

REPORT ON STATUS QUO OF FOOD WASTE PREVENTION AND MANAGEMENT

Deliverable D.T1.1.1

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Summary

This report Deliverable D.T1.1.1 (“Status-Quo Report”) will summarise the current legal background with implications on food waste general in the EU and in the five STREFOWA countries Austria, Czech Republic, Hungary, Italy and Poland as well as existing food waste prevention and management (FWPM) activities in selected functional urban areas of Vienna, Innsbruck, Prague, Wroclav, Miscolc, Budapest, Rimini and Asti along the food supply chain. In addition, it reports the current knowledge on food waste amounts in the five selected countries as well as the quantities of food waste that are prevented by the currently existing food waste prevention activities/initiatives. This report shall serve as basis information for the Food Waste Prevention Tool (Output O.T1.1) as well as back ground information for the planned pilot actions in WP.T2.

REVIEW OF LEGISLATION AND POLICIES WITH IMPLICATIONS ON FOOD WASTE IN THE EU AND FIVE SELECTED EU MEMBER STATES (CHAPTER 3)

On EU-level, in total 62 EU legislative acts in force in November 2016 have been identified and included in the inventory. The inventory (Table 1) comprises 37 Regulations, 10 Directives, 3 Decisions, 11 Communications and 1 Parliament Resolution (This is not a true act of EU legislation per se, but has been included in the inventory because its content appears relevant to any policy or strategy aimed at preventing food waste.).

Table 1: EU legislative acts with implications on food waste

ID	Legislative Act	ID	Legislative Act	ID	Legislative Act
1	Regulation (EU) 2016/1396	22	Regulation (EU) No 142/2011	43	COM (2005) 666 final.
2	Regulation (EU) 2016/127	23	Regulation (EU) No 543/2011	44	Regulation (EC) No 1/2005
3	Regulation (EU) 2016/791	24	Regulation (EU) No 1169/2011	45	Regulation (EC) No 183/2005
4	Regulation (EU) 2016/355	25	COM (2010) 235 final.	46	Directive 2004/12/EC
5	COM (2015) 614 final	26	Directive 2010/75/EU	47	Regulation (EC) No 852/2004
6	Regulation (EU) 2015/98	27	COM (2010) 384 final.	48	Regulation (EC) No 853/2004
7	Regulation (EU) 2015/1375	28	Regulation (EU) No 849/2010	49	Regulation (EC) No 882/2004
8	Regulation (EU) 2015/1162	29	Decision 2009/564/EC	50	COM (2003) 301 final.
9	Regulation (EU) 2015/9	30	Decision 2009/578/EC	51	Directive 2002/99/EC
10	COM (2014) 398 final.	31	Directive 2009/28/EC	52	Regulation (EC) No 178/2002
11	COM (2014) 397 final.	32	Regulation (EC) No 43/2009	53	Regulation (EC) No 2150/2002
12	COM (2013) 260 final.	33	Regulation (EC) No 129/2009	54	Regulation (EC) No 999/2001
13	Regulation (EU) No 56/2013	34	Regulation (EC) No 163/2009	55	Regulation (EC) No 1639/2001
14	Regulation (EU) No 1308/2013	35	Regulation (EC) No 1069/2009	56	Directive 2000/29/EC
15	Regulation (EU) No 1380/2013	36	Directive 2008/98/EC	57	Directive 1999/31/EC
16	Decision No 1386/2013/EU	37	Regulation (EC) No 589/2008	58	Regulation (EC) No 850/98



ID	Legislative Act	ID	Legislative Act	ID	Legislative Act
17	COM (2012) 60 final.	38	COM (2007) 136 final.	59	Regulation (EC) No 258/97
18	Regulation (EU) No 43/2012	39	Regulation (EC) No 832/2007	60	Directive 94/62/EC
19	Regulation (EU) No 44/2012	40	Directive 2006/112/EC	61	Regulation (EEC) No 315/93
20	Parliament Resolution 2011/2175 (INI)	41	Regulation (EC) No 1664/2006	62	Directive 85/374/EEC
21	COM (2011) 571 final.	42	Regulation (EC) No 1881/2006		

According to their potential implications on food waste the inventoried EU legislation has been grouped into (1) Legislation with (potential) implications on food waste generation, (2) Legislation addressing food waste management, (3) Legislation actively addressing food waste reduction and (4) Legislation addressing food (re-)distribution.

EU legislation with (potential) implications on food waste generation is connected to the topic areas „Animal by-products and feedingstuff“, „Catch restrictions“, „Eco-label criteria“, „Food safety / Food contaminants“, „Food information“, „Hygiene rules“, „Marketing standards“ and „Resource efficiency and waste“.

EU legislation with implications on food waste management is covering issues regarding the disposal of animal by-products and derived products, the management of bio-waste and former foodstuffs as well as statistics.

EU legislation with implications on food waste reduction regards the following topic areas: „Animal by-products and feedingstuff“, „Awareness-raising“, „Catch discards“, „Food packaging“, „Hygiene rules“ and „Resource efficiency and waste“.

EU legislation with implications on food (re-)distribution is regarding issues of free distribution/ donation of food, producer liability for donated food and VAT for donated food.

The analysis of legislation and policies in the five EU Member States participating in this project (Austria, Czech Republic, Hungary, Italy, Poland) highlighted how EU Member States have different legislative and political approaches to food waste reduction and prevention. Nevertheless, some similarities can be found - mainly concerning the market-based instruments and regulatory schemes adopted as well as the areas of intervention. An overview of legislation and policy sections addressing food waste of the five STREFOWA countries is given in Table 2.

Table 2: Overview of legislation and policies with implications on food waste in five selected EU Member States

Country	National strategies	Market-base instruments	Regulations and regulatory instruments addressed to				Voluntary agreements
			Food waste generation	Food waste management	Food waste reduction	Food (re-) distribution	
AUT	X		X	X	X		X
CZE	X	X	X	X		X	X
HUN	X	X	X	X			X



ITA	X	X	X	X	X	X	X
POL	X	X	X	X		forseen	

National strategies on food waste prevention

Each of the five countries examined has developed and embedded specific approaches and policy tools which aim to reduce, manage and prevent food waste. Such programmes include National Plans specifically addressed to food waste reduction and a wide range of strategies and plans such as national waste management plans, waste prevention programmes or sustainable food strategies.

Market-based instruments

The market-based instruments in place in the five reviewed EU countries include VAT deduction for food donations and (eco-)taxes intending to promote more environmentally friendly waste management practices (e.g. less (food) waste being deposited in landfill sites).

Regulations and regulatory instruments

Legislation with (potential) implications on food waste generation exists in all of the five reviewed countries. Animal by- products and feeding stuff, food safety and contaminants or hygiene rules are some of the topics addressed by such regulations.

Legislation addressing food waste management already exist in all the countries examined, mainly addressing bio- waste collection and reduction of bio- waste in landfills.

Legislation actively addressing food waste reduction could only be found in Austria and Italy - e.g. defining exceptions from the prohibition of feeding former foodstuffs to farm animals.

Legislation addressing food (re-) distribution only exist in the Czech Republic and in Italy. Such regulations for example introduce the obligation to donate foods that do not meet certain legislative requirements (e.g. foodstuffs that are mislabelled or deformed) or promote the donation of leftover food for the purpose of social solidarity and human use.

Local legal conditions in selected urban areas

The study also examined the legal situation of selected urban areas including Vienna and Tyrol (Austria), Prague (Czech Republic), Budapest and Miskolc (Hungary), Asti and Rimini (Italy) as well as Warsaw and Wroclaw (Poland). Most of the regulations identified belong to legislations addressing food waste management, specifically being collection, treatment and disposal regulations for bio-waste or environmental sustainability programs for the cities or regions.

Voluntary agreements

In all countries but Poland voluntary agreements addressing food waste reduction could be identified - mainly focussing on awareness-raising, food redistribution activities and optimizing processes along the entire food supply chain. These voluntary agreements may operate as networks of stakeholders along the food supply chain and involve private as well as public parties. They can be on a local or on a national scale.



STATUS QUO OF FOOD WASTE AMOUNTS (CHAPTER 4)

The estimation of food waste amounts per country is difficult as food waste often is collected together with other wastes and therefore not registered as total quantity. This is mainly true for household waste but also for other sectors where food waste may be collected and treated as biowaste. Even more difficult it is to estimate the amount of avoidable food waste. To determine the generation of avoidable food waste time consuming sorting analysis are often the only methodology in use. Therefore often reliable data on food waste still are missing in European countries although figures are reported to Eurostat.

Only for Austria reliable measured food waste data exist, for all other countries recalculations from literature are the basis for food waste amounts figures. Data are only available on a biowaste or even higher (municipal solid waste) level.

EXISTING FOOD WASTE PREVENTION AND MANAGEMENT ACTIVITIES (CHAPTER 5)

This chapter gives an overview on the food waste prevention and management (FWPM) activities currently existing in the five STREFOWA countries. The FWPM activities were analysed with regards to the following aspects:

- target group(s) of the activity,
- category (to characterise the initiative/activity),
- main responsible body meaning main actor responsible for the initiative/activity,
- geographic level of implementation

More than half of all FWPM activities identified are addressed to multiple target groups. Only 1 % of all FWPM activities are solely addressed to stakeholders from “Primary Production” (e.g. farmers, rangers, fishers). Not more than 2 % are aimed at the sector “Wholesale/Retail/Market” such as supermarket chains, grocery stores, food retailing, food stores or wholefood shops. Likewise, only 5 % of the activities have a focus on the food service sector (meaning restaurants, hotels, canteens or catering companies). Another 5 % of the identified FWPM activities are targeted to the target group “Waste Management”. This group refers stakeholder responsible for the sustainable collection, treatment and organisation of food waste such as waste management enterprise or waste federations. The category “School”, which is addressed by around 12 % of the identified activities, includes kindergartens, primary / secondary schools, colleges and universities. 23 % of all activities are solely targeted at consumers. None of the identified FWPM activities is solely targeted at stakeholders from the processing sector.

Concerning to which categories the food waste prevention measures belong it turned out that 20 % of all identified FWPM activities belong to the category “Operational measures”, representing different operations to minimize food waste. 19 % of all identified FWPM activities can be allocated to the category “Awareness campaigns”. 18 % of all identified FWPM activities belong to the category “Food redistribution activities”. 16 % of all identified FWPM activities belong to the category “Association/Company”. Such collaborations, which mainly focus on food waste minimization, exist in almost all of the five countries. 13 % of all identified FWPM activities belong to the category “educational measures” and 8 % of all identified FWPM activities belong



to the category “Information material”. Activities of this category aim to communicate via all media (e.g. brochures, folders, flyers, Internet, radio, TV). 7 % of all identified FWPM activities belong to the category “Innovation”.

Analysing the all identified FWPM activities with regards to the actors mainly responsible for their implementation (

Figure 7) reveals that for the largest share (34 %) of the identified FWPM activities the main responsible body is attributable to interest groups including NGO’s, including for example social markets, food banks, city farms, farmer organisations, catholic social service organisations (e.g. Caritas) and food sharing associations. 17 % of the FWPM activities are under the responsibility of small and medium-sized enterprises (SME) such as bakeries, hotels, restaurants, wholefood shops or environment agencies, while large enterprises are responsible for only 12 % of the FWPM activities identified. Representatives of this category would be, for example, larger supermarket chains. Another 10 % of the identified FWPM activities are under the responsibility of education or training centres and schools.

Less than one third of all FWPM activities identified in the five STREFOWA countries are under the responsibility of (national, regional or local) public authorities, infrastructure and (public) service providers, sectoral agencies, higher education and research, and the general public.

While national public authorities such as Ministries of agriculture or environment, inspectorates, waste management authorities or governmental institutions are responsible for about 8 % of the identified FWPM activities, 5 % of all activities belong to infrastructure and (public) service providers (e.g. environmental associations, waste federations, food outlets, waste management enterprises).

Regarding the geographic level of implementation, analysing the FWPM activities identified in all STREFOWA countries reveals that more than half of all activities are implemented at the national level, while at the local level 30 % and at the regional level 14 % of all identified FWPM activities are enforced. Only a very small number (3 %) of all activities are implemented on more than one geographical level (“multiple level of implementation”).



1. Introduction

Wasting food is not only an ethical and economic issue but it also depletes the environment of limited natural resources. Additionally, methane emissions from improper food waste management cause high GHG emissions. The STREFOWA project therefore addresses as main challenge the environmental situation in Central European (CE) cities. In addition, the energy challenge (biogas production) and the challenges of globalisation and economic development as well as social cohesion are addressed (e.g. food donation).

The main objective of the project is to improve food waste management in selected CE functional urban areas by fostering food waste prevention and treatment which leads to a reduction of environmental impacts (especially in GHG emissions). The project results will contribute to raising knowledge and implementation capacity on food waste management of all target groups along the whole food supply chain (incl. private persons, local authorities, gastronomes, retailers, teachers, waste management authorities...).

A real reduction of food waste in different areas and optimisation in food waste treatment will be reached by the implementation of different pilot and demonstration actions, the establishment of an appropriate transnational stakeholder platform, and the implementation of a web based decision support tool tailored to different users to provide best practice guideline and trainings.

This report Deliverable D.T1.1.1 (“Status-Quo Report”) belongs to thematic work package WP T1 (“Food Waste Prevention Support Tool”) Activity A.T1.1 “Analysis of Status Quo”. Within WP T1 background data is collected, to get a better knowledge on the status quo of food waste in the affected functional urban areas. In a second step, possible solutions have to be evaluated concerning sustainability criteria. Based on the outcomes of the description and analysis of the status quo, the main goal of this work package is to develop a tailor-made web-based software tool that shall provide specific information on best practices in food waste prevention and treatment to relevant stakeholder groups in the selected functional urban areas.

The objectives of this WP T1 are to:

- get knowledge on status quo (concerning food waste amount, prevention, collection and treatment) in selected urban areas and for demonstration projects
- get knowledge on functioning best practice models applicable in the selected urban areas
- perform success control for existing and new implemented measures for food waste prevention and treatment
- provide a best practice, decision support tool

Within Activity A.T1.1, a literature review focussing the legal background and on existing food waste prevention and management (FWPM) activities in the participating countries is performed and actual figures on food waste amounts, prevention, collection and treatment are collected.



This report Deliverable D.T1.1.1 (“Status-Quo Report”) will summarise the current legal background with implications on food waste in the EU as well as in the five STREFOWA countries Austria, Czech Republic, Hungary, Italy and Poland. Further, existing food waste prevention and management (FWPM) activities in selected functional urban areas of Vienna, Innsbruck, Prague, Wroclav, Miscolc, Budapest, Rimini and Asti along the food supply chain are studied. In addition, it reports the current knowledge on food waste amounts in the five selected countries as well as the quantities of food waste that are prevented by the currently existing food waste prevention activities/initiatives. This report shall serve as basis for WP.T2 (“Pilot actions - Demonstration projects”).



2. Definitions

In the last five years three major definitions of food waste have been developed and will also be the main source for the STREFOWA project.

2.1. Food Waste Definition by FUSIONS (eu.fusions.org)

Within the European project on Food Use for Social Innovation by Optimising Waste Prevention Strategies - “FUSIONS” experts have been working on providing a Definitional Framework to harmonise the current definition within the EU28 (Östergren et al., 2014). According to FUSIONS, “Food waste is any food, and inedible parts of food, removed from the food supply chain to be recovered or disposed (including composted, crops ploughed in/not harvested, anaerobic digestion, bio-energy production, co-generation, incineration, disposal to sewer, landfill or discarded to sea)”.

Drink and liquid waste, fish discarded to sea and waste of any materials that are ready for harvest, but which are not harvested, are included in FUSIONS’s definition of food waste, making its perimeter wider and broader than many other existing definitions. FUSIONS also considers inedible parts of food (e.g. skin, bones, etc.) as food waste in order to support the development of resource efficient and sustainable food systems in the EU. Within FUSIONS inedible parts of food sent to animal feed are not included in the definition of food waste.

2.2. Food Waste Definition by FAO

Within the FAO’s definitional framework, food waste is delimited by two other notions: food loss, food waste and food wastage (FAO, 2013).

Food loss refers to a decrease in mass (dry matter) or nutritional value (quality) of food that was originally intended for human consumption. These losses are mainly caused by inefficiencies in the food supply chains, such as poor infrastructure and logistics, lack of technology, insufficient skills, knowledge and management capacity of supply chain actors, and lack of access to markets. In addition, natural disasters play a role.

Food waste is part of food loss and refers to food appropriate for human consumption being discarded, whether or not after it is kept beyond its expiry date or left to spoil. Often this is because food has spoiled but it can be for other reasons such as oversupply due to markets, or individual consumer shopping/eating habits.

Food wastage refers to any food lost by deterioration or waste. Thus, the term “wastage” encompasses both food loss and food waste.” (FAO, 2013)

Since “food waste” and “food loss” can cover different stages of the supply chain for different products or geographical areas, it is difficult to measure and report these parameters separately.



2.3. Food Waste Definition by the FLW Protocol

Within the FLW Protocol (Hansen et al., 2016), a partnership which has developed a global FLW Standard for quantifying and reporting on food and/or associated inedible parts removed from the food supply chain, also a broad definition was chosen based on the definitions of food and inedible parts.

Food: Any substance—whether processed, semi-processed, or raw—that is intended for human consumption. “Food” includes drink, and any substance that has been used in the manufacture, preparation, or treatment of food. “Food” also includes material that has spoiled and is therefore no longer fit for human consumption. It does not include cosmetics, tobacco, or substances used only as drugs. It does not include processing agents used along the food supply chain, for example, water to clean or cook raw materials in factories or at home.

Inedible parts: Components associated with a food that, in a particular food supply chain, are not intended to be consumed by humans. Examples of inedible parts associated with food could include bones, rinds, and pits/stones. “Inedible parts” do not include packaging. What is considered inedible varies among users (e.g., chicken feet are consumed in some food supply chains but not others), changes over time, and is influenced by a range of variables including culture, socio-economic factors, availability, price, technological advances, international trade, and geography

food loss and waste (FLW): food and/or associated inedible parts removed from the food supply chain.

2.4. STREFOWA definition of food waste

- In general, the definition of food waste follows the recommendations of the FLW protocol (World Resources Institute) as well as the outcomes of the FUSIONS project. But the project content has additionally to be taken into account.
- As the focus of the project lies on solid waste prevention and treatment drinks are not included within STREFOWA as food. According to the German Food Association (Deutsche Gesellschaft für Ernährung e.V. DGE) the category of „drinks“ includes mineral water, tap water, herbal and fruit tea, fruit juice spritzer, fruit juice nectar, other types of fruit juices, lemonades, caffeine-containing soft drinks, coffee, tea, wine, beer etc. Milk is not considered as a beverage. Together with dairy products, the DGE subsumed milk (category “milk and dairy products”) under food of animal origin (DGE, 2015).
- Although the project focus lies on the prevention of food waste and therefore inedible parts might be excluded as they cannot be prevented, they are kept as part of food waste as in many cases they cannot be divided from existing figures on food waste amounts. Only time consuming and costly sorting analysis provide the possibility to differentiate between edible and inedible share of food waste. Depending on the step of the supply chain this differentiation is more or less in use. E.g. in the food service sector one can easily divide the share of food loss during kitchen preparation (mainly inedible parts) from the other edible parts of food waste like unissued meals and leftovers on the plate.



Within the STREFOWA project therefore:

Food is defined as any substance—whether processed, semi-processed, or raw—that is intended for human consumption including any substances that have been used in the manufacture, preparation, or treatment of food excluding drinks.

Inedible parts = unavoidable food waste: refers to components associated with a food that in a particular food supply chain are not intended to be consumed by humans. This is food thrown away that has not been edible under normal circumstances for most of the inhabitants. Examples could include bones, rinds, or pits/stones. Contrary Avoidable food waste is coming from originally edible parts.

Food waste (including food loss) refers to food as well as associated inedible parts removed from the food supply chain. That means they are not used for normal human consumption.

Inedible parts (Bones, skins...)	Non-avoidable
Preparation residues (skins, ... consumption residues	Non-avoidable
Partly consumed food (not whole as purchased)	Avoidable
Whole unused food (as purchased, whole, unopened)	Avoidable

2.5. Sectors of the Food Supply Chain

The food supply chain refers to the processes that describe how food from a farm ends up on our tables. The processes include production, processing, distribution, consumption and disposal. Concerning food waste prevention also the food service sector is a relevant part within the food supply chain. Each of this step Within STREFOWA each step of the supply chain is considered within the different Pilot Actions.

The pilot actions can be allocated to following food supply chain sector:

Production and Processing: Within STREFOWA the focus is laid on redistribution of Post Harvest Food Waste and therefore on fresh fruit and vegetables

Distribution and Retail: Within STREFOWA pilot actions deal with food re-use and donation from retail to foodbanks. Mainly the prevention of processed and packaged food is topic within this sector.

Consumption out of home: Within STREFOWA the focus is laid on food waste prevention in tourism and food preparation including canteens (also from schools) and therefore on prepared meals

Consumption in home: Beside general issues on Food Waste Prevention at consumers focus is laid additionally on pupils which might act as multiplier of the food waste prevention idea.

Disposal: Food waste that cannot be prevented has to be collected and treated properly. Accordingly pilot actions also focus on food waste management.



3. Review of legal background for food waste prevention and food waste management in the EU and selected member states

The following sub-chapter contains a review of regulations and policies with implications on food waste on EU-level (Chapter Fehler! Verweisquelle konnte nicht gefunden werden.) as well as on the national level of selected EU member states that are participating in the STREFOWA project (Austria, Czech Republic, Hungary, Italy, Poland; Chapter 3.2).

For both the EU level as well as for the five selected EU member states, the legislative acts currently in force are not only listed but also briefly described regarding their implications on food waste prevention and management.

For reviewing the EU legislation with implications on food waste the inventory of EU legislation which was compiled in 2014 for the EU project FUSIONS (Vittuari et al., 2015b) was updated. For updating that inventory the European Database on legislative acts EUR-LEX (<http://eur-lex.europa.eu>) was searched.

The review of the legislation addressing food waste of the selected EU member states was organized into four sections: National strategies, market-based instruments, regulations and regulatory instruments as well as voluntary agreements. This classification was adopted from the EU project FUSIONS in order to enable comparison of the results of this review/report with information about the legal background of further EU member states as well as other non-EU countries.

Table 3: Definition of sections to structure of the review of legislation addressing food waste in selected EU member states (Schneider and Lebersorger, 2016)

National strategies	National strategies on food waste prevention are a method, strategy or plan specifically addressing food waste prevention as required by the 2008 Waste Framework Directive. Key sectors addressed in the plan should include local authorities, households, the hospitality industry, the retail supply chain, businesses and institutions (such as schools and hospitals).
Market-based instruments	Market-based instruments are policy tools that encourage behavioural change through market signals rather than through traditional regulations. Examples include environmentally related taxes, charges and subsidies, emissions trading and other tradable permit systems, deposit-refund systems, environmental labelling laws, licenses, and economic property rights.
Regulations and regulatory instruments	Regulations and regulatory instruments are governmental or ministerial orders having the force of law. Regulatory instruments are sometimes called "command-and-control"; public authorities mandate the performance to be achieved or the technologies to be used.
Voluntary agreements	Voluntary agreements are alternative courses of actions such as self-regulations developed by the industry generally aimed to deliver the policy objectives faster and/or in a more cost-effective manner compared to mandatory requirements.



3.1. EU legislation with implications on food waste

The review of EU legislation with implications on food waste in this section is an updated version of the inventory of EU legislation which was compiled in 2014 for the EU project FUSIONS in the report “Review of EU legislation and policies with implications on food waste” (Vittuari et al., 2015b). For updating that inventory the European Database on legislative acts EUR-LEX was searched.

In total 62 EU legislative acts in force in November 2016 have been identified and included in the inventory. The inventory comprises:

- **37 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.
- **11 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.

In Chapter 3.1.2 the 62 EU legislative acts that are listed in the inventory (Chapter 3.1.1) are analysed and grouped into the following four categories depending on their main implication on food waste:

- (1) Legislation with (potential) implications on food waste generation
- (2) Legislation addressing food waste management
- (3) Legislation actively addressing food waste reduction
- (4) Legislation addressing food (re-)distribution

3.1.1. Inventory of EU Legislation with implications on food waste

In the following inventory these 61 legislative acts are listed chronologically, from the most recent to the oldest. A short description is provided for each legislative act. The entries of legislation before 1st January 2015 are based on the report “Review of EU legislation and policies with implications on food waste” from the EU project FUSIONS (Vittuari et al., 2015b).



Table 4: Inventory of EU legislation with implications on food waste. Update and adaptation of the inventory compiled within FUSIONS (Vittuari et al., 2015b)

ID	Legislative Act
1	<p>Commission Regulation (EU) 2016/1396 of 18 August 2016 amending certain Annexes 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.</p> <p><u>Description:</u> This regulation is amending certain Annexes to Regulation (EC) No 999/2001 which lays down rules for the prevention, control and eradication of transmissible spongiform encephalopathies (TSEs) in bovine, ovine and caprine animals. It applies to the production and placing on the market of live animals and products of animal origin and in certain specific cases to exports thereof.</p>
2	<p>Commission Delegated Regulation (EU) 2016/127 of 25 September 2015 supplementing Regulation (EU) No 609/2013 of the European Parliament and of the Council as regards the specific compositional and information requirements for infant formula and follow-on formula and as regards requirements on information relating to infant and young child feeding.</p> <p><u>Description:</u> This Regulation supplements Regulation (EU) No 609/2013 by adding instructions for appropriate preparation, storage and disposal of the product and a warning against the health hazards of inappropriate preparation and storage for infant formula and follow-on formula.</p>
3	<p>Regulation (EU) 2016/791 of the European Parliament and of the Council of 11 May 2016 amending Regulations (EU) No 1308/2013 and (EU) No 1306/2013 as regards the aid scheme for the supply of fruit and vegetables, bananas and milk in educational establishments.</p> <p><u>Description:</u> Section 1 of Chapter II of Title I of Part II of Regulation (EU) No 1308/2013 of the European Parliament and of the Council provides for a school fruit and vegetables scheme and a school milk scheme. This regulation defines that Member States shall, in order to make the school scheme effective, also provide for accompanying educational measures, which may include, inter alia, measures and activities aimed at reconnecting children with agriculture through activities, such as farm visits, and the distribution of a wider variety of agricultural products as referred to in paragraph 7. Those measures may also be designed to educate children about related issues, such as healthy eating habits, local food chains, organic farming, sustainable production or combating food waste.</p>
4	<p>Commission Regulation (EU) 2016/355 of 11 March 2016 amending Annex III to Regulation (EC) No 853/2004 of the European Parliament and of the Council as regards the specific requirements for gelatine, collagen and highly refined products of animal origin intended for human consumption.</p> <p><u>Description:</u> This regulation is amending Annex III to Regulation (EC) No 853/2004 which is part of the European Hygiene Package. It harmonizes conditions and lays down specific requirements for the production of certain highly refined products of animal origin intended for human consumption.</p>
5	<p>COM (2015) 614 final. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions from 12 December 2015: "Closing the loop - An EU action plan for the Circular Economy".</p> <p><u>Description:</u> This Communication states that in order to support the achievement of the Sustainable Development Goal¹ target on food waste and to maximise the contribution of actors in the food supply chain, the Commission will:</p> <ul style="list-style-type: none"> ■ develop a common EU methodology to measure food waste and define relevant indicators. It will create a platform involving Member States and stakeholders in order to support the achievement of the SDG targets on food waste, through the sharing of best practice and the evaluation of progress made over time. ■ take measures to clarify EU legislation relating to waste, food and feed and facilitate food donation and the use of former foodstuff and by-products from the food chain in feed production without compromising food and feed safety; and ■ examine ways to improve the use of date marking by actors in the food chain and its understanding by consumers, in particular the "best before" label.



ID	Legislative Act
	<p>¹ UN Sustainable Development Goals (SDGs): On September 25th 2015, countries adopted a set of 17 goals to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda. Each goal has specific targets to be achieved over the next 15 years. The following SDGs are connected to food waste: Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture; Goal 3: Ensure healthy lives and promote well-being for all at all ages; Goal 12: Ensure sustainable consumption and production patterns (http://www.un.org/sustainabledevelopment/sustainable-development-goals).</p>
6	<p>Commission Delegated Regulation (EU) 2015/98 of 18 November 2014 on the implementation of the Union's international obligations, as referred to in Article 15(2) of Regulation (EU) No 1380/2013 of the European Parliament and of the Council, under the International Convention for the Conservation of Atlantic Tunas and the Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries.</p> <p><u>Description:</u> Delegated Regulation (EU) 2015/98 implements certain provisions of ICCAT Recommendation 13-07 that establish a discard and release obligation for vessels and traps catching bluefin tuna in the eastern Atlantic and the Mediterranean in certain cases.</p>
7	<p>Commission Implementing Regulation (EU) 2015/1375 of 10 August 2015 laying down specific rules on official controls for Trichinella in meat.</p> <p><u>Description:</u> This regulation is amongst others having regards to Regulation (EC) No 882/2004 of the European Parliament and of the Council (5) lay down the health rules and requirements regarding food of animal origin and the official controls required. It lays down specific rules on official controls for Trichinella in meat.</p>
8	<p>Commission Regulation (EU) 2015/1162 of 15 July 2015 amending Annex V 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.</p> <p><u>Description:</u> This regulation is amending Annex V to Regulation (EC) No 999/2001 by changing the previous regulation on specific requirements for Member States with negligible BSE risk status.</p>
9	<p>Commission Regulation (EU) 2015/9 of 6 January 2015 amending Regulation (EU) No 142/2011 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.</p> <p><u>Description:</u> This regulation amends the Regulation (EU) 142/2011 implementing Regulation (EC) No 1069/2009 laying down health rules as regards animal by-products and derived products not intended for human consumption by amongst others changing details in the regulations regarding disposal options. Regulation (EC) No 1069/2009 restricts the use of certain food by-products and 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.</p>
10	<p>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 Europe.</p> <p><u>Description:</u> Communication (2014) 398 proposes that Member States develop national food-waste prevention strategies and endeavour to ensure that food waste is reduced by at least 30% by 2025 in households and the manufacturing, retail/distribution, and food service/hospitality sectors in order to address specific waste challenges.</p>
11	<p>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 equipment.</p> <p><u>Description:</u> Communication (2014) 397 is part of the circular economy (CE) package 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 main elements of Communication (2014) 397 with direct implications for food waste management and reduction include:</p> <ul style="list-style-type: none"> ■ The definition of “food waste” (among other terms) in Directive 2008/98/EC.



ID	Legislative Act
	<ul style="list-style-type: none"> ▪ 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%.
12	<p>COM (2013) 260 final. Proposal for a Regulation of the European Parliament and of the Council on animal health.</p> <p><u>Description:</u> This Communication focuses on the prevention and control of diseases that are transmissible to animals or humans. It aims to reduce the complexity of current legislation on animal health. The proposal streamlines roughly forty legislative documents into a single law.</p>
13	<p>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 Council laying down rules for the prevention, control and eradication of certain transmissible spongiform encephalopathies.</p> <p><u>Description:</u> 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.</p>
14	<p>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.</p> <p><u>Description:</u> Following the debate on the Communication ‘The CAP towards 2020: Meeting the food, natural resources and territorial challenges of the future’, the CAP (Common Agricultural Policy) has been reformed with effect from 1 January 2014. 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.</p>
15	<p>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.</p> <p><u>Description:</u> The Regulation reforms the Common Fisheries Policy by including an obligation to land all catches of species that are subject to EU restrictions (“discard ban”).</p>
16	<p>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.”</p> <p><u>Description:</u> One of the priority objectives defined in this decision is to turn the European Union into a resource-efficient, green, and competitive low- carbon economy. The 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.”</p>



ID	Legislative Act
17	<p>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.</p> <p><u>Description:</u> The Europe 2020 Strategy calls for bioeconomy as a key element of smart and green growth in Europe. Bioeconomy encourages the use of sustainable and greener production processes in primary production sectors 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 by calling for greener production processes in the food processing industry.</p>
18	<p>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.</p> <p><u>Description:</u> This Regulation fixes for this respective year 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.</p>
19	<p>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.</p> <p><u>Description:</u> This Regulation fixes for this 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 which are subject to international negotiations or agreements.</p>
20	<p>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.</p> <p><u>Description:</u> 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.</p>
21	<p>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.</p> <p><u>Description:</u> 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. Food waste reduction must be considered one of drivers for the development of resource efficiency.</p>
22	<p>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.</p> <p><u>Description:</u> 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 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.</p>
23	<p>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.</p> <p><u>Description:</u> 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.</p>
24	<p>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</p>



ID	Legislative Act
	<p>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.</p> <p><u>Description:</u> 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:</p> <ul style="list-style-type: none"> ▪ 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.
25	<p>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.</p> <p><u>Description:</u> This Communication explains the steps considered necessary by the Commission to optimize the management of bio-waste (in particular, the prevention and treatment of bio-waste).</p>
26	<p>Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control).</p> <p><u>Description:</u> 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. 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. Moreover, the rule intended to prevent or reduce emissions includes strategies for waste monitoring and management measures.</p>
27	<p>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.</p> <p><u>Description:</u> 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. 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.</p>
28	<p>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.</p> <p><u>Description:</u> 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 45 of the inventory).</p>
29	<p>Commission Decision 2009/564/EC of 9 July 2009 establishing the ecological criteria for the award of the Community eco-label for campsite service.</p> <p><u>Description:</u> This Decision establishes the ecological criteria for the award of the Community eco-label for campsite services including the provision of food services. The separate collection of kitchen waste for composting purposes has been included among the optional criteria. Food waste prevention measures are neither included in the mandatory criteria nor within the optional criteria for the award of the Community eco-label.</p>



ID	Legislative Act
30	<p>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.</p> <p><u>Description:</u> This Decision establishes the ecological criteria for the award of the Community eco-label tourist accommodation services including the provision of food services. The separate collection of kitchen waste for composting purposes has been included among the optional criteria. Food waste prevention measures are neither included in the mandatory criteria nor within the optional criteria for the award of the Community eco-label.</p>
31	<p>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.</p> <p><u>Description:</u> 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. This Directive encourages the use of anaerobic digestion to treat food waste.</p>
32	<p>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.</p> <p><u>Description:</u> This Regulation fixes for their respective year 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.</p>
33	<p>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.</p> <p><u>Description:</u> This Regulation amended Regulation (EC) No 197/2006 extending the validity of the transitional measures until 31 July 2011. The measures listed in the Regulation pertain to the collection, transport, treatment, use, and disposal of former foodstuffs.</p>
34	<p>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.</p> <p><u>Description:</u> 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.</p>
35	<p>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).</p> <p><u>Description:</u> 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 <i>generation</i> and may also contribute to the <i>management</i> of these types of products.</p>
36	<p>Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.</p> <p><u>Description:</u> 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.</p>
37	<p>Commission Regulation (EC) No 589/2008 of 23 June 2008 laying down detailed rules for implementing Council</p>



ID	Legislative Act
	<p>Regulation (EC) No 1234/2007 as regards marketing standards for eggs.</p> <p><u>Description:</u> 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).</p>
38	<p>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}.</p> <p><u>Description:</u> This Communication suggests a policy to reduce unwanted by-catches and progressively eliminate discards in European fisheries.</p>
39	<p>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.</p> <p><u>Description:</u> 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. It 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.</p>
40	<p>Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax.</p> <p><u>Description:</u> This Directive establishes the common European system of value added tax (VAT). 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).</p>
41	<p>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.</p> <p><u>Description:</u> This Regulation 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.</p>
42	<p>Commission Regulation (EC) No 1881/2006 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs.</p> <p><u>Description:</u> 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). Products exceeding tolerance limits of contaminants may be neither sold nor consumed and must be discarded.</p>
43	<p>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.</p> <p><u>Description:</u> 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 50 of this inventory). 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. A particular emphasis on biodegradable waste was made.</p>
44	<p>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.</p> <p><u>Description:</u> Regulation (EC) No 1/2005 requires specific measures to improve animal welfare during transport. It</p>



ID	Legislative Act
	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. By improving animal welfare, the number of DOA (Deaths on arrival) may be limited and food waste consequently reduced.
45	<p>Regulation (EC) No 183/2005 of the European Parliament and of the Council of 12 January 2005 laying down requirements for feed hygiene.</p> <p><u>Description:</u> This legislative act is part of the European Hygiene Package, which seeks to ensure the hygiene of foodstuffs at all stages from production to consumption. It lays down requirements for feed hygiene.</p>
46	<p>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.</p> <p><u>Description:</u> This Directive establishes certain amendments to the Directive 94/62/EC (num 60 of this inventory) on packaging and packaging waste. It aims to improve product packaging for better packaging can promote less food waste.</p>
47	<p>Regulation (EC) No 852/2004 of the European Parliament and of the Council of 29 April 2004 on the hygiene of foodstuffs.</p> <p><u>Description:</u> This legislative act is part of the European Hygiene Package, which seeks to ensure the hygiene of foodstuffs at all stages from production to consumption. It lays down rules on the hygiene of foodstuffs.</p>
48	<p>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.</p> <p><u>Description:</u> This legislative act is part of the European Hygiene Package, which seeks to ensure the hygiene of foodstuffs at all stages from production to consumption. It lays down specific hygiene rules for food of animal origin.</p>
49	<p>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.</p> <p><u>Description:</u> This legislative act is part of the European Hygiene Package, which seeks to ensure the hygiene of foodstuffs at all stages from production to consumption. It lays down rules on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules.</p>
50	<p>COM (2003) 301 final. Communication from the Commission. Towards a thematic strategy on the prevention and recycling of waste. Brussels, 27.5.2003.</p> <p><u>Description:</u> 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 43 of this inventory).</p>
51	<p>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.</p> <p><u>Description:</u> This legislative act is part of the European Hygiene Package, which seeks to ensure the hygiene of foodstuffs at all stages from production to consumption. It lays down the animal health rules governing the production, processing, distribution and introduction of products of animal origin for human consumption.</p>
52	<p>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.</p> <p><u>Description:</u> 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. It contains, amongst others, measures aimed at guaranteeing that unsafe food is not placed on the market.</p>
53	<p>Regulation (EC) No 2150/2002 of the European Parliament and of the Council of 25 November 2002 on waste statistics.</p> <p><u>Description:</u> The objective of this Regulation is to establish a framework for the production of Community statistics</p>



ID	Legislative Act
	on the generation, recovery, and disposal of waste. amended by Regulation (EU) No 849/2010 still valid.
54	<p>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.</p> <p><u>Description:</u> This Regulation 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. It 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.</p>
55	<p>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.</p> <p><u>Description.</u> 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.</p>
56	<p>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.</p> <p><u>Description:</u> This Directive focuses on keeping invasive organisms harmful to plants and plant-based products out of the Community and controlling their spread within it. If contaminated foodstuffs are identified, the entire batch is to be destroyed or sent back.</p>
57	<p>Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste.</p> <p><u>Description:</u> 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.</p>
58	<p>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.</p> <p><u>Description:</u> This Regulation regulates the conservation of fishery resources.</p>
59	<p>Regulation (EC) No 258/97 of the European Parliament and of the Council of 27 January 1997 concerning novel foods and novel food ingredients.</p> <p><u>Description:</u> This Regulation prescribes that new foods and new food ingredients are subject to approval procedures.</p>
60	<p>European Council Directive 94/62/EC on packaging and packaging waste.</p> <p><u>Description:</u> This Directive has been amended by Directive 2004/12/EC (num 46 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.</p>
61	<p>Council Regulation (EEC) No 315/93 of 8 February 1993 laying down Community procedures for contaminants in food.</p> <p><u>Description:</u> 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). Products exceeding tolerance limits of contaminants may be neither sold nor consumed and must be discarded. In detail, it establishes certain basic principles regarding contaminants in food, notably that (1) food containing a contaminant of an amount that is unacceptable from a public health viewpoint and in particular at a toxicological level, shall not be placed on the market; and (2) maximum levels must be set for certain contaminants in order to protect public health.</p>
62	<p>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.</p> <p><u>Description:</u> 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.</p>



3.1.2. Analysis of EU legislation with implications on food waste

The inventory of legislation regarding food waste on EU-level (Chapter 3.1.1) shows that the EU legislative framework with implications on food waste covers many different topics and policy areas. Within the EU project FUSIONS (Vittuari et al., 2015b) the following EU legislative and policy areas have been identified to have implications for food waste (in alphabetical order): Agriculture; Economic and monetary policy and free movement of capital; Environment, consumers and health protection; Fisheries; General, financial and institutional matters; Industrial policy and internal market; Taxation.

Depending on the policy area the regulative acts are attached to, the implications on food waste differ. In FUSIONS (Vittuari et al., 2015b) five types of implications regarding the (positive or negative) impacts of food waste legislation were identified. These five types of implications reflect the different effects of the examined legislation on the generation, management and reduction of food waste as well as on the optimization of food use. A description of these implication categories is given in Table 5.

Table 5: Types of implications of legislation and policies impacting on food waste (adapted from FUSIONS (Vittuari et al., 2015b))

Type of implication	Description
i) Legislation implying or potentially implying food waste generation	The examined legislative act 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 addressed to food waste management	The examined legislative act contains provisions to manage the generation of food waste.
iii) Legislation actively addressed to food waste reduction	The examined legislative act contains provisions targeted to reduce the generation of food waste.
iv) Legislation actively addressed to food use optimization	The examined legislative act 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 with more than one implication	The examined legislative act contains more than one type of implication for food waste.

In the following analysis the legislative acts listed in the inventory (Chapter 3.1.1) are grouped according to their main implications into the four categories listed below.

In order to make the results of this report comparable to similar studies (such as the review of EU legislation and policies performed within the EU project FUSIONS) and because a major part of the inventory is based on the inventory compiled within FUSIONS, the categories used for grouping the legislative acts have been based on the implication types described in Table 5. Besides grouping the legislative acts according to their types of implications, a short description of the topics covered is given for each legislative act. Summarising, the EU legislative acts with (potential) implications on food waste can be connected to the following topics: Animal by-products and feedingstuff; Awareness-raising; Catch restrictions / Catch discards; Eco-label



Criteria; Disposal of animal by-products and derived products; Food safety / Food contaminants; Food information; Food packaging; Free distribution / Donation; Hygiene rules, Management of bio-waste and former foodstuffs; Marketing standards; Producer liability; Resource efficiency and waste; Statistics and VAT for donated food.

The four categories for grouping the legislative acts are:

- (1) Legislation with (potential) implications on food waste generation
- (2) Legislation addressing food waste management
- (3) Legislation actively addressing food waste reduction
- (4) Legislation addressing food (re-)distribution

3.1.2.1. Legislation with (potential) implications on food waste generation

EU legislation with (potential) implications on food waste generation is connected to the topic areas „Animal by-products and feedingstuff“, „Catch restrictions“, „Eco-label criteria“, „Food safety / Food contaminants“, „Food information“, „Hygiene rules“, „Marketing standards“ and „Resource efficiency and waste“.

Animal by-products and feedingstuff

Several EU Regulations are targeted at restricting the use of animal by-products because animal residual flows could potentially be dangerous for human and animal health.

Many policy measures regarding this topic are aiming at eradicating or at least reducing the risk of transmission of spongiform encephalopathies (TSEs) (Vittuari et al., 2015b). Regulation (EC) 999/2001 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. Vittuari et al. (2015b) concluded that through these rules the valorization of harmless material for animal feed is prohibited. The extended feed ban of Regulation (EC) 999/2001 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 (Vittuari et al., 2015b).

Regulation (EC) 1069/2009 restricts the use of certain food by-products in order to prevent and minimize risks to public and animal health. Moreover, it prohibits the feeding of catering waste and kitchen scraps to farmed animals, as well as the feeding of raw, partially cooked, and cooked meat products in order to control the potential introduction and spread of major exotic notifiable diseases (Vittuari et al., 2015b). Thus, this Regulation may contribute to food waste generation, but also has an impact on food waste management.

- Commission Regulation (EU) 2016/1396 of 18 August 2016 amending Regulation (EC) No 999/2001 (inv. ID 1).
- Commission Regulation (EU) 2015/1162 of 15 July 2015 amending Regulation (EC) No 999/2001 (inv. ID 8).



- Commission Regulation (EU) No 56/2013 of 16 January 2013 amending Regulation (EC) No 999/2001 (inv. ID 13).
- Regulation (EC) 1069/2009 of 21 October 2009 (inv. ID 35) lays down health rules as regards animal by-products and derived products not intended for human consumption.
- Regulation (EC) No 999/2001 of 22 May 2001 laying down rules for the prevention, control and eradication of certain transmissible spongiform encephalopathies (inv. ID 54).

Catch restrictions

Several regulations implemented in the fisheries policy area include catch restrictions. The regulations listed below define for their respective year the fishing opportunities (meaning catch limits) 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. Furthermore, the minimum landing size of fish is defined.

One measure implementing catch restrictions is named “Total Allowable Catch” (TAC). Considering that each Member State has an allocated quota (a proportion of the TAC), the fish have to be discarded when a catch exceeds the limit. As the fish thrown back into the sea often do not survive, this rule (potentially) has implications on food waste generation (Vittuari et al., 2015b).

- Council Regulation (EU) No 43/2012 of 17 January 2012 on fishing opportunities (inv. ID 18).
- Council Regulation (EU) No 44/2012 of 17 January 2012 on fishing opportunities (inv. ID 19).
- Council Regulation (EC) No 43/2009 of 16 January 2009 on fishing opportunities (inv. ID 32).
- 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 (inv. ID 58).

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 ecolabel indicates that the product or service has a reduced environmental impact throughout its entire life cycle (Vittuari et al., 2015b).

Decision 2009/564/EC and Decision 2009/578/EC establish the ecological criteria for the award of the Community eco-label for campsite services and tourist accommodation services both including the provision of food services. The separate collection of kitchen waste for composting purposes has been included among the optional criteria. However, food waste prevention measures are neither included in the mandatory criteria nor within the optional criteria for the award of the Community eco-label. This omission should be addressed in the interest of food waste strategies (Vittuari et al., 2015b).



- Decision 2009/564/EC of 9 July 2009 establishing the ecological criteria for the award of the Community eco-label for campsite service (inv. ID 28).
- Decision 2009/578/EC of 9 July 2009 establishing the ecological criteria for the award of the Community eco-label for tourist accommodation service (inv. ID 29).

Food safety / Food contaminants

Regulation (EC) No 178/2002 lays down the general principles and requirements of food law, establishes the European Food Safety Authority and lays down procedures in matters of food safety. Those measures aim at guaranteeing that unsafe food is not placed on the market by setting a high level of health protection. According to Vittuari et al. (2015b) some experts suggested that 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. Thus, this legislative act might also imply potential food (re-)distribution.

- Regulation (EC) No 178/2002 of 28 January 2002 (inv. ID 52) on general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.

Several EU legislative documents lay down Community procedures to protect public health from contaminants in food. They regulate that food (products) exceeding tolerance limits of contaminants may be neither sold nor consumed and must be discarded. Directive 2000/29/EC, for example, defines that if contaminated foodstuffs are identified, the entire batch has to be destroyed or sent back. In the case of perishable products, this may generate food waste (Vittuari et al., 2015b). In accordance with other legal acts Council Regulation (EEC) No 315/93 and Regulation (EC) No 1881/2006 prohibit to place certain foodstuffs (including milk) on the market where those foodstuffs contain certain contaminants at a level exceeding the maximum level set out in those legal acts. Those legal acts also require Member States to adopt appropriate surveillance measures to control the presence of contaminants in foodstuffs.

The following regulations are connected to this issue:

- Commission Regulation (EC) No 1881/2006 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs (inv. ID 42).
- 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 (inv. ID 56).
- Council Regulation (EEC) No 315/93 of 8 February 1993 laying down Community procedures for contaminants in food (inv. ID 61).

Food information

The European 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 and consuming food, thus, causing less food waste (Vittuari et al., 2015b). Regulation (EU) 2016/127, for example, is supplementing Regulation (EU) No 609/2013 on specific compositional and information requirements for infant formula and follow-on formula, with instructions for appropriate preparation, storage and disposal of the product. Regulation (EU) 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 such as how to communicate the durability, storage and safe use of food. Dealing with these aspect would yet be necessary as studies show that for consumers the information regarding shelf life and use of a product are sometimes (i.e. the meaning of “use by” and “best before” dates) unclear and food banks do not use food over the “best before” date, leading to the waste of food that is still safe (Vittuari et al., 2015b).

- Regulation (EU) 2016/127 of 25 September 2015 supplementing Regulation (EU) No 609/2013 regarding the specific compositional and information requirements for infant formula and follow-on formula and regarding requirements on information relating to infant and young child feeding (inv. ID 2).
- Regulation (EU) No 1169/2011 of 25 October 2011 on the provision of food information to consumers (inv. ID 24).

Hygiene rules

The EU has established several hygiene rules regarding food and several other elements of the Food Supply Chain (FSC) from production to consumption. The main objective of this “hygiene package” is to implement safe procedures to ensure human, animal, crop, and forest health. As these rules exist to ensure hygienic conditions in all segments of FSC, they generally prevent food from being wasted. They lay down, for example, the health rules and requirements regarding food of animal origin and the official controls required. However, some experts caution that rules excessively binding and disproportionate to practical hygiene needs might also cause food waste. By requiring very wide safety margins and imposing excessive limitations food waste might occur, as can be 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, due to given “sell by” dates, “best before” dates etc. (Vittuari et al., 2015b).

Part of the European hygiene regulations aim at “new” foodstuffs. The “Novel Food Regulation” (Regulation (EC) No 258/97) prescribes that new foods and new food ingredients are subject to approval procedures. Vittuari et al. (2015b) identified this regulations as (potentially) impacting food waste generation as the acceptance of new foods and food ingredients takes a long time in some cases even when these are eaten elsewhere in the world, thus, prohibiting valuable foods from being eaten.

EU hygiene rules with (potential) implications on food waste generation are:

- Commission Regulation (EU) 2016/355 of 11 March 2016 amending Regulation (EC) No 853/2004 (inv. ID 4).
- Commission Implementing Regulation (EU) 2015/1375 of 10 August 2015 laying down specific rules on official controls for *Trichinella* in meat (inv. ID 7).
- Regulation (EC) No 183/2005 12 January 2005 laying down requirements for feed hygiene (inv. ID 45).
- Regulation (EC) No 852/2004 29 April 2004 on the hygiene of foodstuffs (inv. ID 47).



- Regulation (EC) No 853/2004 29 April 2004 laying down specific hygiene rules for food of animal origin (inv. ID 48).
- Regulation (EC) No 882/2004 29 April 2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules (inv. ID 49).
- 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 (inv. ID 51).
- Regulation (EC) No 258/97 of 27 January 1997 concerning novel foods and novel food ingredients (inv. ID 59).

Marketing standards

European legislation establishes general and specific marketing standards for several products. Marketing standards include rules establishing what products should look like (not related to health issues) in terms of size and shape. They potentially can cause food waste as 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 (Vittuari et al., 2015b).

Marketing standards can also be targeted at the definition of the minimum durability period (“best before” dates). Regulation (EC) No 589/2008, for example, 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). In some regions where the climate is relatively cold and very few cases of salmonella are observed such as the Nordic countries this minimum durability period might be too short, leading to the wastage of eggs in those countries before perishing. Thus, this Regulation can be classified as potentially implying food waste generation (Vittuari et al., 2015b).

- Commission Implementing Regulation (EC) No 543/2011 of 7 June 2011 laying down general and specific marketing standards for fruit and vegetables and processed fruit and vegetables sectors. (inv. ID 23).
- Regulation (EC) No 589/2008 of 23 June 2008 laying down detailed rules for marketing standards for eggs (inv. ID 37).

Resource efficiency and waste

Several EU legislative documents aim at increasing the efficiency of resource management by combining economic and environmental needs. In particular, food waste prevention has become a subject of great interest (Vittuari et al., 2015b). Directive 2009/28/EC encourages the use of anaerobic digestion to treat food waste. Vittuari et al. (2015b) concluded that this could be a potential disincentive for the prevention of food waste, which could be partly justified by its use for energy production.

- Directive 2009/28/EC of 23 April 2009 on the promotion of the use of energy from renewable sources (inv. ID 31).



3.1.2.2. Legislation addressing food waste management

EU legislation with implications on food waste management is covering issues regarding the disposal of animal by-products and derived products, the management of bio-waste and former foodstuffs as well as statistics.

Disposal of animal by-products and derived products

Animal residual flows are considered to be potentially dangerous for human and animal health. Thus, uses of animal by-products are restricted and also the disposal of animal by-products and derived products is regulated. Besides having implications on food waste management such regulations could also potentially have impacts on food waste generation.

- Commission Regulation (EU) 2015/9 of 6 January 2015 (inv. ID 9) is amending Regulation (EU) 142/2011.
- Commission Regulation (EU) No 142/2011 of 25 February 2011 (inv. ID 22) contains rules regarding the disposal of animal by-products and derived products.

Management of bio-waste and former foodstuffs

Biodegradable waste, which includes food waste, has a negative environmental impact. When being landfilled, for example, biodegradable materials produce methane (CH₄), a powerful greenhouse gas. Thus, beside the strong focus on the need of implementing food waste prevention measures, the management of bio-waste and former foodstuffs is also subject of several EU legislative documents (Vittuari et al., 2015b). The legislative documents listed below explain, for example, the steps necessary to optimize the treatment of bio-waste (COM (2010) 235) or list measures for the collection, transport, treatment, use, and disposal of former foodstuffs (Regulation (EC) 129/2009). The “Landfill Directive” (Directive 1999/31/EC) sets targets for Member States to reduce the amount of biodegradable waste in landfills by 65% by 2016 from 1995 levels. Since food waste constitutes a significant portion of Biodegradable Municipal Waste, 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 (Vittuari et al., 2015b). As the landfill Directive does not include binding specifications on methods for disposal of Biodegradable Municipal Waste that is not sent to landfills, most Member States opted for incinerating it (Vittuari et al., 2015b).

- Communication (2010) 235 final on future steps in bio-waste management in the European Union (inv. ID 25).
- Commission Regulation (EC) 129/2009 of 13 February 2009 (inv. ID 33).
- Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (inv. ID 57).

Statistics

Regulations on statistics do not have direct but indirect implications on food waste. Accurate 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 (Vittuari et al., 2015b). The



regulations listed below regulate, for example, how waste statistics must be reported to Eurostat or lay down the method by which catches, landings, and discards are evaluated.

- Regulation (EU) No 849/2010 of 27 September 2010 on waste statistics (inv. ID 28).
- Regulation No 2150/2002 of 25 November 2002 on waste statistics (inv. ID 53).
- Commission Regulation (EC) No 1639/2001 of 25 July 2001 establishing a Community framework for the collection and management of the data needed to implement the common fisheries policy (inv. ID 55).

3.1.2.3. Legislation actively addressing food waste reduction

EU legislation with implications on food waste reduction regards the following topic areas: “Animal by-products and feedingstuff”, “Awareness-raising”, “Catch discards”, “Food packaging”, “Hygiene rules” and “Resource efficiency and waste”.

Animal by-products and feedingstuff

Although several EU Regulations are targeted at restricting the use of animal by-products because animal residual flows could potentially be dangerous for human and animal health, some rules on regarding animal by-products and feedingstuff can also have implications on food waste reduction.

Communication (2010) 384, for example, asks for a review of the current feed ban provisions, toward a possible gradual lifting of the feed ban provisions for non-ruminants (pigs, poultry, and fish) to avoid the waste of certain animal parts and by-products not allowed to enter the food/feed chains. Regulation (EC) No 832/2007 prescribes that Member States may authorize former foodstuffs to be used in feed 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 such use does not pose a risk to public or animal health. Other restrictions on the uses of former foodstuffs in feed are laid down in Regulation 142/2011 (inv. ID 8). Commission 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 (Vittuari et al., 2015b).

- Communication (2010) 384 final “The TSE Roadmap 2. A Strategy paper on Transmissible Spongiform Encephalopathies for 2010-2015.” (inv. ID 27).
- Commission Regulation (EC) No 832/2007 of 16 July 2007 regarding uses of former foodstuffs and the extension of the validity of the transitional measures relating to such foodstuffs (inv. ID 39).
- Commission Regulation (EC) No 1664/2006 of 6 November 2006 on implementing measures for certain products of animal origin intended for human consumption and repealing certain implementing measures. (inv. ID 41).



Awareness-raising

Some EU legislative documents call for reinforced awareness-raising in order to foster sustainable food consumption and reduce food waste. Regulation (EU) 2016/791, for example, defines that Member States shall also provide for accompanying educational measures (e.g. farm visits) in order to make the school scheme laid down by Regulation (EU) 1308/2013 effective. Those measures may also be designed to educate children about related issues, such as healthy eating habits, local food chains, organic farming, sustainable production or combating food waste (Vittuari et al., 2015b). Furthermore, Resolution 2011/2175 calls for an awareness raising initiative targeted at the dissemination of information on how use of food in a more sustainable way among European citizens. This act is also calling for the development of guidelines for improving efficiency along the entire Food Supply Chain (FSC).

- Regulation (EU) 2016/791 of 11 May 2016 (inv. ID 3).
- European Parliament Resolution 2011/2175 of 19 January 2012 on how to avoid food wastage: strategies for a more efficient food chain in the EU (inv. ID 20)

Catch discards

The main aim of the legislative documents listed below is to reduce food waste through the reduction of unwanted by-catches and discards. Regulation (EU) 2015/98, for example, introduced the general obligation to land all catches of species that are subject to EU restrictions. This “discard ban” is in force since 2015 and will stay in force until 2019. Regulation (EU) 2015/98 lays down specific discard and release rules for vessels and traps catching bluefin tuna.

- Commission Delegated Regulation (EU) 2015/98 of 18 November 2014 on the implementation of the Union's international obligations regarding the conservation of Atlantic Tunas (inv. ID 6).
- Regulation (EU) No 1380/2013 of 11 December 2013 on the Common Fisheries Policy (inv. ID 15).
- Communication (2007) 136 final from 28.03.2007 “A policy to reduce unwanted by-catches and eliminate discards in European fisheries” (inv. ID 38).

Food packaging

Measures addressing this topic are often designed to reduce packaging waste, but they may also be relevant to food waste prevention. These measures stimulate research and innovation that could lead to extended food life due to optimized packaging solutions as well as to simplified and more readable labels. Labels often drive food waste because consumers do not understand the information provided on the packaging (Vittuari et al., 2015b). Directive 2004/12/EC, for example, to improve product packaging in order to have less food waste. 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.



- Directive 2004/12/EC of 11 February 2004 on packaging and packaging (inv. ID 46).
- Directive 94/62 EC on packaging and packaging waste (inv. ID 60).

Hygiene rules

Hygiene rules connected to the policy area “Agriculture” are addressing issues of disease control and animal welfare and can, thus, potentially have implications on food waste (Vittuari et al., 2015b). Communication (2013) 260 and Regulation (EC) No 163/2009, for example, focus on the prevention and control of diseases that are transmissible to animals or humans. Regulation (EC) No 1/2005 requires specific measures to improve animal welfare during transport. By improving animal welfare, the number of DOA (Deaths on arrival) may be limited and food waste consequently reduced (considering DOA as animals that were ready to slaughter).

- Communication (2013) 260 final “Proposal for a Regulation of the European Parliament and of the Council on animal health.” (inv. ID 12).
- Commission Regulation (EC) No 163/2009 of 26 February 2009 amending regulations laying down rules for the prevention, control and eradication of certain transmissible spongiform encephalopathies (inv. ID 34).
- Council Regulation (EC) No 1/2005 of 22 December 2004 on the protection of animals during transport and related operations (inv. ID 44).

Resource efficiency and waste

Several EU legislative documents aim at increasing the efficiency of resource management by combining economic and environmental needs. They often also focus on waste reduction or avoidance of waste as waste prevention and recycling are seen as part of a broader waste management strategy to reduce the environmental impact of resource use (COM (2003) 301). In COM (2011) 571 the Commission explicitly stated again that food waste reduction must be considered one of drivers for the development of resource efficiency.

The so-called “Waste Framework Directive” (Directive 2008/98/EC) calls for the development of Waste Prevention Programmes (WPPs), which might lead to food waste prevention. Moreover, the waste hierarchy set out by this Directive drives the prioritization of prevention across all types of waste and, thus, food waste reduction (as consequence of prevention) might be a possible implication. Furthermore, although this Directive does not contain measures or targets specifically addressed to food waste, it outlines a clear strategy for the separate collection and treatment of bio-waste, with a view to composting and digestion, and could, thus, have impacts on food waste management as well.

COM (2014) 397 and COM (2014) 398 are both part of the circular economy (CE) package to promote the transition of the EU into a circular economy, boost recycling, secure access to raw materials, and create jobs and economic growth. Communication (2014) 398 proposes, for example, that Member States develop national food-waste prevention strategies and endeavour to ensure that food waste is reduced by at least 30% by 2025 in households and the manufacturing, retail/distribution, and food service/hospitality sectors.

The “EU action plan for the Circular Economy” (COM (2015) 614) also puts a strong focus on food waste. In order to support the achievement of the UN Sustainable Development Goal target on



food waste and to maximise the contribution of actors in the food supply chain, the Commission will, amongst others, develop a common EU methodology to measure food waste and define relevant indicators, take measures to clarify EU legislation relating to waste, food and feed and facilitate food donation and the use of former foodstuff and by-products from the food chain in feed production without compromising food and feed safety, examine ways to improve the use of date marking by actors in the food chain and its understanding by consumers, in particular the "best before" label. This Communication, thus, is not only connected to food waste reduction, but also to food waste generation, management and (re-)distribution.

The Thematic Strategy on the prevention and recycling of waste (presented in COM (2005) 666), aims at reducing the negative impact on the environment caused by waste throughout its lifecycle, from production to disposal, making a particular emphasis on biodegradable waste. The remaining legislative documents below aim at, for example, a comprehensive strategy to combat unnecessary food waste (Decision No 1386/2013/EU), greener production processes in the food processing industry (Communication (2012) 60) or sets priorities on the avoidance of waste generation (Directive 2010/75/EU).

- Communication (2015) 614 “Closing the loop - An EU action plan for the Circular Economy” (inv. ID 5).
- Communication (2014) 398 final towards a circular economy: A zero waste programme for Europe (inv. ID 10).
- Communication (2014) 397 final (inv. ID 11).
- Decision 1386/2013/EU of 20 November 2013 on a General Union Environment Action Programme to 2020 “Living well, within the limits of our planet.” (inv. ID 16).
- Communication (2012) 60 final on innovating for Sustainable Growth: A Bioeconomy for Europe (inv. ID 17).
- Communication (2011) 571 final “Roadmap to a resource efficient Europe” (inv. ID 21).
- Directive 2010/75/EU of 24 November 2010 on industrial emissions (inv. ID 26).
- Directive 2008/98/EC of 19 November 2008 on waste (inv. ID 36).
- Communication (2005) 666 final “Taking sustainable use of resources forward: A Thematic Strategy on the prevention and recycling of waste” (inv. ID 43).
- Communication (2003) 301 final “Towards a thematic strategy on the prevention and recycling of waste“ (inv. ID 50).

3.1.2.4. Legislation addressing food (re-)distribution

EU legislation with implications on food (re-)distribution is regarding issues of free distribution/donation of food, producer liability for donated food and VAT for donated food.

Free Distribution / Donation



Free distribution was identified by Vittuari et al. (2015b) as an effective measure that should be supported in order to reduce food waste. Measures related to the free distribution / donation of food are supported in the policy area of agriculture, where the recent reform of the Common Agricultural Policy (CAP) 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 (Vittuari et al., 2015b). The reformed CAP is effective since 1 January 2014.

- Council Regulation (EC) No 1308/2013 of 17 December 2013 establishing a common organisation of the markets in agricultural products (inv. ID 14).

Producer liability for donated food

Directive 85/374/EEC established the principle of producer liability. This liability is applicable to European producers without fault when a defective product causes damage to a consumer. However, this Directive also includes exemptions releasing producers from liability such as the exemption that applies to food donation. 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 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 (Vittuari et al., 2015b). This Directive was amended by Directive 1999/34/EC.

- 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 (inv. ID 62).

VAT for donated food

Directive 2006/112/EC establishes the common European system of value added tax (VAT). In principle, fiscal measures can be effective tools in a prevention strategy. In their analysis of EU legislation with implications on food waste, Vittuari et al. (2015b) conclude that this legislation may hinder the cooperation between retailers and food banks. 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 States (e.g. Denmark, Estonia, France, Germany, Hungary, Ireland, Italy, Lithuania, Netherlands, Poland, Portugal, United Kingdom) 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 (Vittuari et al., 2015b).

The EU VAT Committee agreed on 7 December 2012 on new guidelines on interpreting the content of Articles 16 and 74 on food donation to harmonize the application of the Directive across EU Member States. However, the grey area of the value of donated food close to its "best before/use by" date is not addressed (Vittuari et al., 2015b).

- Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax (VAT) (inv. ID 40).



3.2. National legislation with implications on food waste in selected EU Member States

For the five countries that participate in the STREFOWA project (Austria, Czech Republic, Hungary, Italy and Poland) the national legislation and policies on food waste are summarized in the following sub-chapters. Besides regulations and regulatory instruments, legislation and policies on food waste also include national strategies, market-based instruments and voluntary agreements. A definition of these categories of legislation is given in Chapter Fehler! Verweisquelle konnte nicht gefunden werden.. For Austria, Hungary and Italy the results were checked against the results from FUSIONS (Cseh, 2016; Schneider and Lebersorger, 2016; Vittuari et al., 2015a).

The summaries of legislation and policies on food waste in the selected EU Member States are structured as following:

- A) National strategy on food waste prevention
- B) Market- based instruments
- C) Regulations and regulatory instruments
- D) Local legal conditions for selected urban areas
- E) Voluntary agreements

For each country, the regulations are grouped into same four categories that have been used for grouping legislation on EU-level, meaning:

- (5) Legislation with (potential) implications on food waste generation
- (6) Legislation addressing food waste management
- (7) Legislation actively addressing food waste reduction
- (8) Legislation addressing food (re-)distribution

In the comparative summary (Chapter 3.2.6) there was made the attempt to group the regulations according to their types of implications they have on food waste and to describe which legislations are mostly repeated and what is instead missing from the legislative picture.

3.2.1. Austria

This summary of Austrian legislation covers legislation directly targeting food waste prevention or management as well as related legislation that with indirect impacts on food waste. It is based on the report “Austria - Country Report on national food waste policy” from the EU project FUSIONS (Schneider and Lebersorger, 2016) and was updated by the authors to cover also the years 2015 and 2016.



A) National strategies on food waste prevention

- Federal Waste Management Plan 2011.

There is no national plan specifically addressing food waste in Austria, however food waste is addressed in the Federal Waste Management Plan 2011. Promoted by the Federal Ministry of Agriculture, Forestry, Environment and Water Management in 2011, the Federal Waste Management Plan 2011 summarizes the situation of waste management in Austria including the amounts of different waste streams and their treatment paths, the number and condition of treatment facilities and perspectives for the future, required in order to implement the objectives and principles of the Waste Management Law of 2002. An update is scheduled for December 2016 but has not been released yet.

The plan aims to deliver a reduction of 20 % of food waste in residual waste generated from households and companies within 2016. The target is specific for residual waste as this is the only municipal waste stream fully monitored and therefore characterized by a reliable data set. A qualitative target was set for all the other waste streams to emphasize that, beside the lack of data, also all other food waste along the food supply chain should be reduced.

B) Market- based instruments

At the time of preparing this report, there are no market-based instruments in Austria specifically addressing food waste.

C) Regulations and regulatory instruments

The body of laws that have major implications on food waste includes national and federal legislative acts and presents significant differences in their application on a regional basis.

Legislation with (potential) implications on food waste generation

- Ordinance on green electricity: StF: BGBl. II Nr. 471/2011 Verordnung des Bundesministers für Wirtschaft, Familie und Jugend, mit der Preise für die Abnahme elektrischer Energie aus Ökostromanlagen auf Grund von Verträgen festgesetzt werden, zu deren Abschluss die Ökostromabwicklungsstelle im Jahr 2012 verpflichtet ist (Ökostromverordnung 2012)
Description: This ordinance regulates the prices for the consumption of electric energy from new plants on the basis of renewable energy sources such as wind, solar, geothermal, wave and tidal energy, biomass. The provisions of this legislative act could encourage the use of anaerobic digestion to treat food waste and, thus, could be a potential disincentive for the prevention of food waste, which could be partly justified by its use for energy production (Vittuari et al., 2015b).
- Ordinance on food hygiene for food companies: StF: BGBl. II Nr. 231/2009 Verordnung des Bundesministers für Gesundheit über die lebensmittelhygienerechtliche Zulassung von Betrieben von Lebensmittelunternehmern (Lebensmittelhygiene-Zulassungsverordnung)



Description: This regulation applies to the necessary certification of food companies with respect to food hygiene legitimation.

- Ordinance on infant formula: StF: BGBl. II Nr. 68/2008 Verordnung der Bundesministerin für Gesundheit, Familie und Jugend über Säuglingsanfangsnahrung und Folgenahrung
Description: Information on the correct preparation, storage and disposal of the food as well as a lead on a health-adverse effect in the case of improper preparation and storage of infant formulas and follow-on formulas.
- Law on food security and consumer protection: StF: BGBl. I Nr. 13/2006 zuletzt geändert durch BGBl. 144/2015, Bundesgesetz über Sicherheitsanforderungen und weitere Anforderungen an Lebensmittel, Gebrauchsgegenstände und kosmetische Mittel zum Schutz der Verbraucherinnen und Verbraucher (Lebensmittelsicherheits- und Verbraucherschutzgesetz - LMSVG)
Description: According to §60 the rules of the Ordinance on Animal Substances, BGBl. I No. 141/2003, as well as Regulation (EC) No. 1069/2009 shall apply to the treatment or disposal of foodstuffs of animal origin, which are not or are no longer suitable or intended for human consumption, and to animal by-products not intended for human consumption during slaughter and processing of meat.
- Law on animal substances: StF: BGBl. I Nr. 141/2003, letzte Änderung BGBl. I Nr. 23/2013 Tiermaterialengesetz 2013, Bundesgesetz betreffend Hygienevorschriften für nicht für den menschlichen Verzehr bestimmte tierische Nebenprodukte und Materialien (Tiermaterialengesetz - TMG)
Description: This law is intended to implement the EC regulations 1069/2009 and 142/2011 as well as applies to by-products and materials of animal origin not covered by regulation (EC) 1069/2009. It regulates the collection, storage, transport, treatment, processing, disposal or use and the placement on the market of animal by-products. Besides having implications on food waste generation this law could also impact food waste management.
- Law on animal feed: StF: BGBl. I Nr. 139/1999, letzte Änderung BGBl. I Nr. 189/2013 Bundesgesetz über die Herstellung, das Inverkehrbringen und die Verwendung von Futtermitteln, Vormischungen und Zusatzstoffen (Futtermittelgesetz 1999 - FMG 1999)
Description: This law regulates production, placing on the market and use of animal feed, pre-mixtures and additives of animal feed and, thus, (potentially) has implications on food waste generation. Further, it serves as the legal basis for the feed of waste bread for animal feed, thus having also impacts on food waste reduction.
- Ordinance of food labeling: StF: BGBl. Nr. 72/1993 zuletzt geändert durch BGBl. II Nr. 165/2008L Verordnung des Bundesministers für Gesundheit, Sport und Konsumentenschutz über die Kennzeichnung von verpackten Lebensmitteln (Lebensmittelkennzeichnungsverordnung 1993 - LMKV)
 This ordinance regulates the labelling of packed food. Food with an expired ‘best before’ date can be sold on the market. Products with a ‘use by’ label should not be consumed due to health risks. This type of labelling is statutory for food that expires quickly such as raw milk, raw meat products and fresh fish.
- Epizootic diseases law: StF: RGBL. Nr. 177/1909 zuletzt geändert durch BGBl. I Nr. 163/2015, Gesetz betreffend der Abwehr und Tilgung von Tierseuchen (Tierseuchengesetz)



Description: This law applies to the eradication and monitoring of animal diseases. It prohibits feeding food waste and leftovers to domestic and wild animals identifying under what circumstances pig feeding should be considered legal.

Legislation addressing food waste management

- **Austrian landfill ordinance:** StF: BGBl. II Nr. 39/2008 zuletzt geändert durch BGBl. II Nr. 291/2016 Verordnung des Bundesministers für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft über Deponien (Deponieverordnung)
Description: Since 2004 landfilling of untreated organic waste is banned according to Austrian Landfill ordinance (1996, revised version 2008), implemented a limiting value for total organic content of 5% dry matter, this means that all waste has to be pre-treated by mechanical-biological pre-treatment (MBT) or incineration before landfilling.
- **Waste catalogue ordinance:** StF: BGBl. II Nr. 570/2003 zuletzt geändert durch BGBl. II Nr. 498/2008 Verordnung des Bundesministers für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft über ein Abfallverzeichnis (Abfallverzeichnisverordnung)
Description: The waste catalogue ordinance regulates the determination of hazardous waste, the definition of a waste code for each type of waste and the indication of criteria for the allocation of waste to a type of waste.
- **Austrian waste management law:** StF: BGBl. I Nr. 102/2002 zuletzt geändert durch BGBl. I Nr. 163/2015 Bundesgesetz über eine nachhaltige Abfallwirtschaft (Abfallwirtschaftsgesetz 2002 - AWG 2002)
Description: The Austrian waste management law was issued in 2002 and promoted by the Austrian Parliament and regulates the sustainable management of waste. It includes regulations on general principles, waste prevention and recovery, duties of waste holders, producer responsibility, waste collection, waste treatment and trans-boundary movements. Besides having implications on food waste management it also has implications on food waste reduction due to prioritizing waste prevention.
- **Ordinance on compost quality:** StF: BGBl. II Nr. 292/2001 Verordnung des Bundesministers für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft über Qualitätsanforderungen an Komposte aus Abfällen (Kompost Verordnung 2001)
Description: This ordinance regulates quality requirements for composts from waste, the type and source of used materials as well as labelling and the marketing of composts. Packaging material should not be thrown into the bio bin to avoid unfavorable contamination of the compost.
- **General ordinance on sewage water emissions:** StF: BGBl. Nr. 186/1996 Verordnung des Bundesministers für Land- und Forstwirtschaft über die allgemeine Begrenzung von Abwasseremissionen in Fließgewässer und öffentliche Kanalisationen (AAEV)
Description: This ordinance applies to the discharge of sewage, combined sewage and rainwater, groundwater and leachate from landfills into flowing waters. It defines maximum permissible values for discharge of waste waters into sewers influencing the use of food waste grinders and compactors. For the use of food waste grinders and authorization according to the Waste Management Law has to be obtained.
In addition, there are regulations applying to sewage water emissions 1) from fish



production plants (Verordnung über die Begrenzung von Abwasseremissionen aus Anlagen zur Erzeugung von Fischprodukten (Fischproduktionsanlagen) BGBl. Nr. 1075/1994), 2) from the production of plant-based or animal oils or fats including cooking oil and edible fats (Verordnung über die Begrenzung von Abwasseremissionen aus der Erzeugung pflanzlicher oder tierischer Öle oder Fette einschließlich der Speiseöl- und Speisefetterzeugung BGBl. Nr. 1079/1994) and 3) from sugar and starch production (Verordnung über die Begrenzung von Abwasseremissionen aus der Erzeugung pflanzlicher oder tierischer Öle oder Fette einschließlich der Speiseöl- und Speisefetterzeugung BGBl. Nr. 1079/1994).

- Ordinance on separate collection of biowaste: StF: BGBl. Nr. 68/1992, idF: BGBl. Nr. 456/1994 Verordnung des Bundesministers für Umwelt, Jugend und Familie über die getrennte biogener Abfälle
Description: This ordinance requires biogenous waste to be collected separately unless it is recovered by the household or generator.

Legislation actively addressing food waste reduction

- Ordinance on animal feed 2010: StF: BGBl. II Nr. 316/2010 Verordnung des Bundesministers für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft, mit der Bestimmungen zur Durchführung des Futtermittelgesetzes 1999 erlassen werden (Futtermittelverordnung 2010)
Description: This ordinance includes provisions for implementing the Law on animal feed (Futtermittelgesetz). It serves as the legal basis for the use of waste bread for animal feed (as one of many regulations). Besides its implications on food waste reduction this Ordinance also can impact food waste management.
- Ordinance on animal by-products: StF: BGBl. II Nr. 484/2008, Änderung BGBl. II Nr. 141/2010 Verordnung der Bundesministerin für Gesundheit, Familie und Jugend über nähere Bestimmungen zum Umgang mit tierischen Nebenprodukten (Tiermaterialien -Verordnung)
Description: It defines exceptions from the prohibition of feeding former foodstuffs to farm animals, for the production of which no animal products other than milk, dairy, eggs and egg products were used. Manufactured former foodstuff can be used as input for biogas and compost plants without pre-treatment. Minimum standards for biogas and composting plants are identified.

Legislation addressing food (re-)distribution

There are no regulations addressing food (re-)distribution in Austria.

D) Local legal conditions for selected urban areas:

Vienna

Although there are regulations concerning waste prevention, management and treatment in general, there is no regulation in Vienna which applies directly to food waste management and/or generation.



- Viennese waste management law: LGBL. Nr. 13/1994 zuletzt geändert durch LGBL. Nr. 45/2013 Gesetz über die Vermeidung und Behandlung von Abfällen und die Einhebung einer hierfür erforderlichen Abgabe im Gebiete des Landes Wien (Wiener Abfallwirtschaftsgesetz)
Description: The Viennese waste management law regulates waste prevention, collection and treatment and the collection of a necessary levy in Vienna. It, thus, has implications for food waste management.
- Some other laws such as the Viennese Wine Tavern Laws (Wiener Buschenschankgesetz LGBL. Nr. 39/2013) or the Viennese Kindergarten Ordinance (Wiener Kindergartenverordnung LGBL. Nr. 20/2014) deal with food safety and may indirectly cause food waste.

Innsbruck

- Tyrolean Waste Management Law LGBL. Nr. 3/2008.
Description: The Tyrolean Waste Management Law regulates - in consideration of federal regulations - the adoption of the Austrian waste management concept at federal state level, the waste disposal regulations and the waste collection at municipal level, as well as the precaution for the treatment of waste arising in Tyrol i.e. the establishment and operation of the treatment facilities.
- Tyrolean Waste Management Concept LGBL. Nr. 51/2004.
Description: The waste management concept defines the waste streams that have to be collected separately as well as the catchment areas of the public treatment plants. Biologically usable municipal solid waste and other waste streams are listed as separate collection fractions.
- Waste collection regime (schedule):
Description: A waste collection system has to be prescribed for each municipality. This regulation defines the disposal system at municipal level, including the biologically usable waste. It contains more detailed information on the collection containers, the installation sites and the collection- and emptying frequencies.

All the Tyrolean legislative acts listed above have implications for food waste management.

E) Voluntary agreements

In spring 2013 the Federal Ministry of Agriculture, Forestry, Environment and Water Management initiated an action programme together with social partners (Austrian Chamber of Commerce, Austrian Chamber of Labour, Austrian Federation of trade unions and Austrian Chamber of Agriculture) as result of a stakeholder process. The aim of the stakeholder consultations was the exchange of experiences, development of solutions throughout the food supply chain and connecting relevant participants. The resulting action programme is organized in four main topics (Schneider and Lebersorger, 2016):

1. Awareness and information campaign for households and companies' staff members;
2. Increase in food redistribution activities (from companies to social organisations) as well as establishment of food sharing (between private households);



3. Optimization of processes along the food supply chain (ordering system, transport, returned goods, product availability, demand-oriented assortment);
4. Funding of research activities.

The consultation process further resulted in several partnerships among companies, authorities, schools, NGOs who committed themselves to cooperate with the initiative “food is precious”. The options for cooperation are manifold and include (Schneider and Lebersorger, 2016):

- usage of the logo of the “Food is precious” initiative for internal and external communication in order to highlight the quality and the solidarity of the different activities;
- integration of food prevention projects and activities from all partners within the initiative website and communication;
- opportunity to develop joint communication activities;
- support to school projects (e.g. teaching materials, awards, project ideas);
- support to the adaption of processes and systems along the food supply chain towards food waste prevention including production, logistics, distribution etc;
- participation in stakeholder consultations.

This action programme and initiative respectively potentially has implications on food waste reduction as well as on food waste management along all sectors of the food supply chain as well as a number of subsectors.



3.2.2. Czech Republic

A) National strategies on food waste prevention

Pursuant to Directive 2008/98/EC of the European Parliament and the Council of 19 November 2008 on Waste, the Member States are required to set up their national Waste prevention programmes. The Waste Management Plan of the Czech Republic for the period 2015-2024 defines waste prevention and reduction of specific waste production as a major strategic goal. The principles for achieving this objective include the implementation of "waste prevention programmes" and the implementation of the waste management hierarchy.

The CR Waste management programme presents a more detailed analysis and overview of the following waste streams:

- municipal waste;
- biodegradable waste;
- food waste and foods;
- waste and end-of-life products based on product specifications (packaging, electrical equipment, batteries and storage batteries, end-of-life vehicles);
- construction wastes/building materials;
- textile waste/textiles earmarked for re-use.

At the first stage of the Programme the absence of analytic and methodological instruments will be addressed.

B) Market-based instruments

- Law on a methodological change in VAT calculation (Zákon č. 235/2004 Sb. Zákon o dani z přidané hodnoty):
Description: The General Directorate of Finance issued a methodological change in VAT calculation: At the end of 2014, the Ministry of Agriculture agreed with the Ministry of Finance on the methodological change, which will allow the taxable amount of donated food close to be zero or completely zero. Until then a 15% VAT applied for donated food. This has implications on food (re-)distribution.

C) Regulations and regulatory instruments

Legislation with (potential) implications on food waste generation

- Decree no. 299/2003 Coll. on measures for prevention and control of diseases and diseases transmissible from animals to humans. (Vyhláška č. 299/2003 Sb., o opatřeních pro předcházení a zdolávání nákaz a nemocí přenosných ze zvířat na člověka).
Description: § 58 of this Decree prohibits the feeding of gastro-waste.
- Law No. 110/1997 on food and tobacco products and Decree No. 113/2005 Coll. regulating the labelling of foodstuff (Zákon č. 110/1997 Sb. Zákon o potravinách a tabákových výrobcích)



a o změně a doplnění některých souvisejících zákonů, Vyhláška č. 113/2005 Sb., o způsobu označování potravin a tabákových výrobků):

Description: The labelling of foodstuffs is regulated by Law No. 110/1997 and Decree No. 113/2005. Foods placed on the market must be safe and healthy, and must not mislead the consumer regarding the composition, labelling, etc. These Acts specify that:

- Food with an "expiration date" cannot be put into circulation as at the time of exceeding this date the food is considered "dangerous".
- Food with a "best before date" may be marketed even past this date, assuming it is safe and is marked as such.
- Decree No. 137/2004 Coll., on hygienic requirements for catering services and on principles of personal and operational hygiene in epidemiologically important activities (Vyhláška č. 137/2004 Sb. o hygienických požadavcích na stravovací služby a o zásadách osobní a provozní hygieny při činnostech epidemiologicky závažných):

Description: This Decree regulates:

- Obligations of companies operating with cooked food: Obligation to comply with sensory, physical, chemical and microbiological requirements on food quality; to observe all stages of production, packaging, slicing or otherwise cutting and putting food on the market; technological and sanitary requirements; methods and conditions of transport, storage and handling of food.
- Conditions for putting cooked food into circulation: Food not given out within its time-limit cannot longer be stored, re-heated or put in the refrigerator or freezer; hot dishes are put into circulation in order to reach the consumer as soon as possible and above 60°C.
- Labelling of semi-finished meals, convenience foods, confectionery and cooked meals: Specific requirements of labelling applies to refrigerated or frozen meals, packaged cold dishes and pastries when put into circulation. Among others, the expiration date or best before date, the storage temperature, and in the case of refrigerated and frozen meals, also information on the method of heating are stated.
- Storage and serving of food at refrigerator temperatures: After heat treatment or, if no heat process is applied then final preparation, food must be quickly cooled to a temperature which does not cause a health hazard.
- Law on animal feed Act 91/1996 Coll. (Zákon o krmivech č. 91/1996 Sb.):
Description: In Section 3 para. (6) this regulation says: "For the production of animal feed, additives and premixes it is not allowed to use prohibited substances and products, animal feed and premixes that contain prohibited substances and products." Prohibited substances include, pursuant to Decree No. 451/2000 Coll., Annex 1, para. 7 also "waste from restaurant operations except for plant-based foods, which with regard to their freshness cannot be considered fit for human consumption."



Legislation addressing food waste management

- 2. Government Regulation 352/2014 Coll., on Waste Management Plan of the Czech Republic for the period 2015-2024 (2. Nařízení vlády 352/2014 Sb., o Plánu odpadového hospodářství České republiky pro období 2015-2024 (POH)):
Description: In this Waste Management Plan waste prevention and reduction of waste production are defined as major strategic goals. The principles for achieving this objective include the implementation of "waste prevention programmes" and the implementation of the waste management hierarchy.
Regarding municipal waste, point 1.3.1.1 of this Regulation lit. f) contains the obligation for municipalities to follow the waste hierarchy, preferably by separately collecting recyclable fractions. Only if that is not possible, it can be delivered for disposal. Lit. g) makes it necessary for municipalities to inform citizens at least once a year on the municipal waste management, especially on the manner and extent of separate collection of municipal waste and management of other wastes within the municipal system. That includes also information on how to prevent and minimize the generation of municipal waste. At least once a year, a municipality must publish quantified results of their waste management.
- Amendment to the Waste Act regarding bio-waste collection No. 229/2014 Coll. (Novela zákona o odpadech č. 229/2014 Sb.):
Description: This law regulates the separate collection of bio-waste. Section 17, paragraph 3, stipulates that municipalities are obligated to provide designated collection spaces for all municipal waste produced by physical persons within its cadastral territory. The municipality is obliged to provide space for separate gathering of the components of municipal waste: hazardous waste, paper, plastics, glass, metal and biodegradable waste.
- Decree No. 294/2005 Coll. regarding bio-waste in landfills (Vyhláška č. 294/2005 Sb., o podmínkách ukládání odpadů na skládky a jejich využívání na povrchu terénu a změně vyhlášky č. 383/2001 Sb., o podrobnostech nakládání s odpady):
Description: This Decree (implementing the EU Landfill Directive 1999/31/EC) prohibits depositing biologically degradable waste (BDW) to landfills. It regulates that biologically degradable municipal waste (BDMW) can be deposited to landfills, but the amount must be reduced in accordance with the timetable for reducing the amount of BDMW in mixed municipal waste.
- Laws on on garbage disposal units (grinders) (Zákon o vodách č. 254/2001 Sb., Zákon o vodovodech a kanalizacích č. 274/2001 Sb.):
Description: This regulation forbids the use of garbage disposal units (grinders) for canteens. The discharge of residues from canteens with grinders, even crushed, is in conflict with the Water Act no. 254/2001 Coll., Section 38, para. 1 and Act on Water Supply and Sewerage no. 274/2001 Coll., § 18, para. 2.
- Law on waste No. 185/2001 Coll. (Zákon č. 185/2001 Sb. Zákon o odpadech a o změně některých dalších zákonů):
Description: In this act, §9a defines the waste hierarchy and §10 stipulates the obligation of everyone to prevent waste. It also governs the fee for municipal together with the Tax Code Act No. 280 / 2009 Sb. The fee for the operation of the system for collection, transportation, sorting, use and disposal of municipal waste is determined in the Law on local fees No. 565/1990 Coll. (Zákon č. 565/1990 Sb., o místních poplatcích). As residents have to pay for



the bio-waste collection the same as for other waste streams, thus, bio-waste waste collection is not fostered by this fee structure.

Legislation actively addressing food waste reduction

In the Czech Republic, there is no legislation specifically addressing food waste reduction.

Legislation addressing food (re-)distribution

- Law no. 180/2016 Coll. amending the Bill No. 110/1997 on foodstuffs and tobacco products (Zákon č. 180/2016 Sb., kterým se mění zákon č. 110/1997 Sb., o potravinách a tabákových výrobcích a o změně a doplnění některých souvisejících zákonů, ve znění pozdějších předpisů, a další související zákony):

The Bill on food and tobacco products contains strict hygiene rules and requirements for safety and quality in the output, production and storage of food and meals. Act no. 180/2016 Coll. introduces in § 11 the obligation of donating food to charitable organizations for stores of over 400 square meters. It applies only to foods that do not meet certain legislative requirements (e.g. foodstuffs that are mislabelled or deformed). Donated food must be safe and not harmful. Expected to enter into force in 2018.

D) Local legal conditions for the selected urban areas

Prague

The amendment to the Waste Act (Act No. 229/2014 Coll.), Section 17, paragraph 3, stipulates that municipalities are obligated to provide designated collection places for all municipal waste including biodegradable waste. According to this new regulation, municipalities are obliged to provide space for the separate collection of at least biological waste of plant origin, at least in the period from 1 April to 31 October of the calendar year. How the system of collecting bio-waste is designed is up to municipalities themselves. Several options exist: Organic waste can be collected by providing composter units (bins in public places provided by disposal companies) or public collection yards with special bins. For treating the collected bio-waste composting system managed by the municipality might be established.

In urban area Prague, citizens have the possibility to bring their organic waste to public collection yards with special high-volume containers for bio-waste or to bring it to mobile collection points with bio-waste containers. Mobile collection points are certain places designated by the municipality for collection of bio-waste on certain dates. After these dates, the containers are removed. However, all these options are mainly for bulk green/garden waste and are not suitable for food waste collection. Citizens can also order a separate bio-waste bin between April and October or for the whole calendar year for a fee.

For the urban area Prague the fee for municipal waste is regulated in the “Generally binding Decree No.2 / 2005 Coll., Prague” (Obecně závazná vyhláška č.2/2005 Sb., hl. m. Prahy). Citizens have to pay for the collection of bio-waste the same as for other waste streams, thus, separate bio-waste waste collection is not supported by the fee structure.



E) Voluntary agreements

Some retailers and producers donate food (mostly packaged highly processed foods and to a lesser extent also vegetables and fruits) that was not sold to regional Food Banks. Among the donors are for example: Globus, Tesco, Albert (Ahold), Makro, Unilever, Nestle, Ferrero CZ, Danone, Vitana, Meagle, Lagris podravka, Douwe egberts.



3.2.3. Hungary

A) National strategies on food waste prevention

Hungary does not have a national strategy dedicated specifically on the reduction of food waste. Nevertheless some related strategic documents addressing food and waste in food industry exist. The two important national strategies on this matter are the “Food Chain Safety Strategy 2013 - 2022” (mandated by the national Act n°2008. XLVI on the food-chain and its regulatory supervision) and the “National Waste Management Plan (2014 - 2020)”.

Food Chain Safety Strategy (2013 - 2022)

This plan is not directly aimed at the reduction of food waste but has implications on food waste generating activities. The strategy’s vision is that food chain products (particularly food) will be always healthy, high quality and safe as well as that people and the society show a high level of awareness and responsibility in food production, in trade and in consuming behaviour. In this context society includes all actors of the food chain, so in addition to companies and authorities, it includes the media, politics, professional, civil, educational and scientific organizations as well.

One of the most important effects of this strategy is an improvement regarding the preservation of food quality. Risks to food quality and food chain safety are influenced by three basic factors: (1) the vulnerability of the production process against certain hazards, (2) the overloading of the monitoring system due to increasing amounts and kinds of food, and (3) ineffective communication and distribution of information between the actors of the food chain. By handling these risks customers will receive food of better quality and, thus, the food waste production can be reduced.

The Food Chain Safety Strategy defines 4 strategic objectives and 11 programmes to achieve the main goal - increasing food chain safety.

I. Food chain safety knowledge management

I. A. Establishing and operating the knowledge centre

1. Global information management
2. Introducing transparent risk analysis
3. Reorganization of the laboratory network

I. B. Developing a knowledge network and innovation

4. Building the basis of the knowledge network
5. Modern education and training
6. Partnerships in research and innovation
7. Active public relations

II. Control of food chain risks

II. A. Control of known hazards

8. Extensive risk reduction



9. Strong and credible authority

II. B. Control of unknown hazards and unacceptable risks

10. Successful fight against abuse

11. Protection of critical infrastructures (MRD and NEBIH, 2014).

National Waste Management Plan (2014 - 2020) (NWMP)

The NWMP defines evaluations and conditions of different types of waste, objectives and prognoses regarding waste treatment for the period from 2014 to 2020. Waste from food industry is mentioned, but not analysed in more detail. The NWMP also recognizes that the problem of differentiating between waste and by-product is crucial.

According to the NWMP, food waste is managed together with the waste from the agricultural sector and biodegradable part of municipal waste. From the agriculture, forestry and food industry, 30-35 million tons of biomass are generated per year and 15% - 20% of this amount is considered as waste. The 80% of biomass is utilized in two ways: composting and energy utilization.

Changing the sustainable consumption practices of companies (e.g. green procurement) is also addressed as a possible instrument for food waste reduction.

Some of the goals of the NWMP are:

- Widespread application of the principles and methods for waste prevention and reduction related to the production and business operation,
- increase the number of business which are applying the Environmental Management System (EMS),
- Waste prevention in fields of research, development and innovation,
- Elimination of waste: Usage of foods for charitable purposes when the food is adequate from the food security point of view but its durability time has nearly expired.

To meet these goals the following measures are intended:

- development of tools and systems as well as the encouragement for the application of the environmentally operation of the enterprises,
- supporting the researching, development, eco-innovation and eco-design,
- promoting the legislation of charitable usage of those products which are adequate food from security point of view, but their quality durability time has expired.



B) Market-based instruments

In Hungary there are two major market-based instruments with implications on food waste: the corporate tax benefit for donations (National Act n° CLXXV/2011) and the exclusions of the value added tax from donations (National Act n° LIII/2010).

- **Corporate tax benefit for donations (National Act n° CLXXV/2011):**
Description: This act was issued in 2011 and promoted by the Hungarian Parliament. It states that 20% of the value of donations can be deducted from corporate tax base. This change in Hungarian VAT regulation changed the previously existing problem that in cases where VAT was applicable for food surplus donations, destroying food was financially more beneficial than donating.
- **Act on VAT (value added tax) from donations (National Act n° LIII/2010):**
Description: The Act on VAT (n° LIII/2010) was issued in 2010 and promoted by the Hungarian Parliament. The VAT exemption for food donations means that neither the companies donating food nor the recipients of these donations have to pay VAT. This act also contains a detailed definition what is understood by “charitable donation” (meaning making goods and services available to public-benefit organizations). No VAT exemption applies, for example, when the products are given to own employees or to the own enterprise (meaning internal using).

C) Regulations and regulatory instruments

Legislation with (potential) implications on food waste generation

- **Regulation of food-health requirements applied in public catering (regulation 37/2014 (IV.30.)):**
Description: This regulation was issued in 2014 by the Ministry of Human Resources. It regulates the healthy nutrition content and conditions applied in public catering (schools, hospitals, etc.). The defined minimum level of portion sizes may result in some cases in food waste generation.
- **Act on the food chain and its regulatory supervision and monitoring (National Act n° XLVI./2008):**
Description: This act was issued in 2008 by the Hungarian Parliament. The act defines the legal regulations and requirements regarding the regulatory supervision and monitoring of the food chain. The sections with implications for food waste regulate for example:
 - The producer is responsible for the declaration of the shelf life of goods (“best before”) and the deadline for its consumption (“use before”).
 - It is forbidden to sell goods with an expired “use before” date (deadline for consumption) on the market.
 - Definitions for requirements for storage to ensure the declared shelf life.

Some of these limitations and conditions may result in food loss and waste e.g. pursuant to Hungarian Law products may not be sold after ‘best before’ or ‘use before’ dates.



- Regulation on the usage of food-waste for feeding animals (Regulation 75/2002 (VIII.16.)): Description: This regulation was issued in 2002 by the Ministry of Agriculture. The aim of this regulation is to minimise the risks to animal health, especially to prevent the swine fever. One of the provisions with implications on food waste is that the feeding of swine with food waste is prohibited (28. § (1)).
- Hungarian Food Book (Codex Alimentarius Hungaricus): Description: The last version of the Codex Alimentarius Hungaricus was issued in 2013 by the Ministry of Rural Development. The codex contains quality, marking and food safety requirements for food products. All segments of food supply chain are involved. Provisions mainly aim at production, manufacturing, processing as well as retail and redistribution (Magyar élelmiszerkönyv, 2013).

Legislation addressing food waste management

- Act on Waste (National Act n° CLXXXV/2012): Description: This act was issued in 2012 by the Hungarian Parliament. It is the implementation of the 2008/98/EC Waste Framework Directive, containing the principles of waste hierarchy and thereby promoting the optimisation of food waste use. The act refers to food waste in the definition of bio-waste: bio-waste is defined as biodegradable garden and park waste, food and kitchen waste from households, restaurants, caterers and retail premises, and comparable waste from food processing plants (2. § (1) 3.).
- Regulation on the producing and marketing of products by catering and hospitality (regulation 62/2011 (VI.30.)): Description: This regulation about food safety conditions in the hospitality and catering sector was issued in 2011 by the Ministry of Rural Development.
- Regulation on landfill and related rules and conditions (Regulation 20/2006 (IV.5.)): Description: This regulation is the implementation of the EU Landfill Directive, issued in 2006 by the Ministry of Environment. It refers to food waste in relation to the intention to reduce the amount of biodegradable waste to be deposited on landfills.
- Regulation on the conditions and methods of food disposal (Regulation 56/1997 (VIII.14.)): Description: This regulation was issued in 1997 by the Ministry of Agriculture. The scope of the regulation includes raw and processed food as well as food materials and additives, which are produced and traded in Hungary and considered as waste due to their expired quality. Food waste from public sources is excluded. This regulation determines that food that lost its function and has become food waste has to be treated in an environmentally sound way. The treatment costs (storage, transportation, safe-keeping and disposal) for food waste have to be paid by the waste producer (meaning the owner of the food for the moment when it became waste).

Legislation actively addressing food waste reduction

In Hungary, there is no legislation specifically addressing food waste reduction.



Legislation addressing food (re-)distribution

In Hungary, there is no legislation specifically addressing food (re-)distribution.

D) Local legal conditions for the selected STREFOWA functional urban areas in Hungary

Budapest

Based on the local regulation (26/2013 (IV.18)), only one company - Waste Management Ltd. of the Capital city (FKF Zrt.) - has the exclusive rights for the collection and treatment of the communal waste.

The inhabitants have the possibility to collect the biodegradable waste in special bags. These bags - with company's logo - can be bought from the company. The collection period is from March to November in the city quarters (the regulation contains the exact streets of Budapest). The frequency of collection is once a week. However, this regulation does not directly address food waste.

Waste management plan of FKF Zrt. (2013-2015)

The waste management company active in Budapest collects the biodegradable waste - in special bags - since 2006. After treating this waste in a composting system, the compost is used for landfill coverings.

In this plan, also food waste is addressed briefly: It states that the separate collection and treatment of biodegradable waste generated by the households other than garden waste - meaning for example: food waste and kitchen waste - are not solved yet and treatment capacity is not available at the moment. The company will examine which option is the best treatment technology regarding economic, environmental and social aspects in the near future.

Miskolc

MIREHUKÖZ (The official waste management company of Miskolc city) - Waste management plan (NEBIH, 2014):

Based on the KEOP 1.1.1/B programme home composting was introduced in 2013 in order to reduce the amount organic parts in residual waste.

The regional waste management company of Miskolc city collects waste in 37 settlements covering Miskolc City and its surrounding settlements.

In little settlements with less than 2000 inhabitants, there is no bio-waste collection by the waste management company because this is too expensive. Instead, the waste management company distributes composting bins (or frames) to the inhabitants (free of charge) for composting at home. The compost then can be used in their private gardens.

The programme of giving composting bins (frames) to the inhabitants by the local (Miskolc) municipality and the "Green connection association" in cooperation is established since 10 years. The official waste management company gives bins for free only in little settlements, the "Green connection association" also in bigger settlements.



Bigger settlements (more than 2000 inhabitants, for example in Miskolc city) are split into two types of residential areas: “garden house area” meaning residential areas with gardens and “block of flats area” meaning residential areas with mainly bigger houses / block of flats without gardens.

In the “garden house area”, the official company gives “green bags” to the inhabitants for free to collect the bio-waste. From March until November this bags are collected every second week. Inhabitants can put large bended biodegradable waste (such as wood or branches) as well as small biodegradable waste (from the garden and kitchen) into these bags.

Areas with mainly block of flats are not provided with these “green bags”. The only possibility for inhabitants of these areas is to bring their bio-waste to the public waste yard. Miskolc has three waste collection yards in different parts of the city. It is allowed to bring 240 kg bio-waste per household per quarter of the year to the waste yards. Citizens have to show their receipt of paying the waste bills at the collection yard to be allowed to dispose the waste there. These public waste yards can be used by all inhabitants (meaning also the inhabitants of the “garden house areas”).

Development of the waste management system of Miskolc city

This document (KEOP -1.1.1./C/13 - Development plan of the waste management system with asset acquisitions in Miskolc and its regions, 2013) contains details on the regulation of the compostable biodegradable waste and characterises of the regional situation.

E) Voluntary agreements

Connection of retail with National Food Bank

In Hungary, the National Food Bank helps to allocate a big part of the food donation to people in need which is carried out by the partner organisations. The donators are private persons as well as economic and public actors. Donated food primarily comes from food producers and retailers. Figure 1 contains a list of companies that are regularly donating food in cooperation with the Hungarian Food Bank.



Figure 1: Companies that are regularly donating food in cooperation with the Hungarian Food Bank

“Food is valuable - Forum for decreasing food loss and waste”

The “Forum for decreasing food loss and waste” was launched in 2014 by the Ministry of Rural Development and the Hungarian Foodbank Association. The main goal of the Forum is to quantify the amount of food waste and considerably reduce it. Further goals are the implementation of at least 20 projects on product path cooperation and raising the awareness of all engaged business stakeholders about the value of food. By engaging all stakeholders along the food supply chain through workshops and working group meetings the “Forum” allows the identification of relevant problems as well as of feasible solutions (The Hungarian Government, 2014).

Association of TÉT Platform (TÉT Platform Egyesület)

The aims of this platform are increasing the consumer awareness and sharing the information in fields of lifestyle, nutrition and physical activity. Members of the platform are for example offices of Ministries (e.g. Ministry of Agriculture), associations, producers (Nestle Hungaria, Institute for Health Development, NÉBIH, Mars Hungary, Hungarian Dietetic Association, Coca-Cola Hungary, Danone Hungary) etc. (Association of TÉT Platform, 2016).



3.2.4. Italy

Sections A, B and E of this Chapter are based on “D3.1 Review of current EU Member States legislation and policies addressing food waste” from the EU project FUSIONS (Vittuari et al., 2015a) and was updated by the authors to cover also the years 2015 and 2016.

A) National strategy on food waste prevention

- In 2013, the Italian Ministry of Environment started working on a National Plan for Food Waste Prevention (Piano Nazionale di prevenzione dello spreco alimentare) in collaboration with Last Minute Market, one of the Italian major player in food waste management. For preparing this waste prevention programme the main stakeholders of the food chain were involved in this policy process.

The result of the consultation process (which started in 2014 under the guidance of the Ministry of the Environment) should be a report aiming at assessing the knowledge basis on food waste at national level and the stakeholders' expectations about the prevention measures to be included in the Plan. The Plan is intended to tackle the problem of food waste all along the supply chain from primary production (only agricultural production) to the final consumption. Food losses related to fish discards and livestock have been currently kept outside the scope of the Plan.

In the framework of the National Plan to avoid food waste (PINPAS adopted with D.M. 185 of 18/07/2014) and EXPO 2015 there is an initiative concerning the food waste prevention. The PINPAS foresees ten priorities at the national level.

B) Market-based instruments

- Ecotax (Ecotassa): Law n. 549 of 28th of December 1995:
Description: The Ecotax law intends to promote more environmentally friendly waste management practices while, at the same time, discouraging the landfilling of waste. It is, thus, addressing food waste management issues.
- Legislative Decree 4 December 1997, n. 460/1997.
Description: It explains the procedures of food donation. Art. 13 re-organizes the tax regulations for non-commercial, non-profit social utilities.

C) Regulations and regulatory instruments

In Italy, since August 2016 there is one main law with several types of implications on food waste:

- National law about food and pharmaceutical products donation and distribution for social helps and to limit waste (Legge 19 agosto 2016, n. 166 ‘Disposizioni concernenti la donazione e la distribuzione di prodotti alimentari e farmaceutici a fini di solidarietà sociale e per la limitazione degli sprechi’) issued by the Italian Parliament on the 2 nd of August 2016.



Description: This regulation is composed by 18 articles and is the national framework for the food waste. Before this national law there was the previous Law (called “Law of the Good Samaritan, Law n. 155/2003) which put the charities collecting the food (and not the food donors) in the situation to be responsible of the correct storage of the donated food and they were responsible of the expiration date.

With this new Law donating food to charities and food banks will be more flexible and easier to do. The Law is not coercive and does not use penalties, but incentives. Operators from the food sector can donate for free food leftover to organisations and similar that are in charge of the collection of these goods. The collection of leftover agricultural products directly in the field is possible as well.

The objectives of this new national law are:

- to reduce the waste production along the whole chain (production, transformation, distribution) for food and pharmaceutical products;
- to promote the recycling and donation of food leftover (and pharmaceutical products) for the purpose of social solidarity and human use;
- to limit negative impacts on the environment and on the natural resources with specific actions intended to reduce the waste production and promote the re-use and recycling in order to expand the life cycle of any products;
- to reach general objectives established by the National Programme for the Waste Prevention and the reduction of the biowaste going to landfills;
- Promote research and information activities for consumers and young generation.

The Law also provides definitions for important terms such as: food operators (private and public along production, packaging, transformation and distribution); donators (public and private), food leftover; food waste (wasted food for commercial reasons/use); donations for free; expiration date; best before *preferably*.

The Law introduces two different expressions for the expiration date, thus, having tremendous impacts on food waste (re-)distribution and on food waste generation:

- “Best before *preferably*” is referring to the time limit as a minimum limit for food products; food over this date can be donated (if the products are in good state and the packaging is incorrupt).
- “Best before” is referring to specific type of food very perishable and means an expiration date. Food/Products over this date cannot be donated.

In addition, some older legal acts with implications on food waste exist in Italy. Those acts are still in force and address very specific aspects. Their content is partially also covered by the new National law about food and pharmaceutical products donation and distribution for social helps and to limit waste (Legge 19 agosto 2016, n. 166).



Legislation with (potential) implications on food waste generation

- Legislative Decree 109/1992 - Implementation of Directives n. 89/395/CEE e n. 89/396/CEE
Description: This legislation, among other things, clarifies what is the difference between the expiration date, and the "best before" date.

Legislation addressing food (re-)distribution

- Legislative Decree 4 December 1997, n. 460/1997.
Description: It explains the procedures of food donation. Art. 13 re-organizes the tax regulations for non-commercial, non-profit social utilities.
- Decree of the President of the Italian Republic, 26th of October 1972, n. 633.
Description: Art. 10, Section 12: "It regulates food donations made in favour of public entities or charities associations".

D) Local legal conditions for selected urban areas

Asti (Piedmont Region)

- Law no.12 (approved on 23-6-2015): Promotion of actions for recycling and valorisation of goods not sold.

Description: The regional Law completes the National framework. It has been written by the Democratic Party that is the majority party both at Regional both at National.

With this law, the Regional Authority promotes and supports projects and recovery activities as well as the enhancement and distribution of unsold goods in order to develop the culture of a responsible consumption as a virtuous life model with economic, environmental and social benefits. The law has the following purposes: to support people at risk of falling into poverty; allow a reduction of waste going to landfills; reducing disposal costs; promote the creation of new jobs. It, thus, (potentially) has implications on food waste (re-)distribution, food waste management and food waste reduction.

Unsold goods cover: agro-food products with short expiring date; agricultural products not collected and left in the field; not served meals from catering and public canteens; pharmaceutical and parapharmaceutical with a short expiring date.

This law allows PAs, social cooperatives, NGOs, non-profit Organisations, to plan projects and specific actions with producers, retailers, professional and trade associations, which will economically supported by the Regional Authority.

Rimini

Rimini at present hasn't specific formal acts on this topic.



E) Voluntary agreements

■ Zero Waste Charter

The “Zero Waste Charter” was launched in 2013 by Last Minute Market and the Municipality of Sasso Marconi (Bologna). With this Charter, the public administrations committed themselves to carry out various actions aimed at reducing and preventing food waste within their territory.

The aims of the charter are (Vittuari et al., 2015a):

- to share and promote the campaign "One year against waste";
- to support all the initiatives - by public and private organizations - that aim at recovering, at a local level, the products remained unsold and discarded along the entire agro-food chain and to redistribute them for free to citizens living below the minimum income;
- to change the rules governing public contracts for food and catering services so as to favour firms that guarantee the free redistribution of recovered food in favor of less affluent citizens;
- to promote concrete actions for the reduction upstream of wastage;
- to establish nutrition education courses;
- to promote discounted sales when a product is close to expiring or has a defect, instead of throwing it away;
- to simplify the endorsements on food labels for expiration;
- to establish an observatory or national agency for the reduction of waste in order to minimize any losses and inefficiencies in the food industry by promoting the direct relationship between producers and consumers and by involving all relevant stakeholders with the aim of making more eco-efficient logistics, transportation, inventory management, and packaging.

The “Zero Waste Charter”, thus, has implications on Food (re-)distribution, food waste reduction and food waste management along various sectors of the food supply chain.

Milan Protocol - Barilla Center for Food and Nutrition

The so-called “Milan Protocol” was issued in 2014 and promoted by the Barilla Group and the Barilla Center for Food & Nutrition. The Milan Protocol calls upon national governments, international organizations and civil society to sign a Protocol on Food, Nutrition, and Sustainability to address the sustainability of the global food system. The Protocol entreats signatories to participate in several voluntary commitments. The Milan Protocol, that could be signed during Expo 2015, aims specifically at reducing food waste by the signatory Countries of 50 per cent within 2020 and at sustaining sustainable agriculture (Vittuari et al., 2015a).

This voluntary agreement potentially has implications on food (re-)distribution, food waste reduction and food waste management along all sections of the food supply chain.



3.2.5. Poland

A) National strategies on food waste prevention

Description of national strategies specifically addressing food waste:

- **National Waste Management Plan 2022.**

Description: The transposition of the EU- directives into national law (e.g. Framework Directive, Landfill Directive, Packaging Directive), especially the European issues of waste management lay the framework for the National Waste Management Plan (KPGO 2014) as well as various regional plans. Poland's waste management could be described as a system of regional solutions. Each region of Poland (voivodship) will be provided with a Regional Waste Management Plan, which is responsive to the assumptions of the KPGO 2014 and the strategic documents of a region (Swiss Business Hub, 2013).

The plan includes procedures to reduce waste, to prepare them for re-use, recycling, other recovery operations and for waste disposal. The National Waste Management Plan for 2022 is in line with the strategic documents adopted at EU and national level.

The programme applies to municipal waste, including food waste and other biodegradable waste and includes:

- Analysis of the current status of waste management
- Targets of waste management
- Lines of the activities of waste prevention
- Waste and the sharpening of waste management system
- How to monitoring and evaluation of national implementation waste management plan
- Schedule and method of determination of contractors
- Waste Management Plan - funding implementation
- Information about strategic evaluation of environmental impacts
- Assessment of funds used the scope of prevention waste
- Summary of the national plan of waste management

- **The National Programme for the prevention of waste, 2014.**

Description: The programme establishes the waste prevention objectives, defines the existing prevention and determine appropriate specific qualitative or quantitative reference levels for the measures adopted to prevent the formation of waste, in order to supervise and evaluation progress of these measures. Plan applies to biodegradable waste including food waste and contains:

- Diagnosis of state
- Utility examples of measures indicated in Annex IV
- Existing methods of prevention Waste



- Good Practice for prevention priority waste
- Good Practice waste prevention
- Objectives strategic
- Actions to strategic goals
- Monitoring the Implementation
- Impact assessment of the proposed solutions
- Consultation project
- Diagnosis condition of specific groups waste
- Plans, programmes, strategies for prevention waste.

B) Market-based instruments

- Amendment of Art. 43 of October 2013 of Act of 11th March 2011 on value added tax (tax on commodity and services) J. of L. of 2011 No. 177, item 1054, with later amendments.
Description: As an effect of this amendment the donation of food by producers and distributors is exempt from VAT (value added tax). Previously only donation made by producers was exempt from VAT. This new regulation should help to prevent food waste generation.

C) Regulations and regulatory instruments

Legislation with (potential) implications on food waste generation

- Dz.U. [Journal of Laws] No. 171, item. 1225. The Law of 25 August 2006 on food safety and nutrition.
Description: This law lay the basic legal act regulating concerns of food safety and nutrition and form the framework which regulates in a comprehensive manner the conditions necessary to ensure food safety from “farm to fork”. This law refers to the European “Hygiene package” laying down rules for the hygiene of foodstuffs and the rules of conduct food sector regulatory authorities. This law is amended by Dz.U. [Journal of Laws] 2010 No. 21, item. 105. of 8 January 2010.

Legislation addressing food waste management

- Dz.U. [Journal of Laws] from 2013 item 21 Law on Waste of 14 December 2012 r.
Description: The Act specifies measures to protect the environment, human life and health to prevent and reduce the negative impact on the environment and human health resulting from the generation and management of waste, and limiting the overall impact of resource use and improving the efficiency of such use.
- Dz.U. [Journal of Laws] No. 75, item. 527, as amended Regulation of the Minister of Environment of 21 April 2006. on the list of types of waste, that the waste holder may transfer to individuals or agencies who are not entrepreneurs, and acceptable methods of



their recovery.

Description: The Regulation sets out:

- a list of the types of waste that a person or entity other than entrepreneurs can undergo recovery for their own needs, and acceptable methods of recovery;
- conditions of storage of waste intended to be used for their own needs and limits the amount that these entities can take and store in a year, or the manner of determining those quantities for certain types of waste
- the list of types of waste that individuals or entities other than entrepreneurs can undergo recovery for their own needs, and acceptable methods of recovery, conditions of storage of certain waste for use and permissible quantities that these operators can take and store in a year, or the manner of determining these amounts for certain types of waste set out in Annex to Regulation.
- This document applies biodegradable kitchen waste.

Legislation actively addressing food waste reduction

In Poland, there is no legislation specifically addressing food waste reduction.

Legislation addressing food (re-)distribution

At the time of compiling this report, there is no legislation specifically addressing food (re-) distribution in Poland. However, the Polish parliament is currently drafting a law which aims to prevent local retailers from trashing unsold food which remains fit for consumption. Under this new law, the owners of retail outlets fitted with a total surface of more than 250 square meters will be required to donate such food to charity organizations, with intentional discards punishable by financial penalties. The senate is hoping to pass the law at the beginning of the year.

D) Local legal conditions for selected urban areas:

Warsaw

- Resolution of the Capital City Warsaw dated 9 July 2015 on the adoption of the Rules of maintaining cleanliness and order in City Warsaw Resolution No. XIV / 292/2015 from 9-07 2015.

Description: The resolution specifies:

- the types and amount of waste received from the owner of the property;
- the frequency of collection of municipal waste from the property owner;
- of the Services by the entities receiving the waste Municipal Waste Management in the field of municipal waste;
- of the Services by the Points of selective collection of waste Municipal.



- It applies to receive selectively collected bio-waste from kitchens, catering and bio-waste from markets and gastronomy.
- It contains information about the methods and rules of collected bio-waste from kitchens, catering and bio-waste from markets and gastronomy.

Environmental sustainability programme for the City Warsaw for 2009-2012 with the prospect of 2016.

Description: The aim of the programme is to achieve balanced and sustainable development of the city of Warsaw through the preservation essential qualities of the natural environment, improve the environment, improve spatial order, development and environmental protection infrastructure. The priorities of the programme are to improve the quality of surface water, achieving the required standards of air quality, communication noise nuisance limitation, establishment of a coherent natural system of the city, along with the protection of valuable natural elements, creation of an integrated waste management system, increase the ecological consciousness of inhabitants of Warsaw.

This sustainability programme has implications on food waste management as it achieved a high degree of reduction of biodegradable waste (including food waste) that is landfilled without prior biological or thermal treatment.

- Environmental sustainability programme for the City Warsaw for 2017-2020 with the prospect of 2023.
Description: The aim of the programme is: sustainable management of the environment, providing the domestic economy secure and competitive energy supply, improvement of the environment. The programme covers the following areas: air quality and climate protection, noise pollution, electromagnetic fields, water management (including the quality of surface water and groundwater and waste water management), land (including soil and geological resources), management of municipal and industrial waste (including food waste from households), natural resources, major accident hazards, environmental awareness of citizens, social participation, environmental education, adaptation to climate change.

Wroclaw

The programme providing residents compost (segreguj.wroc.pl programme)

The programme providing residents having home gardens and educational institutions located throughout the city, composters for composting green waste and kitchen waste biodegradable. The aim of the programme is to educate residents on proper waste composting, promoting composting waste for their own needs, increasing the amount of biodegradable waste to be recovered, thus reducing the amount going to landfill of municipal waste generated in Wroclaw.

E) Voluntary agreements

In Poland there are no voluntary agreements directly related to food waste.



3.2.6. Comparative Analysis of national legislation

All of the five EU member states participating in the STREFOWA project have different legislative and political approaches to food waste reduction and prevention. Nevertheless, some similarities can be found - mainly concerning the market-based instruments and regulatory schemes adopted as well as the areas of intervention. While some of them have developed advanced extensive measures, others still can progress their strategies and tools.

An overview of legislation and policy sections addressing food waste of the five STREFOWA countries is given in Table 6.

Table 6: Overview of legislation and policies with implications on food waste in five selected EU Member States

Country	National strategies	Market-base instruments	Regulations and regulatory instruments addressed to				Voluntary agreements
			Food waste generation	Food waste management	Food waste reduction	Food (re-) distribution	
AUT	X		X	X	X		X
CZE	X	X	X	X		X	X
HUN	X	X	X	X			X
ITA	X	X	X	X	X	X	X
POL	X	X	X	X		forseen	

National strategies on food waste prevention

Each of the five countries examined has developed and embedded specific approaches and policy tools which aim to reduce, manage and prevent food waste. Such approaches are normally expressed in the form of action programmes dictated either by the European Commission or by national governments (normally the Ministry of Environment or the Ministry of Agriculture). Such programmes include National Plans specifically addressed to food waste reduction and a wide range of strategies and plans such as national waste management plans, waste prevention programmes or sustainable food strategies (Vittuari et al., 2015a).

In 2013, the Italian Ministry of Environment has launched the National strategy on food waste prevention (PINAS) with the focus on food waste reduction all along the supply chain.

Often there is no national plan specifically addressing food waste like in Austria, the Czech Republic or Hungary. While food waste is anchored in the Federal Waste Management Plan 2011 in Austria, which aims of a certain reduction rate in residual waste, the Czech Republic has set up a "waste prevention programme" according to their Waste Management Plan 2015-2024. This programme presents a more detailed overview on specific waste streams e.g. food waste and foods but primarily the absence of analytical and methodological instruments shall be addressed. The National Waste Management Plan (2014 - 2020) of Hungary promotes amongst others the sage of foods for charitable purposes under certain conditions. Hungary's Food Chain Safety Strategy (2013 - 2022) is not directly aimed at the reduction of food waste but has implications on food waste generating activities like raising awareness for responsibility in the trade sector and in consumer behaviour.



In Poland waste prevention guidelines are mentioned in the National Waste Management Plan 2022, specified in the National Programme for the prevention of waste (2014). This plan gives an overview of the actual situation of waste prevention, existing and intended measures, practices, main strategies and goals, monitoring and evaluation of implementations.

Market-based instruments

Economic instruments are used to stimulate food prevention inter alia in commercial enterprises. Representatives of such instruments are taxes and fees on waste treatment, landfilling or incineration which can be seen as economic incentives as they abruptly increase the total costs of waste handling or deposit, thus, increasing the financial benefits of waste reduction and also help cutting down on food waste (Marthinsen et al., 2012; Watkins et al., 2012).

Another way to launch market based instruments into national legislation are subsidies and funding for green production or tax exemptions for social purposes, e.g. for donated food. Laws on food donations are currently in force in Czech Republic (20% of the value of donations can be deducted from corporate tax base, or Act on VAT from donations) Hungary, Italy and Poland (tax exemption for producers and distributors).

In Italy the Ecotax (Ecotassa) law intends to promote more environmentally friendly waste management practices to force the decrease of landfilling and addressing in the broader sense food waste management issues.

At the time of preparing this report, there are no market- based instruments specifically addressing food waste in Austria.

Regulations and regulatory instruments

Regulations and regulatory instruments that have implications on food wastes differ from country to country and include national and federal/regional legislative acts. In order to get a better overview on which type of implications the existing national legislative acts have and which topics they address, below they have been organized into legislation with potential implications on food waste generation, legislation addressing food waste management, legislation actively addressing food waste reduction and legislation addressing food (re-) distribution.

Legislation with (potential) implications on food waste generation

These regulations mainly imply the generation of food waste as collateral effect of its implementation and do not have any provision to prevent or manage this inconvenience (Vittuari et al., 2015b). Animal by- products and feeding stuff, food safety and contaminants or hygiene rules are some of the topics addressed by such regulations.

The body of laws that has implications on food waste generation in Austria ranges from ordinances on green electricity (anaerobic digestion to treat food waste), food hygiene, food



labelling, food security and consumer protection to laws on animal substances, animal feed and Epizootic diseases.

The Czech Republic has similar regulations for prevention and control of diseases and diseases transmissible from animals to humans, the labelling of foodstuff and on animal feed or hygienic requirements related to catering services.

In Hungary there also are regulations regarding food-health and safety (Hungarian Food Book) or the usage of food-waste for feeding animals. The act on food chain regulates labelling and selling requirements, for instance it is forbidden to sell goods with an expired “use before” date (deadline for consumption) on the market.

In Poland, the law on food safety and nutrition can be mentioned as legislation with implications on food waste generation.

In Italy, there is one main law with several types of implications on food waste: the National law about food and pharmaceutical products donation and distribution for social helps and to limit waste. In this context the law includes a definition of “expiration date” and “best before”.

Legislation addressing food waste management

Regulations and legislation addressing food waste management already exist in all the countries examined, mainly addressing bio- waste collection and reduction of bio- waste in landfills.

In Austria, several laws regarding waste management are firmly anchored, for example the Austrian waste management law, the landfill ordinance (landfilling of untreated organic waste is banned), the waste catalogue ordinance, the ordinance on compost quality and on separate collection of bio-waste. Each Austrian province also has their own waste management legislation, e.g. the Viennese Waste Management law that stipulates waste collection, treatment and three areas of activity for sustainable waste prevention.

The Government Regulation on Waste Management Plan of the Czech Republic defines waste prevention and reduction as major strategic goal and forms a framework for food waste management too. Such strategies are stated by the Amendment to the Waste Act regarding bio-waste collection, the decree regarding bio- waste in landfills, or the laws on garbage disposal units and law on waste.

In Hungary, the regulation on the conditions and methods of food disposal stipulates that food waste has to be treated in an environmentally sound way. The treatment costs (storage, transportation, safe-keeping and disposal) for food waste have to be paid by the waste producer. The Italian national law about food and pharmaceutical products donation and distribution for social helps and to limit waste promotes in this context the recycling of leftover food.

Poland’s food waste management is mainly organised by Law on Waste (2012), which sets measures to protect the environment, human life and health related to the generation and management of waste.



Legislation actively addressing food waste reduction

Legislation containing provisions targeted to reduce the generation of food waste can only be found in Austria and Italy. Hungary, the Czech Republic and Poland actually have no legislation specifically addressing food waste reduction.

The ordinance on animal feed in Austria serves as a legal basis for the use of waste bread for animal feed (as one of many regulations) and can also impact food waste management. The ordinance on animal by-products defines exceptions from the prohibition of feeding former foodstuffs to farm animals, for the production of which no animal products other than milk, dairy, eggs and egg products were used.

Italy's National law mentioned above is targeted on reducing the waste production along the whole chain including production, transformation and distribution for food.

Legislation addressing food (re-) distribution

Legislative acts addressing food (re-)distribution only exist in the Czech Republic and in Italy.

The law on foodstuffs and tobacco products in Czech Republic introduces the obligation to donate foods that do not meet certain legislative requirements (e.g. foodstuffs that are mislabelled or deformed). In addition, it also must be safe and not harmful.

The Italian National law about food and pharmaceutical products donation and distribution for social helps and to limit waste specifically refers to promote the donation of leftover food for the purpose of social solidarity and human use. In this context, the implied definitions of expiration date and best before preferably are important related to the question what is allowed to be donated and what is not.

In Austria, Hungary and Poland no legislations specifically addressing food (re-) distribution currently in force could be identified. However, the Polish parliament is currently drafting a law that aims to prevent local retailers from trashing unsold food, which remains fit for consumption. They should be required to donate such food to charity organizations.

Local legal conditions in selected urban areas

The study also examined the legal situation of selected urban areas including Vienna and Tyrol (Austria), Prague (Czech Republic), Budapest and Miskolc (Hungary), Asti and Rimini (Italy) as well as Warsaw and Wroclaw (Poland).

Most of the regulations identified belong to legislations addressing food waste management, specifically being collection, treatment and disposal regulations for bio-waste or environmental sustainability programs for the cities or regions.

Wroclaw further has established an education program to force composting in households, therefore reducing the amount of biodegradable waste going to landfills.

Only Vienna currently has strategies and measures in its Viennese Waste Management law that actively addressing food waste prevention and reduction. Some other laws such as the Viennese Wine Tavern Laws or the Viennese Kindergarten Ordinance deal with food safety and may indirectly cause food waste.



Voluntary agreements

Besides establishing legal acts, voluntary agreements offer another possibility to address food waste reduction. Voluntary agreements are alternative courses of actions such as self-regulations developed by the industry generally aimed to deliver the policy objectives faster and/or in a more cost-effective manner compared to mandatory requirements (Schneider and Lebersorger, 2016). The following voluntary agreements in the five reviewed EU member states could be identified in this review:

In 2013 an action program was initiated in Austria focussing amongst others on awareness-raising and food redistribution activities as well as on optimizing the processes along the entire food supply chain (ordering system, transport, returned goods, product availability, demand-oriented assortment). A result of several partnerships among companies, authorities, schools, NGOs was the initiative "food is precious" also strongly focussing on awareness-raising through various measures as well as implementing food waste prevention projects.

In Czech Republic voluntary agreements between the wholesale and retail sector and regional food banks exist. A similar system is established in Hungary (connection of retail with National Food Bank). Moreover, the Hungarian Government and the Food Bank Association launched a "forum for decreasing food loss and waste" to quantify the amount of food waste and considerably reduce it. Another Platform (TÉT Platform Egyesület) aims to increase the consumer awareness.

With the "Zero Waste Charter", the public administration in Italy committed itself to carry out various actions aimed at reducing and prevention food waste within their territory. Thus, the Charter has implications on food (re-)distribution, food waste reduction and food waste management along various sectors of the food supply chain. The so-called "Milan Protocol" calls upon national governments, international organizations and civil society to sign a Protocol on Food, Nutrition, and Sustainability to address the sustainability of the global food system. This voluntary agreement potentially has implications on food (re-) distribution, food waste reduction and food waste management along all sections of the food supply chain.



4. Status Quo of Food Waste Amounts, Amounts of Prevented Food Waste and Food Waste Management

4.1. Food Waste Amounts

The estimation of food waste amounts per country is difficult as food waste often is collected together with other wastes and therefore not registered as total quantity. This is mainly true for household waste but also for other sectors where food waste may be collected and treated as biowaste. Even more difficult it is to estimate the amount of avoidable food waste. To determine the generation of avoidable food waste time consuming sorting analysis are often the only methodology in use. Therefore often reliable data on food waste still are missing in European countries although figures are reported to Eurostat.

At the other hand knowledge on the existing amounts of food waste per country and supply chain sector are the best way to start with food waste prevention measures. Therefore within STREFOWA food waste amounts were analysed for the participating countries.

Austria

In Austria since more than ten years scientists deal with food waste and a lot of studies have been performed on that topic. Therefore the database is relatively good and reliable data are existing at least for some sectors.

In the production sector that means in agriculture edible food is left even at the fields or in following production steps sorted out. Considerable quantities are not marketed and therefore are lost as food. First analysis are based on questionnaires to farmers on their losses, but still no reliable data exist for this sector. An online questionnaire survey among 462 producers and 78 suppliers of 25 different fruits and vegetables (including potatoes) was made. 287 datasets from producers and 71 datasets from suppliers could be obtained. The food losses reported in the questionnaire survey represent only 5% of the crop area for vegetables, 10% of the crop area of fruit, and 0.6% of the crop area for potatoes in Austria. Other agricultural produce such as grain, meat and dairy were not subject of the study. The food losses reported by the producers were extrapolated from the sample to the total crop area of fruit, vegetables and potatoes in Austria.

The results provide a first estimate of total food loss quantities. Food loss quantities of the studied fruits and vegetables were extrapolated to the crop area of the respective product in Austria. Potatoes show the highest absolute food loss (89,000 t/a) due to their large crop area. Besides potatoes, the crops with the highest absolute food losses are onion and cabbage (each more than 10,000 metric tons), Chinese cabbage and apples (each about 8,700 metric tons). Overall, 41% of the food loss quantity from the studied products have not been harvested at all, 27% of the food loss occurs during storage and 32% are recycled which means that they are either sent to a composting or biogas plant, used for animal feed, spread in situ or used for other than food purposes.

Even worse is the situation concerning reliable data for the processing sector, where huge differences occur between different years depending on unforeseeable losses.



In the retail sector Lebersorger & Schneider (2014) Food loss data from 612 retail outlets (were analysed. Food loss amounts to 1.3% of the sales of dairy products, 2.8% for bread & pastry and 4.2% for fruit & vegetables. Returned bread amounts to additional 9.7% of the sales of bread & pastry. The food loss rates are similar to the results of previous publications. In total the sum of food waste in the Austrian food retail trade in the year 2013 accounted for 74,000 tonnes. Additionally, 6,600 tonnes were donated to social organisations and 35,600 tonnes of bread and pastry were returned to the supplier.

Within the framework of the research initiative “United Against Waste” (UAW), the food waste generation of 50 Austrian food service outlets including restaurants, hotels, workplace canteens and healthcare centres were investigated (Hrad et al., 2016). In order to allow a comparison between various food service outlets or sub-sectors as wells as an evaluation of the individual operating efficiencies, the loss ratio (level of efficiency) was introduced as a benchmark. The loss ratio is the amount of avoidable food waste (in kg) in relation to the amount of food consumed (in kg) per survey day. The ratio between the amount of avoidable food waste and the food consumed ranged between 3 to 46 % in all companies. Healthcare centres showed significantly higher loss ratios (median 27 %) compared to hotels (median 21 %), restaurants (median 14 %) and workplace canteens (median 13 %).

Table 7: Food Waste Amounts in Austria

Country:		Generated Amounts of Food Waste				
Austria		Amounts (t/a)		Reference	Information on data source	Data Gaps
Sectors of Food Supply Chain		Total Food Waste ¹	Avoidable Food Waste ²			
Production	Total	n.a.	n.a.	Schneider et al. (2014)	Only indicative analysis of food loss available - survey among 287 farmers, 71 suppliers covering 24 fruits and vegetables varieties)	
Processing	Total	n.a.	n.a.			
Distribution	Total	109700	n.a.	Lebersorger & Schneider (2014)	Participating retail companies have combined market share of 83%	Wholesale and markets are not included
Food Service	Total	280000	175000	Hrad et al. (2016)	calculation basis 49 food service outlets	Incomplete coverage of individual food service sub-sectors, small sample
			156,000 - 258,000	Schneider et al. (2012)	based on indicators for food waste amounts of different food service sub-sectors (literature)	
Households	FW-RW ³	276430	157650	Schneider et al. (2012)	Based on analyses of residual waste composition in all 9 provinces	Data does not include other disposal channels such as sewer and home composting
	FW-SC ⁴	90750	49340	Schneider et al. (2012)	composition of biowaste (sorting analysis)	Data is based on 1 province
	FW-HC ⁵	n.a.	n.a.			
	FW-S ⁶	n.a.	n.a.			

1 Total food waste = avoidable + non-avoidable food waste (i.e. inedible food parts)

2 Avoidable food waste = edible food products/substances

3 MBT = Mechanical-biological treatment, MBS = Mechanical-biological stabilisation

4 FW-RW = Food waste contained in residual waste

5 FW-SC = Food waste contained in separately collected organic waste

6 FW-HC = Home composted food waste

7 FW-S = Food waste disposed through the sewer

n.a. ... not available



In total, 6,504 kg of food waste was analysed in all food service outlets. Based on the determined amount of waste an extrapolation for Austria resulted in 61,000 tonnes of avoidable food waste in the community catering, 50,000 tonnes in hotels, 45,000 tonnes in restaurants and another 19,000 tonnes in other services like coffee houses. In total this resulted in 175,000 tonnes of avoidable food waste in the Austrian food service sector.

Schneider et al. (2012) provided a compilation on food waste generation in Austria. This compilation still provides the newest data on food waste in the household sector. Food waste in Austria accounts for 25 Mass-% of residual waste. This equals to 33.1 kg per person and year or 276,430 tonnes per year for Austria. Out of this amount 43 Mass-% belong to non-avoidable food waste or preparation residues like bones, peels or stalks. 57% are at least potentially avoidable. Important for waste prevention measures are therefore 14.5 mass-% of the residual waste or 157,647 tonnes per year or 18.9 kg per inhabitant and year.

Czech Republik

In the Czech Republic no measure data were available. There is no national data on losses. Cited references are based on estimates. Sorting analysis or studies like in Austria have not been performed yet. Figures are based on international studies and recalculated based on the population size (Priefer et al., 2013; Monier et al., 2010).

Table 8: Food Waste Amounts in the Czech Republic

Czech Republic		Amounts (t/a)		Reference	Information on data source
Sectors of Food Supply Chain		Total Food Waste ¹	Avoidable Food Waste ²		
1. Production	Total	449 982 + 73 074	n.a.	Priefer et al. 2013.[1]	Calculates agri production + postharvest/storage losses. Calculations based on the SIK-methodology (Gustavsson et al. 2013)
2. Processing	Total	317 295	n.a.	Priefer et al. 2013.	Calculations based on the SIK-methodology (Gustavsson et al. 2013)
		361 813		Monier et al. 2010.[3]	Calculation for manufacturing sector. Based on EUROSTAT-data. Includes also by-products that are re-used/recycled
3. Whole-sale/ Retail/ Market	Total	121 149	n.a.	Priefer et al. 2013.	Based on SIK methodology. Defined as "distribution", includes food service
		91 104		Monier et al. 2010.	Estimate of Monier et al. based on an average of 8.89 kg/year/capita. Highly disputable estimates.
4. Food Service	Total	122 810	n.a.	Monier et al. 2010.	Estimate of Monier et al. Calculated average based on trends at 12 kg/year/capita.
5. House-holds	FW-RW ³	963 423	n.a.	Priefer et al. 2013.	Calculations based on the SIK-methodology (Gustavsson et al. 2013)
		254 124		Monier et al. 2010.	Estimate of Monier et al. based on plausible minimum of 22 kg/year/capita
	FW-SC ⁴	n.a.	n.a.		
	FW-HC ⁵	n.a.	n.a.		
	FW-S ⁶	n.a.	n.a.		



Hungary

Also in Hungary no specific investigations on food waste have been performed, yet. Data in the table reflect data from EWC subgroup (02 01) which is animal- and plant-tissue waste and wastes not otherwise specified were found. This means all wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing are included in this group, which is much more than food waste.

Table 9: Food Waste Amounts in Hungary

Country:		Generated Amounts of Food Waste				
Hungary		Amounts (t/a)		Reference	Information on data source	Data Gaps
Sectors of Food Supply Chain		Total Food Waste ¹	Avoidable Food Waste ²			
1. Production	Total	41580,79	n.a.	EHIR - National environmental information system	Environmental data browser-	Only data from EWC subgroup (02 01): animal- and plant-tissue waste and wastes not otherwise specified were found
2. Processing	Total	292476,4	n.a.	EHIR - National environmental information system	Same as previous	
3. Whole-sale/ Retail/ Market	Total	4750,09	n.a.	EHIR - National environmental information system	Same as previous	The data do not cover the all amount of waste from this category. Cannot enable other amounts because it has been treated together the household waste. The EWC 20 03 02 contain more waste than the food waste but cannot be separable.
4. Food Service	Total	4,690,454	n.a.	EHIR - National environmental information system	Same as previous	Only data about biodegradable kitchen and canteen waste
5. House-holds	FW-RW ³	184246,7	n.a.	EHIR - National environmental information system	Same as previous	Only biodegradable waste data (EWC 20 02 01); data for waste contained in different fractions not available
	FW-SC ⁴					
	FW-HC ⁵					
	FW-S ⁶					

Italy

Also for Italy no measured data are available. No calculations were performed.



Poland

In Poland, food waste from households are not collected separately. Food is collected by city dwellers to one container, among others, porcelain, toys, rubber, diapers, garbage, street, the light bulb. Part of the food waste goes to the backyard composters.

Table 10: Food Waste Amounts in Poland

Country:		Generated Amounts of Food Waste			
Poland		Amounts (t/a)		Reference	Information on data source
Sectors of Food Supply Chain		Total Food Waste ¹	Avoidable Food Waste ²		
1. Production	Total	6.6 million		Eurostat data (2006)	published in a report to the European Commission in October 2010
2. Processing	Total	0.35 million	n.a	Eurostat data (2006)	published in a report to the European Commission in October 2010
3. Whole-sale/ Retail/ Market	Total		n.a		
4. Food Service	Total		n.a		Eurostat data informs that from other sources jointly are 0.35 million is wasted (except production, household)
5. House-holds	FW-RW ³	2 million			
	FW-SC ⁴		n.a		
	FW-HC ⁵	n.a	n.a		
	FW-S ⁶	n.a	n.a		

Almost 1/3 of Poles admit that sometimes they throw away food. Significantly more likely to throw away food people living in large cities. Main causes of wasting food in households are: not using food in time 38%, too large shopping 15%, too large portions of meals 13%, improper storage 11%, poor quality of the product 9%, lack of ideas to use the components for a variety of dishes 3%, dish is distasteful (6%), no shopping list (2%) (Millward Brown on behalf of the Federation of Polish Food Banks, 2016).

The following figures are available concerning waste collection in Poland:

Municipal waste collected separately of which biodegradable from commerce, small business, offices and institutions in Poland (2015) - 37062,7 tonnes (including food).

Mixed waste collected of which urban areas in Poland (2015): households - 4864630.78 t commerce, small business, offices and institutions: 1,074,204.32 tonnes (including food).

City of Warsaw in 2015. Storage handed 2 299.67 Mg of biodegradable municipal waste (including food).

About 1 749.8 thousand. tonnes of municipal waste were sent to biological treatment processes (composting or fermentation). These were mainly green waste from gardens,



parks and cemeteries, waste from markets, biodegradable kitchen waste and waste from catering.

The share of food waste in Poland is:

- production 70%
- wholesale and retail 4%,
- food service / catering 5%,
- households, including: received by sewage, household composting and feeding the animals 22%

4.2. Amounts of Prevented Food Waste

As the previous tables showed only for one of the participating countries reliable measured data on food waste are existing. Even worse is the situation searching for data on the amounts of already prevented food waste. There are major difficulties in measuring food waste prevention as this can only be based on food donation (in that case food is normally not registered as waste and therefore also not registered as prevented waste) or if there are comparative studies available showing the differences before and after a food waste prevention measure. In fact none of the partners was able to give an satisfactory overview on that topic.

In Austria 6,600 tonnes are donated by the retail sector to foodbanks and about 55 tonnes of food waste are prevented in the framework of food sharing activities. In the Czech Republic more than 1000 tonnes are donated by the wholesale/Retail sector to foodbanks. In Hungary it is 445 tonnes and additionally 770 tonnes donated from primary production to foodbanks. From Italy no figures are available. IN Poland 81,000 tonnes are donated from primary production to food banks and 9600 tonnes come from the retail sector.

4.3. Food Waste Management

According to the Waste Framework Directive (Directive 2008/98/EC) focus has to be laid on waste prevention. But still food waste, both avoidable and unavoidable accrue and therefore it is important also to consider the further management (collection and treatment) of those biogenic wastes. The following table (Table 11) gives an overview on the actual practiced food waste treatment options in countries participating within STREFOWA.



Table 11: Food Waste Management options in Austria, Czech Republic, Hungary and Poland

Sectors of Food Supply Chain	Treatment of Food Waste																																							
	Treatment Options																																							
	Anaerobic Digestion				Animal Feed				Composting				Home Composting				Treatment at WWTP				Waste to Energy				Landfilling w/o. Pt				MBT / MBS3											
Countries	AT	CZ	HU	PL	AT	CZ	HU	PL	AT	CZ	HU	PL	AT	CZ	HU	PL	AT	CZ	HU	PL	AT	CZ	HU	PL	AT	CZ	HU	PL	AT	CZ	HU	PL								
1. Production	x	x	x		x	x		x	x	x	x																													
2. Processing		x	x				x	x	x	x											x				x	x	x		x		x									
3. Wholesale/Retail/Market		x					x	x	x	x															x	x	x	x	x				x							
4. Food Service	x	x	x	x			x		x	x	x						x								x		x		x		x									
5. House-holds	x	x	x	x					x	x	x	x	x	x	x	x	x								x	x	x	x	x	x	x	x	x	x	x	x	x	x		

It can be detected that direct landfilling of food-waste is still practiced in some of the European countries resulting in negative environmental impacts. Especially by improper treatment or landfilling of food waste one runs into danger that methane with high global warming potential is produced.

Anaerobic digestion and energy use are the most often used treatment technologies in the participating countries for biowaste in general and also for food waste. IN all countries more than one treatment option are used for food waste from each supply chain sector.



5. Existing Food Waste Prevention and Outstanding Management Activities in Selected EU Member States

This chapter gives an overview on the food waste prevention and management (FWPM) activities currently existing in the five STREFOWA countries. The FWPM activities are analysed with regards to the following aspects:

- target group(s) of the activity,
- category (to characterise the initiative/activity),
- main responsible body meaning main actor responsible for the initiative/activity,
- geographic level of implementation.

The complete list of food waste prevention and management (FWPM) activities identified in the five STREFOWA countries (incl. a short description of each activity) is presented in Annex Fehler! Verweisquelle konnte nicht gefunden werden..

A list of currently existing food waste prevention and management (FWPM) activities in the five STREFOWA countries was compiled.

For each activity, the following information was collected (in English and national language):

- Category (type of initiative)
- Original Name and English Name
- Short description of activity
- Actor ((main) actor responsible for the initiative)
- Main responsible body (classification of main actor responsible for the initiative/activity)
- Country
- Geographic level of implementation (national, regional, local; for activities on local level also Province/City and Postcode)
- Target group (main type of stakeholder targeted: Primary production, Processing, Wholesale/Retail/Market, Food service sector, Consumers, Waste management, School)
- Year
- Reference (web-link)
- Description of results

For “Category” the following uniform classifications for different types of initiatives were chosen: Food redistribution activities, Association/Company, Information material, Operational measures, Awareness campaigns, Innovation, Educational measures. A more detailed description of which types of initiatives was allocated to which “category” is given in Chapter 5.2 in Table 12.



For “Main responsible body” the following uniform classifications were chosen: Local public authority: Regional public authority, National public authority, Sectoral agency, Infrastructure and (public) service provider, Interest groups including NGOs, Higher education and research, Education/training centre and school, Large enterprises, SME, General public. Examples for actors belonging to the various groups are provided in Chapter 5.3 in Table 13.

In total, 176 food waste prevention and management (FWPM) activities could be identified in the five STREFOWA countries Austria, Czech Republic, Hungary, Italy and Poland. The majority of all activities identified (67 %) was found in Austria (Figure 2). 15 % of all identified activities are located in the Czech Republic, 9 % in Hungary, 6 % in Poland and 4 % in Italy respectively. This reflects the results of the status quo analysis where also only for Austria reliable data are existing. Such data are the basis for subsequent measures.

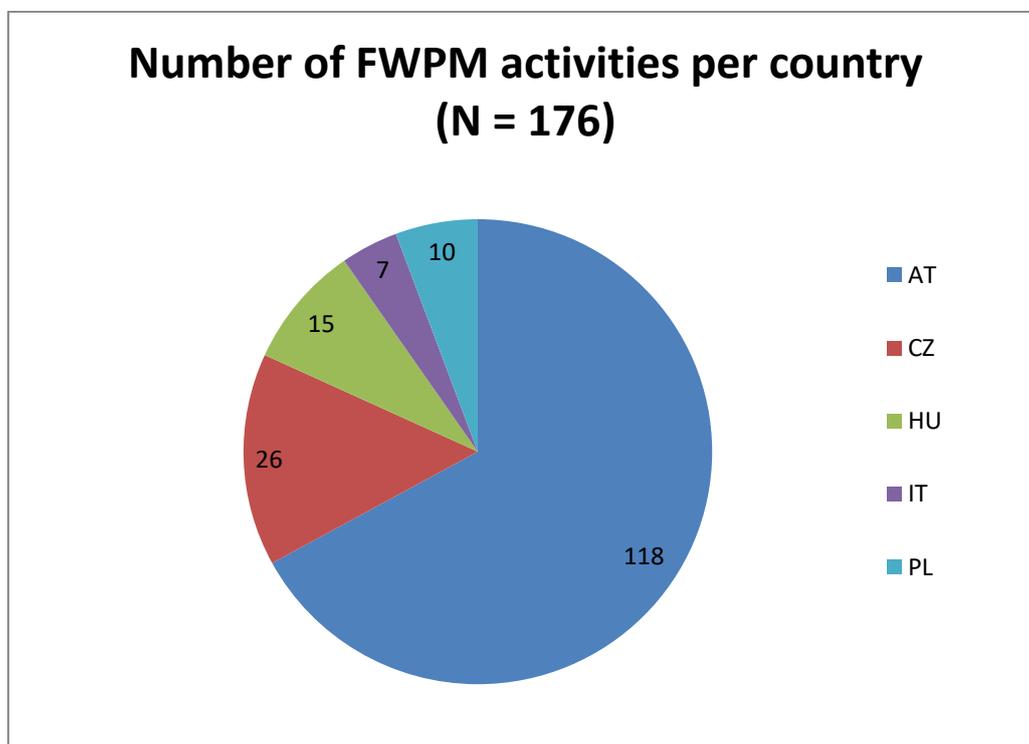


Figure 2: Number of food waste prevention and management activities in the five STREFOWA countries

5.1. Target groups

With regards to the main type of stakeholder the activities are targeted to (“target groups”) the FWPM activities were classified into the following groups: Primary production, Processing, Wholesale/Retail/Market, Food Service Sector, Consumer, Waste Management, Schools. These target groups represent stakeholder along the entire food supply chain.

Figure 3 shows the distribution of the target groups addressed by the FWPM activities identified in the five STREFOWA countries.

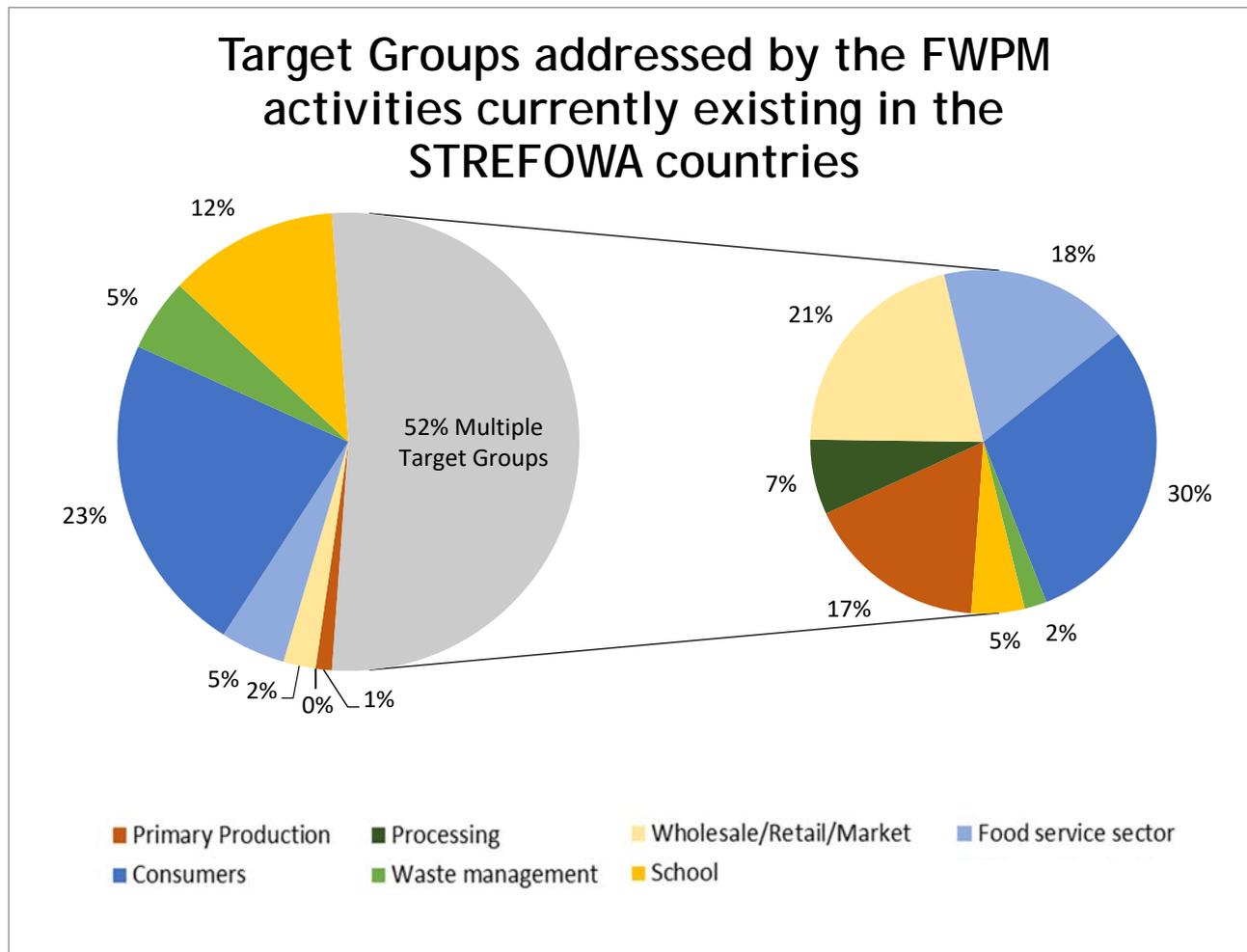


Figure 3: Target groups of the FWPM activities identified in the five STREFOWA countries

As the results show (Figure 3), only 1 % of all FWPM activities are solely addressed to stakeholders from “Primary Production” (e.g. farmers, rangers, fishers). Not more than 2 % are aimed at the sector “Wholesale/Retail/Market” such as supermarket chains, grocery stores, food retailing, food stores or wholefood shops. Likewise, only 5 % of the activities have a focus on the food service sector (meaning restaurants, hotels, canteens or catering companies). Another 5 % of the identified FWPM activities are targeted to the target group “Waste Management”. This group refers stakeholder responsible for the sustainable collection, treatment and organisation of food waste such as waste management enterprise or waste federations.

The category “School”, which is addressed by around 12 % of the identified activities, includes kindergartens, primary / secondary schools, colleges and universities. 23 % of all activities are solely targeted at consumers. None of the identified FWPM activities is solely targeted at stakeholders from the processing sector.

More than half of all FWPM activities identified are addressed to multiple target groups. Taking a closer look at this group of activities, Figure 3 shows that the main stakeholders addressed by activities that are aimed at multiple target groups are “Consumers”, “Wholesale/Retail/Market”, the “Food Service Sector” and “Primary Production”. Further,



stakeholders belonging to the target group “Processing” are only addressed by this kind of activities with multiple target groups. The category “Processing” mainly stands for stakeholders from food producing (e.g. bakery, butcher, creamery/ dairy, convenience food production).

An in-depth analysis on country level reveals the following:

- In Austria and Hungary, there are FWPM activities addressing all target groups mentioned above. In Austria, consumers are by far the most often addressed target group.
- In the Czech Republic and in Italy, FWPM activities address stakeholders from all target groups but waste management.
- In Poland, the only target group not addressed by the identified FWPM activities is “Schools”.

5.2. Categories of FWPM activities

In order to better characterise the content of the FWPM activities the following categories were used for classification (Table 12):

Table 12: Categories for grouping different types of activities

Category	Type of activity/initiative
Association/Company	e.g. various groupings, collaborations, associations or companies, which mainly focus on food waste minimization and sustainable supply of food
Awareness campaigns	e.g. workshops, seminar, idea competition, informational campaigns to alert the general public to food waste issues
Educational measures	e.g. projects conducted at educational institutions, as well as specific actions to be included in the curriculum.
Food redistribution activities	e.g. (social) food redistribution programmes collecting food that would otherwise be discarded by retailers
Information material	e.g. guides, handbooks created by public authorities, industry associations, NGO, etc. to help specific sectors minimize food waste generation
Innovation	e.g. technical or conceptual innovations, but also tools for stakeholders along the food supply chain
Operational measures	Optimizing operations to minimize food waste (e.g. stock management tools in the retail environment, ordering flexibility in hospitals)

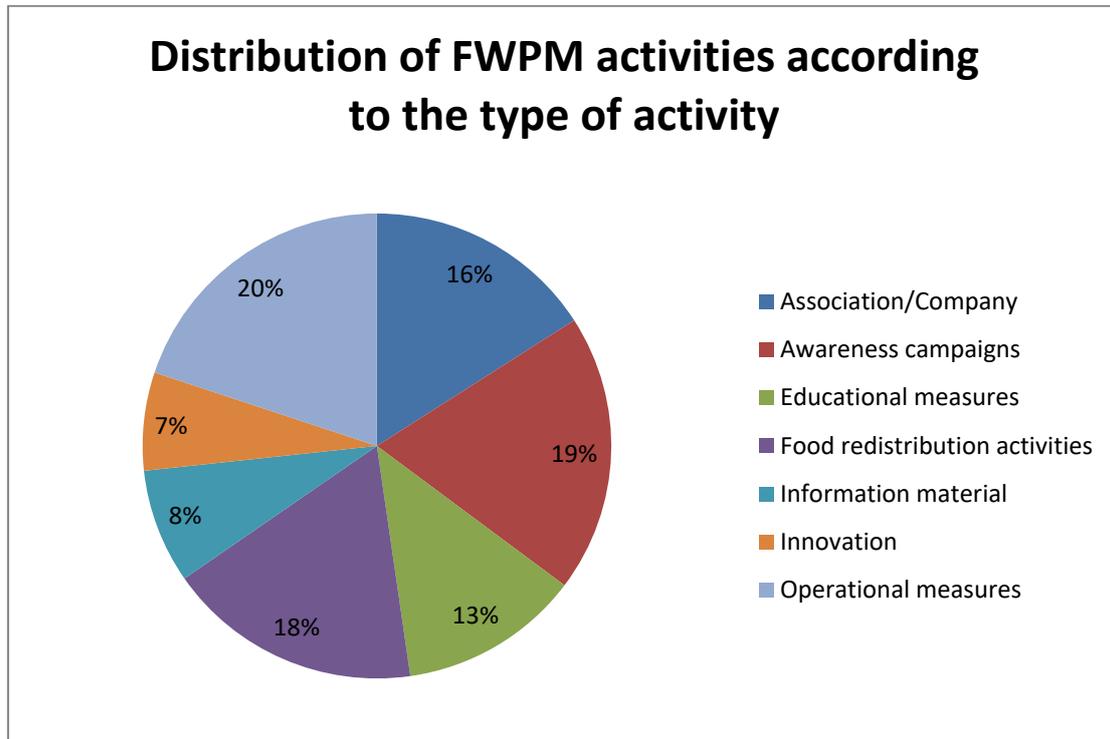


Figure 4: Distribution of FWPM activities identified in the five STREFOWA countries according to the type of activity (“Category”).

As Figure 4 shows, 20 % of all identified FWPM activities belong to the category “Operational measures”, representing different operations to minimize food waste. These activities cover:

- waste management measures (mostly embedded in a legal framework): e.g. separate collection and (pre-)treatment of bio-waste, prevention and reduction of the bio-waste going to landfills (limiting value), digestion of bio-waste in waste water treatment plants to produce biogas and renewable energy, special composters to transform otherwise useless scraps into a concentrated soil substrate;
- national programmes or plans addressing life cycle management: reduction of waste production along the whole chain; also promotion of recycling and donation of unsold food or leftovers for the purpose of social solidarity and human use;
- food donation initiatives by various supermarkets and food retailers and food banks;
- measures aiming at “value creation in the kitchen”, trainings of apprentices, special events for guests in hotels or canteen kitchens;
- promotion of research and information activities for consumers and young generation;
- food waste prevention agreements among government and private actors (e.g. food industry, retailers);

19 % of all identified FWPM activities belong to the category “Awareness campaigns”. The focus of these activities lies on:



- awareness raising to food waste issues in the form of informational campaigns for consumers and employees: e.g. sensible handling of food; expansion of food sharing and food donation activities, optimisation in all sectors of the food supply chain towards food waste prevention (incl. production, logistics, distribution, etc.); support of research activities;
- training courses to avoid food waste especially in the gastronomy / kitchen staff
- food waste prevention by stimulating active participation of the target group (e.g. workshops, seminar and idea competition at schools, leftover cooking courses)
- campaigns and petitions for retailers to start selling "ugly" vegetables and fruits that do not meet aesthetic norms
- communication of this topic via all media (brochures, posters, folders, flyers, blogs, homepages, radio, documentary e.g. "Taste the waste")

18 % of all identified FWPM activities belong to the category "Food redistribution activities". Such activities cover:

- product donations from wholesale/retail, industry, catering, agriculture etc.: products that are near or past their "expiration" date are sold at symbolic prices in social markets (also products with defective packaging or out of season products);
- food donations to social institutions such as refugee shelters and homeless shelters;
- projects and campaigns that often run per volunteers or collaboration between various actors
- "Food Banks": Food banks are (non-)governmental organizations specialized in collecting, transportation and distribution of donated food (farmers, producers, distributors) and with the aim of saving food from waste for social purposes; in all of the five countries also federations of food banks exist for a better coordination;
- websites to link individuals who want to share surplus food;
- the offer of surplus food in public refrigerators, shelves or certain cooling stations mostly in urban areas (in some countries special software helps the users in dealing with the transfers);
- "gleaning" that is the collection of crops that would otherwise remain on the field or in an orchard after harvest;
- the Council Sustainable Use of Food (POL) - it is a group of representatives of public institutions, research organizations, industry and social; the purpose of the Council is to develop the principles of rational use of food production, distribution chain, and at the level of consumption in order to prevent unnecessary losses of food;

16 % of all identified FWPM activities belong to the category "Association/Company". Such collaborations, which mainly focus on food waste minimization, exist in almost all of the five countries. A few examples for such collaborations are described below:

- "United Against Waste" (AT) is an initiative of various members from the food service industry, research institutions, NGOs, ministries developed and implemented strategies for food waste reduction;



- Kokoza (CZ) is a social enterprise that promotes composting and urban gardening among people, companies and other organizations. Kokoza inspires and motivates them to use composting technologies appropriate to the city to grow for their consumption and for pleasure.
- Last Minute Market (IT) is a project where retailers, shops and producers who have unsold food which would otherwise be discarded are linked with people and charities who need food; innovative services for the recovery and reuse of unsold goods are also developed;

13 % of all identified FWPM activities belong to the category “educational measures”. Such measures include:

- workshops and projects that aim to create awareness towards the food waste issue;
- children books that explain this topic in a childlike way and provide tips to avoid food wastage;
- projects at schools/ kindergarten or activity days for school classes (e.g. visit of organisations dealing with food waste prevention); at kindergarten or primary school it is important to explain the topic in a playful, entertaining way;
- cooking projects with children (e.g. different meals with the same leftover ingredients; besides cooking, discussion of topics like shopping, conservation and proper storage);

8 % of all identified FWPM activities belong to the category “Information material”. Activities of this category aim to communicate via all media (e.g. brochures, folders, flyers, Internet, radio, TV). Some examples are listed below:

- Instructions and suggestions for companies to donate non-marketable food
- cooking books and brochures with leftover-recipes and practical tips for a reasonable handling and sensible use of food or calendar with tips to avoid food waste;
- manual on how to start gleaning in your region or a brochure for volunteers on gleaning;
- information on lifestyle, nutrition and exercise;

7 % of all identified FWPM activities belong to the category “Innovation”. Some examples of such activities are given below:

- boxes, pots or lockable plastic cups that shall help to reduce food waste in the gastronomy: guests can take surplus food from buffets and caterings to their homes at the end of an event or leftover food can be packed up for the guests in those boxes; mostly a part of the pot- prize is donated to social projects;
- The "bread machine", a project in Vienna, is placed outside of the bakery and is filled with unsold bread every evening after the shop closing time; the bread is offered at lower prices;
- The smartphone APP SAPADU supports the user in her/his daily work such as planning, shopping and preparing of food;



- The Food Waste Diary helps users to record their food waste. The reasons for throwing something away as well as the type of food can be specified. Optionally the price of the wasted food can be noted;
- The aim of OS KANTINE is to help people build easy-to-apply ecosystems for sharing knowledge and food;
- Food Outlet (PL) is an online food exchange bringing together producers and consumers of food enabling sale of nutritious food for ending the best-before date;

Figure 5 gives an overview on the differences between the five STREFOWA countries regarding which categories the identified activities belong to. It shows that:

- Austria and Hungary are the only countries with FWPM activities covering all categories for different activity types that are listed in Table 12. The “top 3” categories in Austria are “Association/Company”, “Operational measures” and “Awareness campaigns”. In Hungary, “Operational measures”, “Educational measures” and “Association/Company” are the categories most FWPM activities belong to.
- In the Czech Republic, the identified FWPM activities only belong to the categories (in order of relevance) “Awareness campaigns”, “Food redistribution activities”, “Operational measures”, “Information material” and “Association/Company”. None of the identified activities belongs to the categories “Educational measures” or “Innovation”.
- In Italy, the categories “Awareness campaigns”, “Food redistribution activities”, “Operational measures” and “Association/Company” are covered by the existing FWPM activities. None of the identified activities belongs to the categories “Educational measures”, “Information material” or “Innovation”.
- In Poland, the most important category is “Food redistribution activities”, followed by “Educational measures”, “Awareness campaigns” and “Innovation”. None of the identified activities belongs to the categories “Association/Company”, “Information material” and “Operational measures”.
- In comparison with the other countries, in Poland and the Czech Republic have a very prominent position.

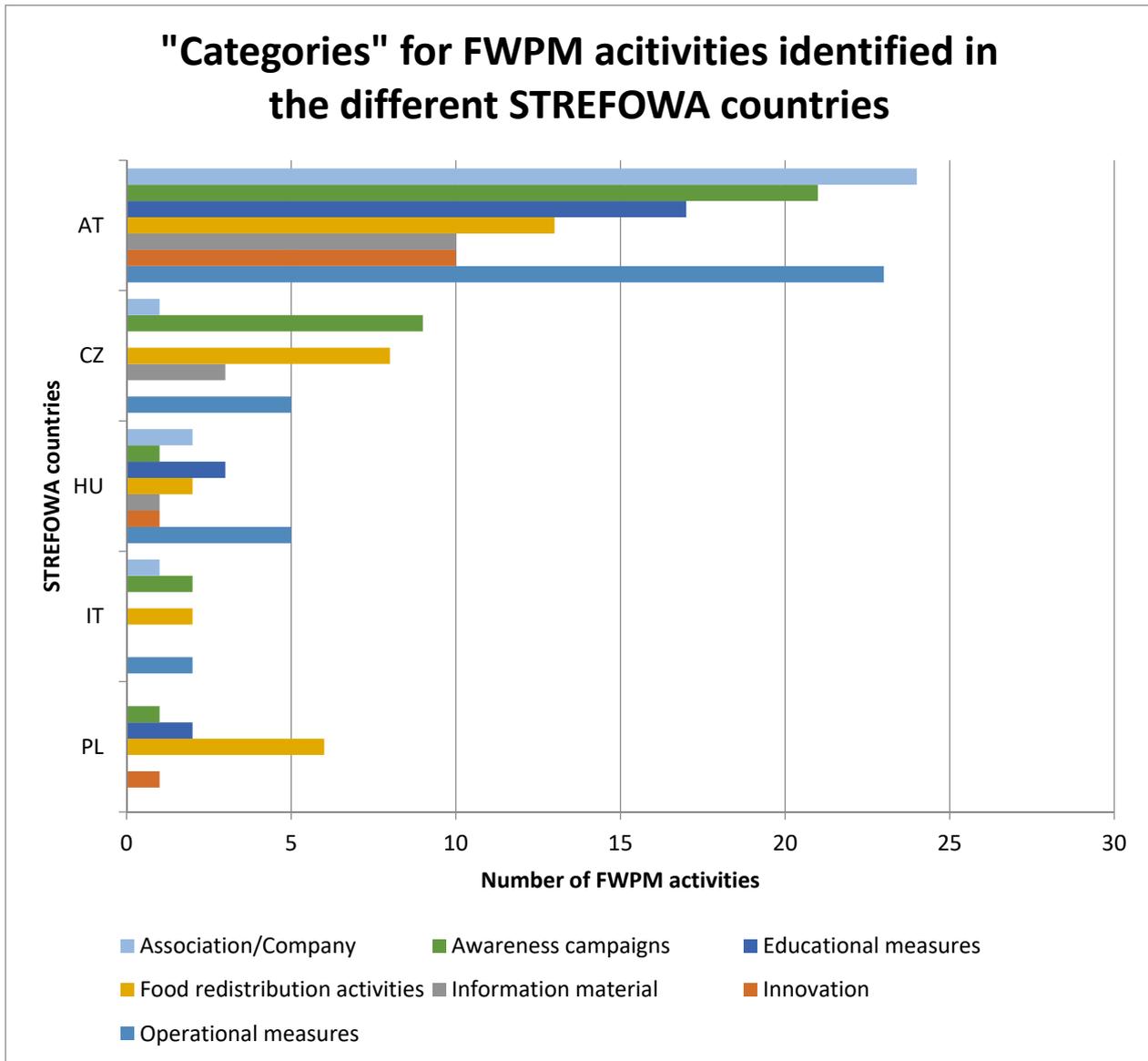


Figure 5: Overview of the categories identified in the five STREFOWA countries

Figure 6 shows which target groups are addressed by the different types (“categories”) of FWPM activities. In order to give a better overview on which categories of activities address which target group, the category “multiple target groups”, as shown in Figure 3, was split up. Thus, in contrast to Figure 3, Figure 6 includes some double counting.

The main target groups of activities belonging to the category “association/company” are consumers, wholesale/retail/market and the primary production. Awareness campaigns mainly focus on consumers, but also address all other target groups to a lesser extent. Educational measures are mainly aimed at schools, while food redistribution activities are mainly targeted to consumers but also have a strong focus on wholesale/retail/market and primary production. Information material also mainly addresses consumers, often in form of brochures, folders and books.



The category “innovation” as part of FWPM activities includes mainly innovative technical products made for consumers and the food service sector. Operational measures are the only category with a major focus on waste management but they also strongly address consumers, the food service sector, wholesale/retail/market actors and the primary production.

Association/company, awareness campaigns and operational measures are the only three categories addressing all target groups.

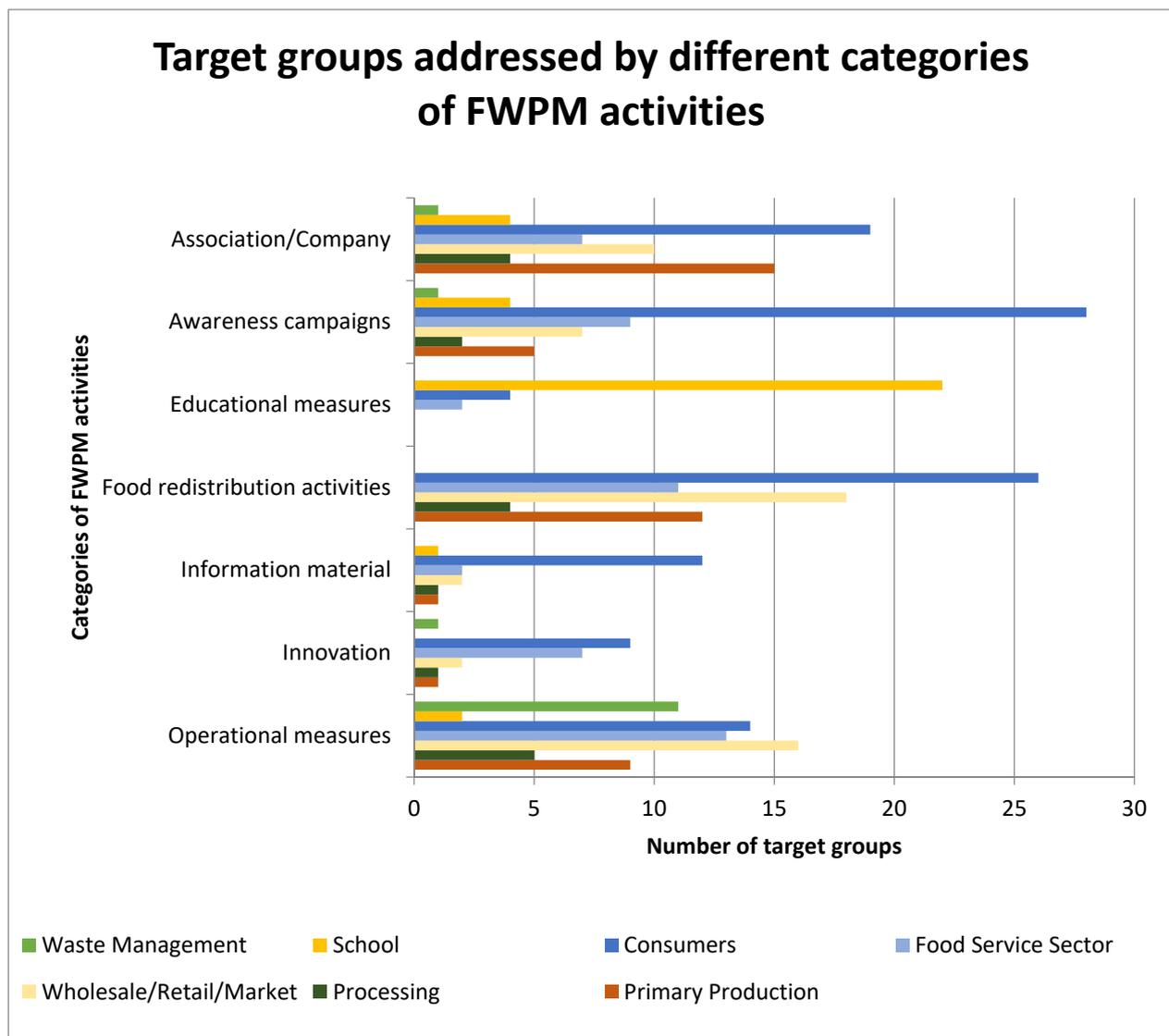


Figure 6: Target groups addressed by different categories of FWPM activities

5.3. Main responsible body

Table 13 gives an overview of the classifications used to group the main responsible bodies of the FWPM activities identified in the five selected countries. Some examples for the types of actors that were allocated to a specific classification category are given as well. Further examples for are given in the analysis below.



Figure 7 gives an overview on the distribution of the main responsible bodies for the identified FWPM activities.

Table 13: Classification of main responsible body

Classification of main responsible body	Examples
Local public authority	municipality, etc.
Regional public authority	regional council, etc.
National public authority	ministry, etc.
Sectoral agency	local or regional development agency, environmental agency, energy agency, employment agency, etc.
Infrastructure and (public) service provider	public transport, utility company (water supply, electricity supply, sewage, gas, waste collection, etc.), airport, port, railway, etc.
Interest groups including NGOs	trade union, foundation, charity, voluntary association, clubs, etc.
Higher education and research	university faculty, college, research institution, RTD facility, research cluster, etc.
Education/training centre and school	primary, secondary, pre-school, vocational training
Large enterprises	supermarket chains
SME	enterprises which employ < 250 persons and have an annual turnover < EUR 50 million
General public	activists, artists, celebrities

Analysing the all identified FWPM activities with regards to the actors mainly responsible for their implementation (

Figure 7) reveals that for the largest share (34 %) of the identified FWPM activities the main responsible body is attributable to interest groups including NGO's, including for example social markets, food banks, city farms, farmer organisations, catholic social service organisations (e.g. Caritas) and food sharing associations. 17 % of the FWPM activities are under the responsibility of small and medium-sized enterprises (SME) such as bakeries, hotels, restaurants, wholefood shops or environment agencies, while large enterprises are responsible for only 12 % of the FWPM activities identified. Representatives of this category would be, for example, larger supermarket chains. Another 10 % of the identified FWPM activities are under the responsibility of education or training centres and schools.

Less than one third of all FWPM activities identified in the five STREFOWA countries are under the responsibility of (national, regional or local) public authorities, infrastructure and (public) service providers, sectoral agencies, higher education and research, and the general public.

While national public authorities such as Ministries of agriculture or environment, inspectorates, waste management authorities or governmental institutions are responsible for about 8 % of the identified FWPM activities, 5 % of all activities belong to infrastructure and (public) service providers (e.g. environmental associations, waste federations, food outlets, waste management enterprises).



The responsibility of the remaining 14 % of activities is distributed between regional and local public authorities, sectoral agencies, the general public (e.g. critical cooking shows with artists or celebrities) and higher education and research institutions (e.g. universities, research institutions).

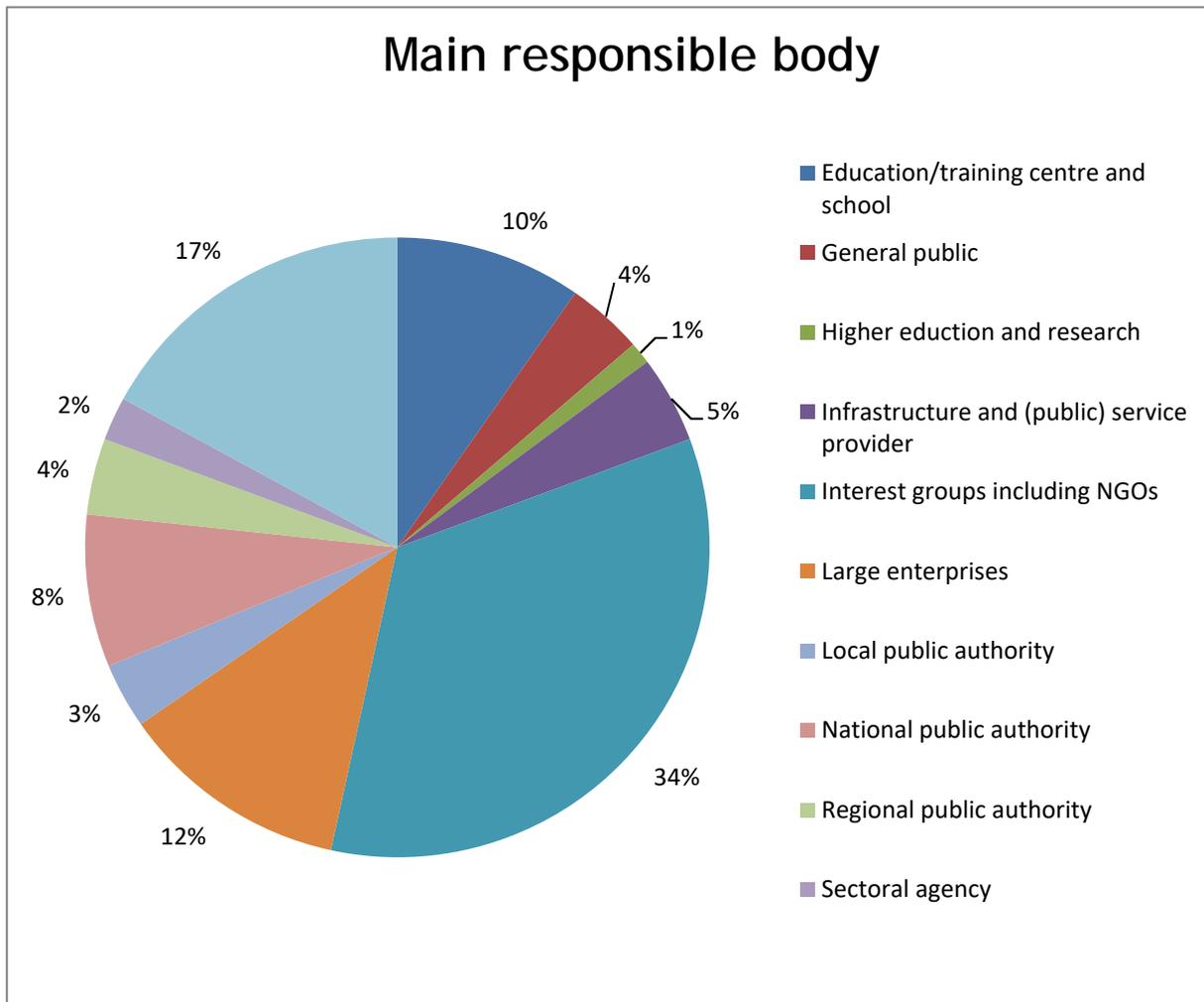


Figure 7: Main responsible body of FWPM activities in the five STREFOWA countries

A deeper analysis of single STREFOWA countries reveals that only “interest groups” are actors in all of the five selected countries. National public authorities and large enterprises each are active in 4 out of 5 countries. Representatives of the all other categories for main responsible bodies are active in only 3 or less countries. Only in Austria all categories for main responsible bodies listed in Table 13 are represented.

5.4. Geographic Level of Implementation

Regarding the geographic level of implementation, analysing the FWPM activities identified in all STREFOWA countries reveals that more than half of all activities are implemented at the



national level, while at the local level 30 % and at the regional level 14 % of all identified FWPM activities are enforced. Only a very small number (3 %) of all activities are implemented on more than one geographical level (“multiple level of implementation”). An overview of the geographic level of implementation of the FWMP activities identified in the five STREFOWA countries is given in Figure 8.

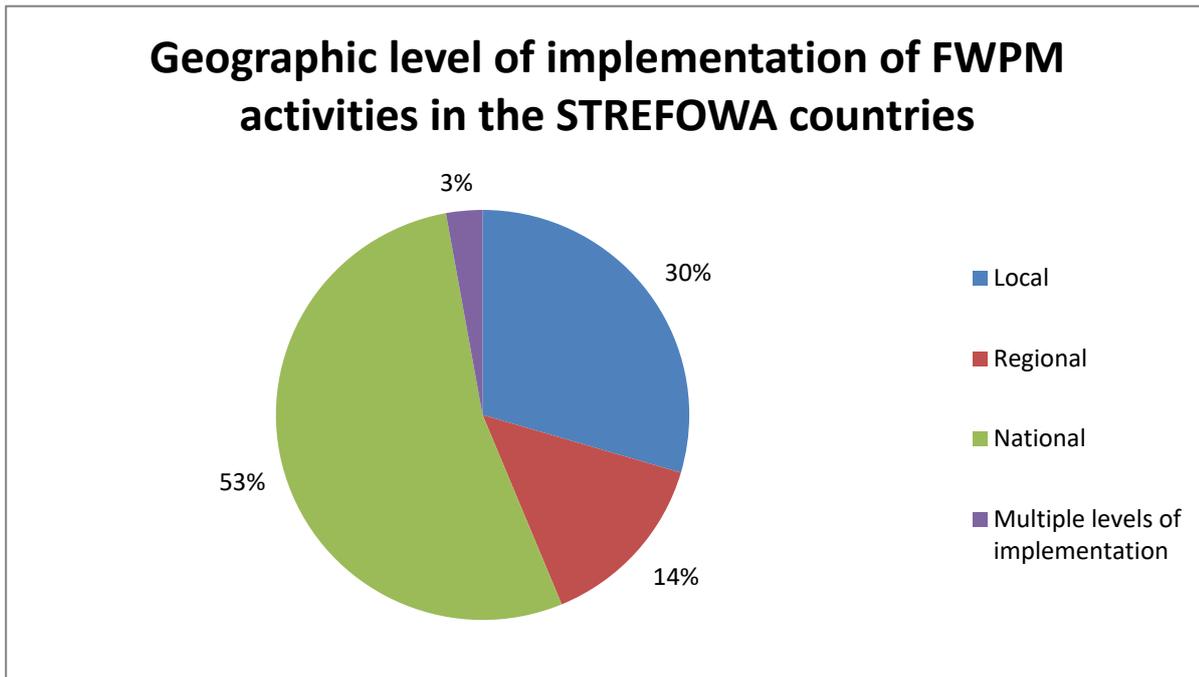


Figure 8: Geographic level of implementation of FWMP activities identified in the five STREFOWA countries

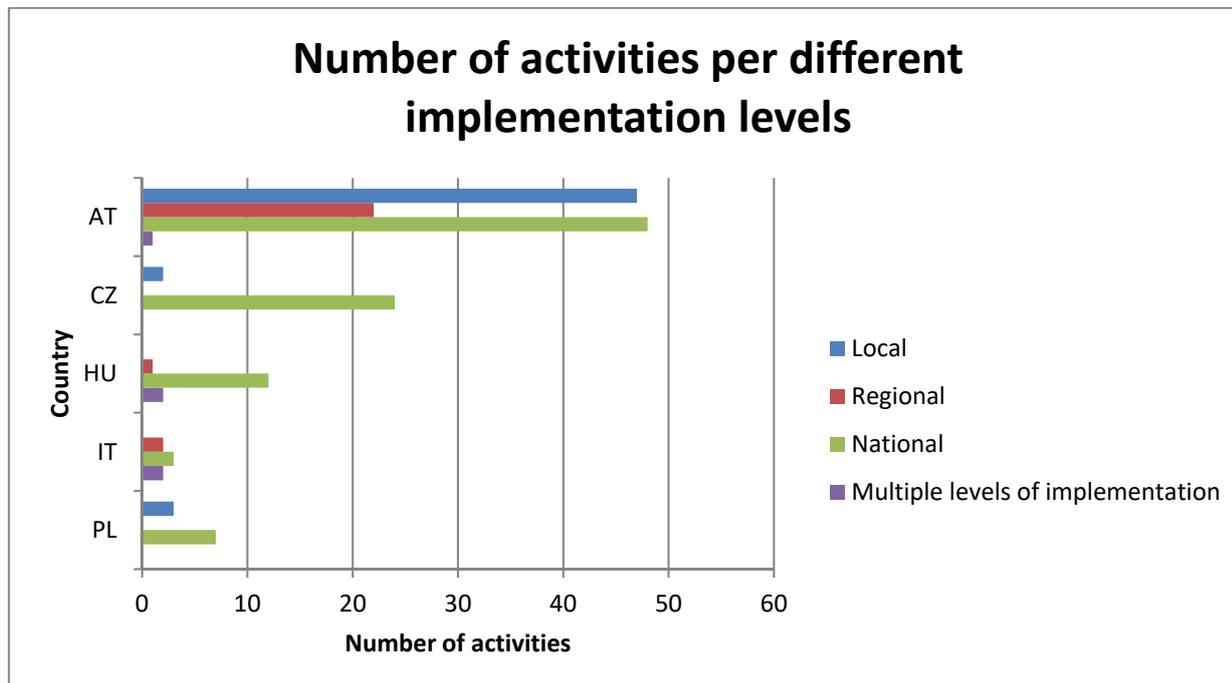


Figure 9: Number of FWPM activities on different geographical implementation levels

Figure 9 shows the number of activities per different implementation levels for each STREFOWA country. It shows that in the Czech Republic and in Poland there are no FWPM activities implemented on multiple geographical levels. Further, the FWPM activities in these two countries are implemented only at national or local level. In Austria, nearly as many FWPM activities are implemented at local level as at national level, while in the Czech Republic the national level dominates.

FWPM activities that are implemented at multiple geographical levels only exist in Austria, Hungary and Italy.

5.5. Potential for improvement

Comparing the status quo of FWPM activities between the five STREFOWA countries Austria, Czech Republic, Hungary, Italy and Poland shows that Austria is the only country with FWPM activities that cover all categories for different activity types (Table 12) and address all target groups presented in Chapter 5.1. Further, only in Austria all categories for main responsible bodies listed in Table 13 are represented. This is most likely mainly due to the comparatively high number of FWPM activities currently existing in Austria (118 activities, Figure 2).

In comparison, in the Czech Republic there are currently no FWPM activities belonging to the categories “Educational measures” and “Innovation”. In Italy, the categories “Educational measures”, “Information material” and “Innovation” and in Poland the categories “Association/Company”, “Information material” and “Operational measures” are not addressed. With regards to the different target groups addressed by the existing FWPM activities the analysis revealed that in the Czech Republic and in Italy stakeholders from “Waste management” and in Poland “Schools” are currently not addressed.



Regarding the (main) responsible bodies for implementing existing FWPM activities this comparison reveals that only “interest groups” are active in all of the five STREFOWA countries. National public authorities and large enterprises each are active in 4 out of 5 countries. Representatives of the remaining categories for main responsible bodies are active in only 3 or less countries.



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Category	Original name	English name	Description	Actor	Main responsible body	Country	Geo. Level			Province/ City	Post-code	Target group(s)							Year	Reference (link to www)	Results			
							National	Regional	Local			PP	Processing	W/R/M	FSS	Consumers	MM	School						
Awareness campaigns	Kochtopf statt Mistkübel	Cooking pot instead of waste bin	In Spring 2012 the environment counselor Rudi Anschöber of the provincial government of Upper Austria started a task force on food waste involving politicians, experts, representatives of the trade chains, social partners, social initiatives and social markets have been involved. The aim is to raise awareness about food waste by arranging annual cooking shows in some cities in Upper Austria.	Provincial government Upper Austria, Slow Food in Upper Austria	Regional public authority	AT		x		Upper Austria	4021							x			2012	http://www.umweltlandesrat.com/ , https://www.facebook.com/KochtopfStatMistkuebel , http://www.slowfoodlinz.at/projekte_in_ooe/kochtopfstatt_mistkuebel.html	"Cooking pot instead of waste bin - The cook show to avoid food waste" has already been carried out in different cities in Upper Austria (2012-2015). Information is still available on Facebook.	
Awareness campaigns	Insallation "Arc de Triomphe"	Installation "Arc de Triomphe"	As part of the annual event in the district Lend in Graz (Styria) called "Lendwirbel", the artists Markus Jeschauning and Wolfgang Oeggel built the first "Arc de Triomphe" filled with wasted bread at the Mariahilferplatz in 2012. With this artistic installation the artists wanted to point out the negative aspects of our consumption-oriented lifestyle. (Berth, 2012)	Artists	General public	AT			x	Graz (Styria)	8020							x			2012	http://kultur.graz.at/v/jeschauning.markus.html		
Awareness campaigns	Fotoausstellung "One Third - A project on food waste"	Photo exhibition "One Third - A project on food waste"	Within the project "One Third", the Viennese photographer Klaus Pichler deals with the "One Third" of food produced in the world which is - according to Food and Agriculture Organization of the United Nations (FAO) - lost or wasted. Numerous pictures of expired food accompanied by some information about the huge contradiction between global food wastage and the simultaneous hunger crisis are exhibited. Since food waste is more of a problem in industrialized countries, the rotten food is displayed with utensils such as cutlery and dishes in order to create a clear reference to the European cultural area. The exhibition is still shown in various cities in Austria (e.g. in October 2016 in "Spielraum Kochlokal" in Innsbruck).	Photographer Klaus Pichler	General public	AT	x													x		2012	http://kpic.at/images/2569	
Awareness campaigns	Restl Festl - Graz isst auf	Leftovers festival - Graz eats up	As part of a course of the University Graz, 23 students launched the "Leftovers festival - Graz eats up" (one-day event in Graz). The aim was to raise awareness of the public towards food waste	Student group	General public	AT			x	Graz (Styria)	8010									x		2014	www.restlfestl.at	About 1,300 people have been already convinced of the importance of this topic and now act as



Category	Original name	English name	Description	Actor	Main responsible body	Country	Geo. Level			Province/City	Post-code	Target group(s)							Year	Reference (link to www)	Results									
							National	Regional	Local			PP	Processing	W/R/M	FSS	Consumers	W/M	School												
				cooking school)																										
Awareness campaigns	Restlchallenge	Leftovers challenge	According to the motto "Leftovers belong to the plate, not to the garbage" the environmental association of Lower Austria initiated the "Leftovers challenge 2012". During a live cooking challenge four finalists (out of 250 participants) showed what they can prepare with leftovers.	NÖ Umweltverbände (Environment Association of Lower Austria)	Infrastructure and (public) service provider	AT		x																			2012	http://www.abfallverbände.at/		
Awareness campaigns	Nejsem plytvák	I'm not a waster	A project of the national radio station Radiožurnál that informs consumers how to reduce their food waste. Radiožurnál also teamed up with renowned Czech chefs who offer their tips on the use of residues.	Radiožurnál	Infrastructure and (public) service provider	CZ	x																						http://www.rozhlas.cz/radiozurnal/plytvak/	
Awareness campaigns	Potravinový budoucnost	Food for the future	The program Food for the future is under the Czech Academy of Sciences to popularize science. One part of this program is focused on food waste. They want to focus on the approach of the general public with regard to food waste, and will analyze in more detail the behavior of households in food consumption. They publish articles, publications and seminars. They aim to present the results of scientific research in a comprehensible manner directly to the general public.	Akademie Věd ČR (Czech Academy of Sciences)	Sectoral agency	CZ	x																						http://www.potravinavav21.cz/	
Awareness campaigns	Byznys pro společnost	Buisness for Society	Byznys pro společnost leads the National Food Collection in Czech Rep. National Food Collection is regularly held in November, which is a day when people from all over the Czech Republic can purchase non-perishable goods and donate it to those who are near poverty. The project partners are to Tesco, Penny, Billa, Kaufland, Lidl, Ahold, Makro, Globus network and DM drogerie and Rossmann.	Byznys pro společnost	Interest groups including NGOs	CZ	x																						http://potravinypomahaji.cz/	
Awareness campaigns	Czech Zero Waste	Czech Zero Waste	Czech Zero Waste is a blog that provides information and examines how you can live a no-waste lifestyle (not only) in the Czech Republic. They inform and advise, but also gradually document how to lower waste in our everyday lives.	Czech Zero Waste	Interest groups including NGOs	CZ	x																						http://www.czechzerowaste.cz/o-czech-zero-waste	
Awareness campaigns	Taste Waste	Taste Waste	Taste waste is a project within the Grandrestaurant festival and tries to motivate chefs to cook without waste, to find and evaluate the best and most interesting restaurants. They focus on animal husbandry, cultivation, making food - from the beginning to final consumption and	Mau Mau s.r.o. (Grand-restaurant)	SME	CZ	x																						http://www.grandrestaurant.cz/taste-waste	



Category	Original name	English name	Description	Actor	Main responsible body	Country	Geo. Level			Province/ City	Post-code	Target group(s)							Year	Reference (link to www)	Results				
							National	Regional	Local			PP	Processing	W/R/M	FSS	Consumers	W/M	School							
			school Gschwandt created a cookbook with collected recipes to use leftovers. In the music lesson the kids wrote rap songs and lyrics with simple messages about food wastage. The pupils of the primary school Traunkirchen shot three videos to share their new knowledge about food waste. (BMLFUW, 2013a)	Traunkirchen						Austria															
Educational measures	Restekochbuch - Kochen mit Kindern	Leftovers cookbook - Cooking with children	As part of a project of the primary school in Kirchham, pupils - together with their teachers and grandmothers - created a leftover-cookbook. The cookbooks were sold by the pupils in Kirchham. In addition, in the subject "social studies" the children learned about the right handling of food. Joint snacks during breaks were a key element in the daily routine of the children. Together with local farmers each class prepared a healthy dish that can be easily cooked at home. During a cheese seminar with the Gmundner creamery the children learned about the importance of regionalty. (BMLFUW, 2013a)	Primary school Kirchham	Education/training centre and school	AT			x	Kirchham (Upper Austria)	4656									x	2012?	http://www.kirchham.at/Bildung_Religion/Volksschule			
Educational measures	Wegwerfgesellschaft - Lebensmittel für den Müll	Throwaway society - Food for the garbage	Within the project "Throwaway society - Food for the garbage" of the Secondary School for agriculture and nutrition in Pitzeltätten, the students design waste record book in order to determine the food waste amount in household. Moreover, a questionnaire on the subject of "food in a household" and a calendar with tips to avoid food waste were developed. A series of experiments with dairy products in the microbiology laboratory should shed light on the role of the "expiration" date. The perishable nature of vegetables and fruits (cooked and non-cooked) were documented in photographic series. (BMLFUW, 2013a) Winner Viktualia Award 2013	HBLA für Land- und Ernährungswirtschaft Pitzeltätten (Secondary School for agriculture and nutrition Pitzeltätten)	Education/training centre and school	AT			x	Pitzeltätten (Carinthia)	9061										x	2012?	http://www.pitzeltatten.at/		
Educational measures	Die Äpfel in Nachbars Garten	The neighbours' apples	With the support of the entire school (New secondary school Frankenfels), teenagers collected apples and produced juice in the school. The apple juice was pasteurised, vacuum-packed and filled into 10 litre jars. During lunch the juice was offered for free at the school. The project has been documented with videos and pictures. (BMLFUW, 2013a)	New secondary school Frankenfels	Education/training centre and school	AT			x	Frankenfels (Lower Austria)	3213											x	2012?	http://nms-frankenfels.edupage.org/	
Educational measures	Green Days 2013: Deine Idee. Dein	Green Days 2013: Your idea. Your network.	The youth-environment-platform "JUMP" initiated the environmental ideas network "Green Days", in which 250 teenagers from Austria (at the age of 16 or older) have the possibility to discuss	Youth-Environment-Plattform	Interest groups including NGOs	AT	x															x	2013	http://www.jugendumwelt.at/	



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							National	Regional	Local			PP	Processing W/R/M	FSS	Consumers	W/M	School				
	Netzwerk. Dein Fußabdruck	Your footprint.	environmental and sustainability issues within three days. In September 2013 the main emphasis of the programme was "food and the ecological footprint". The organisation of the programme days is always carried out by young volunteers. Particular attention is paid to the comprehensive discussion with experts and partners from the food production and distribution as well as consumers. (BMLFUW, 2013a)	JUMP																	
Educational measures	TÉT platform	TÉT platform	The aims of the platform is consumer awareness-raising and information sharing in topics: lifestyle, nutrition and exercise. Members: government agencies, associations, product manufacturers: eg. Nestle Hungaria Ltd., Institute of Health Development, NFCSO, Mars Hungary, Hungarian Dietetic Association, Ministry of Agriculture, Coca-cola Hungary Ltd., Danone Hungary Ltd. etc...	TÉT	Interest groups including NGOs	H U	x												2006	http://tetplatform.hu/	Objectives: improving the knowledge of healthy nutrition; fighting against misconceptions of nutrition and foods; Instruction for the healthy lifestyle; Helping for Media in promoting the right lifestyle topic; helping of the development of food for health-conscious life
Educational measures	Országos Környezetvédelmi és Természetvédelmi Főfelügyelői Nemzeti Hulladékkezelési Igazgatóság (OKTF NHI)	National Environment and Nature Protection Inspectorate - National Waste Management Directorate (OKTF NHI)	The NHKV's predecessor	NHKV	National public authority	H U	x												2009	http://szel.ektalok.hu/fokuszban-az-etelhulladek/	The campaign was joint to the European Waste Reduction Week: restaurants, hotels and food retailers have participated (in 2015); In the actionweek, some restaurants supported the program with such kind of food boxes - which were made from environmental friendly materials. At the hotels, selective waste bins were put in test rooms; Placement of composting bins in residential community, where the inhabitants can collect their biodegradable waste; Waste reduction play for children
Educational measures	Öko-pack Kft.	Öko-pack Ltd.	In the last decade ECO-PACK NON-PROFIT LTD. has managed to establish close contact with several hundreds of companies, civil organizations and thousands of citizens in the fields of environmental	Öko-pack	Interest groups including NGOs	H U	x												2016	http://okopack.hu/hu/etkezdek-az-	ÖKO-pack has joint to the European Waste Reduction week, in their pilot they encourage authority and



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activities			to other areas and now in addition to its own retail stores they also supply wholesale partners. In addition, we are also concentrating on importing own brands from abroad, for many of them we have become the exclusive distributor for the Czech market. Their products can be found in most supermarket chains (Tesco, Makro, Ahold, Globus etc.). They try to expand their product portfolio to also include drugstore goods or products for your home or some clothes. They have an e-shop at www.levnepotravinny.cz/eshop .																		
Food redistribution activities	Využití nepotřebného jídla pro lidi bez domova	Using unused food for people without homes	A unique project in the city of Brno and the Czech Republic, where catering operations provide free unused (or unsold) lunch menus including soups for the homeless on weekdays.	Brno municipality	Local public authority	CZ			x	Brno									http://www.css.brno.cz/download/css/1472629499.pdf		
food redistribution activities	Magyar Élelmiszerbank Egyesület	Hungarian Food Bank Association	The Hungarian Food Bank Association has increased the amount of the saved food surpluses since 2005. The association's main activity is to collect food surpluses which are offered from the manufacturers and commercial networks. These goods are near-term products, products with defective packaging and out of season products in high-quality. The Food Bank regularly supplies nearly 300 thousand people in need with its 220 partner organisation (within more than 100 trade and manufacturer). From 2005, the association has distributed more than 37,4 thousand tons food with a value of nearly 57 million Euros.	Hungarian Food Bank Association	National public authority	HU	x												http://www.elelmiszerbank.hu/kik_vagyunk/elelmiszerbank_magyarorszagon.html?gclid=CJex6ovr488CFdS7GwoDbk4HtA#.WAXQB_mLRph examples of the HFB's acts: METRO - with help of the association - gave 2 million food pack to about 50 000 families in 2012; Christmas action: 270 thousand tons long-term food was collected by METRO, TESCO, Auchan, Penny helping with 5000 volunteer in 3 days (2015); FoRWaRd - international project for the food waste reduction. The aim of the project is providing a free online training in practical guidance where the supply chain actors could reduce their food waste and give their remain food to charity; Fusions project (Food Use for Social Innovation by Optimising waste prevention Strategies) - aim is European partner platform and strategic for the food waste prevention and		



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							National	Regional	Local			PP	Processing	W/R/M	FSS	Consumers	MM	School				
activities	Wykorzystania Żywności		the Council is to develop the principles of rational use of food production, distribution chain, and at the level of consumption in order to prevent unnecessary losses of food. The Council also works for the integration of institutions and citizens in the implementation of system solutions to reduce the waste of food.	Żywności (Federation of Polish Food Banks)	NGOs														/	food production, the distribution chain and at the level of consumption in order to avoid unnecessary losses of food. The Council also works for the integration of institutions and citizens in the implementation of system solutions to reduce food wastage. The result of the work of the Council is Project MOST (Model Reduction Loss and Wasting Food with Benefits for Society)		
Food redistribution activities	FEED Them UP	FEED Them UP	Project FEED Them Up encourages Warsaw dining options to provide surplus food establishments, which usually involved in preparing meals for the needy. This is a unique initiative involving the transfer is still useful to the consumption of food from dining to a public benefit organization, every day dealing with the preparation of meals for the needy. The activities are conducted in Warsaw.	FEED Them UP	Interest groups including NGOs	PL			x	Warsaw	00-807							x		2016	http://feedthemup.org/	From the beginning (March 2016), held a dozens of donations of food, in which transferred several hundred kilos of food.
Food redistribution activities	Podzielmy się	Let's share	Let's share a group of people who organize the action "Share a meal with the homeless." The initiators encourage residents across the Polish to the fact that instead of throw away food that has them after Christmas, drove them to the soup kitchen for the homeless and poor people.	Podzielmy się (Let's share)	Interest groups including NGOs	PL			x	Warsaw									x	2016	http://podzielmysie.pl/	The time between Christmas and New Year's Eve people involved in the action visited 200 homes where food is received, and the same number of meals delivered directly to soup kitchen or places where homeless are staying in Warsaw. Let's share partnered with 21 soup kitchens in 18 cities in Poland, which take the "Christmas" food from individuals.
Food redistribution activities	Foodsharing Polska	Foodsharing Poland	This social initiative whose mission is to save the food before wasting and encourage the sharing of food with everyone. Foodsharing provides a space in which everyone can share food or treat. This place is called. jadtodzielnie - specially marked refrigerator and shelves, opened in popular areas of the city, eg. universities, dormitories, the	Foodsharing Poland	Interest groups including NGOs	PL	x											x		2016	www.foodsharing.pl	Reducing food waste by individuals. Jadtodzielnie to swap food, where surplus food from households, shops, restaurants can still be used. So far, there are



Category	Original name	English name	Description	Actor	Main responsible body	Country	Geo. Level			Province/ City	Post-code	Target group(s)							Year	Reference (link to www)	Results		
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			bazaars. Foodsharing encourages shops, restaurants and individuals to share surplus food that would be wasted. With „Jadłodzielnia” benefit not only those indigent																				three points in Warsaw, and another created in other Polish cities.
Food redistribution activities	BancoAlimentare	Italian Food Bank	The Italian Food Bank was born 1989 by Monsignor Luigi Giussani and the president of the STAR Company (a big food company), Dino Fossati. They collect through the National Agency for Agriculture of the exceeding in the primary production (pasta, rice, oil, milk) and re-distribute the food to local charities. It is a non-profit-making organisation. The Italian Food Bank was born 1989 by Monsignor Luigi Giussani and the president of the STAR Company (a big food company), Dino Fossati. They collect through the National Agency for Agriculture of the exceeding in the primary production (pasta, rice, oil, milk) and re-distribute the food to local charities. It is a non-profit-making organisation.	BancoAlimentare	Interest groups including NGOs	IT	x	x	x	Milano	20158	x	x	x	x						1989	http://www.bancoalimentare.it/en/node/3729	During 2015: 80.000 tons of collected foos was recovered
Food redistribution activities	Last minute sotto Casa LMSC	Last minute at home	It consists in matching the market supply to the market demand through an app. It consists in a platform where sellers make food not sold or exceeded to potential buyers (citizens) at lower prices. It is a community (the start up was born in 2014 at the innovative incubator of the Polytechnic of Turin).	Francesco Ardito (CO-Founder)	SME	IT	x	x	x	Torino	10100			x						2014	http://www.lastminutesottocasa.it/	From 2014 to 2016 they evaluate 300 tons of redistributed food	
Information material	Leitfaden "Weitergabe von Lebensmittel an soziale Einrichtungen - rechtliche Aspekte"	Guideline "Dissemination of food to social institutions - legal aspects"	Instructions and suggestions for companies to donate non-marketable food.	Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW)	National public authority	AT	x							x	x					2013/ new edition 2015	www.bmlfuw.gv.at		
Information material	Broschüre Lebensmittel sind kostbar - 100 Fakten und Tipps	brochure: food are precious - 100 facts and tips	Practical tips and helpful tricks for a reasonable handling and sensible use of food - a brochure from the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management	Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management	National public authority	AT	x													2014	https://www.bmlfuw.gv.at/dam/jcr:8999b1a6-dbee-446b-8e0b-beff8a4cb139/MLO%20Brosch%C3%BCre_Ko		



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							National	Regional	Local			PP	Processing	W/R/M	FSS	Consumers	W/M	School			Year			
			If there is still some surplus white bread they produce breadcrumbs or donate it to social facilities. (BMLFUW, 2015)																					
Operational measures	Lebensmitt elkreislauf - SPA THERME BLUMAU BETRIEBS GMBH	Food cycle - Spa Therme Blumau Betriebs GmbH	In 2016 the thermal bath and hotel "Spa Therme Blumau" (42 hectare) came up with the idea to annually reduce 30 % of their food waste. The company has its own organic farm keeping livestock. Their concept called "Food cycle" is all about regionality of products (within 100 km), evaluation of producers regarding the nature conservation (breeding, planting), the delivery process and the total use (almost 100 %) of the products in their own six restaurants. Trainings of apprentices, special events for guests and their own hotel news paper shall help to raise the awareness towards the food waste issue. (BMLFUW, 2016) (Winner Viktualia Award 2015)	Spa Therme Blumau Betriebs GmbH	SME	AT			x	Bad Blumau (Styria)	8283	x		x						2016	www.blumau.com	The concept of "food cycle" was implemented in the working process in 2016 and led to a daily reduction of 25-35 % of food waste.		
Operational measures	Frischer Wind in unserer Küchenwerkstatt	A fresh breeze in our kitchen workshop	The boarding school canteen of the vocational school for gastronomy in Lochau uses regional, high-quality food. Food waste is avoided through optimised used of leftovers. Surplus food is either conserved and provided to the employees at low price (prime cost) or used for new dishes. Documents have been created summarizing numerous recipes and working methods avoiding food waste. In cooperation with farmers and producers, new methods will be developed to make agricultural products suitable for canteen kitchens. (BMLFUW, 2015) (Winner Viktualia Award 2015)	LBS Lochau	Education/ training centre and school	AT			x	Lochau (Vorarlberg)	6911	x		x					n.a.	www.lbs-lochau.at	The minimisation of food waste and a optimised utilisation of surplus food contributed to increase the economic efficiency and, therefore, the boarding school canteen was able to double the share of regional and organic food at the same cost of sales. The expert knowledge and the recipes are passed on to the pupils as well as cooking classes and an event called "Kost Bar".			
Operational measures	Kochen mit Herz und Hirn	Smart cooking with heart and soul	The unit "gastronomic management" of the Vienna Pensioner Residences is responsible for 30 canteen kitchens situated in the residential houses called "houses for living". 8,800 residents, employees, children in kindergartens and after-school care clubs need to be fed on a daily basis. An analysis conducted in 2010 revealed that the amount of food waste varied in all canteens, although the food menu, quality standards and equipment have been the same. Consequently, a concept have been elaborated to avoid food waste in the canteen kitchens. (BMLFUW, 2015)	Kuratorium Wiener Pensionisten-Wohnhäuser (Vienna Pensioner Residences)	SME	AT			x	Vienna	1090				x				2010	www.hauser-zum-leben.com	All 30 "houses for living" changed from buffet to service operation as well as from filter coffee to freshly brewed coffee. The experience gained about food waste prevention and responsible handling of food is passed on to apprentice in seminars.			
Operational	Lebensmittel-	food - Logistic	The basis of the logistic concept of the residential home for the elderly in Melk is a computer-based	Landespflegeheim	SME	AT			x	Melk (Lower	3390				x				n.a.	www.lhp-melk.at				



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							National	Regional	Local			PP	Processing W/R/M	FSS	Consumers	WM	School										
measures	Logistikkonzept	concept	tray system to ensure an ethical-oriented and flexible food supply taking into account the individual needs and wishes of the residents. Positive side effects are food waste minimisation, optimisation of costs associated with purchasing food and the disposal of waste. (BMLFUW, 2015)	Melk (residential home for the elderly Melk)						Austria																	
Operational measures	Biochi	Biochi	In 2007 the "Biochi" - a combination of organic store, organic bistro and a vegetarian/vegan organic cooking school- has opened its doors in Schladming. When purchasing products for the store attention is paid to short storage periods. Daily vegetable residues from food preparation (e.g. peels, herb stalks, vegetable chunks etc.) are used to make soup stock. The bistro offers only two main dishes during lunch time which are also available in smaller, less-expensive versions. The daily soup is available in three portion sizes. If required by the customer, a second portion is served. (BMLFUW, 2015)	Biochi KG	SME	AT			x	Schladming (Styria)	8970														2007	www.biochi.at	Because of the possibility of a second portion the guests take the smaller portion size and, therefore, the daily amount of food waste is only 200 gram (for 50 guests)! There was also a reduction of work and of costs. In addition, the cooking school shows people how to reduce their own food waste at home.
Operational measures	Lebensmittel sind kostbar bei SPAR	food are precious at SPAR	Supported by a research project of ABF-BOKU (Institute of Waste Management, BOKU University Vienna), all SPAR stores implemented systematical measures to reduce food waste in 2013. The objective was to reduce the spoilage rate by 5% at all SPAR stores by: specific reduction of food waste in the residual waste in all stores, estimation of CO ₂ equivalents of food waste, increase of food donation to social organisation and awareness raising of the consumers. In addition, specific training materials for employees, a computer-based order system for fruits and vegetables, streamlining of the product range, regular inspections of the best-before or expiration date should also contribute to the reduction of food waste. (BMLFUW, 2013a)	SPAR	Large enterprises	AT	x							x											2013	www.spar.at	The action plan has been implemented in all 700 SPAR stores in Austria. The project is also suitable for other supermarkets. (BMLFUW, 2013a)
Operational measures	ATH Full House	ATH Full House	Together with the Austria Trend Hotels & Resorts the transport agency Group operates 32 hotels in Austria, Slovakia and Slovenia with a total capacity of more than 10,000 beds. In 2012 a comprehensive project has been launched in order to reorientate and invest in quality and sustainability. Specific measures like the "smart breakfast" ensure a demand-oriented used of food, especially at breakfast: bread and pastries are directly baked in the hotel's kitchen; egg dishes, butter milk and yoghurt are served in jars; coffee	Verkehrsbüro Hotellerie GmbH	Large enterprises	AT	x																		2012	http://www.verkehrsbuero.com/unsere-marken/austria-trend-hotels/	The Austria Trend Hotels reduced food waste by 10 - 15 %. (BMLFUW, 2013a)



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							National	Regional	Local			PP	Processing	W/R/M	FSS	Consumers	W/M	School					
			is prepared espresso machines. When evaluation suppliers, sustainability in the production and supply chain are important criteria. (BMLFUW, 2013a)																				
Operational measures	Mittagesessen für MitarbeiterInnen	Lunch for employees	Since autumn 2012 the 45 employees of a pharmacy and the associated company "My-Igel medicine production & distribution GmbH" can order different menus from a near-by restaurant in advance (via a joint list). The dishes are delivered in big boxes to the pharmacy.	My-Igel Arzneimittel Produktion & Vertriebs GmbH	SME	AT			x	Vienna	1060							x			2012		
operational measures	Wiener Kompost, Erde "guter Grund"	vienna compost, soil "good ground"	The MA 48 is in charge for the waste collection in Vienna. The organic waste is processed to compost and soil. Citizens can get free compost up to 1 m ³ , the soil is sold in bags.	City of Vienna, MA 48	Local public authority	AT		x		Vienna								x			n.a.	https://www.wien.gv.at/umwelt/ma48/beraetung/muelltrennung/biogen-er-abfall/	
operational measures	Öli	Öli	Used cooking oil and fat from households or gastronomy is collected by a consistent system using returnable containers to produce biogas. The project was established 1999 in Tyrol and got spread in all Austria and parts of Germany and Italy.	ARGE (Arbeitsgemeinschaft Energie und Treibstoff aus Fett)	SME	AT		x		Tyrol								x			1999	http://www.oeli.info/	In 2015 200.000 t of used cooked oil and fat was collected in Tyrol.
operational measures	Bioenergie Schlitters	Bioenergie Schlitters	The Bioenergie Schlitters produces biogas out of organic waste in quality of natural gas, which is sold at one gas station.	Bioenergie Schlitters GmbH	SME	AT		x		Schlitters (Tyrol)									x		n.a.	http://www.tigas.at/index.php/produkte/biogas-energie-aus-speisereste	
Operational measures	Biogasproduktion auf Kläranlagen	Biogas production at waste water treatment plants	Since certain years waste water treatment plants in Austria started to digest biowaste eg from households or canteens in their facilities to produce biogas and renewable energy. The heat and electric power can be used at the plant so that it is energy autonom.	Waste water treatment plant Innsbruck (as one of several operators in Tyrol)	Infrastructure and (public) service provider	AT				Innsbruck (Tyrol)												https://www.ikb.at/unternehmen/klaeranlage/	8.000 tons a year of food waste from households and canteens are treated.
Operational	Kompostieranlagen	Compost plants	In Austria the separate collection of biowaste is introduced since more than 20 years. Biowaste	550 plants in Austria	SME	AT	x			all over												http://kompost-	800.000 tons a year of food waste from households and



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measures			from households (food waste, residues) are collected through kerbside or bringing collection. This organic waste is then further processed at composting plants together with other organic structure materials like green cuttings.							Austria										biogas.info/	cantines are treated at 550 composting plants all over Austria
Operational measures	Wir backen nicht für die Tonne	we don't bake for the waste container	5 Projects are started within the last years to reduce the not used bread. 1. A price reduction of 50% for bread from the day before, or the sign "We are already sold" for breads which are no longer available on this day. 2. Bread as feed: A cooperation between the bakery and a farm was raised. Old bread is used as feed for calves. The bakery gets their milk products from the same farm. 3. & 4. Old bread is processed to beer and gin. The beer was first spread on a music festival in August 2016. The gin will be shortly introduced. 5. Lot of different recipes to use old bread are collected and spread via web and a booklet.	Bakery Therese Mölk	Large enterprises	AT		x		Tyrol			x	x						http://www.therese-moelk.at/news/wir-backen-nicht-fuer-die-tonne.html	
Operational measures	internal operational measures	internal operational measures	Fruits and vegetables are processed in the supermarket to sell as convenience food before not sold at all. The supermarket don't strictly claim class I fruits and vegetables. Different types are sold with mixed class I and II. In case of an expected harvest of not the requirements fitting produces, the farmer can speak to the supermarket. If possible they will take and sell also these produces e.g 2 smaller salads per bag instead of 1 bigger.	MPreis	Large enterprises	AT		x		Tyrol			x	x	x					http://www.mpreis.at	
Operational measures	Zero Waste Obchod	Zero Waste shop	As part of the research activities Bezobalu operates a testing shop, inspects and consults with legal analysts, authorities and supervisory authorities, engineering, warehousing and logistics solutions, networking and sharing know-how with the European Zero Waste shops, examining consumer preferences, searches for suppliers and motivates them to cooperation. Among the awareness raising activities are media communication, school and social events. In the near future, the organization is planning a crowdfunding campaign aimed at consumers to open their shop "Version 1.0", drawing upon the experience of the testing shop "version 0.1". They want to promote the concept with manuals, trainings and consultations for those interested in	Bez Obalu	Interest groups including NGOs	CZ			x	Prague	12000			x						http://bezobalu.org/	



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							National	Regional	Local			PP	Processing	W/R/M	FSS	Consumers	W/M	School										
	lo spreco di cibo	ceutical products donation and distribution for social helps and to limit waste.	solidarity and human use; -To limit negative impacts on the environment and on the natural resources with spcific actions intended to reduce the waste production and promote the re-use and recycling in oredr to expand the life cycle of any products; -to reach general objectives established by the National Programme for the Waste Prevention and the reduction of the biowaste going to landfills; -Promote research and information activities for consumers and young generation.															/5549										
Operational measures	Legge regionale numero 12: Promozioni e di azioni per il riciclo e la valorizzazione di beni invenduti	Piedmont Region- Law n° 12 (approved on 23-6-2015): Promotion of actions for recycling and valorisation of goods not sold.	The Regional Authority, in order to develop the culture of a responsible consumption as a virtuous life model with economic, environmental and social benefits, promotes and supports projects and recovery activities, enhancement and distribution of unsold goods, with the following purposes: support people at risk of their falling into poverty; allow a reduction of waste going to landfills; reducing disposal costs; promote the creation of new jobs.	Regional Authority- Piedmont Region	Regional public authority	IT		x		Torino	10100								x	x			x			2015	http://ariana.consiglioregionale.piemonte.it/ariant/TESTO?LAYOUT=PRESENTAZIONE&TIPODOC=LEGGI&LEGGE=12&LEGGEANNO=2015	Not yet published



STREFOWA

