



Food waste causes and policy strategies, the approach of Fusions

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06 May 2014

WP1– General Objectives

- To enable assessment of food waste quantities and trends in food waste prevention and reduction within the EU through:
 - obtaining reliable data and information sources
 - and developing criteria for food waste monitoring
- To map and model comprehensively the existing trends relevant to social innovations in the food chain

WP1 – Tasks

- Task 1.1 Definitions and study of boundary issues
- Task 1.2 Quantitative techniques, data integrity
- Task 1.3 Food waste drivers in context
- Task 1.4 Environmental and social impacts of food waste
- Task 1.5 Food waste quantification manual
- Task 1.6 Estimation of EU data on food waste
- Task 1.7 Review and data supply

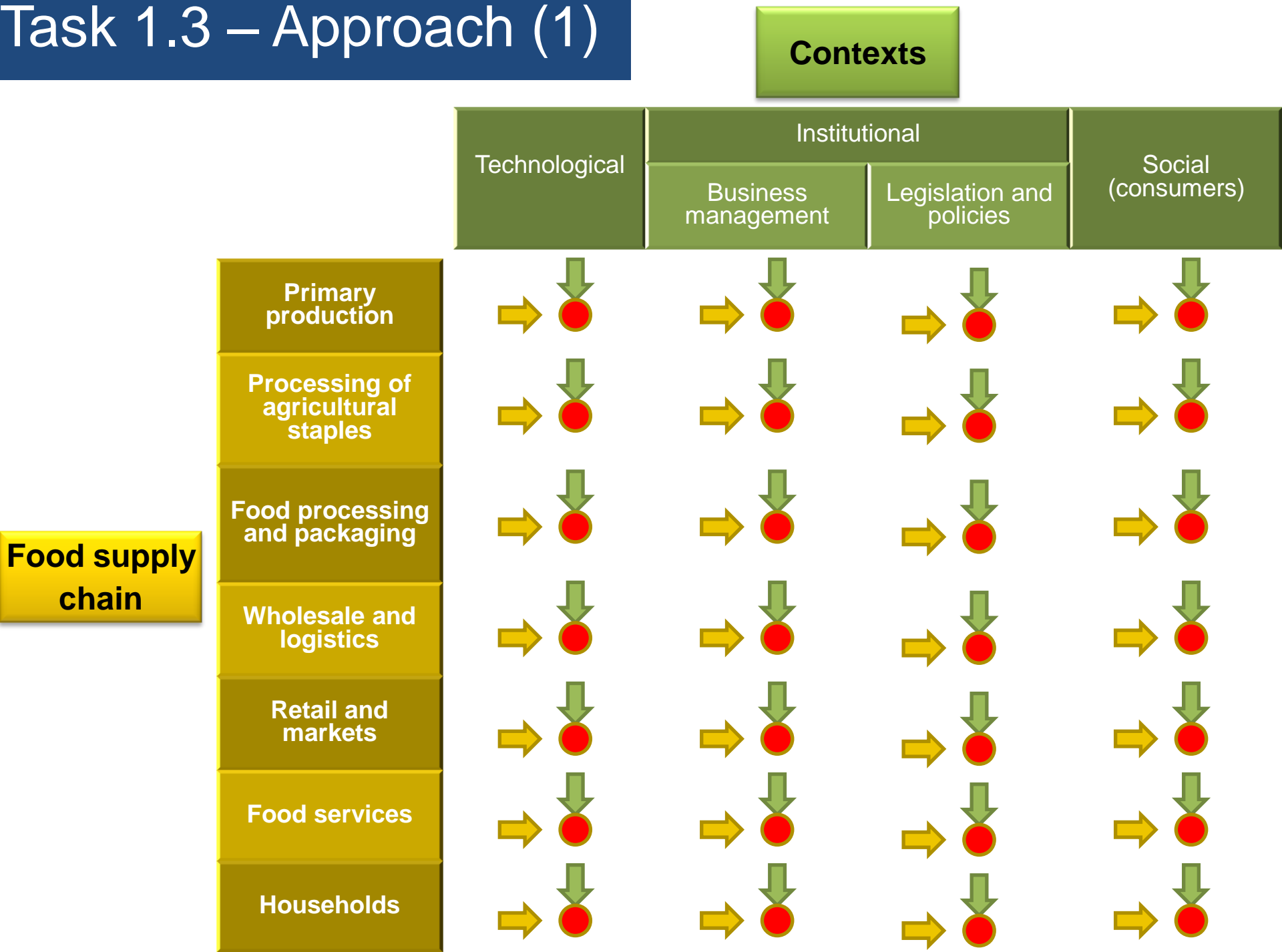
WP1 – Task 1.3 Food waste drivers in context

T3.1 objectives:

- identify the main causes of food waste generation along the food supply chain
- how current trends in technology, food supply chain management, and consumers' behaviours and lifestyles may increase or reduce food waste in the future

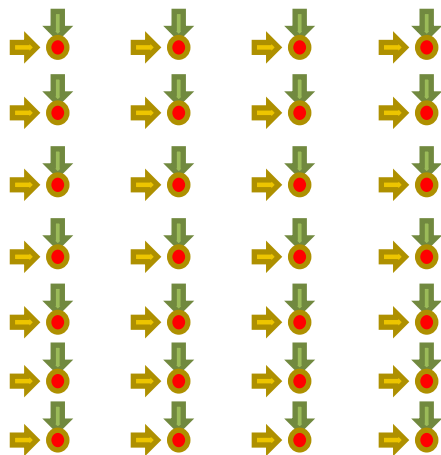


Task 1.3 – Approach (1)

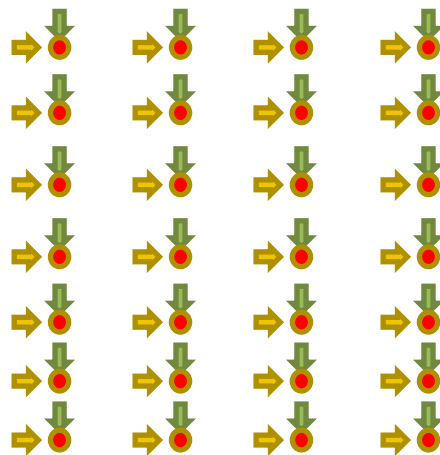


Task 1.3 – Approach (2)

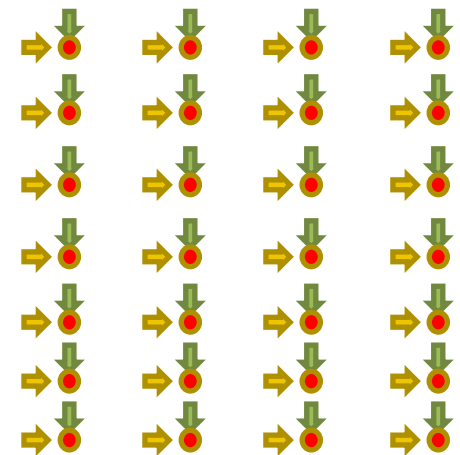
Current causes of food waste



Threats of future increase



Possibilities of reduction



Task 1.3 – Methodology and analysis

INVENTORY of current food waste causes, future threats of increase and possibilities of reduction	Identification of DRIVERS
<ul style="list-style-type: none">• distribution of questionnaires to FUSIONS Partners• 13 questionnaires filled in• 597 items inventoried from:<ul style="list-style-type: none">• 171 bibliographic references• direct experience of respondents	<ul style="list-style-type: none">• by food supply chain segment and• by context category (technological, institutional, social):<ul style="list-style-type: none">• 105 drivers identified for current food waste causes• 77 drivers identified for future threats of increase• 89 drivers identified for future possibilities of reduction



Example: identified drivers of current food waste causes

Context categories	Identified drivers of current food waste causes (total 105 drivers)		
<i>Technological</i> (28 drivers)	Drivers inherent to characteristics of food, and of its production and consumption, where technologies have become limiting	Drivers related to collateral effects of modern technologies	Drivers related to suboptimal use of, and mistakes in the use of food processing technology and chain management
<i>Institutional (business management - 38 drivers)</i>	Drivers not easily addressable by management solutions	Drivers addressable at macro level	Drivers addressable within the business units
<i>Institutional (legislation and policy – 23 drivers)</i>	Agricultural policy and quality standards	Food safety, consumer health, and animal welfare policies	Waste policy, tax, and other legislation
<i>Social (16 drivers)</i>	Drivers related to social trends and dynamics not readily changeable	Drivers related to individual behaviours which are not readily changeable	Drivers related to individual behaviours modifiable through information and increased awareness



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Examples of technological drivers of current food waste causes

1 - Drivers inherent to characteristics of food, and of its production and consumption, where technologies have become limiting	2 - Collateral effects of modern technologies	3 -Sub-optimal use of, and mistakes in the use of food processing technology and chain management
<ul style="list-style-type: none"> •Climatic conditions •Production planning •Forecast/Ordering system •Insufficient product life 	<ul style="list-style-type: none"> •Harvest loss & damage •Livestock mortality •Milk waste caused by drug contamination •Non selective fishing •Improved traceability •Storage handling and conditions •Damage during transport 	<ul style="list-style-type: none"> •Microbiological quality / storage •Obsolete technology (in processing of farm staple) •Obsolete technology (in food processing) •Equipment reliability •Ease of equipment operation •Mismarked/mislabelled packaging •Cold chain inefficiencies •Poor management and forecasting •Poor handling and storage •Unsound packaging (retail) •Minimum food safety failures •Customer knowledge •Storage •Equipment and containers •Lack of good practice •No access to suitable storage systems •Insufficient packaging (households)

Examples of institutional drivers (business management) of current food waste causes

1 – Not easily addressed by management solutions	2 – Addressable at macro level	3 – Addressable within the business units
<ul style="list-style-type: none"> •Consumer demand (“cosmetic” fruit standards, scarce use of by-products for cultural reasons) •Poverty/starvation (premature harvesting) •Lack of infrastructure and facilities •Supply and demand forecasting •Marketing strategies and customer demand •Customer expectations and demand •Deterioration of food (mainly related to characteristics of food products) •Forecast/ordering system (mainly related to characteristics of food products) •Customer expectations, demand and marketing strategies (mainly related to consumer behaviours) •Difficulty to estimate and calculate the right amount of food to cook (related to consumer preference for wide assortment of products) 	<ul style="list-style-type: none"> •Government subsidies (favouring production surpluses) •Market conditions/market price (price does not cover harvest costs) •Access to finance (lock in to existing practices) •Government regulations •EU & national government legislative and taxation policy •Contracts/agreements •Market demand (determining product recalls) •Rejection of delivery/returns •Cheap price of food •Collection infrastructure 	<ul style="list-style-type: none"> •Profitability (non profitability of best practices) •Communication (bad information exchange) •Knowledge & communication •Profitability (discarding of low value components and by-products) •Staff training and communication •Supply chain/cold chain inefficiencies •Forecasting of stocking/ordering (mainly related to management inefficiencies) •Deterioration of food, food safety (mainly related to management inefficiencies) •Power and trust, transparency, communication, and information sharing •Inflexibility in portioning

Drivers of food waste and potential intervention

DRIVERS	EXAMPLES	POTENTIAL INTERVENTIONS
Food waste related to the characteristics of food products and the ways through which they have to be produced and consumed	Perishability of food, limited predictability of supply and demand, limited capacity of control on many factors of production that constrains the possibility to adapt quickly the supply to the evolution of demand, limited possibility of consumers to accumulate individual stocks of food, etc.	Mainly technological
Food waste related to social factors and dynamics in population habits and lifestyles non-readily changeable	Single-person households, young age of household members, young couples with small children, increased consumption of meals out-home, etc. These are all factors and long term trends that result positively correlated with food waste generation.	Mainly technological
Food waste related to individual behaviours of consumers non-readily changeable	Consumer preference for good aspect of food, freshness, possibility of acceding to broad quantities and varieties of food independently on places, season, and time, etc. These preferences (unlikely eradicable) determine behaviours in both the consumers and the food supply chain operators that generate wastage.	Technological and behavioural (long term)
Food waste related to other priorities targeted by private and public stakeholders	The possibility of generating food waste may be a minor concern with respect to other priorities of private companies (increase sales, reduce production costs, reduce risk of damage to brand image due to failures in safety or other marketing standards) and of public authorities (legislative provisions improving food safety and security, consumer information, animal welfare, etc.).	Technological and institutional (mainly policy – medium-long term)
Food waste related to inefficiencies	Non use or sub-optimal use of available technologies, organisational inefficiencies of supply chain operators, inefficient legislation, and bad behaviours of consumers depending on unawareness, scarce information, and poor food skills.	Improve efficiency and sustainability in the food supply chain (short-medium term)

WP3 – General Objectives

- Contribute to policy making at both the European and Member State levels;
- Address socially innovative solutions optimising food use;
- Find out recommendations for a Common Food Waste Policy in the EU;



WP3 – Tasks

Task 3.1 Policies and legislations impacting on food waste in Europe, inventory and current trends

Task 3.2 Finding out policies and measures for socially innovative solutions to the food waste issue

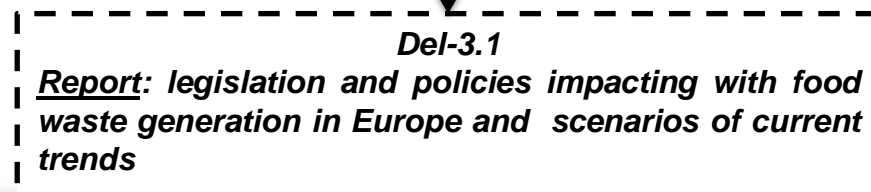
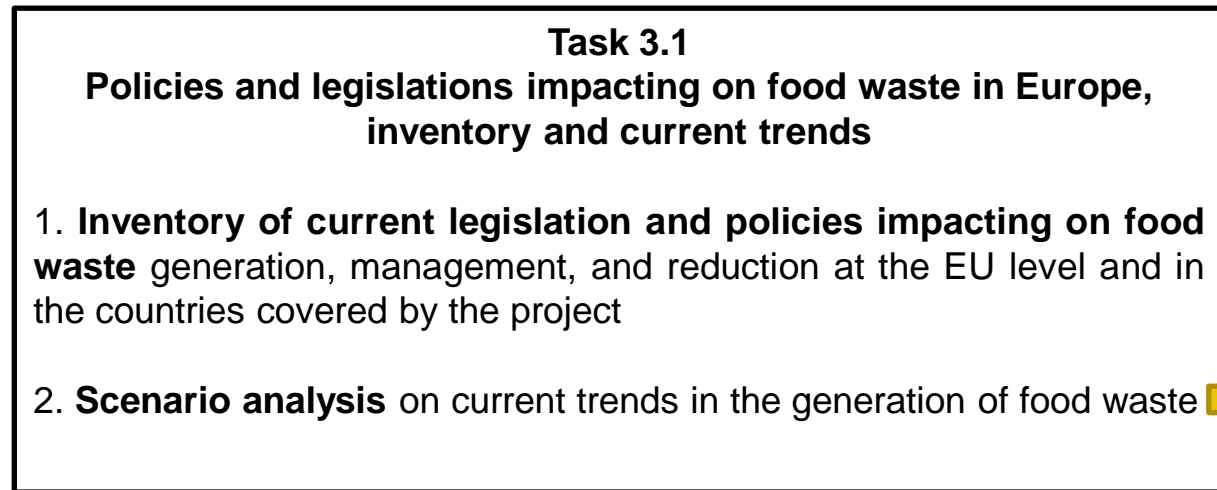
Task 3.3 Work out indicators and criteria for a food waste policy Evaluation Framework

Task 3.4 Elaborate guidelines for a European Common Policy enhancing food waste prevention and reduction through social innovation



WP3 – T3.1 Inventory of policies and legislation

Objective: Comprehensively **mapping and analysing the current legislation and policies** which impact on the creation of food waste in the EU/EEA countries and **evaluating the main trends** of food waste generation;



WP3 stakeholders consultation of SE-RPM in Athens and Dusseldorf



WP3 – T3.1.1 Inventory of current legislation and policies impacting on food waste (achievements)

Main Achievements so far:

- **Literature review** (304 references) identifying legislation impacting on food waste generation at European and national level;
- **Database of European legislation** Classification by type of document (Regulations, Directives, Communications, Resolutions, etc.), EU classification headings of legislation, type of implications for food waste, food supply chain segment involved, and literature sources.
- **Database of national legislation** (provisional). Classification by country, subject of legislation, type of implications for food waste, food supply chain segment involved, and literature sources.

WP3 – T3.1.1 Inventory of current legislation and policies impacting on food waste (activities)

Main Activities:

- Setting procedure and form for the Inventory;
- Distribution among the Contributing Partners of the publications recorded in the FUSIONS Literature Database including:
 - identification of the duplicated references within the Database
 - allocation of publication proportional to Partners' workload)
- 304 publications (out of which 302 listed in the Fusions Literature Database) were analysed;
- Information found in the examined publications were collected and uploaded into the FUSIONS Share Point;
- Information was homogenized and merged it into a single excel file database for analysis;
- For the European Legislation a recognition and integration of the legislation in force was made



WP3 – T3.1.1 Inventory of current legislation and policies impacting on food waste (results)

Analysis of European legislation

52 publications dealing with or citing European legislation found in 304 references.

39 legislation acts + 1 EU Parliament Resolution= Totally, 40 European legislation acts in force were found, of which according to the examined publications:

- **24 Acts imply or potentially imply food waste generation**
- **8 Acts are addressed to food waste management**
- **8 Acts are actively addressed to food waste management**



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Legislation implying or potentially implying food waste generation

<i>Subject of legislation</i>	<i>n.</i>	Regulations	19
food and feed safety*	9	Directives	4
fishery	6	Decisions	1
marketing standards	2		
animal health and welfare	1		
energy from renew. sources (biofuels)	1		
environment action	1		
labelling	1		
packaging	1		
phytosanitary measures	1		
waste	1		
<i>total acts</i>	24		

total acts 24

Next steps:

- Have those laws a real impact on food waste?
- Can those laws be modified?

*including food hygiene, contaminants in food, novel food, and encephalopathitis

Legislation implying or potentially implying food waste generation (related to food & feed safety)

Council Regulation (EEC) No 315/93 of 8 February 1993 laying down Community procedures for contaminants in food	contaminants in food
Commission Regulation (EC) No 1831/2003 of 22 September 2003 setting maximum levels for certain contaminants in foodstuffs	contaminants in food
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	food safety
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	food safety
Regulation (EC) No 853/2004 of the European Parliament and of the Council of 29 April 2004 on the hygiene of foodstuffs	food safety
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	food safety
Regulation (EC) No 1831/2003 of the European Parliament and of the Council of 22 September 2003 laying down requirements for feed hygiene	feed safety
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	food safety
Regulation (EC) No 258/97 of the European Parliament and of the Council of 27 January 1997 concerning novel foods and novel food ingredients	novel food

WP3 – T3.2 Social innovation policies

Task 3.2

Policies for socially innovative solutions to the food waste issue

1. Exploring the potential of market based instruments and other socio-economic incentives to prevent and reduce the creation of food waste in the food-supply chain, and especially in the retail and food services sectors, and in the households
2. Organising a **Social Innovation Camp** on the food waste issue to present the Feasibility Studies of socially innovative solutions selected by the FUSIONS Project and discuss the potential of social innovation for food waste policies
3. Working out a theoretical and operational frame for an improved legislation able to tackle the food waste problem by promoting social inventiveness



in BOLOGNA the 8th April 2014

Camp Survey

The survey was addressed to organizations implementing social innovation initiatives related to food waste prevention and reduction in Europe, with the aim of:

- (i) providing an insight into the main factors enhancing or hindering their activities;
- (ii) and collecting their points of view as regards the types of measures and policy actions that could adequately stimulate social innovation in this field.

The survey was carried out by asking the representatives of those organisations to fill in an on-line questionnaire with closed-answer questions.

Synthesis

The questionnaire consisted of three sections:

- Operational specifications of the initiative (i.e. still active/finished, number and type of beneficiaries, geographical scope, types of food products and food supply chain segments involved;
- Factors of enhancement/hindrance of the initiative;
- Perception on policies that could facilitate or hinder the success of the project;

Organisation involved (total 185):

- Fusions Inventory of European Social Innovation Initiatives on Food Waste (56 organisations)
- European Food Banks (25 organisations)
- Last Minute Market network (104 organisations)

Questionnaires filled in (total 64 – 35%);

- 33 from organizations of the Third Sector
- 19 from Public Institutions
- 12 from Companies

The questionnaire

Section A. OPERATIONAL SPECIFICATIONS ON THE RESPONDER'S INITIATIVE

1. How many people have benefitted from your initiative since it started?
2. At which level has your initiative been most successful?
3. Do you agree with the following statements on your initiative?
4. Which food types are mainly targeted?
5. In which part of the food supply chain is waste primarily reduced?
6. Who mainly benefits from the initiative, which interest groups?

Section B. OPINION ON FACTORS OF ENHANCEMENT/HINDRANCE OF THE INITIATIVE

7. Indicate which factors have been more useful for the conduct of your own initiative
8. Indicate which factors have been hindering the performance of your initiative
9. Indicate the actors currently engaged in the fight against food waste in your country

Section C. PERCEPTION AND PERSPECTIVE ON POLICIES

10. Indicate the policy measures which might stimulate social initiatives and innovations for the prevention and reduction of food waste
11. Indicate the initiatives useful to reduce and prevent food waste

Question 7. Indicate which factors have been more useful for the conduct of your own initiative

On a scale from 1 to 7 please indicate which factors have been more useful for the conduct of your own initiative (1= not at all useful, 7= very useful)	Average*
A strong network of partnerships and knowledge	5.9
A widespread sensitivity towards food waste by all people involved in the initiative	5.9
Support by volunteers	5.8
The ability to communicate and disseminate the initiative	5.7
The support (in this case non financial) by public authorities (at local, governmental or European level)	4.8
The financial support by companies and private institutions	4.7
A large support by final beneficiaries	4.6
Own financial funding	4.1
The financial support by public authorities	4.1
The financial support by citizens/consumers	3.3

*High level of perceived usefulness = average value ≥ 5.5 ; Medium level = average value ≥ 4 and < 5.5 ; Low level < 4

Question 8. How each of the following factors has been hindering the performance of your initiative?

On a scale from 1 to 7 please indicate how each of the following factors has been hindering the performance of your initiative (1= not binding, 7= very binding)	Average*
Health and Safety regulations	4.4
Economic costs	4.0
The non-cooperation by public authorities	3.9
Lack of commitment by local authorities and government	3.9
The non-cooperation by companies and private institutions	3.9
Administrative / fiscal regulations	3.8
Difficulties in logistics	3.7
Bureaucracy imposed by public authorities	3.6
Inability to find economic support	3.5
Lack of sensitivity to the topic	3.5
Limited availability of volunteers	3.3
Failure to disseminate the initiative	3.3
Too long realization times	3.1
Lack of participation / involvement of beneficiaries	3.1
Lack of qualified staff	2.9
Other regulations	2.9

*High level of perceived hindering = average value ≥ 5.5 ; Medium level = average value ≥ 4 and < 5.5 ; Low level < 4

Question 9. Indicate how each of the following actors is currently engaged in the fight against food waste in your country

On a scale from 1 to 7 please indicate how each of the following actors is currently engaged in the fight against food waste in your country (1= not at all, 7= fully)	Average *
Charitable organizations	5.7
Voluntary Associations	5.4
Companies / associations set up on purpose	5.0
Consumer associations	4.5
Public education and research institutions	4.3
Citizens	4.1
The European Community	4.1
Local Authorities	4.0
Cultural associations	3.9
Private companies involved in the production, processing, marketing, preservation of food	3.9
Companies engaged in waste management	3.6
National Government	3.3
Political organizations	2.8
Private companies that have nothing to do with the food sector (banks, financial enterprises, foundations, high tech ...)	2.8

*High level of perceived engagement = average value ≥ 5.5 ; Medium level = average value ≥ 4 and < 5.5 ; Low level < 4

Question 10. How useful each of the following policy measures might be to stimulate social initiatives and innovations for the prevention and reduction of food waste?

(results in the next slide)

10. On a scale from 1 to 7, please indicate how useful each of the following policy measures might be to stimulate social initiatives and innovations for the prevention and reduction of food waste (1= not at all useful, 7= very useful)	Average*
Dissemination of best practices among consumers and food supply chain operators	6.3
State grants and direct financial support to initiatives for FW prevention/red.	6.1
Information campaigns to increase awareness in consumers and the food supply chain operators	6.0
Tax cuts to private investments in the supply chain for food waste reduction and prevention	5.9
Support to research to improve efficiency in the food supply chain and in consumers' behaviours	5.8
Special credit to new investment plans of companies committed for FW prevention/red.	5.8
Promotion of voluntary agreements among firms to achieve specific targets of FW reduction	5.7
Introduction of food waste concerns in public procurements	5.7
Specific eco-labelling/certification system for products/services with low impact on food waste	5.4
Compulsory protocols, targets and standards aimed at reducing food waste	5.2
Specific taxes or fees charging food waste at all levels of the food supply chain	5.0
A system of licenses and tradable permits setting the maximum amount of food waste allowed	4.5
*High level of perceived usefulness = average value ≥ 5.5 ; Medium level = average value ≥ 4 and < 5.5 ; Low level < 4	

Question 11. How useful each of the following initiatives is to reduce and prevent food waste?

11. On a scale from 1 to 7 please indicate how useful each of the following initiatives is to reduce and prevent food waste (1= not at all useful, 7= very useful)	Average*
Education in schools	6.6
Education in companies	6.3
Education to families	6.3
To promote the work of food recovery and distribution initiatives	6.2
Development and teaching of new practices	6.0
Ad hoc legislative measures	5.8
Information campaigns	5.7
Development of new processes/tools	5.7
Research on technological developments related to production, marketing and storage of food	5.6
To increase funding from the state budget for the development of public policies against waste	5.6
Research on the economic, social and behavioural causes of food waste	5.3

*High level of perceived usefulness = average value ≥ 5.5 ; Medium level = average value ≥ 4 and < 5.5 ; Low level < 4



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