Collection and assessment of food waste prevention actions

Joint Research Centre
Directorate D – Sustainable Resources

Bio-Economy Unit (D1)

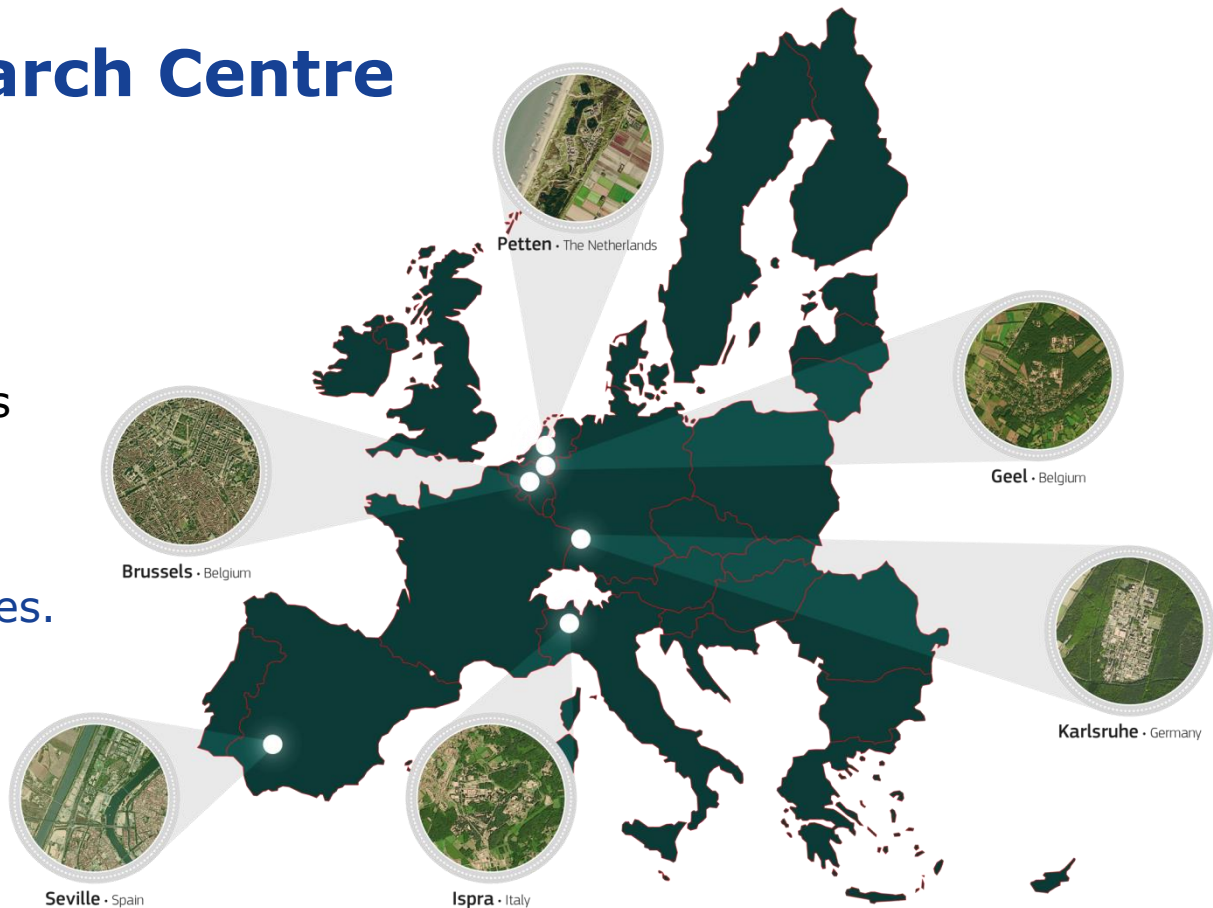**The European Commission's science and knowledge service**

Joint Research Centre

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The Joint Research Centre at a glance

3000 staff
Almost 75% are scientists and researchers. Headquarters in Brussels and research facilities located in 5 Member States.

Petten · The Netherlands

Geel · Belgium

Brussels · Belgium

Karlsruhe · Germany

Seville · Spain

Ispra · Italy

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Content

- Overview of the JRC support to the sub-group Action & Implementation

- Presentation of the draft template structure and gather inputs/feedback from the audience

- Environmental, social and economic indicators considered

- Other aspects to be considered in the assessment?

# Support to the EU Platform on food waste and food loss (FWL)

➢ *Subgroup Action and Implementation*

- Support the PLATFORM in the development of a template to report on FW prevention activities

- Identify indicators assessing effectiveness of prevention strategies from economic, environmental and social perspectives

- Identify best practices, informed by an appropriate evidence base, in order to facilitate their uptake and replication as appropriate

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Stages for the evaluation of best practices for food waste prevention actions

1.Development of the template

2. Data collection

3. Evaluation
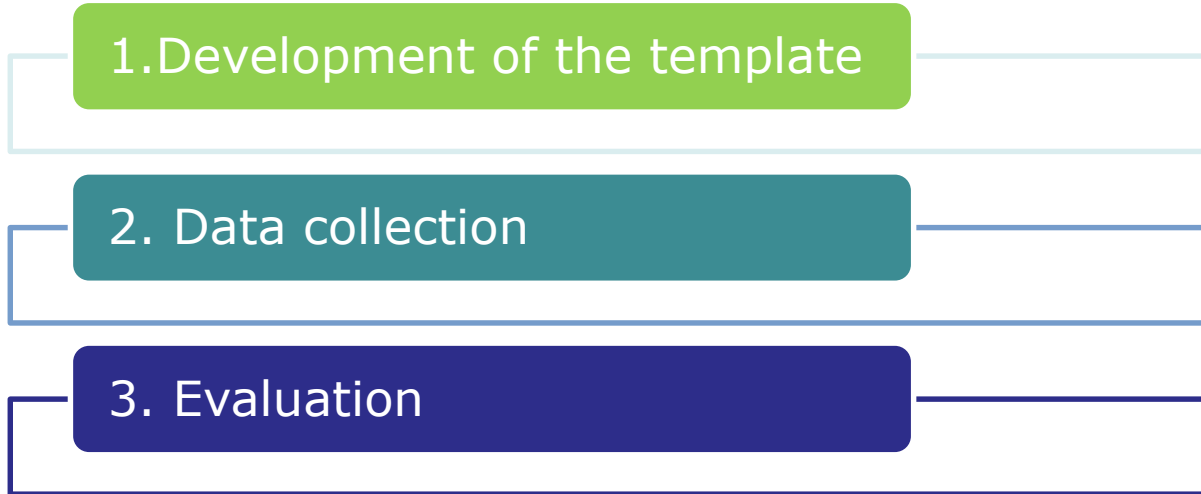
Other actions beside the ones reported through the template will be considered
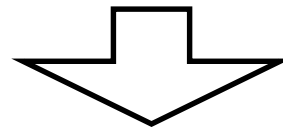
KEY RECOMMENDATIONS

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1.Development of the template

Goal - gather information about food waste prevention actions in a structured way to allow a **systematic classification and evaluation**

The **questions** were/are to be defined taking into account the foreseen **criteria for evaluation**

Sections: **1. Introduction**, **2. General information**,
3. Implementation and results, 4. Additional information

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General information section

2.1 Title

2.2 Type of action

2.3 Objectives

2.4 Short summary of the actions

2.5 Actors(s) responsible for the implementation

2.6 Target audience

2.7 Geographical coverage

2.8 Timeline

2.9 Type of funding

2.10 Contact information

Results and impacts section

3.1 Monitoring system to measure efficiency and/or efficacy

3.2 Information about the food waste prevented

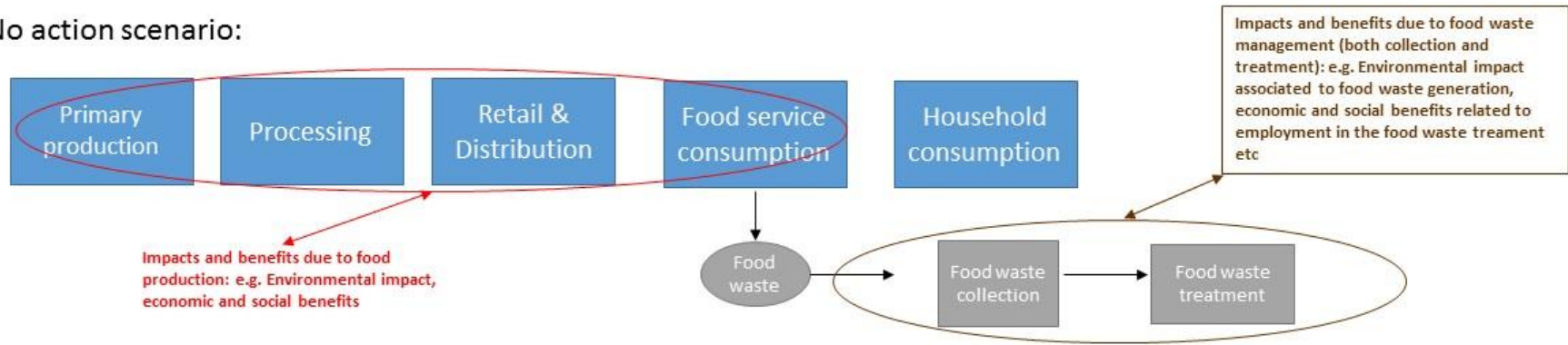3.3 Economic indicators

       - Total cost

Assessment of impacts and benefits

Impact and benefits (economic, environmental and social) associated to prevention actions should be evaluated at three levels:
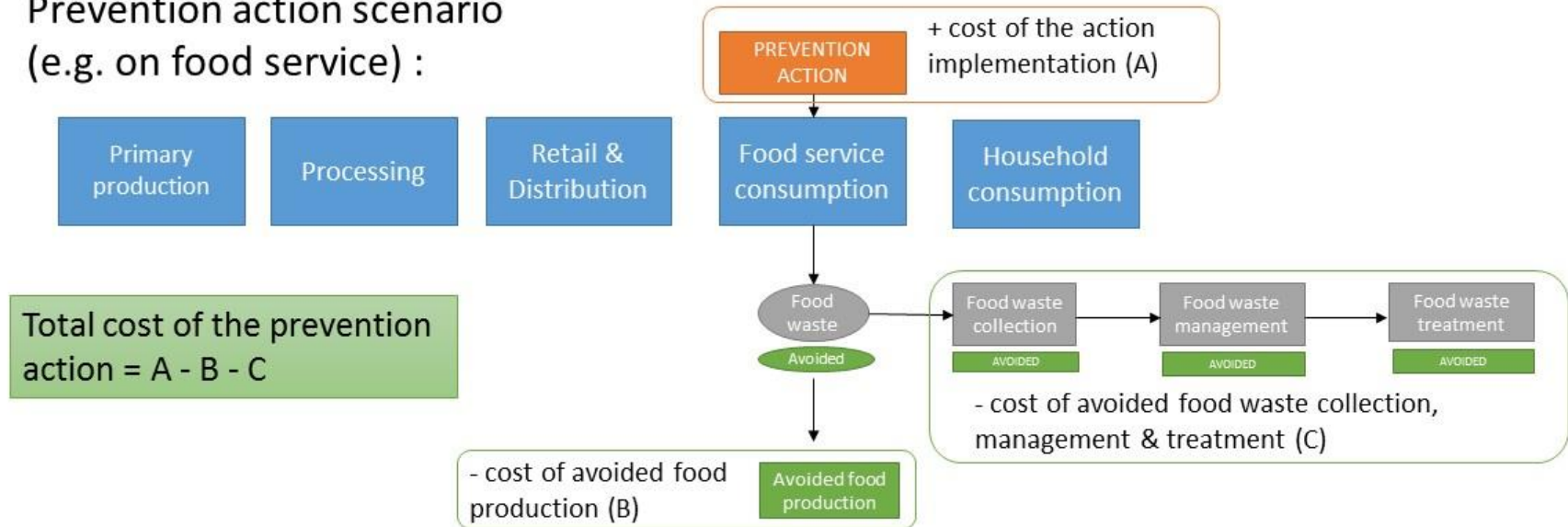
➢ Impacts/benefits of the action itself (e.g changing packaging will have certain costs and associated impacts due to additional material used for its production)

➢ Impacts/benefits associated to the avoided production of food surplus

➢ Impacts/benefits associated to the avoided waste treatment

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Cost of Prevention Action

No action scenario:

Primary production | Processing | Retail & Distribution | Food service consumption | Household consumption

Impacts and benefits due to food production: e.g. Environmental impact, economic and social benefits

Food waste

Food waste collection → Food waste treatment

Impacts and benefits due to food waste management (both collection and treatment): e.g. Environmental impact associated to food waste generation, economic and social benefits related to employment in the food waste treament etc

Prevention action scenario (e.g. on food service) :

PREVENTION ACTION   + cost of the action implementation (A)

Primary production | Processing | Retail & Distribution | Food service consumption | Household consumption

Total cost of the prevention action = A - B - C

Food waste
Avoided

Food waste collection — AVOIDED → Food waste management — AVOIDED → Food waste treatment — AVOIDED

- cost of avoided food waste collection, management & treatment (C)

- cost of avoided food production (B)

Avoided food production

If data is not provided/available...

Use of proxies for the value of food and cost of waste treatment

For example values which were used for the 2014 impact assessment related to the revision of the WFD and considering possible EU Food waste targets obtained from a study from WRAP.

By sector, the value of food wasted has been estimated at:

➢ Manufacturing - £950 a tonne;

➢ Retail - £1,200 a tonne;

➢ Hospitality and Food Service – an average of £2,775 a tonne (ranging from ca £1,660 to £4,000 a tonne for different sectors);

➢ Households - £2,960 a tonne.

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Results and impacts section

3.1 Monitoring system to measure efficiency and/or efficacy

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3.3 Economic indicators

   - Total cost

   - Financial benefits

3.4 Environmental indicators

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LCA for environmental impacts

Avoiding burden shifting
- **over impact categories** (increasing impact in an impact category while reducing the impact on another)
- **over life cycles stages** (e.g. increasing impact in the end of life while reducing the impact in the use phase)
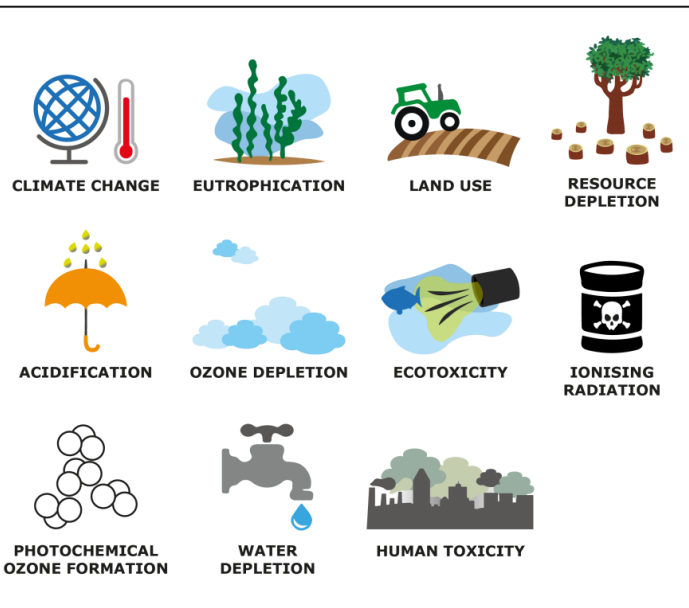

LCI - Life Cycle Inventory

For each stage of a product life cycle (e.g. resource extraction, manufacturing, use, etc.) data on **emissions into the environment** (e.g. CO_2, benzene, organic chemicals) and **resources used** (e.g. metals, crude oil) are collected in an inventory.

Each emission in the environment and resource used are then characterised in term of potential impact in the LCIA, covering a number of impact categories.

LCIA - Life Cycle Impact Assessment

CLIMATE CHANGE   EUTROPHICATION   LAND USE   RESOURCE DEPLETION

ACIDIFICATION   OZONE DEPLETION   ECOTOXICITY   IONISING RADIATION

PHOTOCHEMICAL OZONE FORMATION   WATER DEPLETION   HUMAN TOXICITY

Goal and scope

e.g. LCA of a car of typology X, assuming a use for Y years, produced in country Z, ect.

Areas of protection

Human health
Ecosystem health
Natural resources

Interpretation

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Environmental impact of EU food consumption and of food waste

Environmental impact due to the amount of food consumed in 1 year by an average EU citizen

Product Groups	Basket product	Per-capita consumption (kg/pers.*yr^{-1})	
MEAT	Pig meat	41.0	(7.6%)
	Beef	13.7	(2.5%)
	Poultry	22.9	(4.2%)
DAIRY	Milk & Cream	80.1	(14.8%)
	Cheese	15.0	(2.8%)
	Butter	3.6	(0.7%)
CEREAL-BASED	Bread	39.3	(7.3%)
SUGAR	Sugar	29.8	(5.5%)
OILS	Sunflower oil	5.4	(1.0%)
	Olive oil	5.3	(1.0%)
VEGETABLES	Potatoes	70.1	(13.0%)
FRUIT	Oranges	17.4	(3.2%)
	Apples	16.1	(3.0%)
BEVERAGES	Mineral water	105.0 L	(19.4%)
	Roasted Coffee	3.5	(0.6%)
	Beer	69.8 L	(12.9%)
PRE-PREPARED MEALS	Meat based dishes	2.9	(0.5%)

JRC TECHNICAL REPORTS

Consumer Footprint

Basket of Products indicator on Food

Consumer Footprint. Basket of Products indicator on Food ©EU

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Life Cycle stage	Activities included
Agriculture/breeding	Cultivation of crops
	Animal rearing
	Food waste management
Industrial processing	Processing of ingredients
	Slaughtering, processing and storage of meat
	Chilled or frozen storage
	Food waste management
Logistics	International transport of imports
	Transport to manufacturer
	Transport to regional distribution centre
	Distribution
	Transport to retailer
	Food waste management
Packaging	Manufacture of packaging
	Final disposal of packaging
Use	Transport of the products from retailer to consumer's home
	Refrigerated storage at home
	Cooking of the meal
End of life	Final disposal of food waste
	Wastewater treatment and auxiliary processes due to human excretion

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Results and impacts section

3.1 Monitoring system to measure efficiency and/or efficacy

3.2 Information about on the food waste prevented

3.3 Economic indicators

       - Total cost

       - Financial benefits

3.4 Environmental indicators

3.5 Social indicators

3.6 Outreach and target audience impact

3.7 Key learnings regarding the implementation

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Indicators

- Amount of food waste prevented

- Total cost of the action

- Financial benefits

- Environmental impacts (such as Climate Change, Water depletion etc, namely the 16 impact categories as recommended by EC-JRC for environmental footprint)

- Social impacts (number of meals donated, jobs creation)

- Target audience impact

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Other aspects to be considered in the assessment?

Example of criteria used to evaluate best practices in health promotion/waste prevention:

- Relevance
- Innovation
- Representativeness
- Intervention characteristics
- Evidence and theory based
- Ethical aspects
- Effectiveness and Efficiency of the intervention
- Equity
- Transferability
- Sustainability
- Participation
- Inter-sectoral collaboration

Proposed criteria and guidelines for assessment
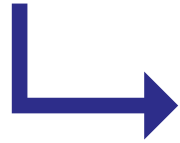
Draft by September to be discussed in the workshop in October 2018

Based on review of existing evaluation frameworks

Suggestions are welcomed!

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