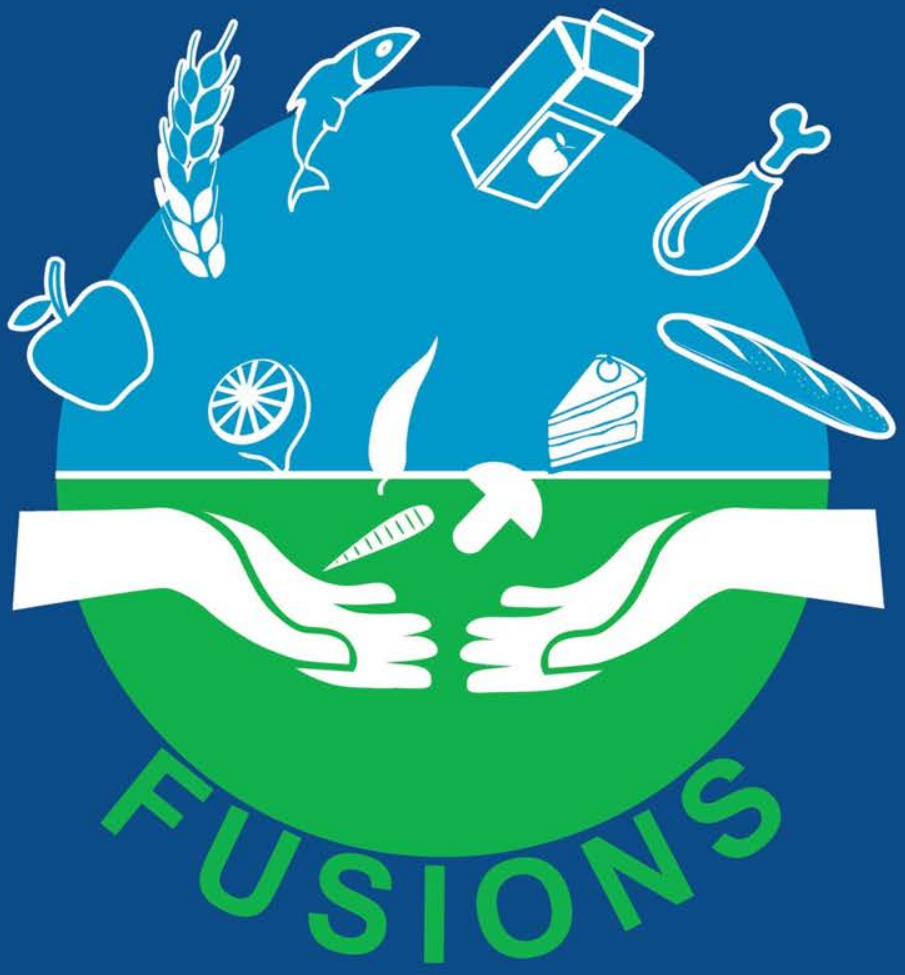


Das Europäische Projekt

FUSIONS zur Vermeidung

von Lebensmittelabfällen

Silvia Scherhaufer

Forschungsbericht, 30. März 2017

Reducing food waste through social innovation

Inhalt zum Forschungsbericht

- Eckdaten des Projekts
- Machbarkeitsstudien
- Netzwerk und Öffentlichkeitsarbeit
- Definition: Lebensmittelabfall
- Lebensmittelabfallmengen
- Ökologische und soziale Auswirkungen
- Politische Handlungsempfehlungen
- Berichte von FUSIONS
- Folgeprojekt Refresh

Food Use for Social Innovation by Optimising Waste Prevention Strategies

The overall aim of the project is to **contribute** significantly to the **harmonisation** of food waste **monitoring**, feasibility of **social innovative measures** for optimised food use in the food chain and the development of a **Common Food Waste Policy** for **EU28**.

Project duration: 48 months (2012 – 2016)

www.eu-fusions.org

Reducing food waste through social innovation

Involving 21 partners in 13 countries

WAGENINGEN UR
For quality of life

SP
your Science Partner

ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

IVL Swedish Environmental Research Institute

UNIVERSITÄT HOHENHEIM
1818

wrap

Magyar miszerbank Egyesület
Egy falat segítség mindenhol elkél

bio by Deloitte.

Ahold

FAO

BOKU
University of Natural Resources and Life Sciences, Vienna

last minute market

INRA
Institut National de la Recherche Agronomique

STOP WASTING FOOD

FEEDBACK

IFR
Institute of Food Research

Luke
NATURAL RESOURCES INSTITUTE FINLAND

Østfoldforskning

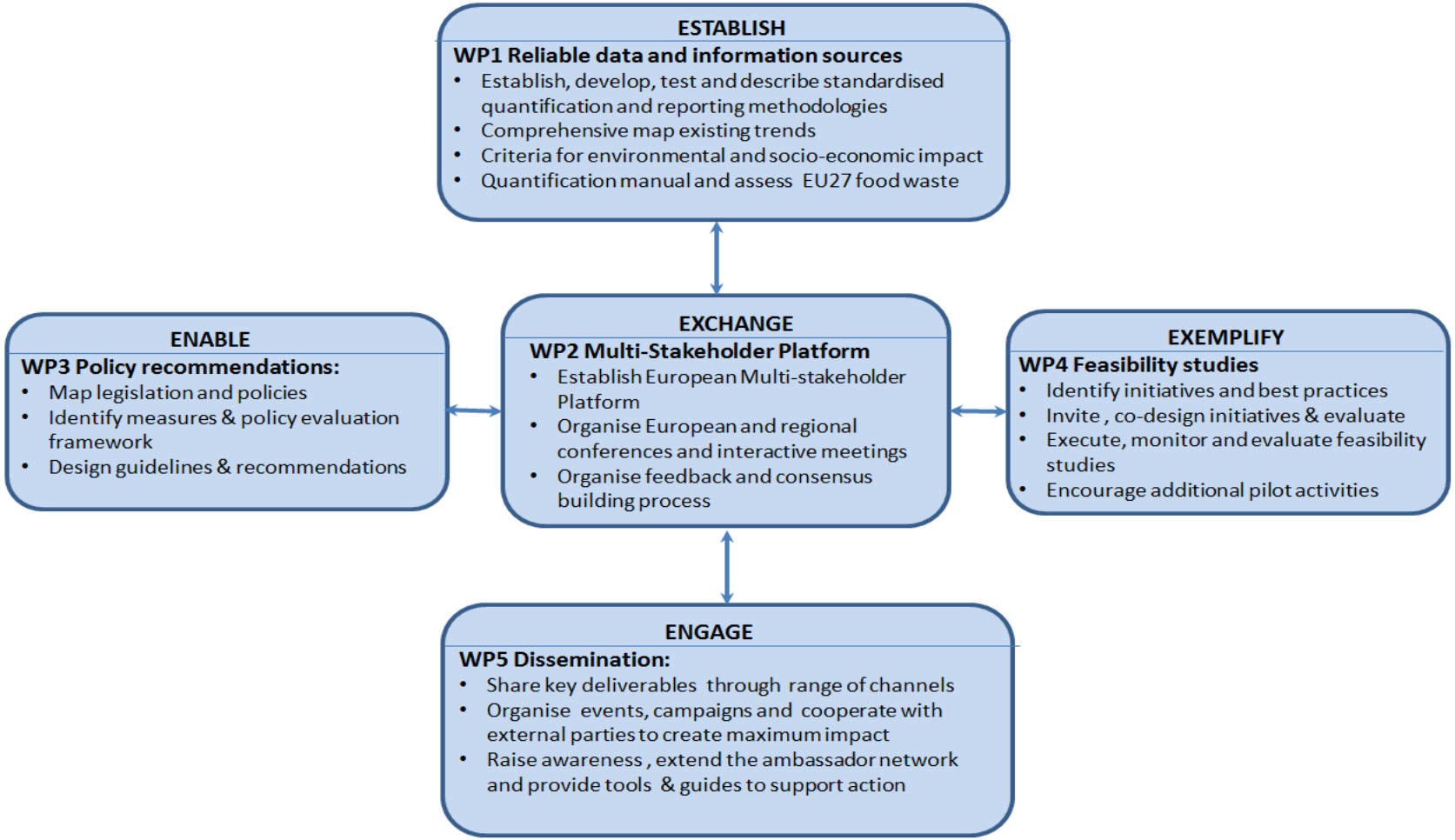
COMMUNIQUÉ

HACETTEPE UNIVERSITY
To the leading edge... Toward being the best...

ANATOLIKI

KU

Project structure



FUSIONS Feasibility Studies

WP4 Selected Feasibility Studies

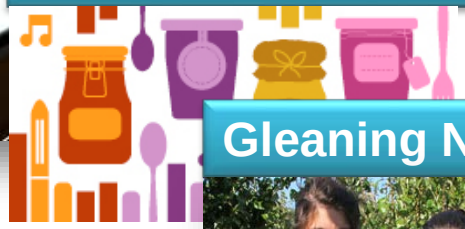
Decentralised Food Donation

Cr-EAT-ive Schools

Advancing Social Supermarkets

Food Service Surplus Solution

Disco BôCô



Gleaning Network EU

FUSIONS Platform Members

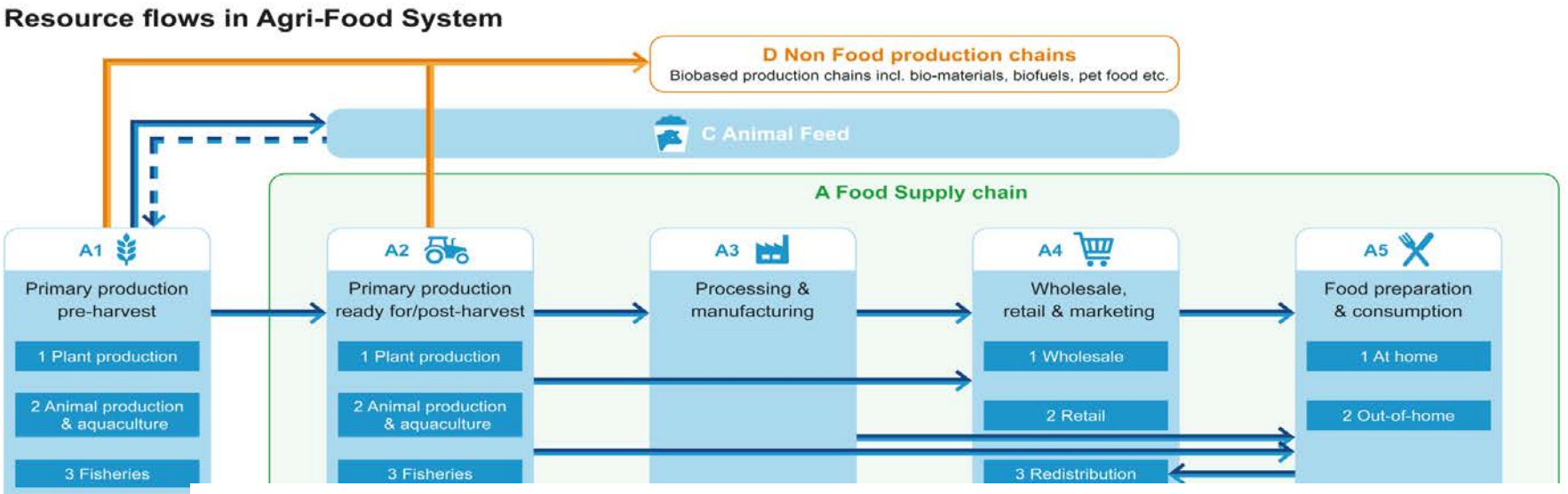
Awareness raising events

2013-2014 events in Amsterdam, Copenhagen, Brussels, Barcelona, Tessaloniki , Warsaw
Example: Feeding the 5000 Brussels
(1 April 2014)

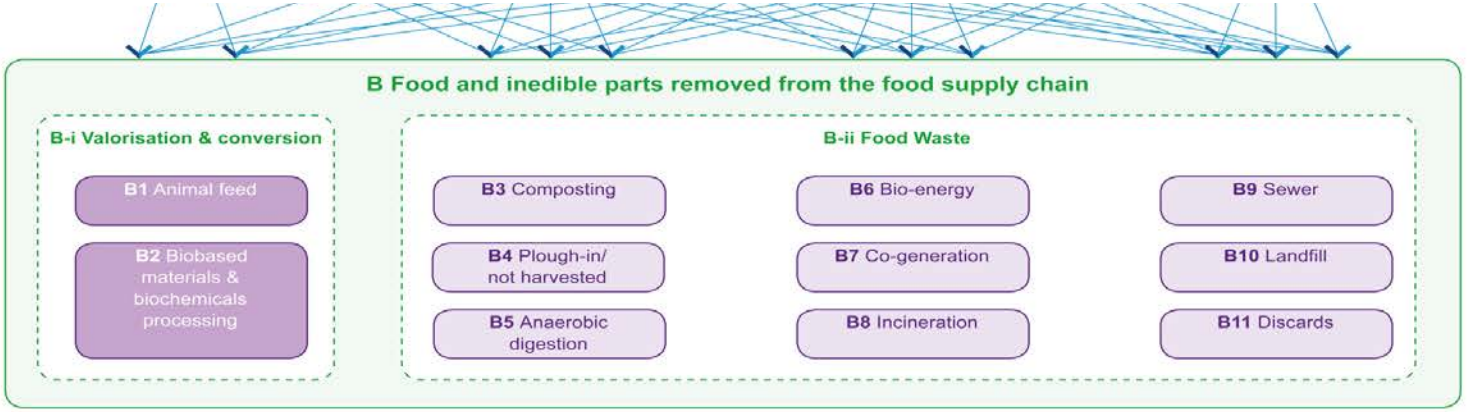
Together with Partners, Feeding the 5000 served up over 6000 delicious lunches all made from ingredients that otherwise would have gone to waste to highlight the positive solutions to the global food waste scandal.

Photo: Julie Feyaerts

FUSIONS definitional framework



Food waste: Any *food*, and *inedible parts* of food, removed from the food supply chain to be recovered or disposed to B3-B11,describing different end of life treatments



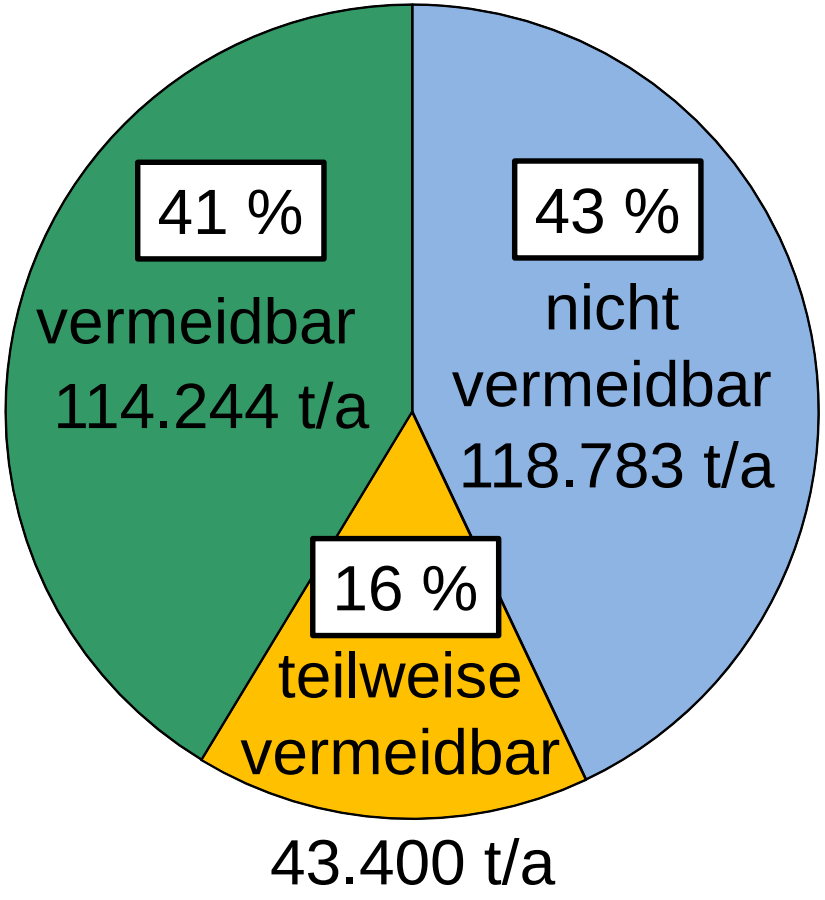
Source: Östergren et al. (2014)

Einteilung hinsichtlich Vermeidbarkeit

- Vermeidbare Lebensmittelabfälle
  - Die zum Zeitpunkt ihrer Entsorgung noch uneingeschränkt genießbar sind oder die bei rechtzeitiger Verwendung genießbar gewesen wären.
- Nicht vermeidbare Lebensmittelabfälle
  - Die im Zuge der Speisenzubereitung entfernt werden (Schalen, Knochen)
- Teilweise vermeidbare Lebensmittelabfälle
  - Mischfraktion oder wenn die Literaturquelle nicht aussagekräftig genug ist.

Quelle: Schneider F., Part F., Lebersorger S., Scherhaufer S., Böhm K. (2012): Sekundärstudie Lebensmittelabfälle in Österreich. Endbericht, im Auftrag des Bundesministeriums für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft, Wien, November 2012

Österreichische Haushalte
Lebensmittelabfälle im Restmüll



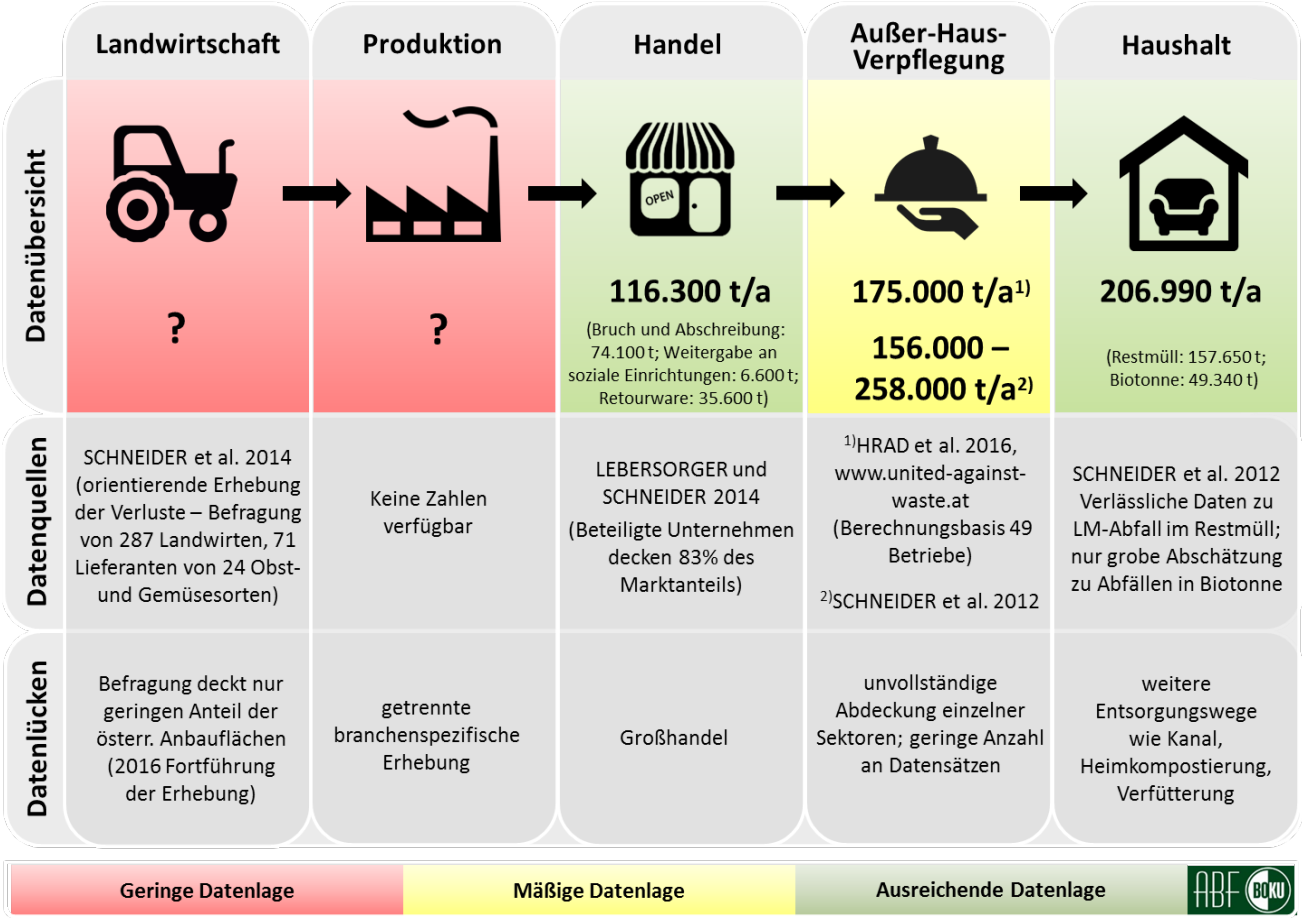
Teilweise bzw. vermeidbar sind:
- 14,5 Masse-% d. Restmülls
- 158.000 t/a bzw. 19 kg/EW.a

Entspricht Geldwert von:
- rund 1 Mrd. EUR
- bzw. 116 EUR pro Kopf
- entspricht 6,2 % der Verbrauchsausgaben für Ernährung u. alkoholfreie Getränke

Quelle: Schneider F., Part F., Lebersorger S., Scherhaufer S., Böhm K. (2012): Sekundärstudie Lebensmittelabfälle in Österreich. Endbericht, im Auftrag des Bundesministeriums für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft, Wien, November 2012

Datenlage in Österreich

Vermeidbare Lebensmittelabfälle in Österreich



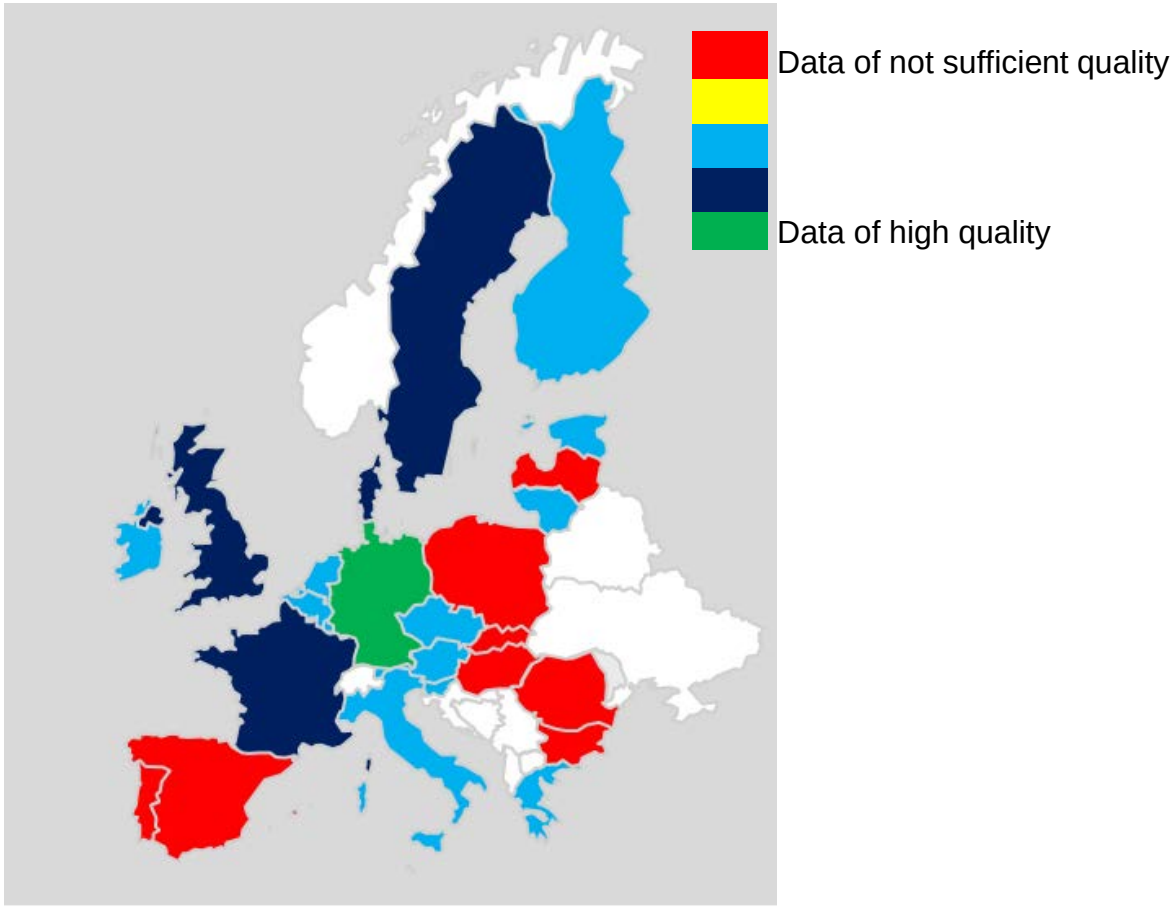
Quelle: Scherhaufer S., Hrad M., Unger N., Obersteiner O. (2016): Datenlage zu LebensmittelabfALLMENGEN in Österreich, Zusammenfassung von Studien des ABF-BOKU, verfügbar unter http://www.wau.boku.ac.at/abf/downloads/

Publicly available data EU28 -> many gaps

Country	1. Production (NACE 1-3)	2. Processing (NACE 10-11)	3. Wholesale and logistics (NACE 46)	4. Retail and markets (NACE 47)	5. Redistribution (food donation etc.)	6. Food service (NACE 56)	7. Household
Austria	No data available	Food waste data of low quality	No data available	Data of sufficient quality	Data has been submitted but no estimation of food waste amounts has been made.	Data of sufficient quality	Data of sufficient quality
Belgium	Food waste data of low quality	Food waste data of low quality	Food waste data of low quality	Food waste data of low quality	No data available	Food waste data of low quality	Food waste data of low quality
Bulgaria	No data available	No data available	No data available	No data available	No data available	No data available	No data available
Croatia	Low food waste amounts	Low food waste amounts	Low food waste amounts. Several or major waste flows not being covered.	Low food waste amounts. Several or major waste flows not being covered.	No data available	Low food waste amounts. Several or major waste flows not being covered.	Low food waste amounts. Several or major waste flows not being covered.
Cyprus	No data available	No data available	No data available	No data available	No data available	No data available	No data available
Czech republic	Low food waste amounts without any explanation given	Low food waste amounts	Food waste data of low quality	Food waste data of low quality	No data available	Lowfood waste amounts. No explanation on what was included.	Several or major waste flows not being covered.
Denmark	Data of sufficient quality	Data of insufficient quality as only edible food waste was reported.	Data of sufficient quality	Very high food waste amounts	No data available	Data of sufficient quality	No information on what was included was retrieved.
Estonia	No data available	Low food waste amounts	Data of sufficient quality	Data of sufficient quality	No data available	Low food waste amounts	Data of sufficient quality
Finland	No data available	Data of insufficient quality as only edible food waste was reported.	No data available	High food waste amounts. No explanation on what was included.	No data available	Data of sufficient quality	Data of sufficient quality
France	Low food waste amounts. Several or major waste flows not being covered.	Data of sufficient quality	High food waste amounts. No explanation on what was included.	High food waste amounts. No explanation on what was included.	No data available	Data of sufficient quality	No information on what was included was retrieved.
Germany	Data of sufficient quality	Data of sufficient quality	Data of sufficient quality	Data of sufficient quality	No data available	Data of sufficient quality	Data of sufficient quality
Greece	Low food waste amounts without any explanation given	High food waste amounts.	Data of sufficient quality	Data of sufficient quality	No data available	Low food waste amounts. No information on what was included was retrieved.	No information on what was included was retrieved.
Hungary	No data available	No data available	No data available	No data available	No data available	No data available	No data available
Ireland	No data available	No data available	High food waste amounts. No information on what was included was retrieved.	High food waste amounts. No explanation on what was included.	Data has been submitted but no estimation of food waste amounts has been made.	Data of sufficient quality	Data of sufficient quality
Italy	Data of sufficient quality	Data of insufficient quality as only edible food waste was reported.	Data of sufficient quality	Data of sufficient quality	No data available	No data available	No explanation given?
Latvia	No data available	No data available	No data available	No data available	No data available	No data available	No data available
Lithuania	Low food waste amounts	Data of sufficient quality	Data of insufficient quality.	Data of insufficient quality.	No data available	Data of insufficient quality.	No information on what was included was retrieved.
Luxembourg	No data available	Low food waste amounts without any explanation given	Data of sufficient quality	Data of sufficient quality	No data available	Low food waste amounts without any explanation given	Data of sufficient quality (excluding sewer and home composting)
Malta	No data available	Data of insufficient quality.	No data available	No data available	No data available	No data available	Data of sufficient quality (excluding sewer and home composting)
Netherlands	No data available	No data available	No data available	Data of sufficient quality	Data has been submitted but no estimation of food waste amounts has been made.	Several or major waste flows not being covered.	Data of sufficient quality (excluding home composting)
Poland	No data available	No data available	No data available	No data available	No data available	No data available	No data available
Portugal	Low food waste amounts without any explanation given	Low food waste amounts. Several or major waste flows not being covered.	No data available	No data available	No data available	No data available	No data available
Romania	No data available	No data available	No data available	No data available	No data available	No data available	No data available
Slovakia	Low food waste amounts. Several or major waste flows not being covered.	Several or major waste flows not being covered.	No data available	No data available	No data available	No data available	No data available
Slovenia	Low food waste amounts. Several or major waste flows not being covered.	No explanation of what was included in the amounts could be given.	Data of sufficient quality	Data of sufficient quality	No data available	Low food waste amounts. Several or major waste flows not being covered.	Park waste and non household MSW are included in the amounts
Spain	No data available	No data available	No data available	No data available	No data available	No data available	No data available
Sweden	Low food waste amounts. Several or major waste flows not being covered.	Byproducts are included in the amounts.	No data available	Data of sufficient quality	No data available	Data of sufficient quality	Data of sufficient quality
United Kingdom	Data of insufficient quality.	Data of sufficient quality	Data of sufficient quality	Data of sufficient quality	No data available	Data of sufficient quality	Data of sufficient quality

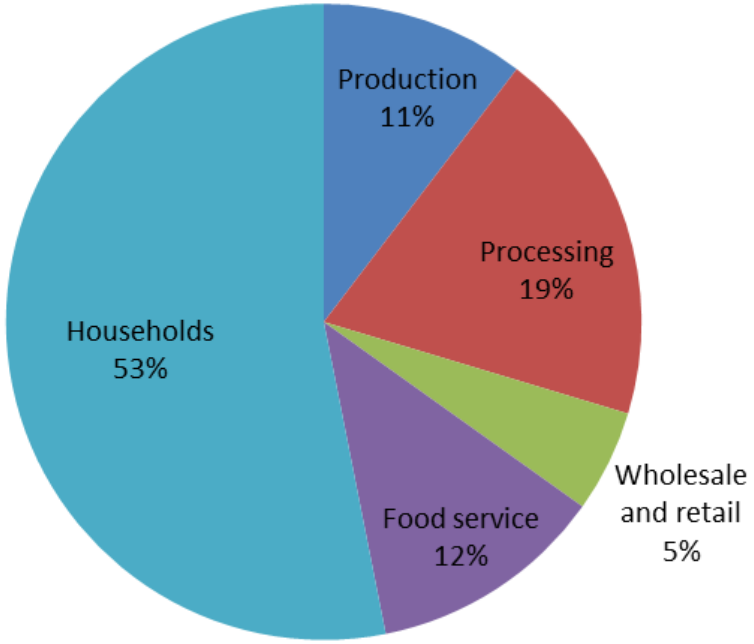
EU 28 has large ambitions reducing food waste

..but the current quantification methodologies are not in phase with the ambition.



Food waste estimates for EU28

- **88 (± 14)** million tonnes of food waste per year
- Equivalent of **20%** of all produced food in EU
- **143** billion euros
- **173** kilograms of food waste per person



Source: Stenmarck Å., Jensen C., Quested T., Moates G. (2016): Estimates of European food waste levels. Report of the project FUSIONS (contract number: 311972) granted by the European Commission (FP7). ISBN 978-91-88319-01-2

Food waste quantification manual

- Quantifying food waste in each sector (i.e. stage) of the food chain
- Combining sectorial quantifications using a common framework at national level
- Reporting the results of the national food waste quantification study at country level in a consistent and comparable manner.
- Harmonised with the FLW-protocol

Environmental and socio-economic impacts

- methodologies and baseline assessment of:

Socio-economic impacts of food waste

- nutritional losses
- impacts on global food prices
- social impacts on food redistribution organisations

Environmental impacts of food waste

- global warming potential
- acidification potential
- eutrophication potential

Source: Scherhaufer et al. (2015)

Baseline results of impacts on health and nutrition

Nutrients	Number of people that could meet their recommended intake a day from nutrients present in food waste
Vitamin C	90 resp. 97 million
Retinol equ.	407 resp. 150 million
Total dietary fibre	139 resp. 173 million
Total iron	157 resp. 169 million
Zinc	181 resp. 210 million

- Nutritional data from food composition databases describe edible products only → inclusion of inedible parts necessary
- Data on food product level necessary
- Results are subject to certain biases → a first estimation

Source: Scherhaufer et al. (2015)

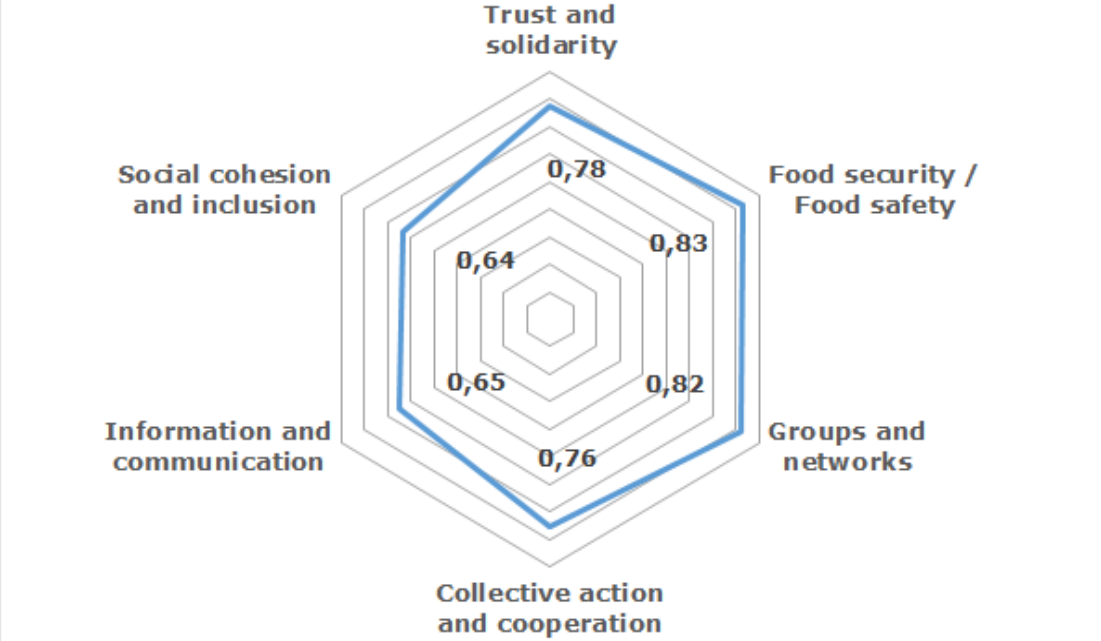
Socio-economic impacts on global food prices

- Approach: Comparative analysis for a framework paper based on:
  - MAGNET Computable General Equilibrium (CGE) model
  - AGLINK - COSIMO FAO OECD partial equilibrium model and economic framework of FLW literature
- CGE Scenario analysis looked at producers and consumers in EU and SSA
- Assumes inaction in SSA and all things constant/ceter paribus
- no economic cost considered for the implementation of the prevention and reduction of FLW
- policy and awareness raising can influence the outcome

Source: Scherhaufer et al. (2015)

Social impacts of food redistribution

- Methodology: social capital from the World Bank
- Survey sent to 211 food redistribution organisations in Europe
- Response rate of 15%



Source: Scherhaufer et al. (2015)

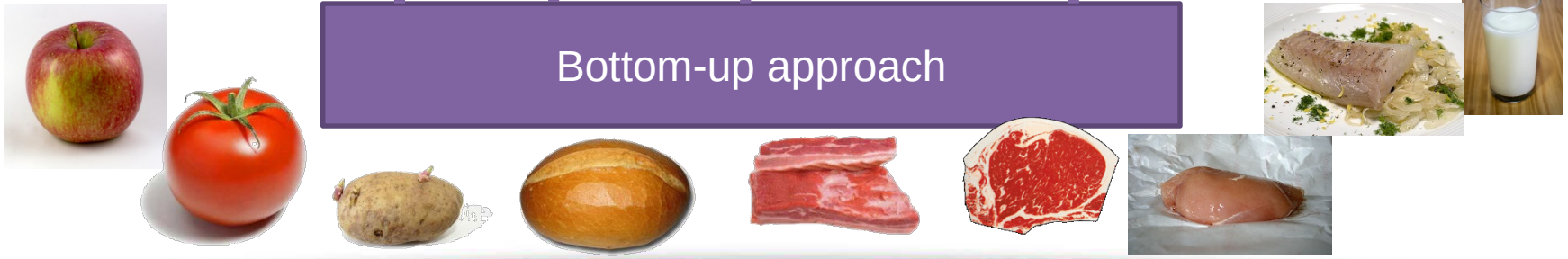
Environmental assessment

Top-down approach

Functional unit:

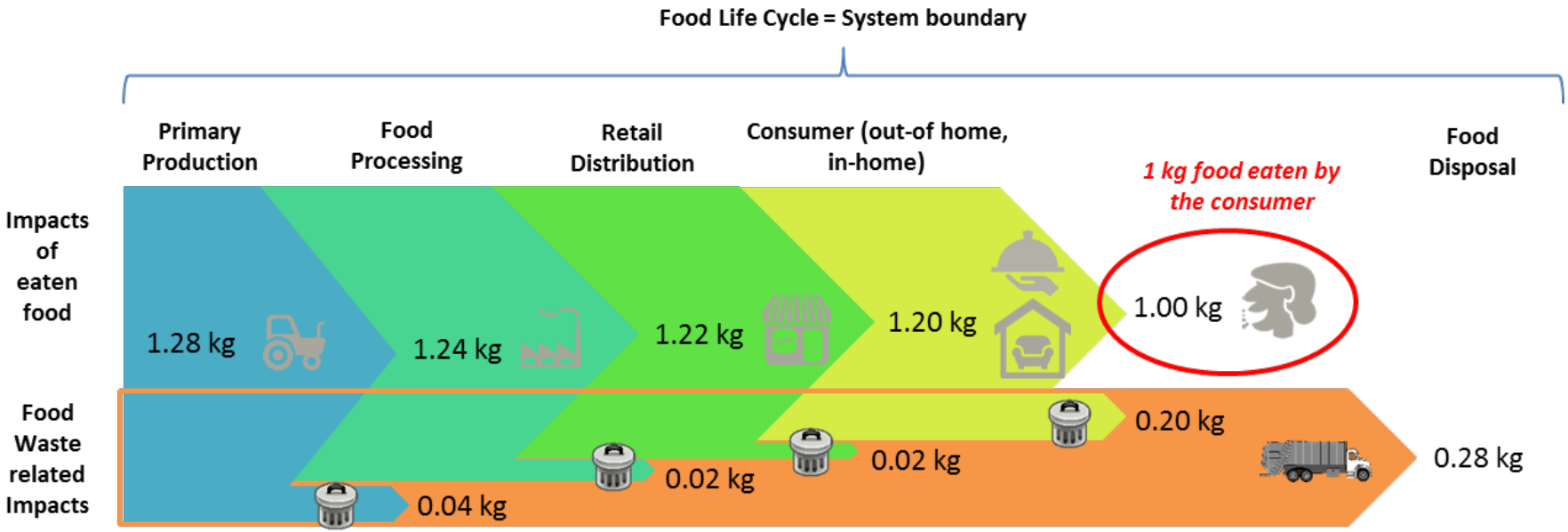
1 kg food product eaten by the consumer

Bottom-up approach

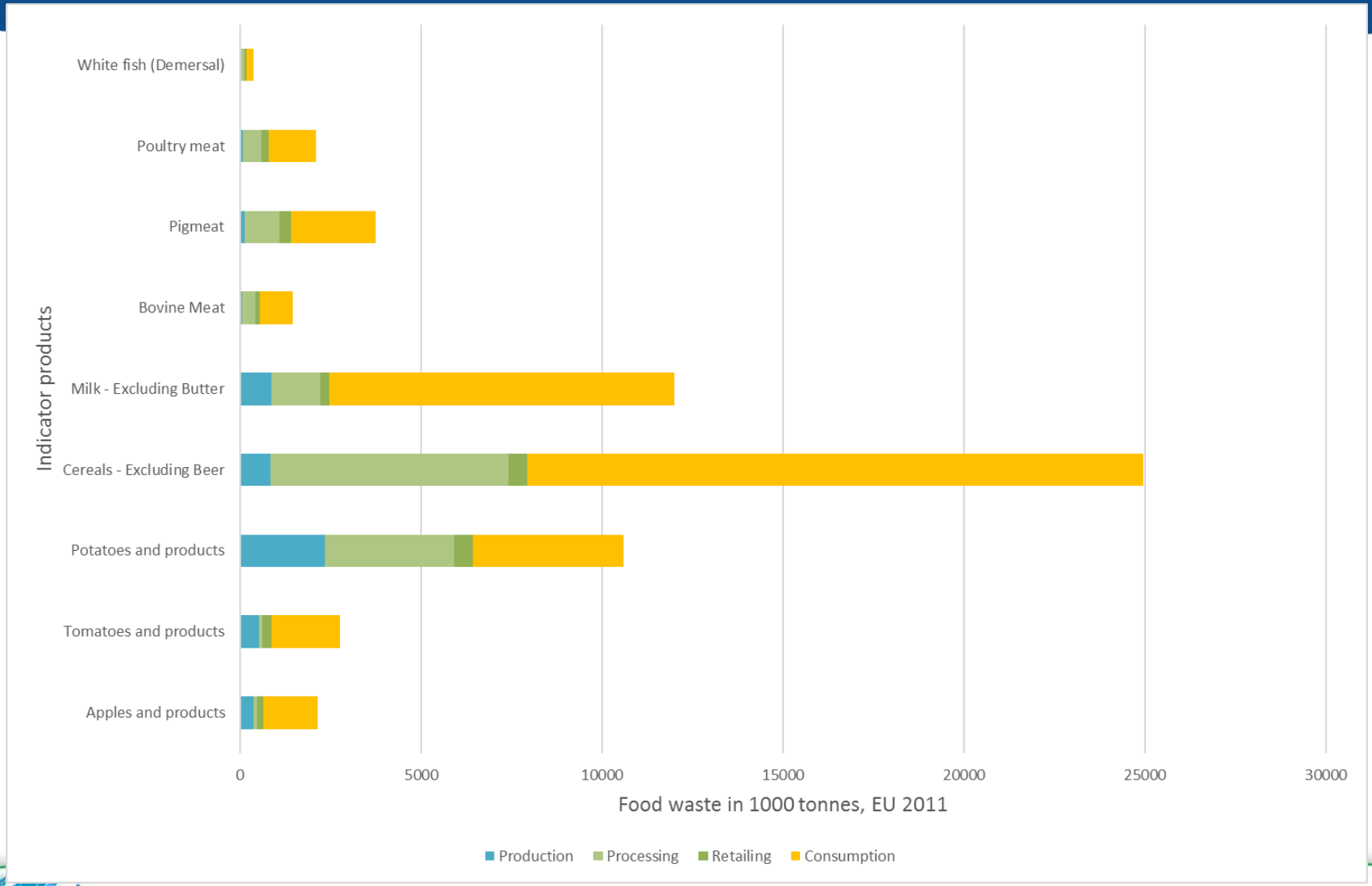


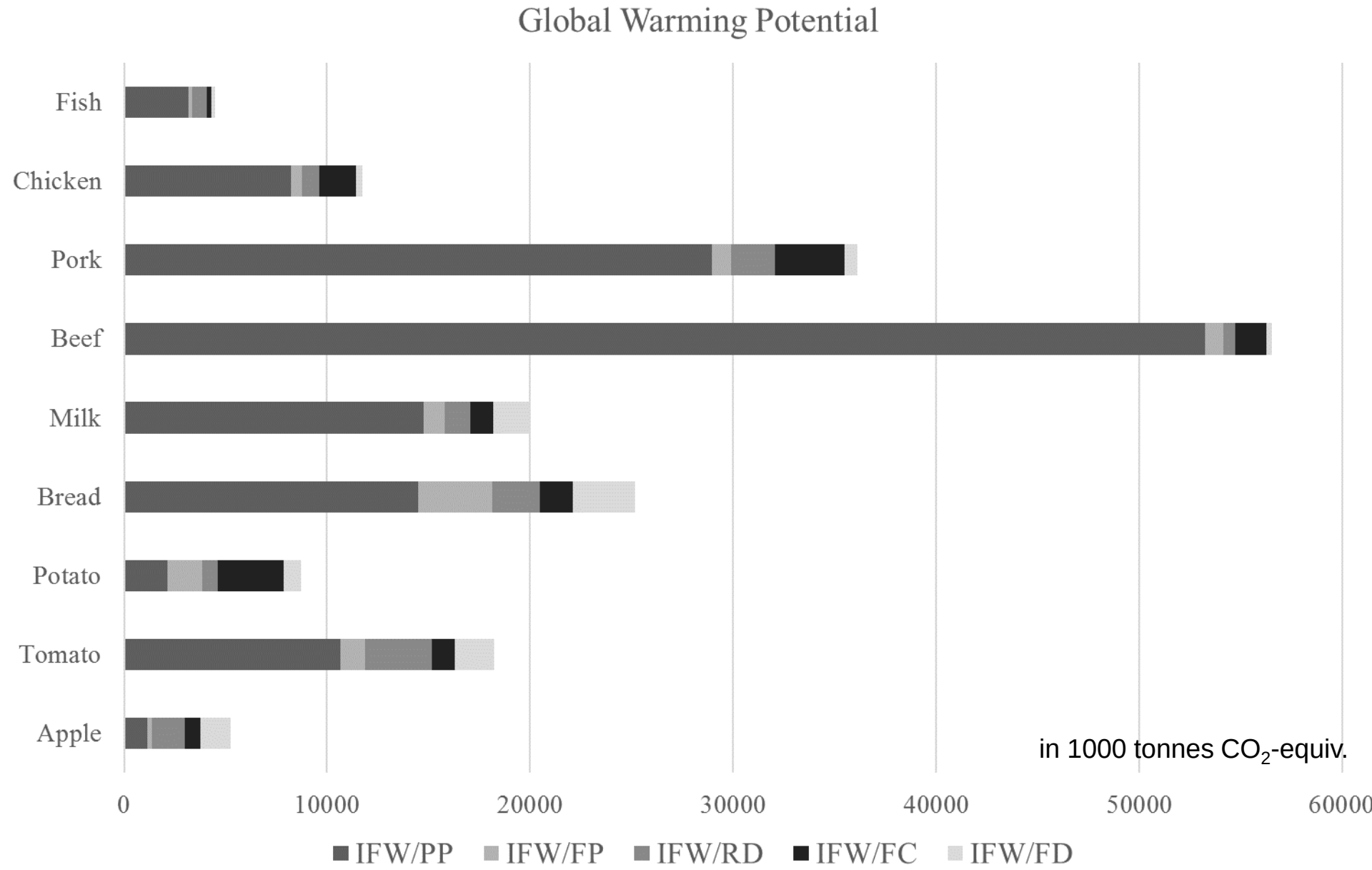
Food Life Cycle vs. Food Waste related Emissions

on the example of an apple:

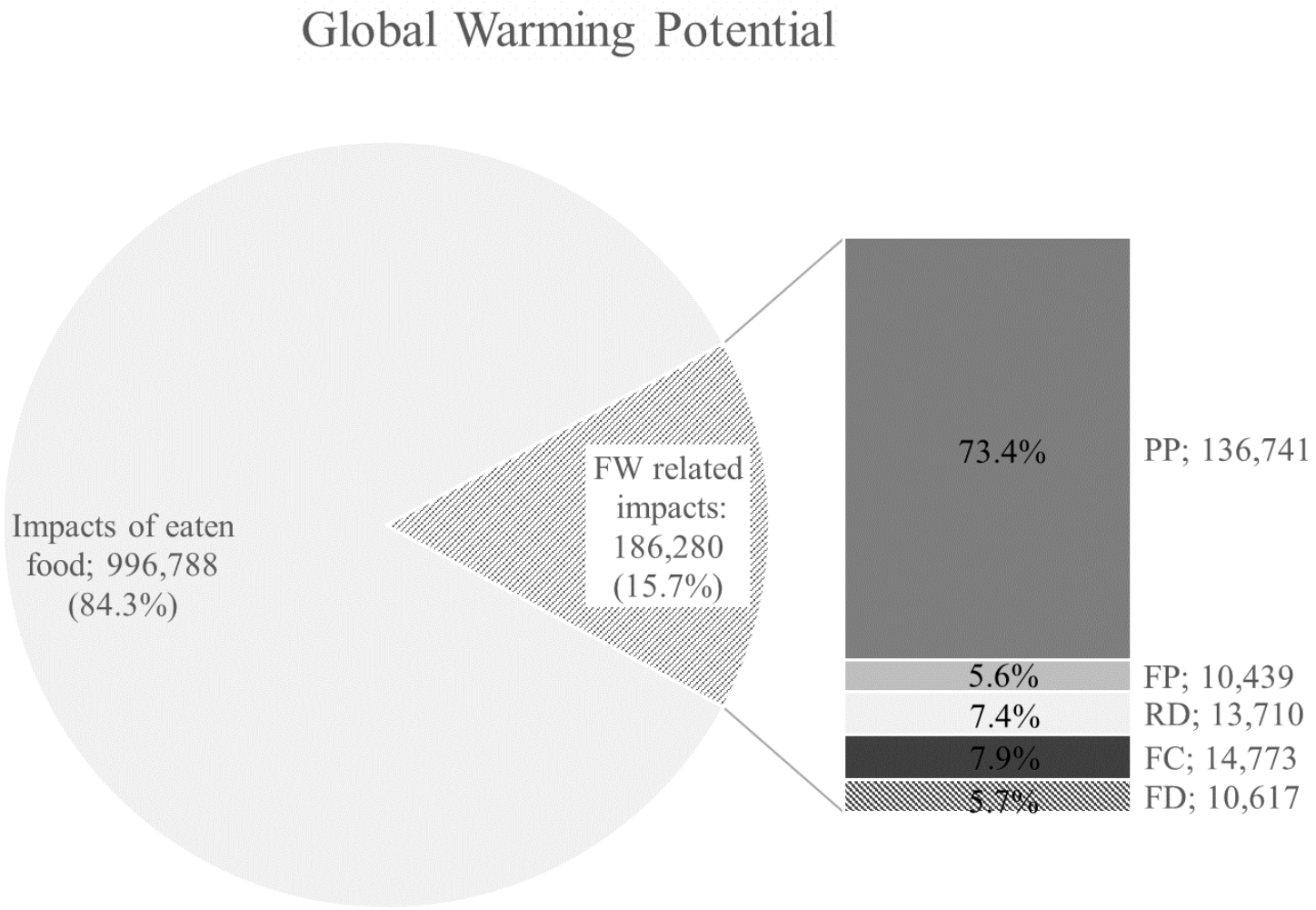


EU Food waste per indicator category




Global Warming Potential
Fish
Chicken
Pork
Beef
Milk
Bread
Potato
Tomato
Apple
0
10000
20000
30000
40000
50000
60000
in 1000 tonnes CO_2-equiv.
IFW/PP
IFW/FP
IFW/RD
IFW/FC
IFW/FD

GWP of eaten food and food waste in EU



in 1000 tonnes CO_2-equiv.

Environmental impacts of food waste

Environmental category	Food waste related impacts	Share of impacts from production
GWP in 1000 tonnes CO_2-equ.	186,279.96	73%
AP in 1000 tonnes SO_2-eq.	1,661.37	94%
EP in 1000 tonnes PO_4-eq	737.46	96%

Food waste related emissions in EU-28 is approximatively the equivalent of Netherlands' total GHG emissions

Policy Recommendations

- Clear and concise LEGISLATION: related to food redistribution (health and safety, environmental health, trading standards, taxation)
- Tools to identify appropriate FUNDING (e.g. via online forum, identify key organisations for financing)
- Build and expand NETWORKS (e.g. to increase visibility of projects)
- DIALOGUE on EU level (via an annual physical or virtual conference)

Some Highlights: outputs & reports

Outputs (reports):

- Food Waste Drivers
- Feasibility studies + Material
- FUSIONS definitional framework for food waste
- Socio-economic and environmental assessment
- Standard approach on quantitative techniques

  → FUSIONS Quantification Manual
- Policy Recommendation

FUSIONS Website
http://www.eu-fusions.org/index.php

FUSIONS Social Innovation projects (reports & resources developed)
http://www.eu-fusions.org/index.php/social-innovations/fusions-feasibility-studies

Contact info:
David Rogers:
david.rogers@wrap.org.uk

European responses

- EC Circular Economy Package (2.12.2015)

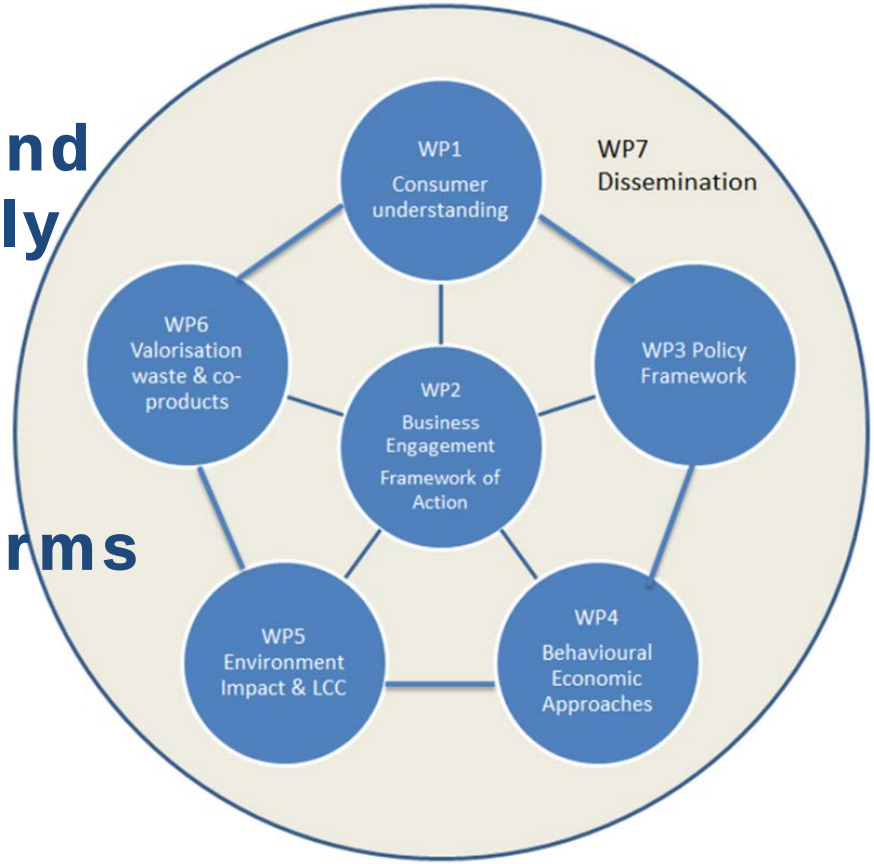
Target = Sustainable Development Goal 12.3 by the UN

→By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses

→ Harmonised monitoring

Resource Efficient Food and dRink for the Entire Supply cHain (2015 – 2019)

- 26 partners
- Multi stakeholder platforms



REFRESH is funded by the Horizon 2020 Framework Programme of
641933. The contents of this document are the sole responsibility of t
views of the European Union

REFRESH Food Waste 2017:
multi-stakeholder conference connecting champions of food waste reduction and valorisation

Brussels, 19 May 2016

18-19 May 2017 in Berlin

REFRESH is funded by the Horizon 2020 Framework Programme of the European Union under Grant Agreement no. 641933. The contents of this document are the sole responsibility of REFRESH and can in no way be taken to reflect the views of the European Union

Zusammenfassung

- Das Projekt FUSIONS konnte weitere Akteure auf EU-Ebene gewinnen, wichtige Schritte in Richtung Harmonisierung der Erhebungsmethoden setzen, Barrieren zur LM-Reduktion identifizieren, politische Empfehlungen ableiten und eine Abschätzung zu den Mengen und den Auswirkungen liefern.

- Ein Großteil der klimarelevanten Emissionen entsteht in der Produktion. Die Vermeidung von Lebensmittelabfällen kann der globalen Erwärmung entgegen wirken.

- **„Wenn viele kleine Leute an vielen kleinen Orten viele kleine Dinge tun, können sie das Gesicht der Welt verändern.“**

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Danke für Ihre Aufmerksamkeit!

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