

Food waste accounting within the EU

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Outline

- Policy context
- EU Platform on food losses and food waste and Delegated Act on food waste measurement
- Food waste accounting in the EU
- Modelling approach to estimate food waste at EU/country level

Context

- Globally **1.3 billion tonnes of food wasted** annually
- EU committed to **SDG 12.3 target** (-50% food waste at consumption and distribution, overall reduction along the entire food chain by 2030)
- EU **bioeconomy strategy** and **circular economy** action plan promote the reduction and valorisation of food waste



Context

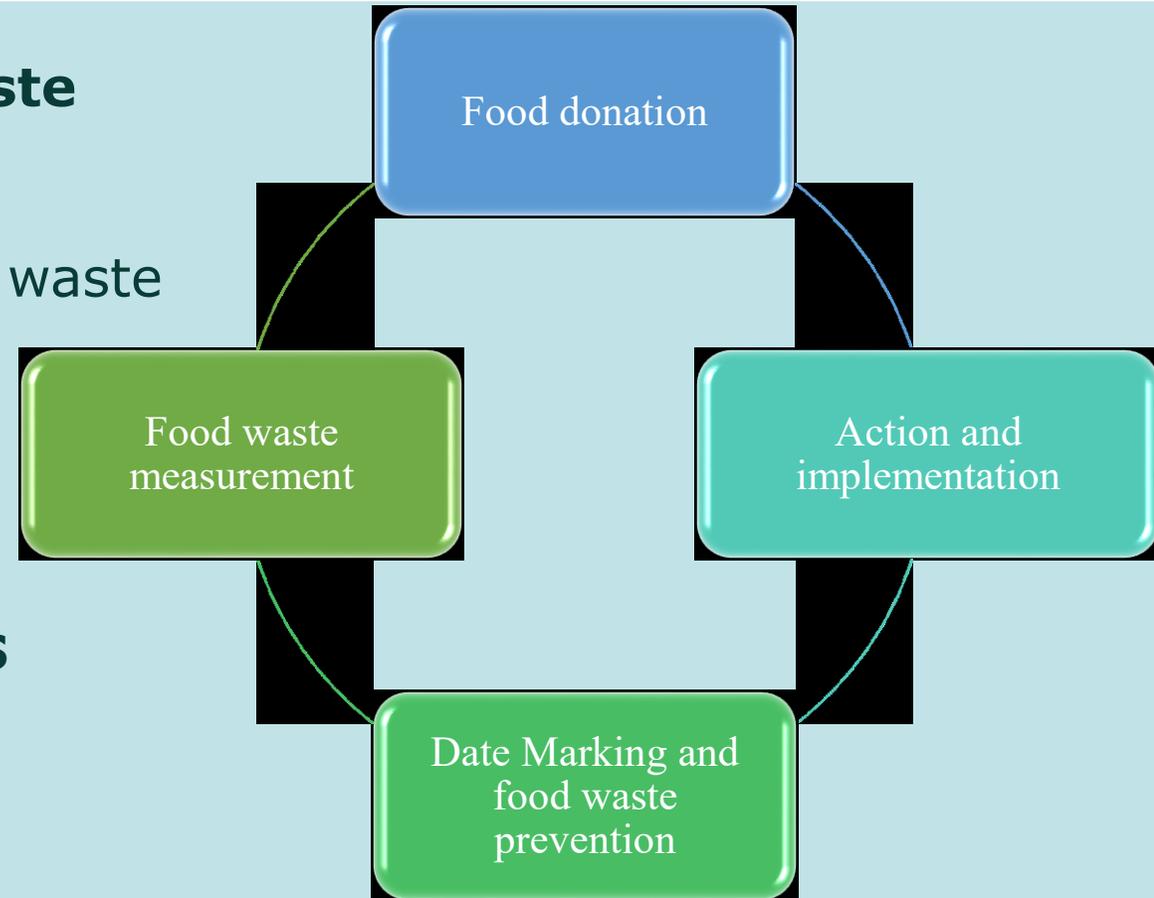
EU Platform on food losses and food waste

Aims to support all actors in:

- defining measures needed to prevent food waste
- sharing best practices
- evaluating progress made over time

4 SUB-GROUPS

https://ec.europa.eu/food/safety/food_waste/eu_actions/eu-platform_en



Harmonizing food waste accounting in the EU

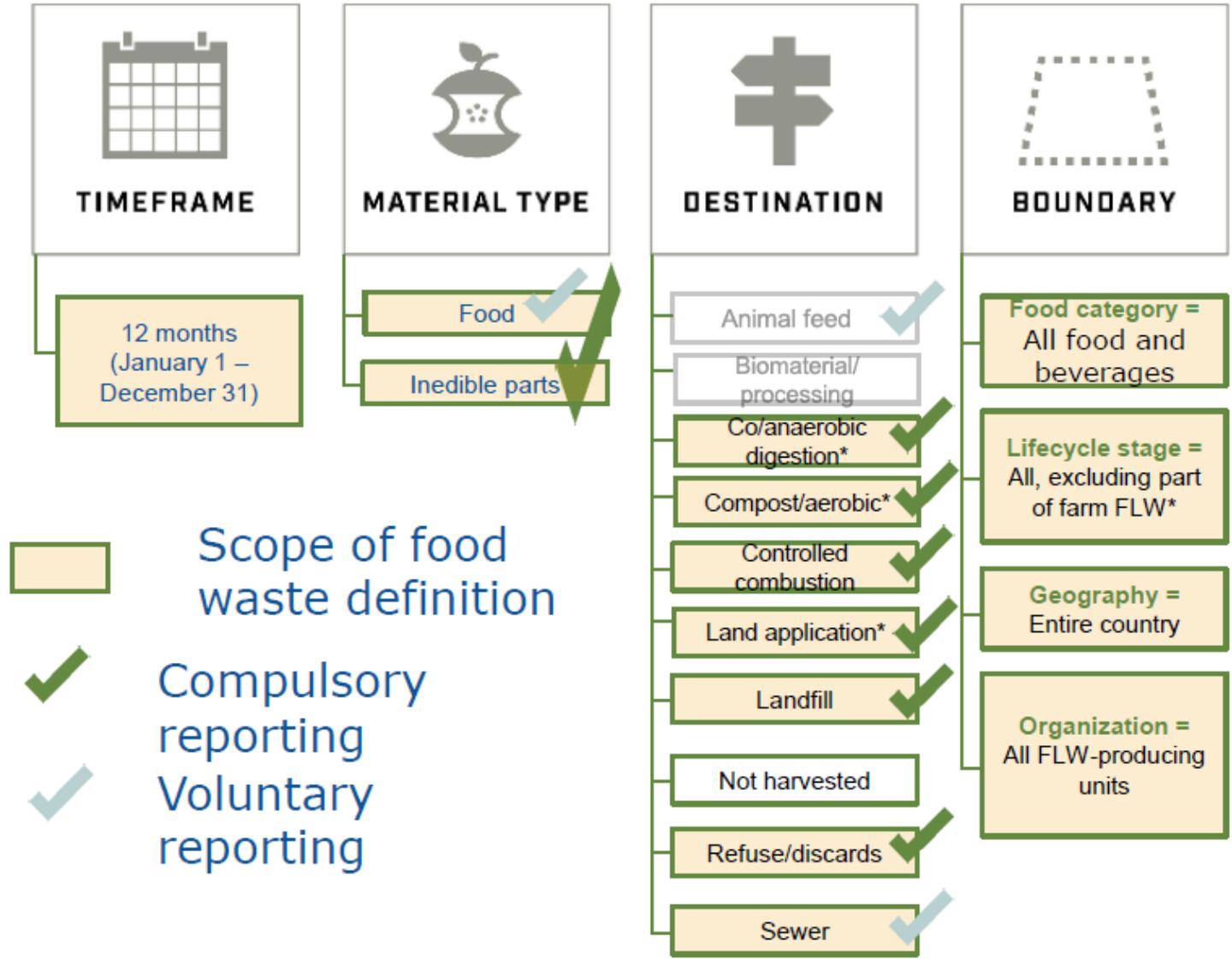
Delegated Decision on food waste measurement

Setting a “common methodology and minimum quality requirements for the uniform measurement of levels of food waste”

- Addressed to Member States (responsible for organizing the data collection)
- Flexibility in the method(s) to be used to measure food waste
- Member States to provide explanations regarding methods used



Harmonizing food waste accounting in the EU



Challenges of food waste accounting

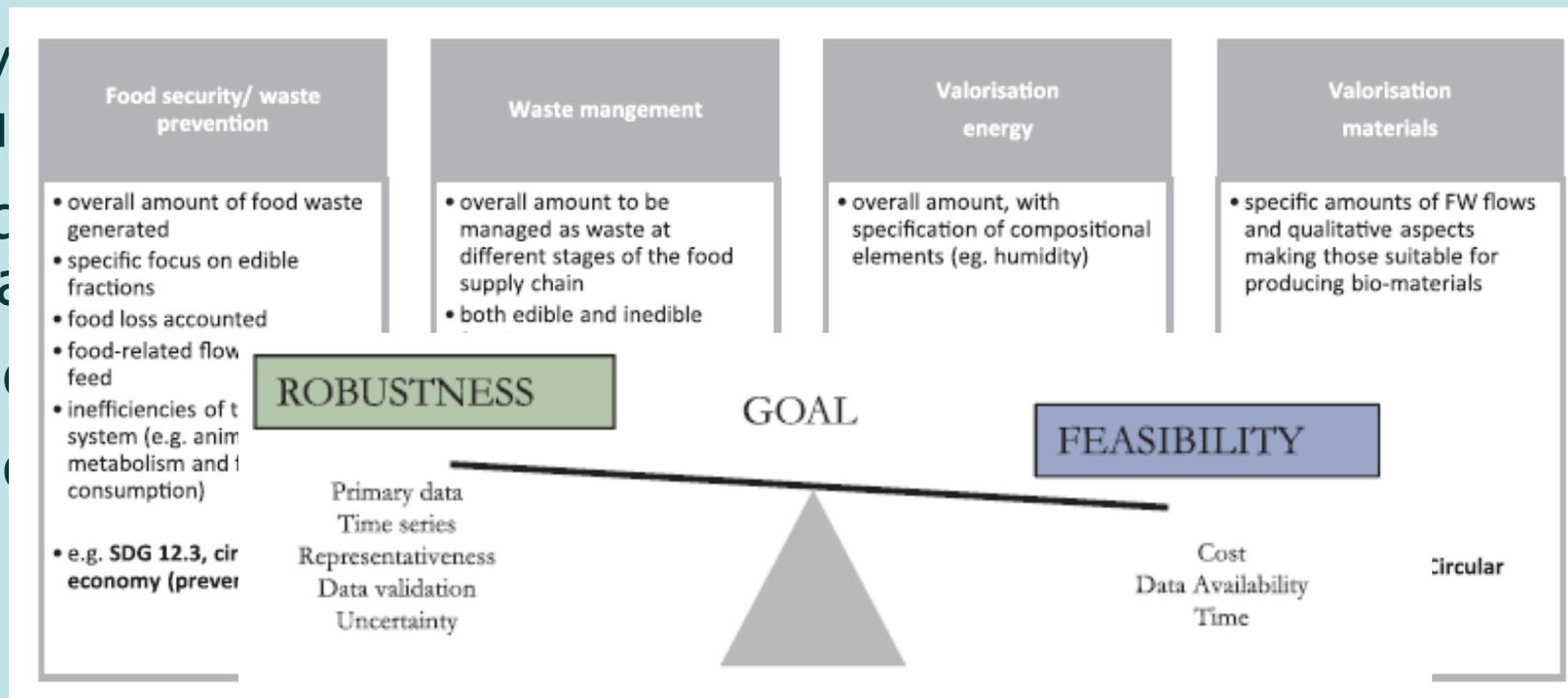
- Have a clear aim of the study to select the most suitable quantification method

- Have a clear boundary

- Find data

- Account

- Account



...e, system

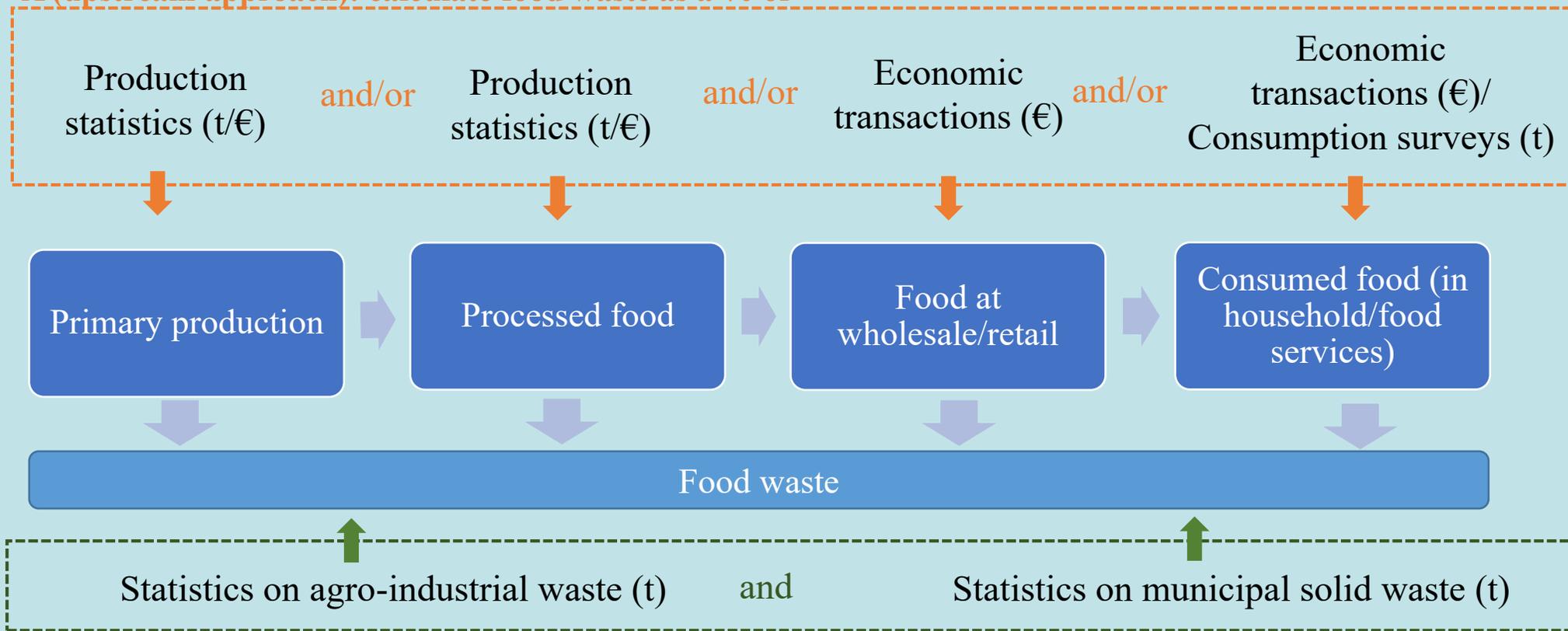
...tiveness of

Corrado, S., Caldeira, C., Eriksson, M., Hanssen, O.J., Hauser, H.E., van Holsteijn, F., Liu, G., Östergren, K., Parry, A., Secondi, L. and Stenmarck, Å., 2019. Food waste accounting methodologies: Challenges, opportunities, and further advancements. *Global food security*, 20, pp.93-100.

Corrado, S. and Sala, S., 2018. Food waste accounting along global and European food supply chains: State of the art and outlook. *Waste management*, 79, pp.120-131.

Modelling food waste generation at the macro-scale: approaches for quantification

A (upstream approach): calculate food waste as a % of



B (downstream approach): calculate food waste as a % of

Food waste accounting in the EU

Several studies on food waste exist. Discrepancies in estimates are due to:

- Definition of food waste

Study	Definition Distinction food loss/waste	Type of material				Destination	
		Edible fraction	Inedible fraction	Liquid waste	Distinction avoidable/ unavoidable	To waste facilities	To feed and bio- refineries
Monier et al. (2010)		X	X			X	
FAO (2011), Gustavsson et al. (2013)	X	X		X (milk)		X	X
Bräutigam et al. (2014)		X		X (milk)		X	X
Vanham et al. (2015)		X	X	X (milk, alcoholics)	X	X	
Porter et al. (2016)	X	X	X			X	X
Stenmarck et al. (2016)		X	X	X		X	
Alexander et al. (2017)	X	X	X			X	
Eurostat (2017a)		X	X			X	
Tisserant et al. (2017)		X	X			X	
Kemna et al. (2017)		X	X	X	X	X	

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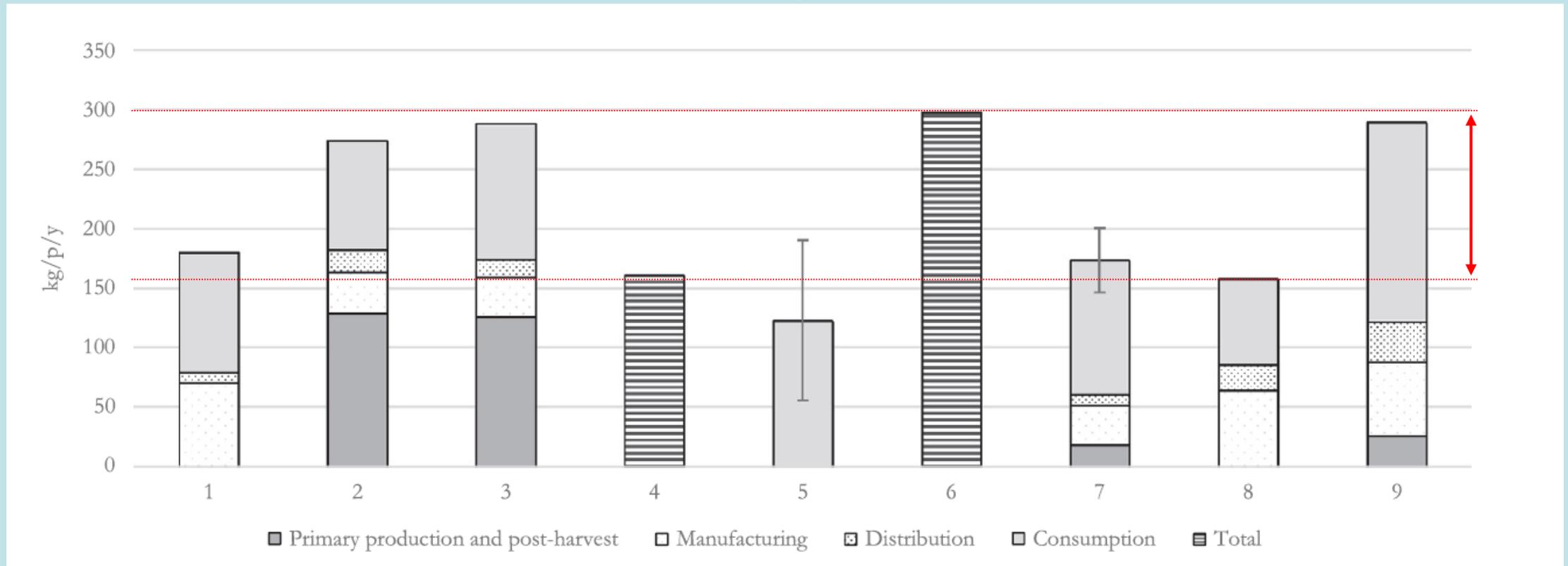


Fig. 3. European FW generation per capita and per year and uncertainty (minimum and maximum value for 5; 95% confidence interval for 7), when reported in the study. 1: Monier et al. (2010); 2: FAO (2011); 3: Bräutigam et al. (2014); 4: data collected by Eurostat (2017b); 5: Vanham et al. (2015); 6: Porter et al. (2016); 7: Stenmarck et al. (2016); 8: Tisserant et al. (2017); 9: Kemna et al. (2017). FAO (2011) includes only edible fraction of FW.

Food waste accounting in the EU

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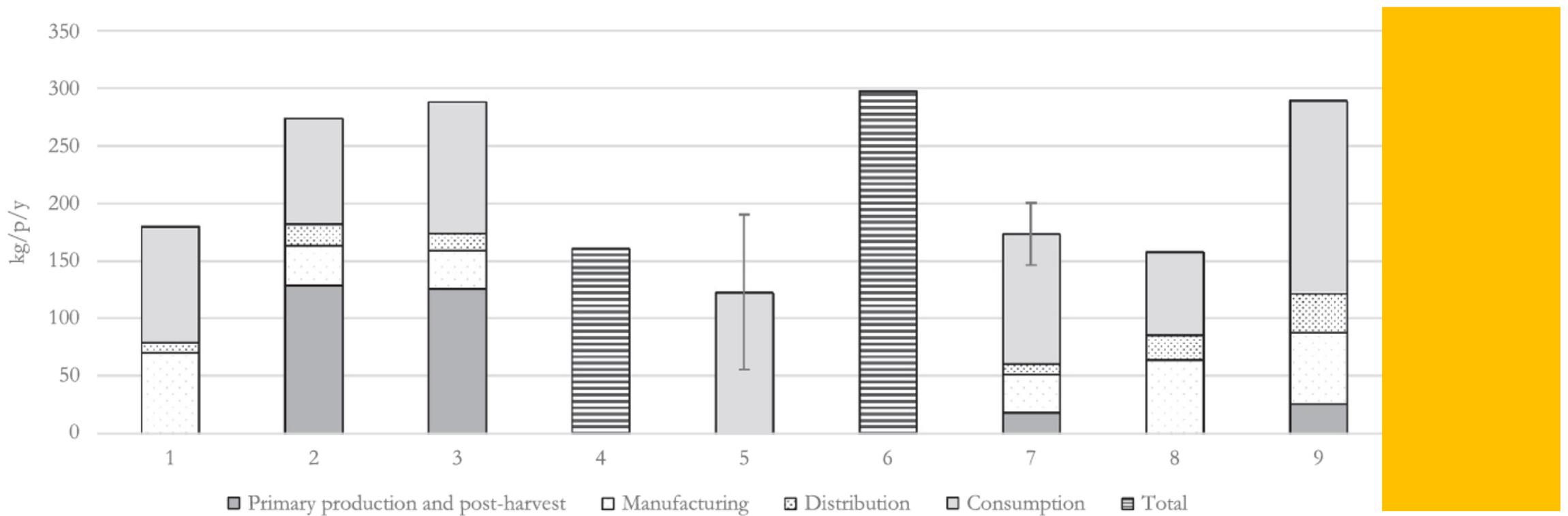


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Food waste modelling framework

Currently there is no statistical data specifically on “food waste” in EU countries.

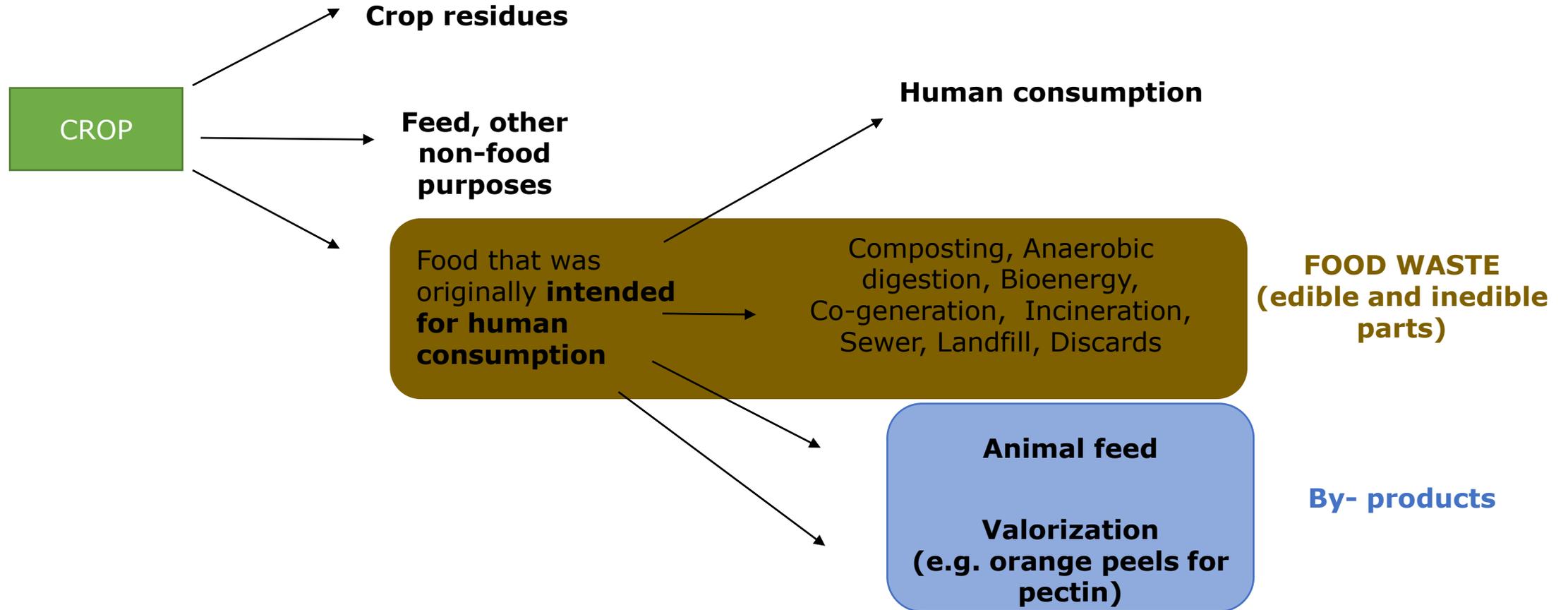
Modelling approach to estimate food waste at EU level / country level:

- Based on FUSIONS food waste definition
- Based on available statistical data and on literature data
- Quantification is production-based
- Food chain stages: primary production, processing and manufacturing, distribution and retail, consumption in households and food services
- Product groups considered: sugar beet, oil crops and nuts, potatoes, vegetables, fruit, cereals, meat, dairy, eggs, fish
- Assessment of the results in light of the data reported in waste statistics

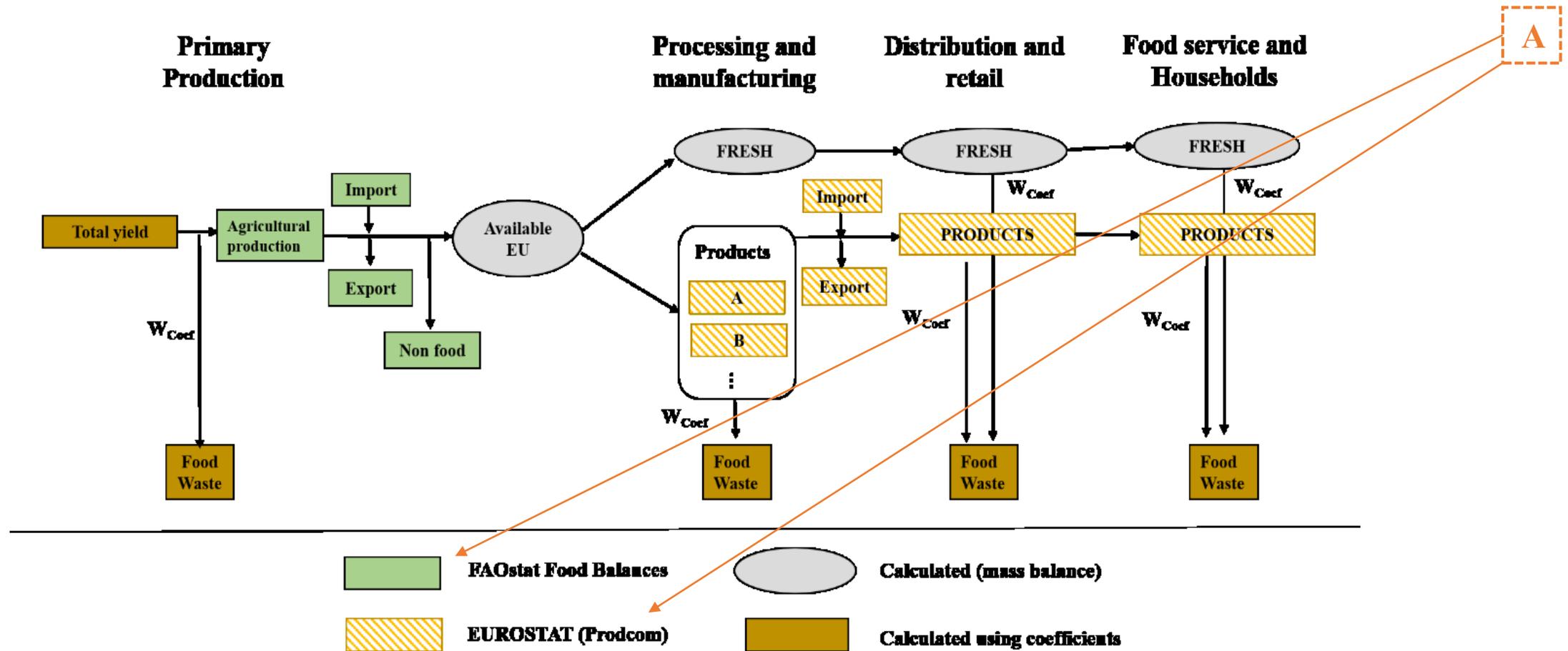
A
(upstream approach)

B
(downstream approach)

Food waste definition



Food waste modelling framework: structure

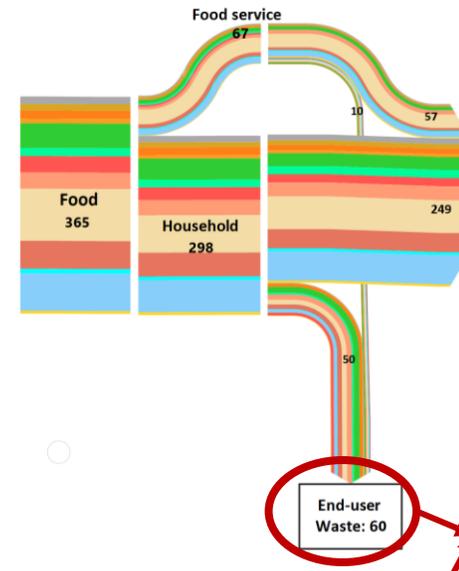
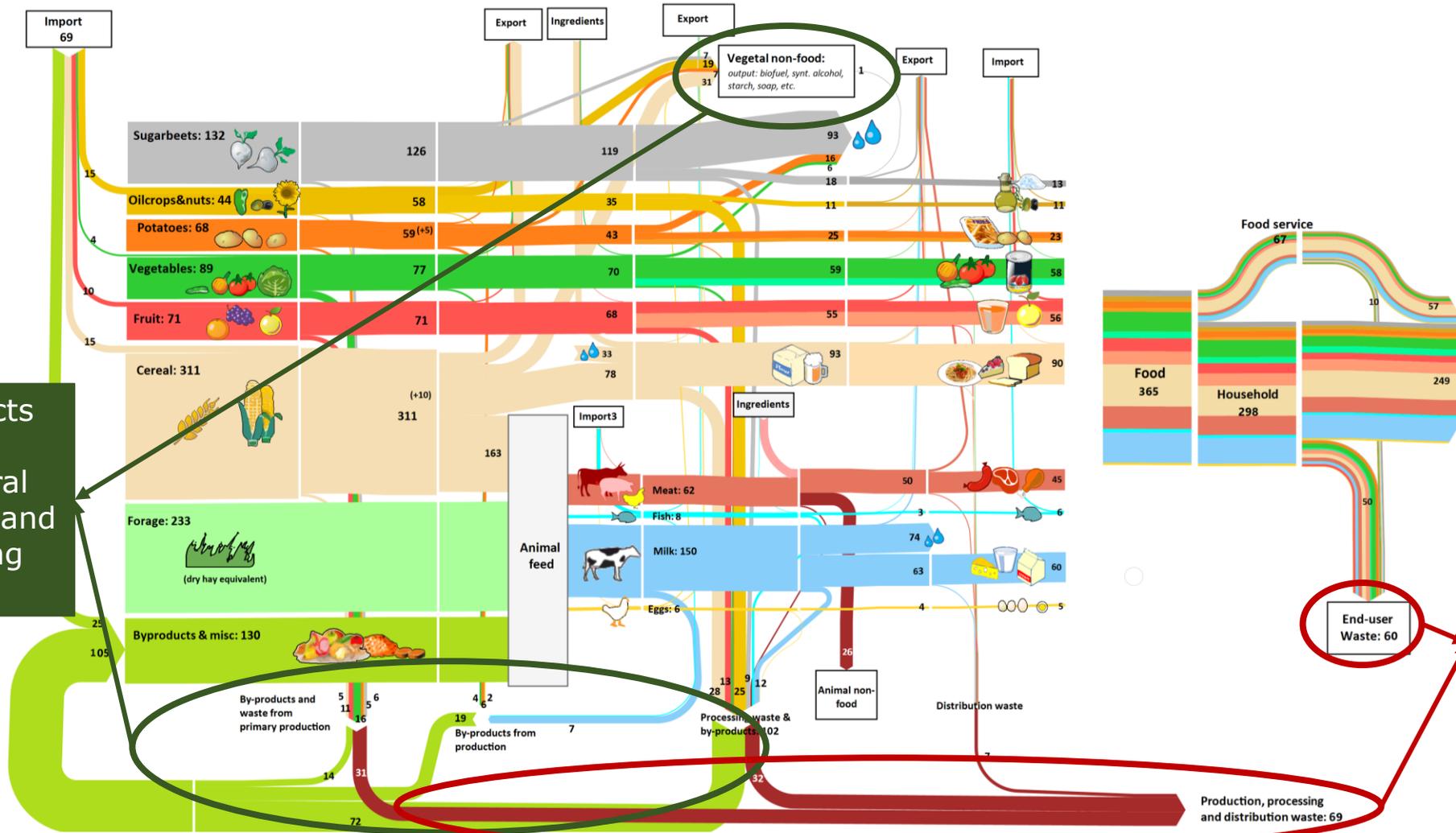


Food waste and by-products in the EU

A

Year 2011
Flows in Mt (wet mass)

By-products from agricultural production and processing 112 Mt

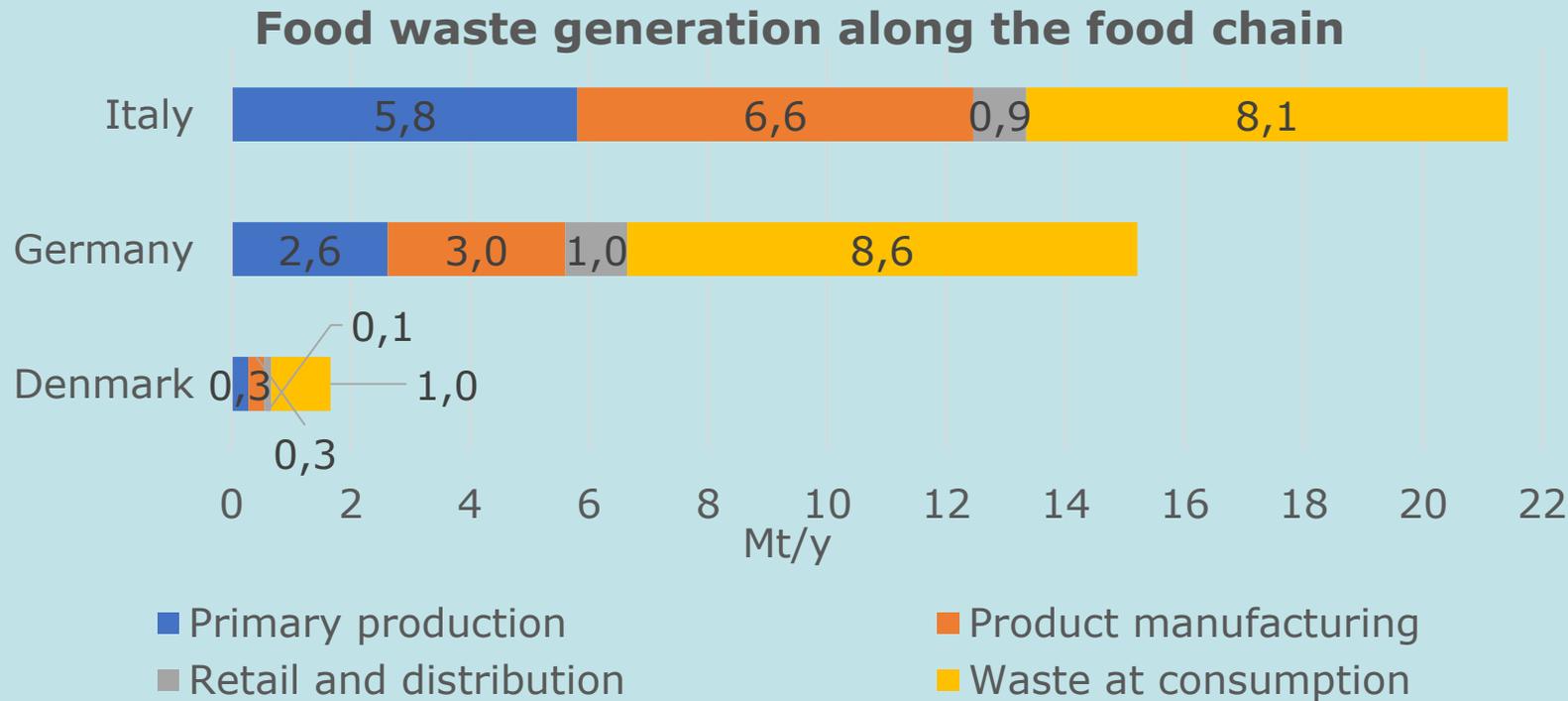


Food waste along the food chain 129 Mt

Food waste and by-products at country level

A

Three case-studies performed: Germany, Italy, and Denmark (preliminary results)



Different food production and consumption patterns captured:

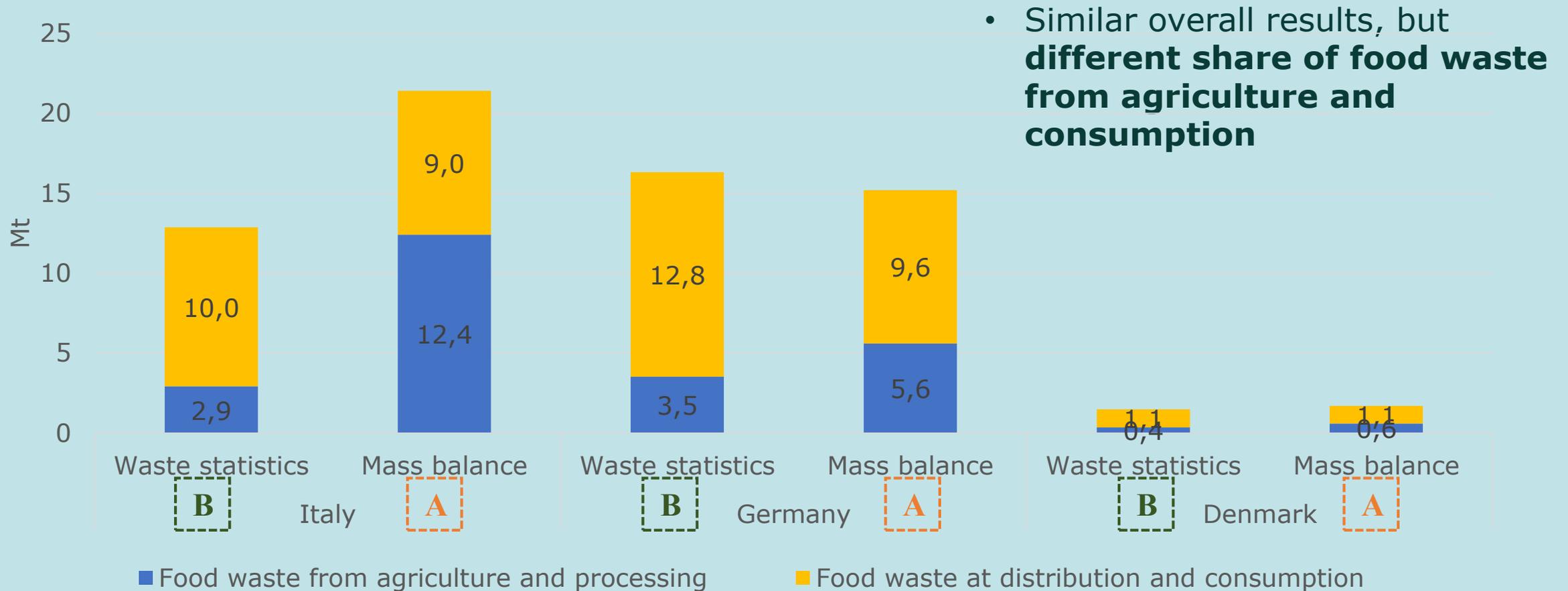
- **Waste** from manufacturing more relevant for Italy (**reflects production trends**)
- Waste at consumption higher in Germany. **Per capita** higher in Denmark (179 kg), followed by Italy (136 kg), and Germany (107 kg)

Estimation of food waste from waste statistics

B

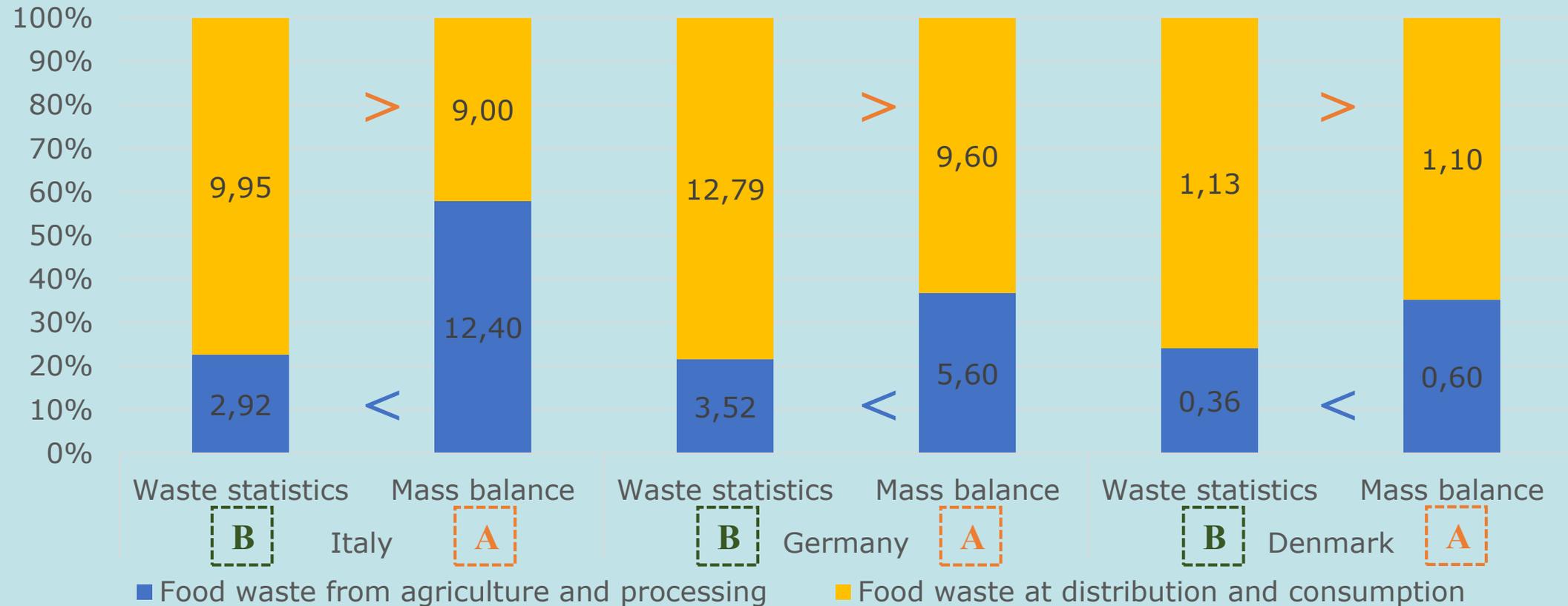
- Data on municipal solid waste was collected from EUROSTAT
- Waste streams reported for NACE activities
- Waste data relevant for food waste categories were selected:
 - W091 - Animal and mixed food wastes
 - W092 – Vegetal wastes
 - W101 – Household and similar wastes
- Food waste in household waste was determined using coefficients provided by empirical studies that estimated the composition of residual or mixed wastes.

Estimation of food waste from waste statistics



Estimation of food waste from waste statistics

- **Similar trend:** statistics lower waste for agriculture/industry, higher waste for consumption



Conclusions

- Need to **harmonize** food waste accounting at EU level
- Food waste modelling framework showed the potential to **identify hotspots in food waste generation** (monitoring of SDG 12.3) and it captures **patterns in food waste and by-products generation** (valorisation opportunities to support bioeconomy, circular economy)
- **Further analyses are needed** to explore the links between our modelling framework based on mass balance (upstream approach) and direct information on waste generation reported in waste statistics (downstream approach)



Any questions?

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