



## Retail food waste: Quantification and potential to change through the analysis of in-store data

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## In terms of definition

*According to EU, **Food Waste (FW)** is defined as any substance or product (processed, partially processed or unprocessed), intended to be, or reasonably expected to be ingested by humans, that becomes waste*



# Food waste is generated in each stage of the food supply chain



## ***Estimates of 2013 (FUSION Stenmark et al., 2016)***

- *Food waste in EU is estimated as 88 million tons per year, 173 kg/capita*
- *20% of total food produced in the EU*
- *53% of such waste is produced at households*

## ***Estimates of 2019 (UNEP Food Waste Index Report 2021)***

*931 million tonnes of food waste was generated in 2019:*

- *61 % of which came from households,*
- *26 % from food service*
- *13 % from retail*

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### Target 12.3



*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.*





- Food retailers are key supply chain players
- Various store sizes
- Geographical distribution
- Multiple suppliers/complex logistics
- Different shelf lives of products
- Lack of reported data





# The retailer dilemma



Customer  
supply/quality  
satisfaction

Customer waste  
concerns



Αυτή η φωτογραφία από Άγνωστος  
συντάκτης με άδεια χρήσης [CC BY-SA](#)



**Table 4:** Appropriate methods of measurement for different sectors

Sector	Methods of measurement					
Manufacturing (if included)	Direct measurement (for food- only waste streams)	Waste composition analysis (for waste streams in which food is mixed with non-food)	Volumetric assessment	Mass balance		
Retail					Counting/ scanning	
Food service						Diaries (for material going down sewer, home composted or fed to animals)
Household						

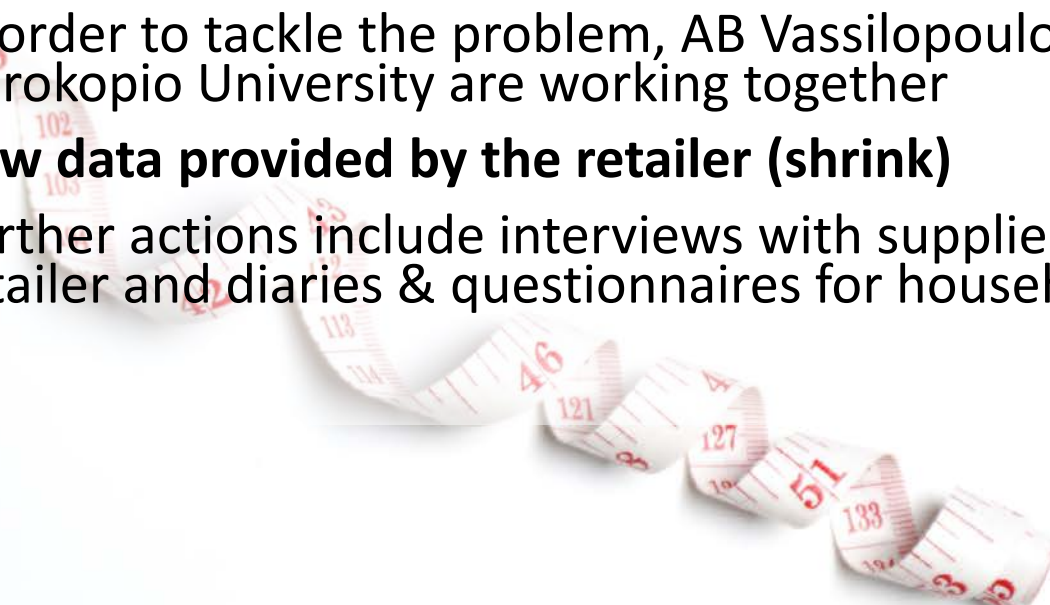
*Source: UNEP Food Waste Index Report 2021*



## Methodology

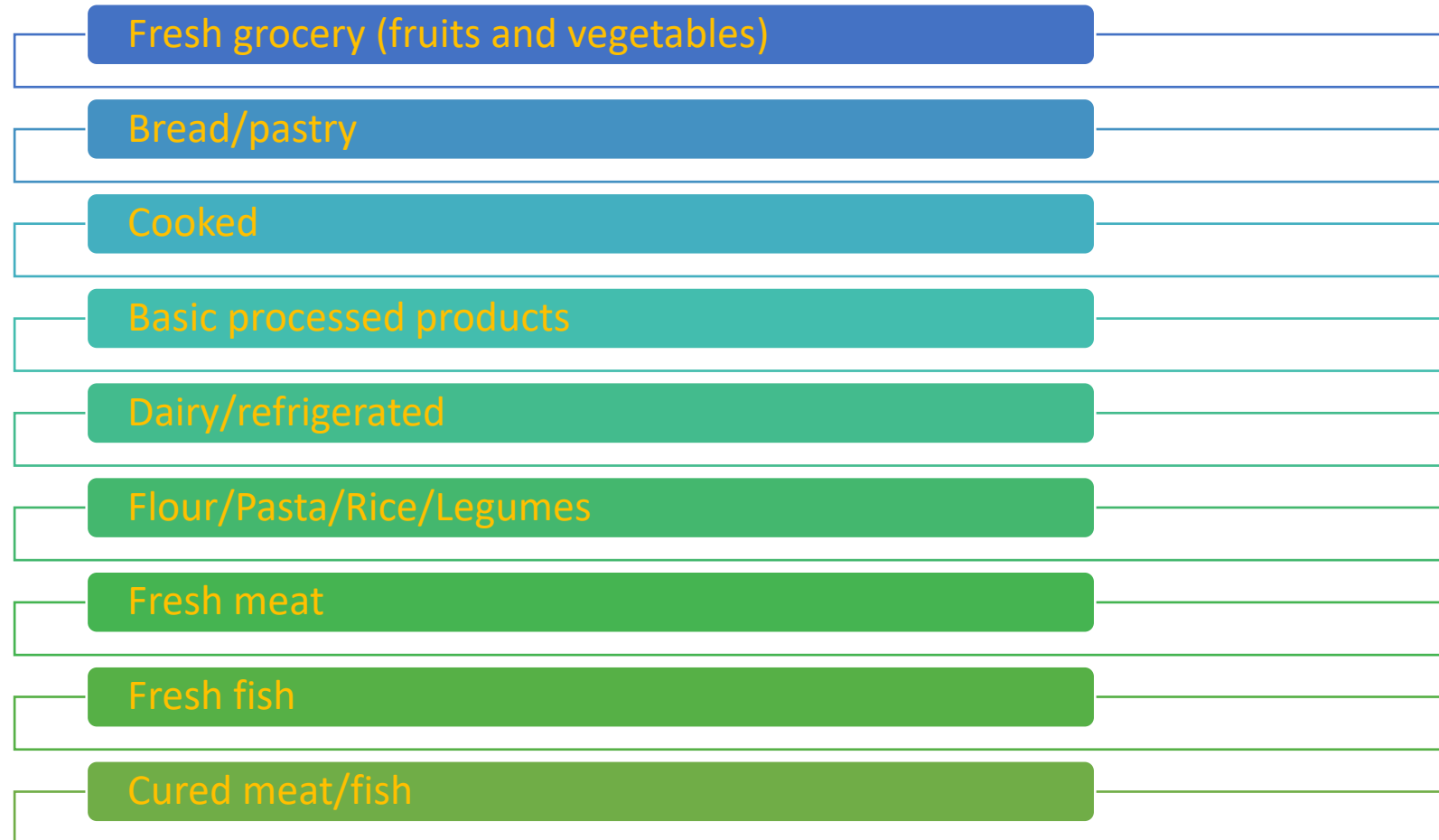
### *Quantification through the analysis of in-store data*

- AB Vassilopoulos: Leader-by-example
- In order to tackle the problem, AB Vassilopoulos and Harokopio University are working together
- **Raw data provided by the retailer (shrink)**
- Further actions include interviews with suppliers of the retailer and diaries & questionnaires for households





# In-store departments – food categories



# Five reported areas



## Key results

- During 2019: **8,584,171 kg of food waste were generated, for a total value of 22.8 million €**
- 35,1% wt. (18.3% value) from fresh grocery department
- Dairy/refrigerated (25.4% wt./ 22.2% in value)
- Bread/Pastry/Cooked (17.1% wt./ 20.3% in value)
- **Donations: 819,669 kg**

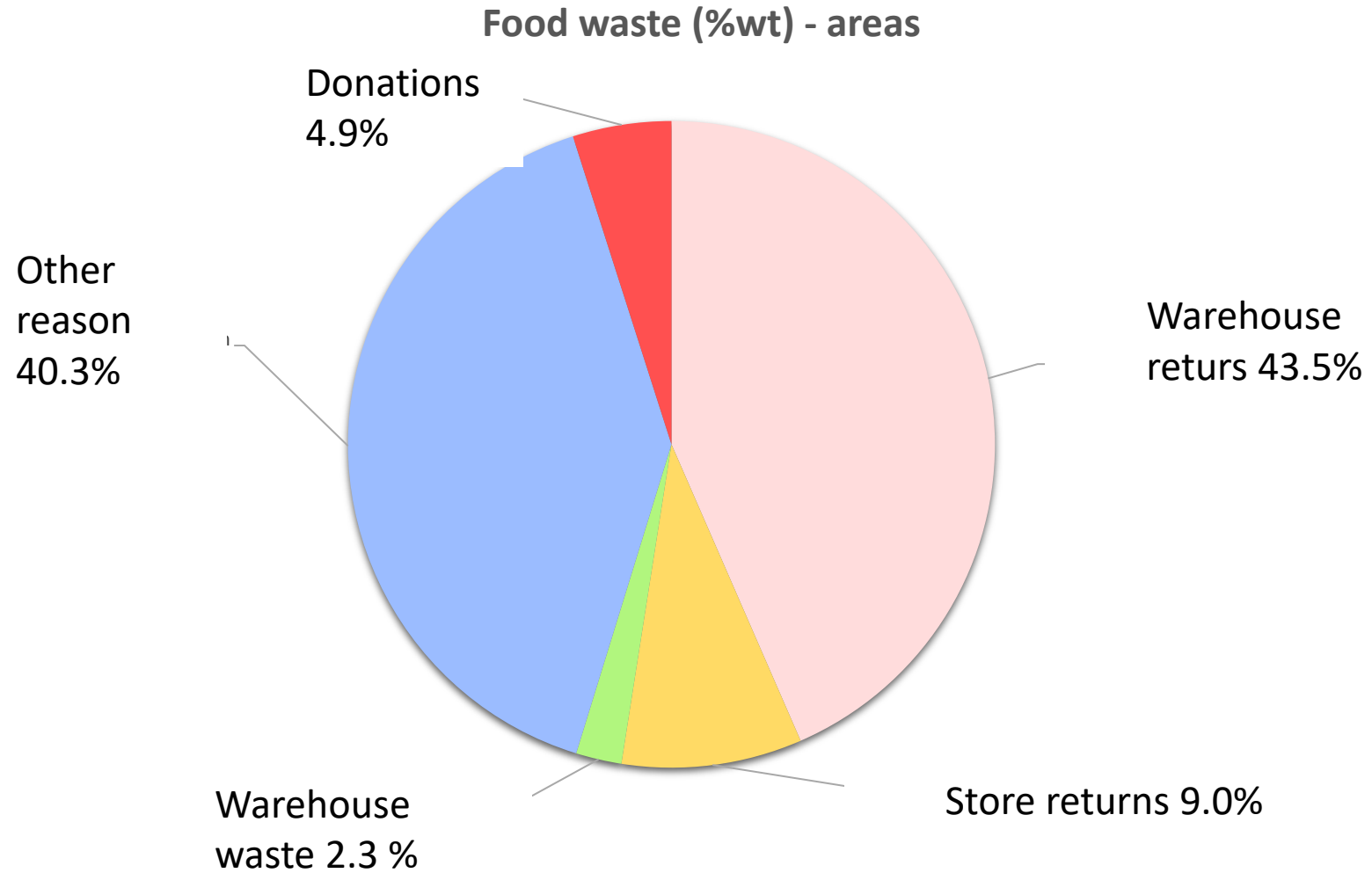






Department	Donation (kg)	Food Waste (kg)	Warehouse returns (kg)	Total (kg)	%
FRUITS, VEGETABLES & PLANTS	27,498	3,013,303	5,188,450	8,229,252	49.5%
DAIRY	387,928	2,176,676	732,634	3,297,238	19.8%
DELI & BAKERY	275,351	1,464,330	108,778	1,848,461	11.1%
MEAT & FISH (FRESH/PROCESSED)	53,679	1,261,186	182,460	1,497,326	9.0%
GROCERY FOOD	71,422	573,787	686,545	1,331,755	8.0%
FROZEN	3,788	94,887	329,715	428,391	2.6%
Total	819,669	8,584,171	7,228,585	16,632,425	100.0%

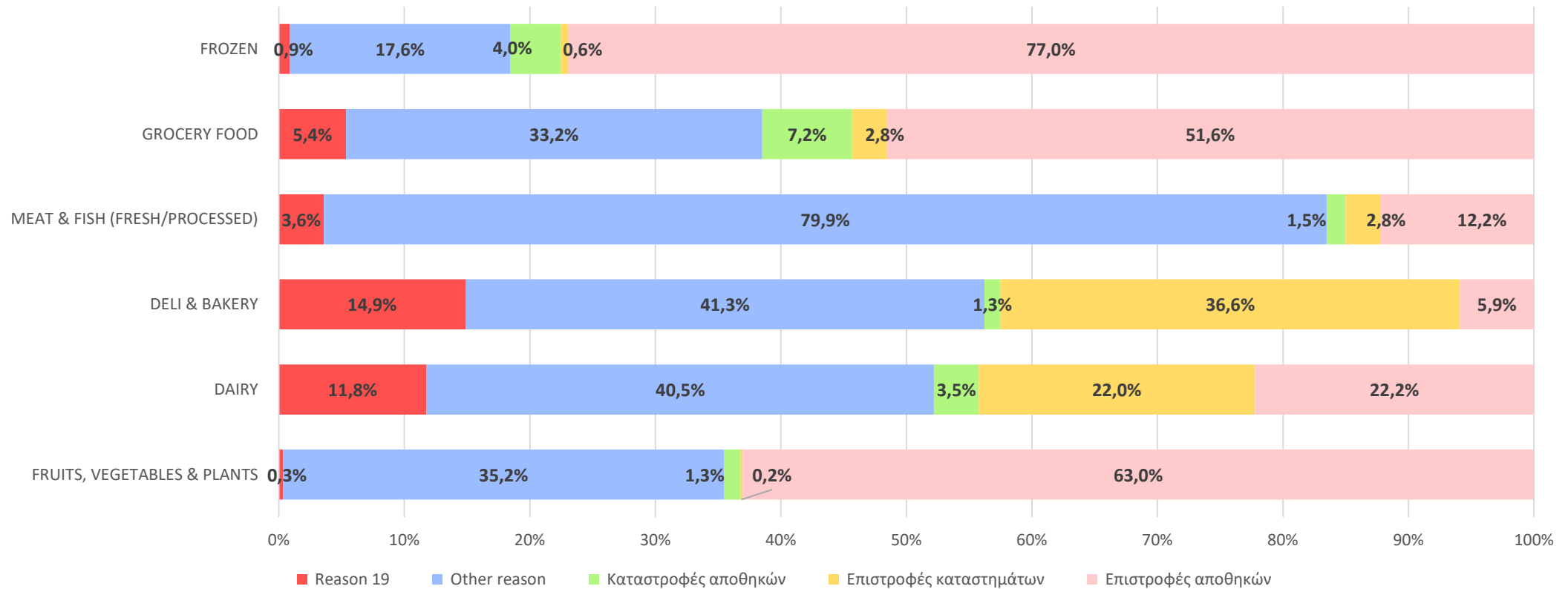






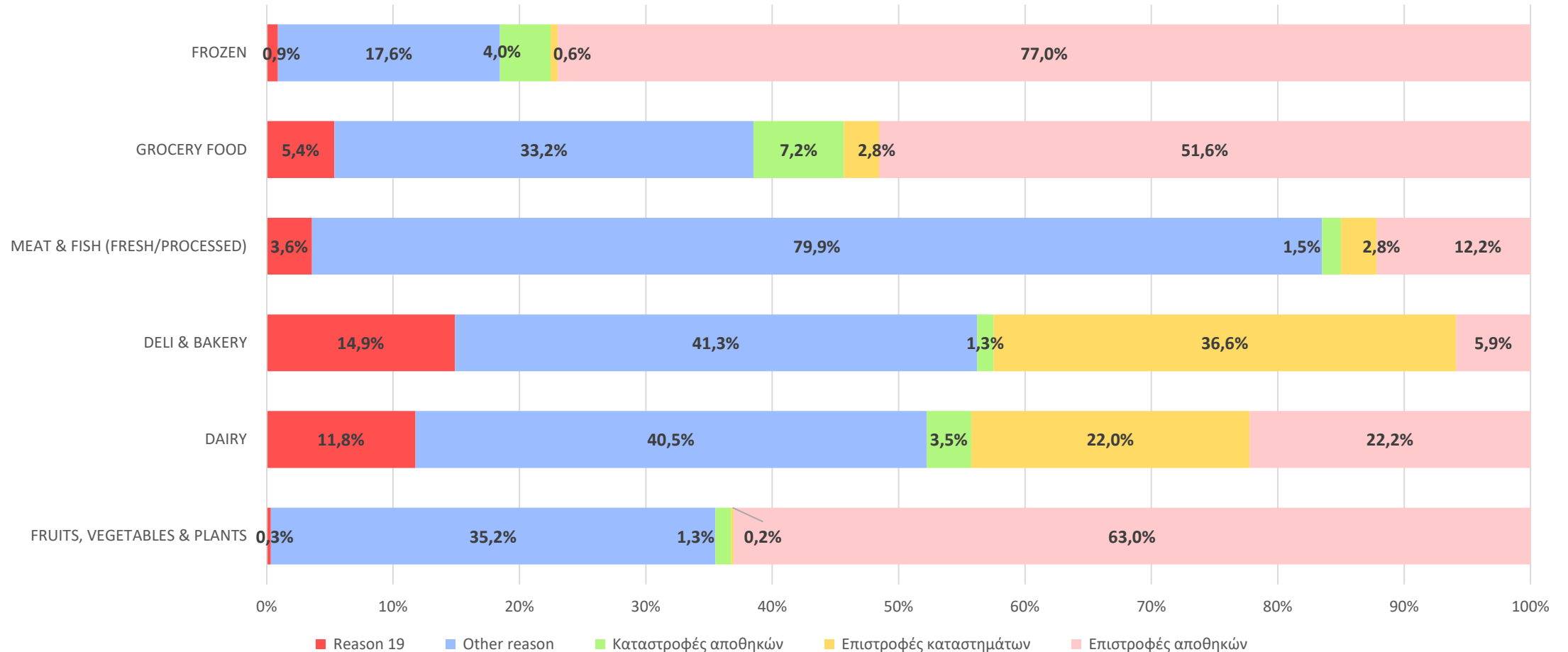
## % (weight) waste generated per department

Ποσοστιαία κατανομή αιτίου σπατάλης (κ.β.) ανά τμήμα





## % (VALUE) waste generated per department





## Conclusions

- An in-store data analysis has been performed for the first time in Greece
- The fresh grocery products dominate in-store food waste followed by dairy products
- The overall percentage of food waste is modest, at <math><2\%</math> of sales, indicating a high efficiency of processes
- However, grocery retailers can - and should - make meaningful changes to help limit food waste mainly through increasing donation
- Donation is about 10% of the total unsold food
- Donation at the store level is resource intensive, but can be further enhanced





*Thanks for  
your  
attention!*



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HAROKOPIO UNIVERSITY

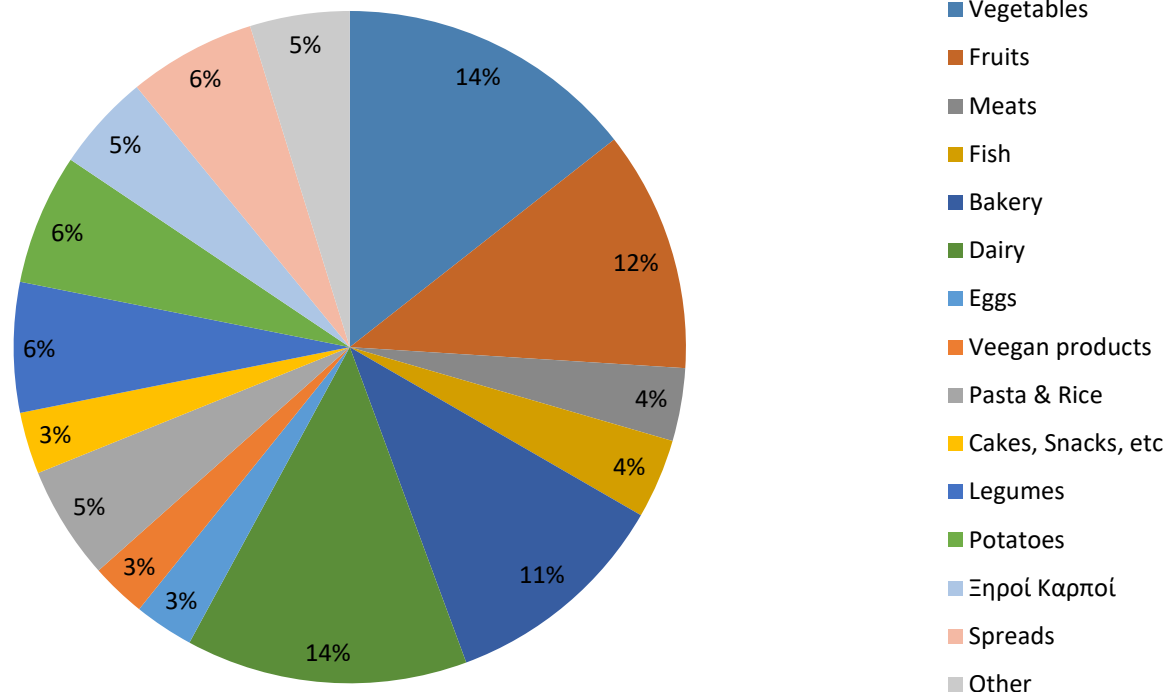




# FW quantification: preliminary results

42 kg avoidable FW / person / year

Avoidable food waste percentage per food category



Κατηγορία	ΜΟ ( gr)
Λαχανικά	48,6
Φρούτα	41,9
Κρέατα	12,4
Ψάρι	11,2
Αρτοποιήματα	39,5
Γαλακτοκομικά	44,6
Αβγά	9,8
Φυτικά	8,7
Ζυμαρικά & Ρύζι	20,0
Γλυκά, Κέηκ, Μπισκότα	8,8
Όσπρια	20,4
Πατάτες & Πουρές	20,0
Ξηροί Καρποί	14,1
Αλείμματα	19,9
Άλλα	15,1

# FW quantification: preliminary results

## Households (Spring 2021)

### Recruitment platform

Number of volunteers= 2,897



Number of selected participants  
= 2,519

*(questionnaire)*

### Food waste diary

- **1<sup>st</sup> wave: 13/03/2021 – 19/03/2021**

- **2<sup>nd</sup> wave: 20/03/2021 – 26/03/2021**

Target: 7 days	A' wave	B' wave
7 days	243	289
6 days	67	47
5 days	46	30
< 5 days	276	171
<b>Total &gt; 5 days</b>	<b>356</b>	<b>366</b>