

# FLANDERS

1. roadmap on food loss 2020
2. impact of cosmetic quality standards on food losses in the fruit and vegetable sector

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# Prevention of food losses in FLANDERS

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graph TD; A[Prevention of food losses in FLANDERS] --> B[Desk research and interdepartmental working group 2011-2012]; B --> C[Declaration of commitment (2014) (ambition, vision, priorities)]; C --> D[Roadmap to 2020 (2015)]; D --> E[Monitoring food loss (2016)]; E --> F[The impact of cosmetic quality standards on food losses in the Flemish fruit and vegetable sector (2017)];
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Desk research  
and interdepartmental working group 2011-2012

Declaration of commitment (2014)  
(ambition, vision, priorities)

Roadmap to 2020 (2015)

Monitoring food loss (2016)

**The impact of cosmetic quality standards  
on food losses in the Flemish fruit and vegetable sector (2017)**

# Food losses coalition

- ▶ Flemish government, supply chain, farmers union, food industry, catering industry, retail, hospitality sector, consumers, NGOs, social and welfare organisations, food banks



Vlaanderen  
verbeelding werkt

overview + subscription:  
[www.vlaanderen.be/landbouw/voedselverlies](http://www.vlaanderen.be/landbouw/voedselverlies)

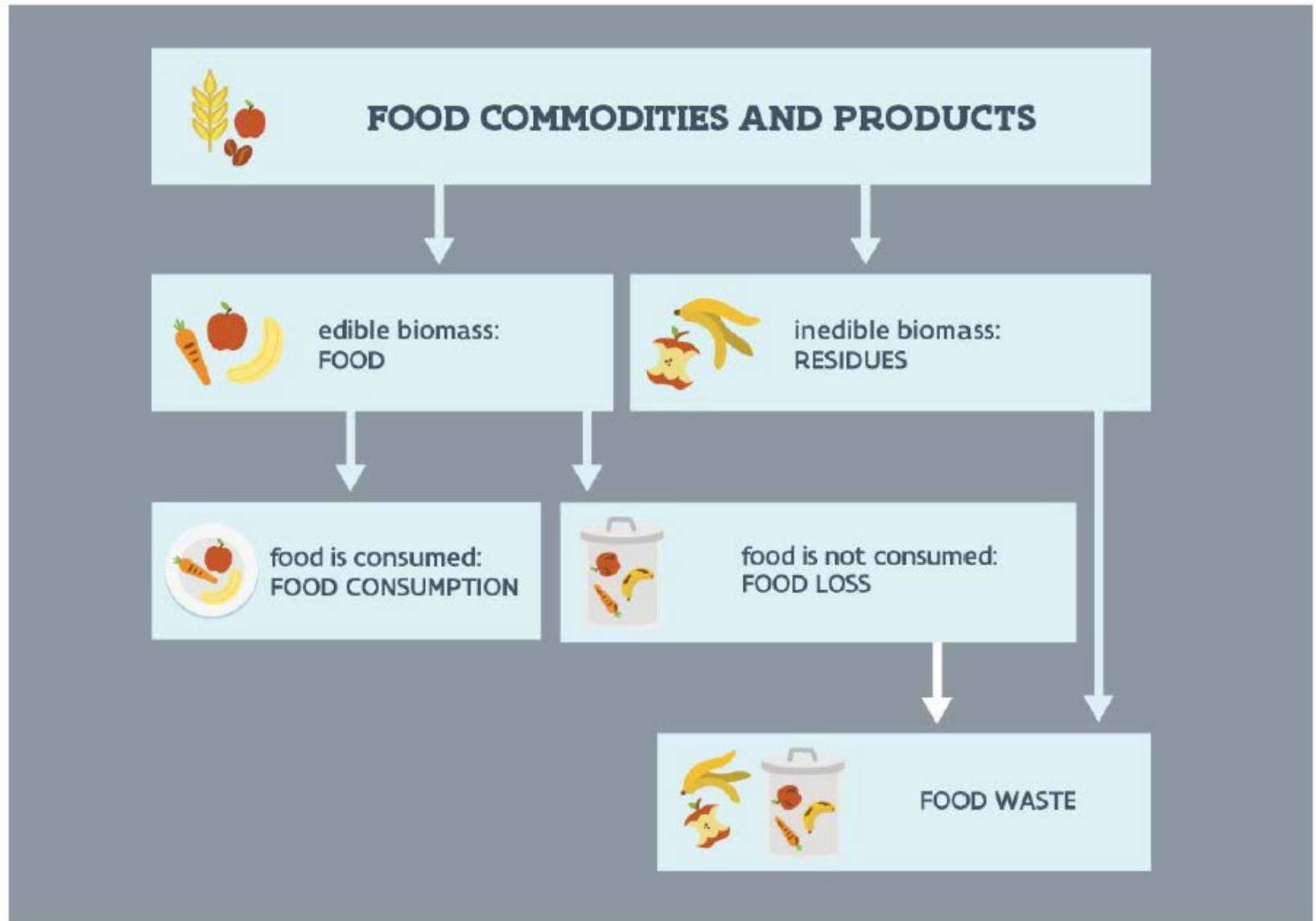
# roadmap main principles

- Public-private partnership
- Commitment of efforts
- Chain perspective approach: from field to fork
- 9 action programmes, 57 actions, 60 partial actions

## ► Goals roadmap

- 30% reduction of food losses in Flanders 2025
- 15% reduction of food losses in Flanders 2020
- call on all actors to help achieve goals

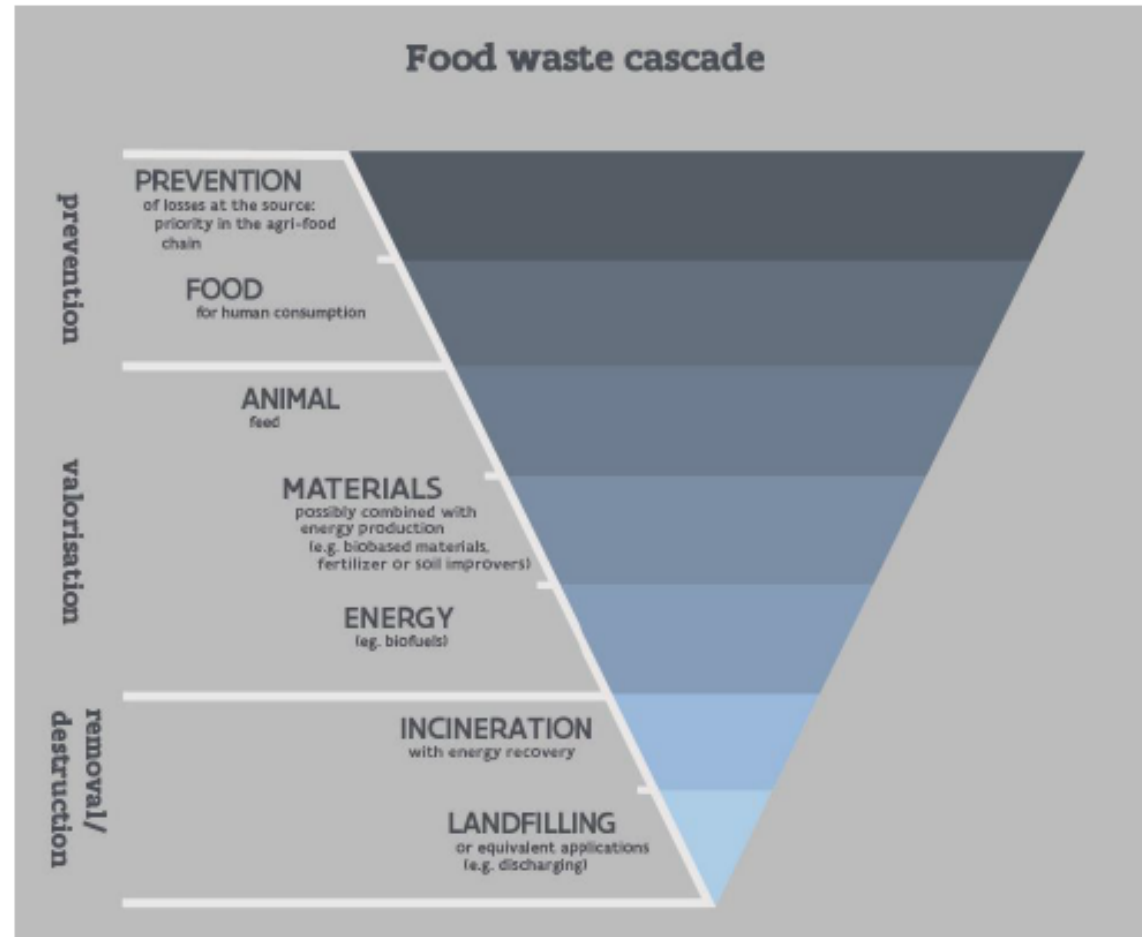
# definitions?



# Example of apples

- ▶ Apples are grown for human consumption
- ▶ When ripe → harvested
- ▶ Edible fraction (flesh and skin)
- ▶ Inedible fraction (core with pips, crown and stalk)
- ▶ If apple during growing suffers from disease or rot → does not enter food supply chain → no food waste
- ▶ If apple is ripe but is not harvested because of market crisis → food loss + residue fraction = waste
- ▶ If apple is eaten there is only an unavoidable residue
- ▶ If apple is not (wholly) eaten → food loss in addition to residue

After prevention → valorisation according to the cascade of value retention



# Action programmes

1. Supporting companies in the supply chain
  - free consultation and company scan for food losses
2. Cooperation within the supply chain reduces food losses
  - focus on the phases between the different links of the chain
3. Sensitization of companies, inspire and engage them
  - good practice restaurants/ canteens of government
4. Training staff to prevent food losses
  - integration of food losses in schooling and training
5. Inspiring and engaging consumers
6. New cooperation models in the regular and social economy
  - implementing business plans with retailers/ producer organisations and social organisations
7. Promote and facilitate donations of food surpluses
  - interactive web applications for food donations
8. Research supporting the supply chain and the government
  - improve technology and introduce innovation
9. Measuring is knowing
  - monitoring





## Food losses + inedible unavoidable residues

sector	Food waste	
	tonnes	Proportion in the total chain
Fischeries	10,402	<1%
Agriculture	449,352	13%
Auctions f&v	25,277	<1%
Food industry	2,349,445	67%
Retail	64,828	2%
Hospitality sector	67,450	2%
Catering	60,098	2%
Households	468,305	13%
Total chain	3,485,157	100%

*Flemish agriculture and food industry is increasingly export oriented*

## Destinations of food waste in% to sector total, Flanders, 2015

sector	Animal feed	Biobased materials	soil	Anaerobic digestion	composting	energy	Incineration with energy recovery	Landfill/ discharge	unknown destination	total
fisheries	-	-	-	-	-	-	-	100%	-	100%
agriculture	11%	-	70%	4%	4%	1%	-	4%	6%	100%
Producer organisations f&v	36%	-	28%	11%	17%	-	-	-	8%	100%
Food industry	55%	0%	11%	26%	-	7%	0%	-	-	100%
retail	3%	2%	-	49%	16%	-	29%	-	-	100%
hospitality sector	-	-	-	31%	-	-	69%	-	-	100%
catering	-	-	-	24%	-	-	76%	-	-	100%
households	28%	-	-	6%	40%	-	24%	3%	0%	100%
<b>Total chain</b>	<b>43%</b>	<b>0%</b>	<b>17%</b>	<b>21%</b>	<b>6%</b>	<b>5%</b>	<b>6%</b>	<b>1%</b>	<b>1%</b>	<b>100%</b>

# Cascade index per link of food chain

sector	Value cascade index
Fisheries	0
Agriculture	7,9
Auctions fruits & vegetables	8,8
Food industry	8,8
Retail	6,3
Hospitality sector	3,9
Catering	3,4
households	6,9
Total chain	8,2

*The cascade index (a variant of Dutch Moerman ladder),  
based on the valorisation of food waste  
index = 10 for 100% valorisation  
index = 0 for 0% valorisation*

# Food losses and residues

Flow→	Food losses (= edible food waste)			Residues (= inedible food waste)	
	Absolute quantity (tonnes)	Proportion in chain (%)	Food loss (tonnes in relation to total production in the link (%))	Absolute quantity (tonnes)	Proportion in chain (%)
Indicator →					
Link ↓					
fisheries	5,201	1%	21%	5,201	0%
Agriculture	330,319	36%	4%	119,033	5%
Auctions f&v	14,629	2%	1.4%	647	0%
Food industry	225,481	25%	1.5%	2,123,964	82%
Retail	43,391	5%	2.6%	21,437	1%
Hospitality sector	19,108	2%		48,342	2%
Catering	57,070	6%		3,005	0%
households	211,858	23%	5.9%	256,447	10%
Total chain	907,077	100%		2,578,076	100%

# Conclusions of zero measurement










- ▶ Prevention is priority (only donations are measurable)
- ▶ Flemish agri-food supply chain is strong in valorisation (92%)
- ▶ 3/4 of food waste are residues, just 1/4 is food loss
- ▶ Cascade index shows problematic areas of valorisation
- ▶ Agriculture, industry and households create large volumes of food loss
- ▶ High production volumes and dependence on natural production circumstance invoke large volumes at risk
- ▶ Food losses are relatively low



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# Impact of cosmetic standards on food losses

DEPARTEMENT  
LANDBOUW  
& VISSERIJ

Shape	Apple	Carrot	Eggplant
Normal			
Moderate Abnormal			
Extreme Abnormal			

# Impact of cosmetic standards on food losses

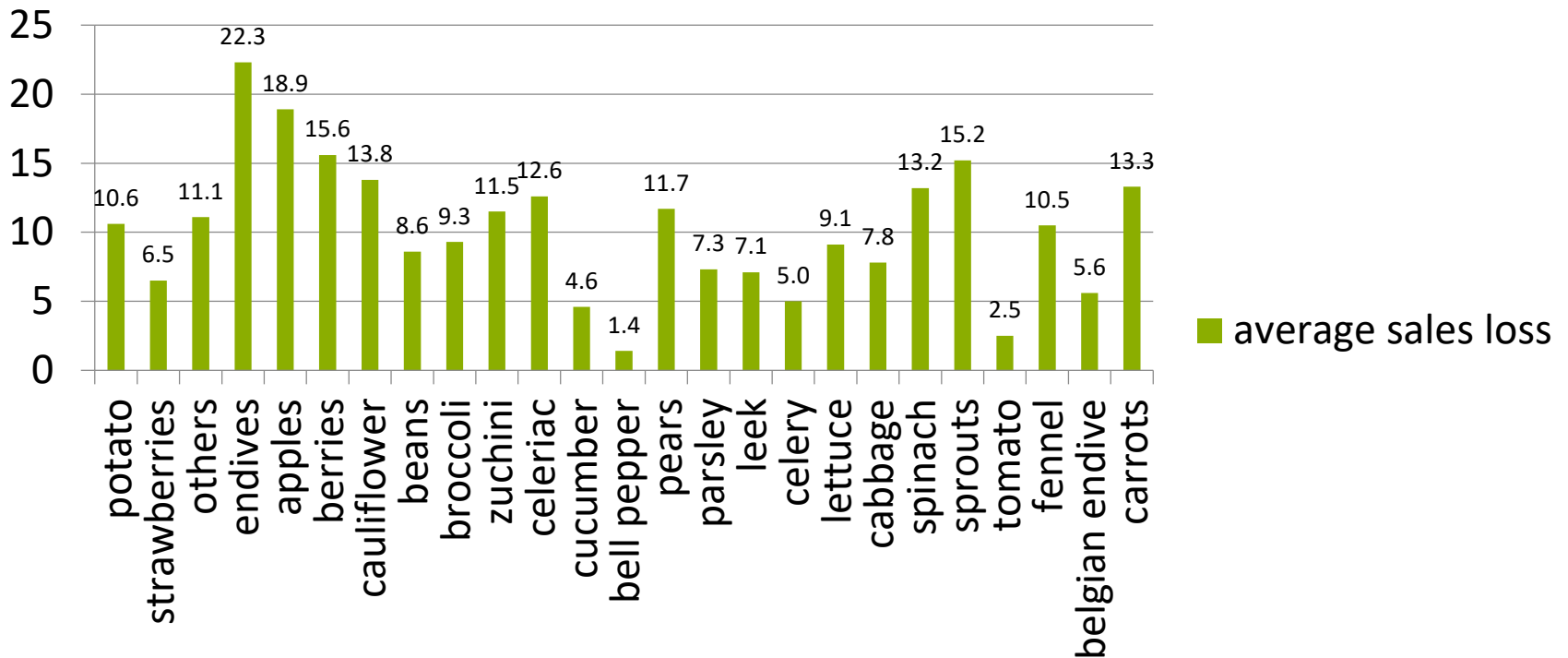
- ▶ Cosmetic standards are blamed to cause food losses
- ▶ But little evidence available: numerical justification is lacking
  - ▶ Develop insight in fruit and vegetable sector in Flanders
    - ▶ Literature study, interview, stakeholder workshops
    - ▶ **Quantification of loss of sales, food losses and valorisation**
    - ▶ Perspectives for policy and the supply chain
- ▶ Research: University of Ghent for the department of agriculture

# Loss of sales or food loss?

- ▶ When food products are not used for human consumption
  - = food loss
- ▶ If part of sales is used for human consumption via lower class, processing or via donations to social organisations
  - this is not food loss
  - loss of sales
    - × Part of sales loss is still valorised as food
    - × EU withdrawals of fruit and vegetables (intervention) and free distribution to charity
      - Only 30 à 40% of production costs is compensated
      - Products have to respect class II requirements



# Average sales loss (%) on farm



▶ Important differences per product

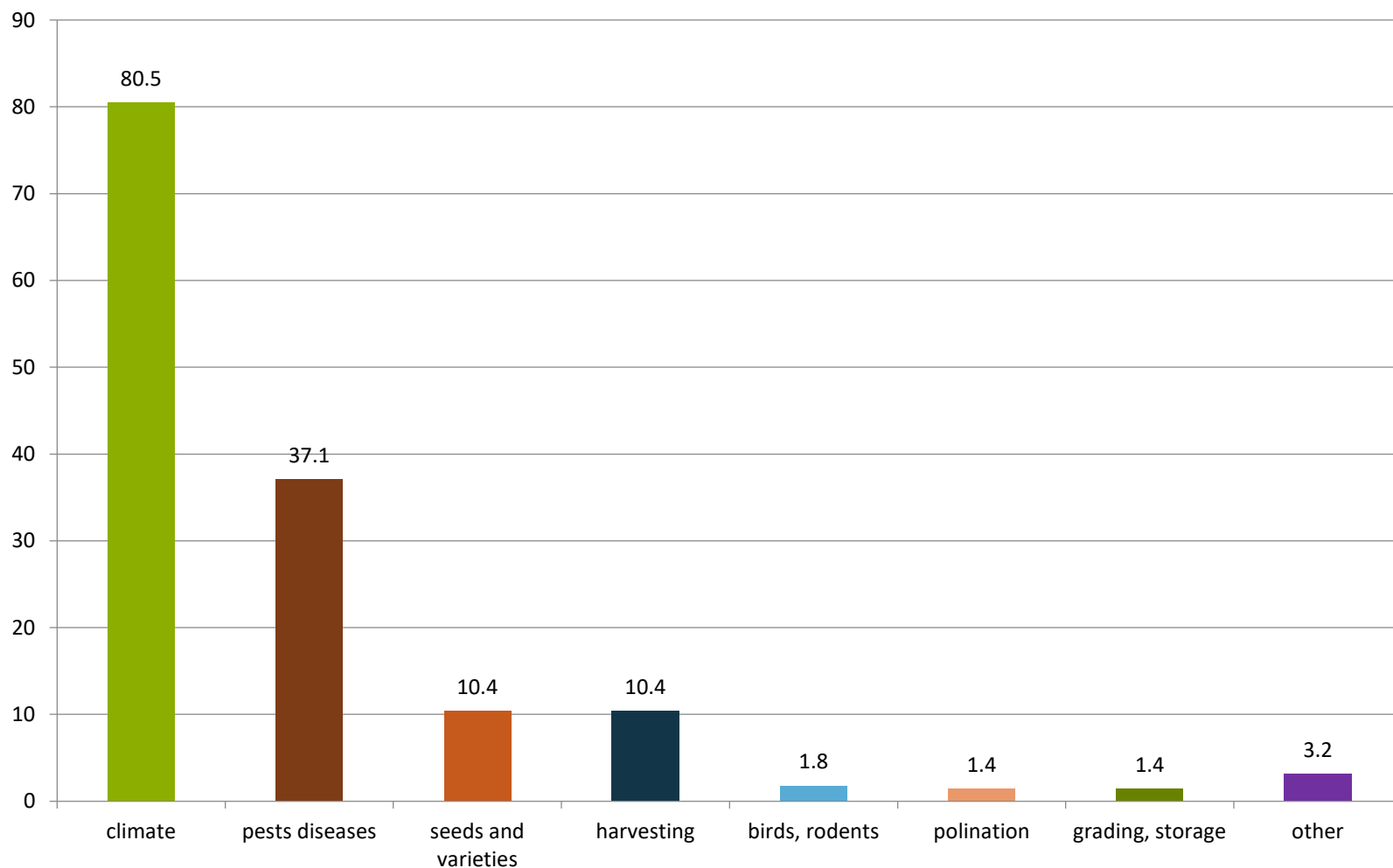
→ Vegetables:

- × high loss rates for cauliflower, zucchini, celeriac and carrots
- × lower rates for leek, tomato cabbage , beans, celery

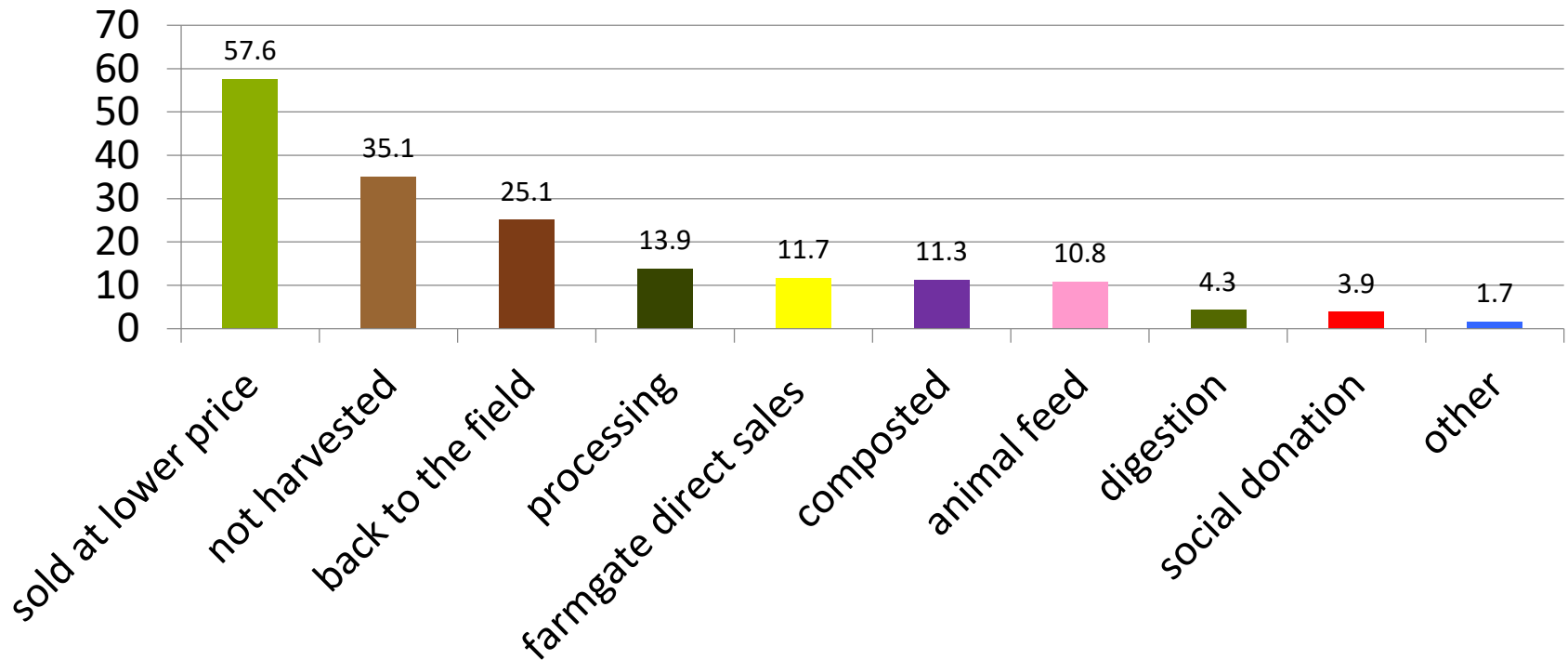
→ Fruits

- × High rates of drop out for apples
- × Lesser drop-out for pears
- × Average for strawberry

# Main reasons for “cosmetic defects”

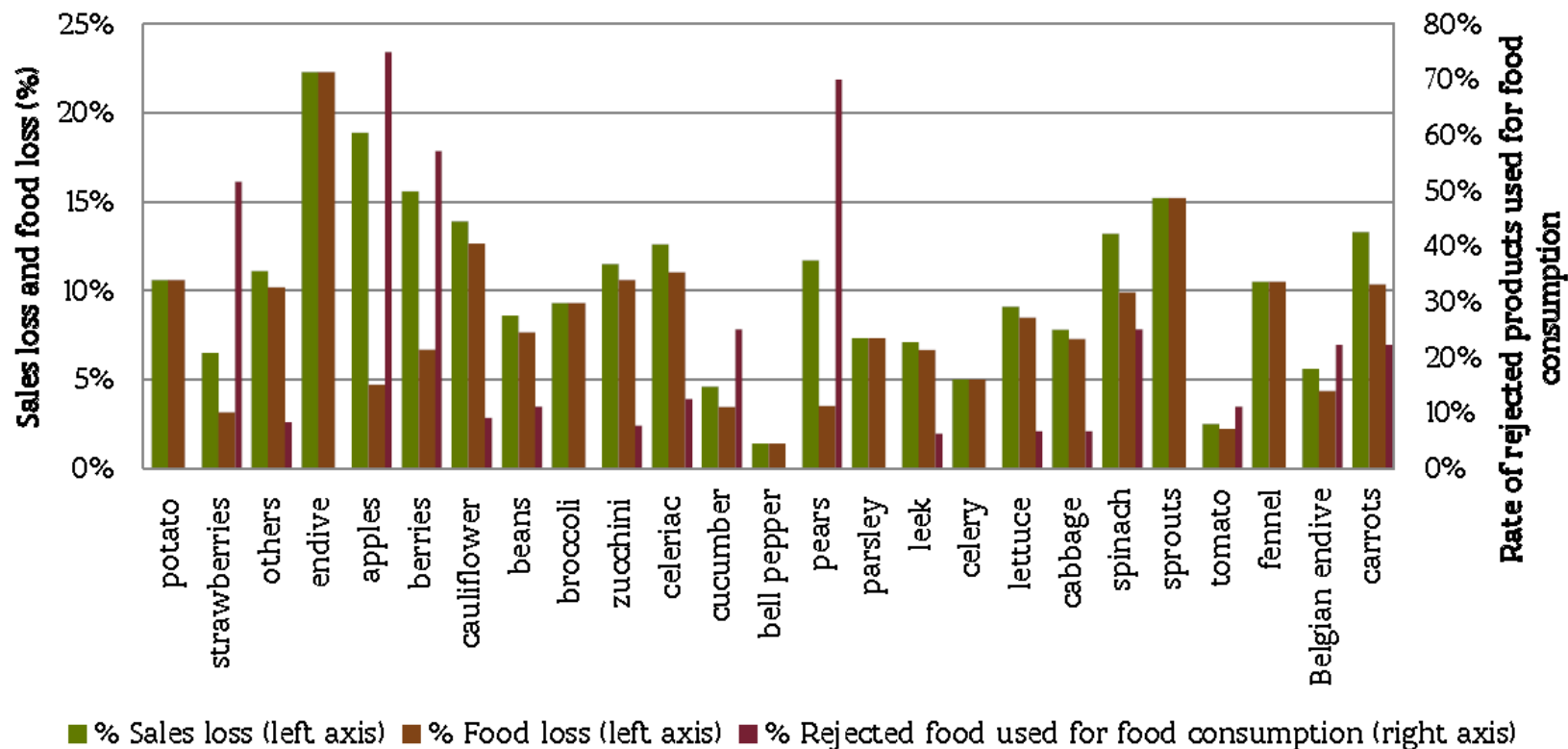


# Destination of produce that failed to the standards



# When loss of sales becomes food loss...

Figure 3 Sales loss versus food loss



► Loss of sales <> food loss

- For vegetables max. 25% of sales loss is valorised in human consumption
- For fruits 50% of sales loss is still valorised in human consumption
- × For apples and pears > 70%

# Some findings

- ▶ arguments in favour of regular shaped f&v
  - Efficiencies in logistic process
  - Higher price → relation to profitability of farming
  - Demand from retail
  - Although a lot of sympathy for the concept, there is relative low consumer acceptance of cosmetically imperfect produce
- ▶ retail ran several campaigns with “ugly” fruits and vegetables
- ▶ ‘ugly’ produce limited availability
  - price raised at first at production level
  - but un-elastic readiness of consumer to pay more for “ugly” produce
  - if ugly food becomes too expensive → less sales
  - retailers use it to show off , and show their nice intentions
  - but if they loose money → not very sustainable

# Some findings (2)

- ▶ Standards are related to price level
- ▶ Private standards barriers not legal standards barriers
  - BRC global standards for food safety
  - IFS international food standard
  - QS Qualität und Sicherheit
- ▶ Other standards apply for primary production
  - × Use of fertilizer, crop protection, hygiene, use of water, waste handling
  - Global GAP
  - Vegaplan
- ▶ Quality labels of producer organisations related to brands or private brands of retail
  - Differentiation from competition (example Flandria)

# Findings (3)

- ▶ Not all losses are related to cosmetic requirements!
  - market situation can cause surpluses and price drops
  - in periods of over-supply retail has the possibility to become more “picky”
  - in periods of low supply retail can become more flexible on their demands and tolerances
- ▶ 2/3 of producers not able to sell some part of their products
- ▶ on average 10% sales loss reported
- ▶ 1/3 of sales loss still valorised for human consumption
- ▶ 43% of farmers believe requirements should be relaxed, 57% feel no need to relax the requirements



# Findings concerning use of quality classes

- ▶ Extra class is used rarely
  - Low tolerance of defects
  - To avoid de-classification
- ▶ Mainly class I and class II used in practice
  - Class I subdivided:
    - × higher class I (quality label or branded products)
    - × lower class I
  - Class 2 not subdivided
- ▶ Most retailers do not buy class II
- ▶ Part of class II ends up in processing or goes to charity donations

# Tackling some of the problems

- ▶ **Quality starts with seeds and plants and is a whole farm to fork and is so much more than just marketing**
- ▶ **On farm support**
  - Choice of varieties → market oriented varieties
  - Crop diversification
  - Investments on farm in proper equipment
- ▶ **Training**
  - Training in handling fruit during harvest
  - Training in grading fruit and vegetables according to standards
- ▶ **Crisis prevention**
  - Hailnets
- ▶ **Organisating better transport and logistics**



# Tackling some of the problems (2)

- ▶ **management and investment in storage and cooling**
  - professional management and follow up of cooling and storage
  - less risk for failure
  - lower cost and more state of the art
- ▶ **packaging products**
  - protect the produce
  - prolong the shelf life
  - introduce reusable packaging
- ▶ **Research**
  - New varieties
  - Improve growing techniques
  - Storage conditions
  - Shelf life
  - New packaging materials
  - Soil and tissue analysis



# Future perspectives

- ▶ Processing into new products and for new social destinations (aid of government)
  - Innovative start ups already created for processing
    - × Into high value products
    - × Longer expiration date → to tackle food poverty
- ▶ Producer organisations coordinating to collect flows from farmers and distribute them for human purposes but also collect residues
- ▶ Initiatives to prevent nonharvesting
- ▶ Elaborate the analysis: tailor made solutions for every product
- ▶ Debate on visual characteristics and intrinsic quality
  - Remove the fuse from the gunpowder

# Governance and monitoring

## ▶ Governance

- coordination and follow up by department of agriculture
- more external partners can be involved → coalition
- Enlarge engagement: call to subscribe
- Yearly stakeholders meeting & consultation
- Interdepartmental Working Group government
- contact with other regions, federal government, Europe

## ▶ monitoring

- ▶ ~~Yearly~~ reports and monitoring
- ▶ ~~Zero~~ measurement of food residues and food losses
  - × results for the whole supply chain + data for every link
  - × structural data collection
  - × monitoring in accordance with EU FUSIONS manual
- Disclaimer: these are the first measurements of their kind, permanent improvement

# More information

- ▶ **Contact:**  
Interdepartmental Working group food losses  
[voedselverlies@v.vlaanderen.be](mailto:voedselverlies@v.vlaanderen.be)
- ▶ **Webpage Flemish Government on food losses:**  
<http://www.vlaanderen.be/landbouw/voedselverlies>
- ▶ **E-zine food losses (3 x year):**  
subscribe [voedselverlies@v.vlaanderen.be](mailto:voedselverlies@v.vlaanderen.be)
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