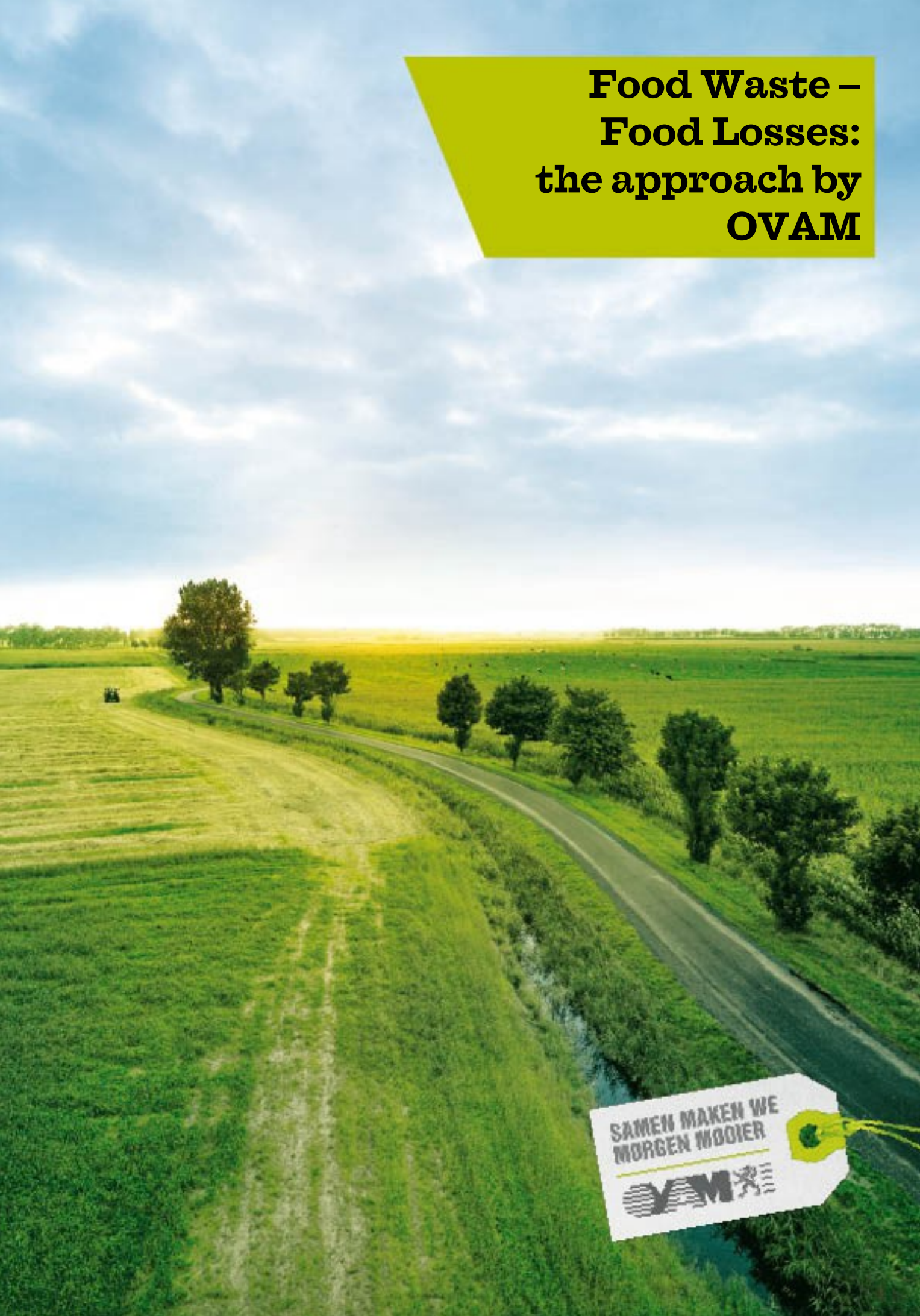


# Food Waste – Food Losses: the approach by OVAM



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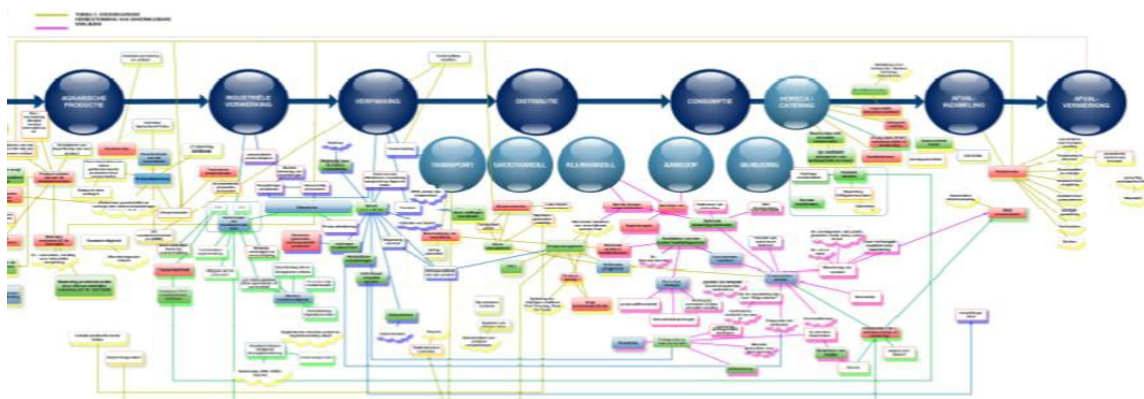
## Food waste – Food losses: the approach by OVAM (Public Waste Agency of Flanders)

In Flanders, the issue of food waste is examined in the research study, “Food wastage from a chain perspective”. This study commenced in April 2011 and ran until July 2012.

It consisted of **two** major components:

- In the first component we outlined the entire chain and indicated where the possibilities are.
- In the second component we investigated four specific themes and we have formulated policy recommendations.

In the first component, the entire chain is analysed. Every link – production, food industry, distribution, consumption – was investigated. That resulted in this graph in which it is precisely indicated where there are possibilities and where there are ‘missing links’ in the chain.



This entire process took place in consultation with the stakeholders and the Interdepartmental working group on food losses. This consultation ran throughout the entirety of the project.

We used a broad working definition for the research because we wanted to keep open, all possible potentialities in all the links of the chain, as much as possible.

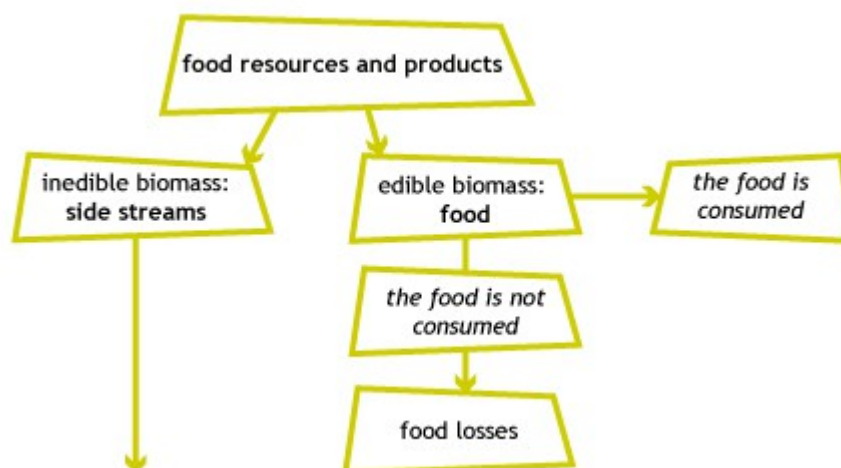
For us, food waste was:

“any reduction in the food available for human consumption which occurs in the food chain, from harvest to consumption.”

When studying the issue and comparing the definitions which have been used in other domestic and foreign studies, we encountered a certain terminological confusion.

Various terms and concepts were mixed, and if they had to be translated, it often became an extensive search for the precise meaning: the Flemish terms ‘voedselverspilling’, ‘voedselverlies’ and ‘voedselafval’ more or less correspond with the French terms ‘déchets alimentaires, gaspillage alimentaire’, but in English they usually talk about ‘food waste’, sometimes about ‘food losses’. But by using them interchangeably and translating, it is hard to tell what falls under it and what does **not**.

Therefore, in the course of this project, we clarified what we understand by it with the use of this chart








In this way we start from the raw materials which are used for food.

On the one hand, these lead to edible biomass, and if they are consumed then all is fine; if not we are talking about food losses.

On the other hand, there is also inedible biomass which is released during food production, and then we prefer to talk about 'Side streams'.

How much food waste and side streams are there currently in Flanders?

Based on the information currently available, we arrive at the following estimate of food waste and side streams (in tonnes per year).

Primary production	Food industry	Distribution	Food Services	Households	Total
					
425,000 – 700,000 tonnes	1,073,000 tonnes	116,000 tonnes	166,000 tonnes	156,000 - 235,000 tonnes	1.936,000 - 2,290,000

Across the entire chain there is thus a stream of approximately two million tonnes of largely valorized side streams and food waste. With the consumer, we see that it has to do with approximately 200,000 tonnes.

In order to get this picture of the magnitude of the streams, we called upon data from the Integrated Environmental Annual Report (IMJV). In addition, at the start of the chain, a measurement was taken by the Department of Agriculture and at the end of the chain by OVAM.

The research at the start of the chain by the Department of Agriculture gives, for the first time, a detailed image of how much is lost with respect to vegetables and fruit, milk, meat, fish, arable products...all the important products in the primary sector in Flanders.

The great merit is mainly that waste in the various sectors is mapped out systematically, and this in relative as well as in absolute terms.



(sub)Sector	Type of losses	Loss percentage	Absolute loss (tonnes)
<b>1. Livestock</b>			
1.1 cattle	dead animals	1,6 - 6,9 %	18,970
	rejection in abattoirs	0,20 %	-
1.2 pigs	dead animals	2,9 - 17,4 %	41,529
	rejection in abattoirs	0,22 %	-
1.3 chicken	dead animals	3,8 - 6,8 %	5,430
	rejection in abattoirs	1,45 %	-
1.4 milk	loss of milk	0,95 %	18,896
1.5 eggs	loss of eggs	< 1 %	1,054
<b>2. Fisheries</b>			
2.1 fish	fish discards	25 %	4,647
	market intervention	1-3 %	422
<b>3. Arable agriculture</b>			
3.1 cereals	harvest	1 %	11,776
	storage	2 %	23,316
3.2 potatoes	harvest	7,5 %	154,736
	sorting	5 - 15 %	95,421 - 286,262
	storage	2,5 %*	40,554
		2,5 %**	45,325
3.3 sugar beets	harvest + cleaning	2,6 - 3,6 %	40,264 - 55,750
<b>4. Horticulture</b>			
4.1 vegetables – open air	process losses	5 -10%	34,676 - 73,204
4.2 Belgian endive	process losses	20 - 25%	9,750 - 13,000
4.3 lettuce	process losses	20% (head lettuce)	11,472
		6% (lamb's lettuce)	732
4.4 cucumber, tomato, bell pepper	process losses	1 - 2%	2,811 - 5,679
4.5 apples	process losses	1 - 5%	3,155 - 16,441
4.6. pears	process losses	2 - 8%	5,751 - 24,502
4.7 cherries	process losses	5 - 30%	243 - 1,983
4.8 strawberries	process losses	2 - 10%	611 - 3,327
4.9 auctions	total loss	<1 %	3,627
<b>5. Primary production – total loss</b>			<b>534,614 – 817,309</b>

The measurement at the end of the chain by OVAM measured the share of food in the residual waste. This study made it clear that residual waste contained approximately 12% food, 5% of which could be considered avoidable ( see annex )

Remarkable in this is that, as we examine the unopened packaging, we note that 21% of unopened packaging was thrown away **before** the food had exceeded its shelf life, and thus **had not exceeded** the indicated 'use by' and 'best before' dates (or TGT and THT). In 37% of instances, the 'best before' date was exceeded, and this percentage should also not really end up in residual waste. We will return to the 'use by' and 'best before' issue below.

Already one conclusion: there is a small yet substantial amount of food in the residual waste, of which the shelf-life has not yet been exceeded.

One will notice that these figures are of a different magnitude than abroad, where much higher figures are cited. The sometimes huge amount of food waste and food losses presented in foreign studies can thus **not** simply be extrapolated to Flanders. Comparisons between countries are always delicate, but one **cannot** look past the fact that in Flanders, there is only 114 kg of household waste per person annually.

Second conclusion: in Flanders we have long been working on a policy in which various instruments are used – PAYT ( tariff differentiation), separated collection of organic waste, composting at home,

using chickens – with the emphasis being on prevention...and **this** policy thus has clear results, **also** on the level of food waste.

Now, this being said, we also know that there are still many hiatuses in the overall picture of food waste and side streams in Flanders. But we are definitely going to bring that image more sharply into focus with further research. This has already been started.

- Fevia: commenced the Food Waste Project in the framework of Factory of the Future.
- Comeos: has conducted a survey of the sector.

But in this way we will – after the Department of Agriculture’s study at the start of the chain and OVAM’s study at the end of the chain – also get a better picture of the links in between: the food industry and distribution.

We will thus, in the consultation about the chain which was initiated in this project, study the results of all this research and then systematically eliminate the lacunas.

And in doing so we are also looking toward Europe.

Europe plays a very important role in the investigation of the figures:

- In this way, the definitions of what may and may not be considered as food waste would be best formulated on the European level.
- Also the EURAL codes, which are used for registering what is included as food waste and what is not, would best be established on this level.

OVAM is already addressing this by conducting a pilot project and will present the results to Eurostat.

In addition, there is the Fusion Project – a European project which is going to focus on the definition and figures issue.

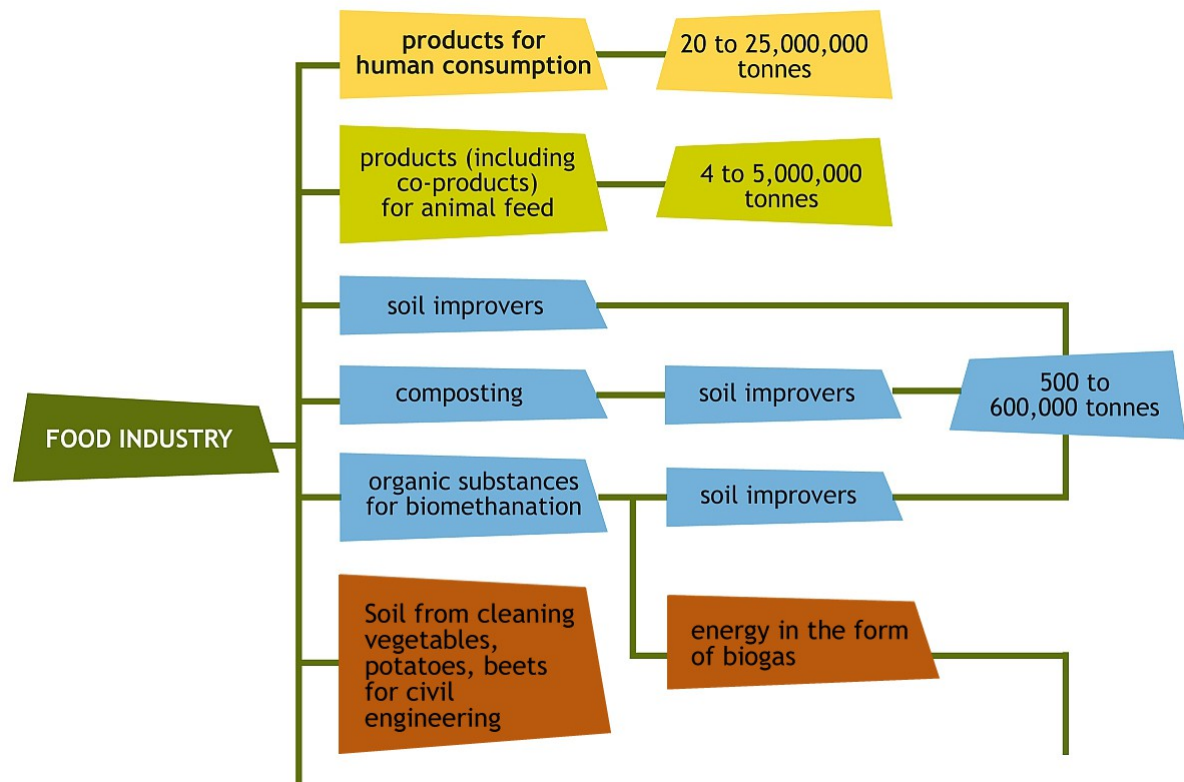
OVAM will cooperate on this project but is not going to wait for its results. It is possible to address food waste and to take action **now**.

But we would like to do this with the figures for side streams and food waste in the back of our minds.

Therefore, we would like to present another figure **for comparison**.

Because, in order to estimate the size of this overall stream of 2 million tonnes of side streams and food waste, it is indeed necessary – purely for the sake of comparison – to also look at the overall amount of food.

For this, we appeal to the Fevia Sustainability Report, from which it appears that in Belgium, the food industry produces approximately 20 to 25 millions tonnes of food. We know that we have to be careful with that figure: approximately 75% of it is located in Flanders; there are also exports and these do not include all food products ... **but** it does clearly indicate the perspective in which we should view these 2 million tonnes of side streams.



And just to be entirely clear, I would also like to briefly line up the following figures for comparison.

Bringing the following three figures to the forefront clarifies a great deal:

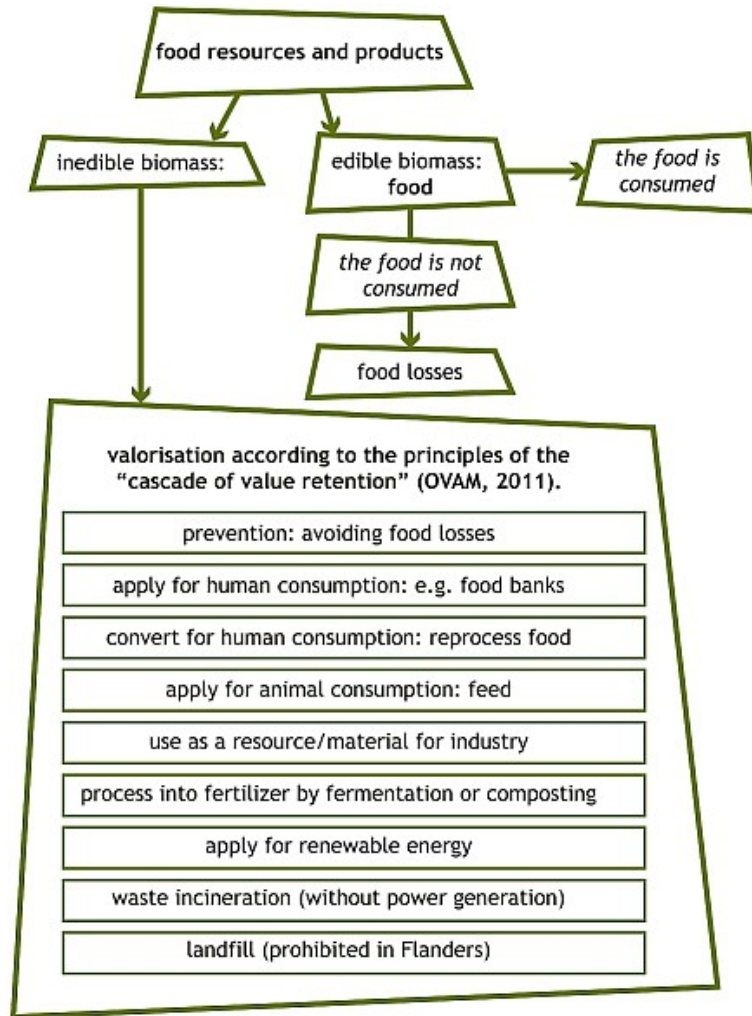
- The food industry in Belgium (of which 75% in Flanders) produces approximately (+/-) 20 million tonnes of food.
- We note +/- 2 million tonnes of side streams and waste in the chain in Flanders.
- And among consumers, we encounter +/- 200,000 tonnes of food in the residual waste and GFT.

**THUS:**

- 20 million tonnes of food;
- 2 million tonnes of side streams and food waste;
- 200,000 tonnes of food in the residual waste.

This analysis immediately makes it clear that the issue can best be seen from the perspective of the chain. The relatively 'small' fraction of food that we find in residual waste must of course be eliminated – and we will work on that. But furthermore, it is also very interesting to widen the scope to those 2 million tonnes and ensure that these are valorized in the best possible way.

We would like to contribute to this and in doing so, would like to start from the cascade of value retention.



This 'cascade of value retention' summarizes how, in Flanders, we want to valorize the determined losses in the highest possible way. The cascade is based on the Flemish Materials Decree and in a certain sense it is the successor to Lansink's Ladder. "The ladder of Lansink" has proven its value in the area of waste management and we have 'translated' into the 'cascade of value retention' as it concerns food.

Here, prevention is at the very top, followed by food for humans, animal food, etc.... landfilling, the final rung in this cascade, has been removed. It is now a matter of valorizing the entire stream as highly as possible, and **then** we are working sustainably.

In the second part of the investigation, we researched four themes:

- shelf life information;
- food banks and social grocers;
- packaging;
- production loss.





## First theme: Shelf Life information

The concepts 'Use by' and 'Best before' are very important. The difference is important because a product whose 'use by' date has been exceeded **must** be discarded; a product whose 'best before' date **has been** exceeded, such as the pasta in this photo, must **NOT** be discarded. Unfortunately, it has been determined that consumers **do not know** the difference and throw away food that is still good to eat.

There are many possibilities for improvement shelf life information, but they always require a chain approach, as measures taken in one link of the chain can easily have adverse effects in the other links.

It can also go wrong if the changes are not handled appropriately.

In the case of shelf life information, we see that measures can be taken in all links of the chain:

- Not only the shelf life information can be indicated more clearly on the products, but.
- Distribution can also make efforts on this level.
- And, of course, the consumer must know the difference between the 'use by' and 'best before' notifications on the packaging.
- And finally: the authorities must also provide information about this. The Federal Agency for the Safety of the Food Chain (FASFC/FAVV) has listed all the necessary information and made it available.

## Second theme: Food banks and social grocers

Social distribution plays a **crucial role** in preventing food waste.

Last year, food banks distributed 13.385 tonnes of food.

And social grocers, a new phenomena which has arisen in recent years in Flanders, are now already helping thousands of underprivileged people in 14 cities.

Possibilities for improvement **here** are mainly at the logistical level: committing to the improvement of transport and the logistical cold chain by, for instance, the promoting of refrigerated vans, is experienced as a very meaningful measure in consultations about the chain.

## The third theme: Packaging



Food packaging is improving very quickly; many innovations have been implemented and can limit food waste.

Possibilities for improvement here are myriad: there has been a great amount of research into active packaging, intelligent packaging and MAP packaging, as depicted here on the photo, can already be found frequently in shops. You can recognize them by the characteristic higher sides which are required to be able to 'modify' the atmosphere in the packaging and thereby extend the shelf life two or three times over.

Another interesting theme is the portioning of food packaging.

Instead of having one, 200 gr. package of meat, the creation of two packages of 100 gr. which can be easily separated, stored separately and consumed at the suitable moment can also prevent food waste.

The result of these options, which sometimes requires more packaging, must be accepted. However, we will have to think about the best balance between improved packaging and the savings achieved with regard to food waste. For we know of course that it is more than just a question of packaging. It is also transport and storage ... and, for instance, refrigerator management: the temperature in the refrigerator is not always optimal and once a package is opened, the consumer also does not know until when something can be kept.

Here there is definitely also room for eco-design – such as, for instance, integrating a thermometer in the refrigerator, combined with a pen which the consumer can use to note when a package has been opened. These are just little things, but they can make the difference in the choice between eating or discarding.



## **Fourth theme: Production losses**

Here we have seen that it is difficult to implement measures to prevent production losses, mainly because there are very large differences from product to product. Losses are also often caused by climate conditions or food shortages ...

Possibilities for improvements also require much research, product by product:

- But here as well, we observe that there are innovations to be found in promoting cooperation between the links of the chain.

- We have also observed that there is already a great amount of research going on: there are the BAT studies (Best Available Technology) for vegetables and fruit and on meat by VITO (Flemish Institute for Technological Research); the Genesys Project by ILVO ( the Institute for Agricultural and Fisheries Research). Hard work is thus already being done, and here as well, there is also much room for chain consultation. But with this study of production losses, the search for the best possible destination for all these streams, we have seen that this overlaps with the much broader theme of the 'Bio-Based Economy' (BBE).

Examining food waste in the chain perspective leads us to the conclusion that this model must be placed in the context of the overall issue of the materials which are used in food production. The waste of resources in one link can be a source of resources for another link. Optimal utilization of all the material is thus the challenge.

OVAM wants to work on this:

- in the Food waste chain consultation, which will be continued;
- in the Flemish Government's Interdepartmental workgroup on food waste;
- in the European initiatives such as the Fusion Project.

In the course of this project, Europe has pushed sharp targets to the foreground, such as the halving of food waste by 2020. OVAM wants to commit to reaching these goals. It is an ambitious objective, but we are convinced that, with our approach and the various measures proposed today, we will reach this objective.

## **Annex**

### **“Baseline measurement of food losses in Flemish homes by a sorting analysis of the mixed residual waste”. OVAM, Mechelen, 2011 - Conclusions**

The total volume of residual waste gathered via house-to-house collection contains 11.98% kitchen bio-waste, both compostable and non-compostable. The largest portion of this waste consists of the unavoidable bio-waste such as coffee grounds or dregs, teabags, rind and/or peels of fruits and potatoes, etc.

The avoidable food waste herein amounts to 4.91% of the total content of the household garbage bag or garbage container, which translates into 5.59 kg per resident per annum. Across the three sorting periods, the percentage portion of wasted food in the household waste remains at a comparable level. Any of the fluctuations are caused entirely by either a higher or lower presence of the unavoidable bio-waste.

Four different types of regions were investigated in the study. The fraction of the kitchen bio-waste within the VFG regions (vegetable-fruit-garden wastes) lies at a comparable level,  $\pm 10\%$  of the total volume of household waste. Amongst the green regions themselves, we nevertheless register a notable difference, whereby in the Urban Green Region the percentage of bio-waste rises to 18.11%. A possible explanation for this higher portion within the green regions may be the absence of a separated collection of VFG waste. Within the Rural Green Municipalities, there still remains space for home composting or alternative processing of waste via, for instance, raising chickens on the property. The fraction 'bread and glycerine, vegetable bio-waste' shows within each region the highest percentage of wasted foodstuffs. 'Vegetables and Fruits', globally seen, also represent the most frequent food fractions amongst the diverse typologies. No significant differences were noted in their composition.

Across the three sorting periods, unopened packaged or wrapped items consist of 22.26% 'dairy products' and 18.03% 'meats, fish, and fowl'. 'Prepared meals' come in third with 16.67%. 'Desserts and snacks' take fourth place with a proportion by weight of 15.10%. Within the four types of municipalities, we find in the unopened packages a marked presence of 'dairy products'. Only in the Rural VFG Regions do the 'prepared meals' register in terms of percentage a higher share in the total volume of unopened foodstuffs. 'Bread and glycerine, vegetable bio-waste' products are here again present at the lowest level in the unopened foodstuff packages.

In the course of the study, specific attention was also paid to the expiry dates on the unopened packaging. Of the total number of samples examined, 21.21% of the products in casu had not yet expired. A total of 54.86% could be catalogued as expired. For the remaining products, it was not possible to identify a clear date and these were consequently categorized as 'undefined'.

Foodstuffs fit for human consumption but not disposed of by means of the household garbage bag may likewise be processed via VFG collection, home composting and similar means. In other words, an important fraction of the foodstuffs that today is being thrown away by the Flemish population cannot be analysed by the mere sorting of the content of the garbage bag. It is, hence, not possible to use the study to map out the total volume of food wasted in Flanders. Nevertheless, it does offer us a number of clear insights into the composition of the types of foodstuffs that we are wont to throw out today. In addition, we have also been able to clearly establish that the separated collection of VFG waste significantly affects the volume of bio-waste in the residual waste bag.