

# Under- or over-packaging: a key question in the food waste debate?

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MyPack

Sustainable Packaging Solutions



# Introduction



packaging  
waste

Strategy in a under-  
packaging situation:  
enhance packaging  
and reduce food  
waste



88 million tonnes of  
food waste per year

# Introduction



> 17 million tonnes  
of packaging waste

Strategy in an over-  
packaging situation:  
reduce packaging  
without increasing  
food waste



food waste

# Introduction

The aim of MyPack is to provide guidelines for sustainable packaging, optimizing packaging and reducing food waste.



# Methodology

In order to identify sustainable packaging solutions, finding the right balance between under- and over-packaging, LCA and LCC are applied at 3 levels:

- State of the art level: screening LCAs and LCCs of 100 food packaging combinations in order to identify under- and over-packaging situations.
- Technology level: LCA and LCC of novel technologies (e.g. biodegradable materials; high oxygen barrier packaging; heat resistant PLA; breathing film using an insertion; SiOx inert barrier).
- End-user level: suitable technologies will be tested at three end-users: salads, baby food and organic products.

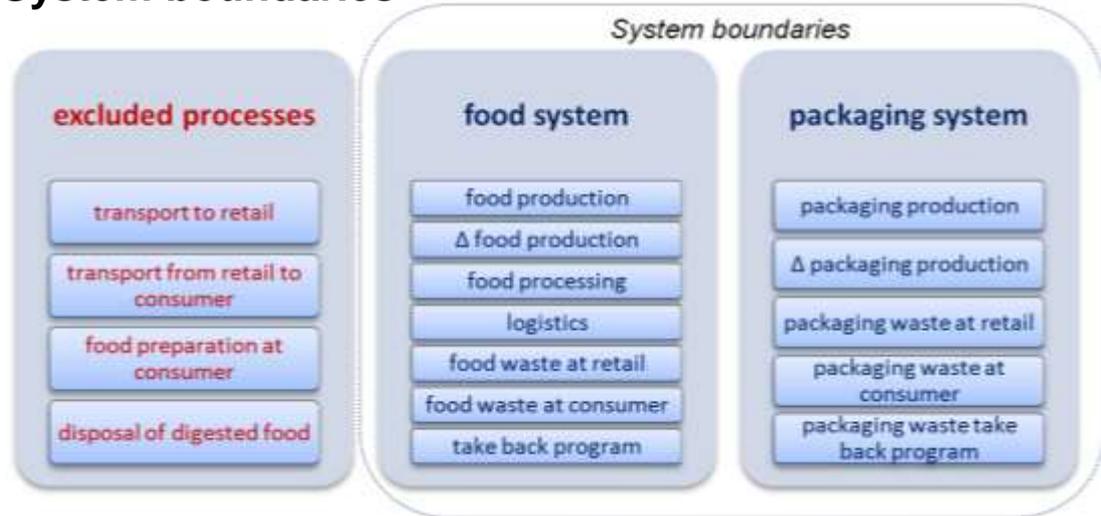
# Goal & scope

## Functional unit

The functional unit is defined as one portion of consumed food by the final user, normalised to 1 kg.

The definition of the functional unit at the level of consumed food, instead of at the level of produced food at the store shelf, allows a more explicit visualization of the food waste impacts.

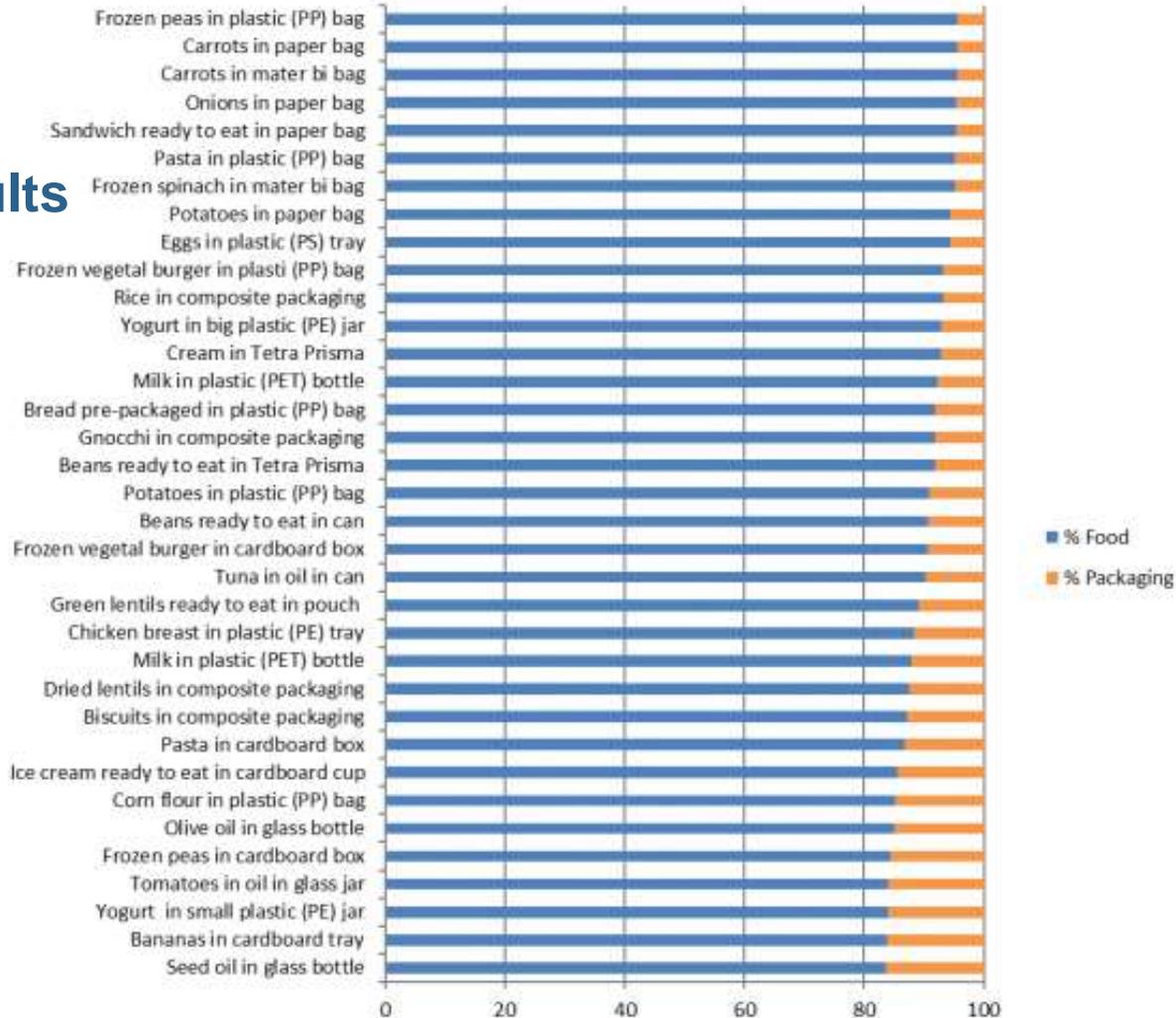
## System boundaries



# Inventory analysis

- In the 100 LCAs primary data have been collected for food ingredients and packaging materials of the selected food packaging combinations.
- For other processes secondary data have been used, originating from LCA databases like ecoinvent (2018), and Agri-footprint (2017) or literature data (LCA publications, EPDs).

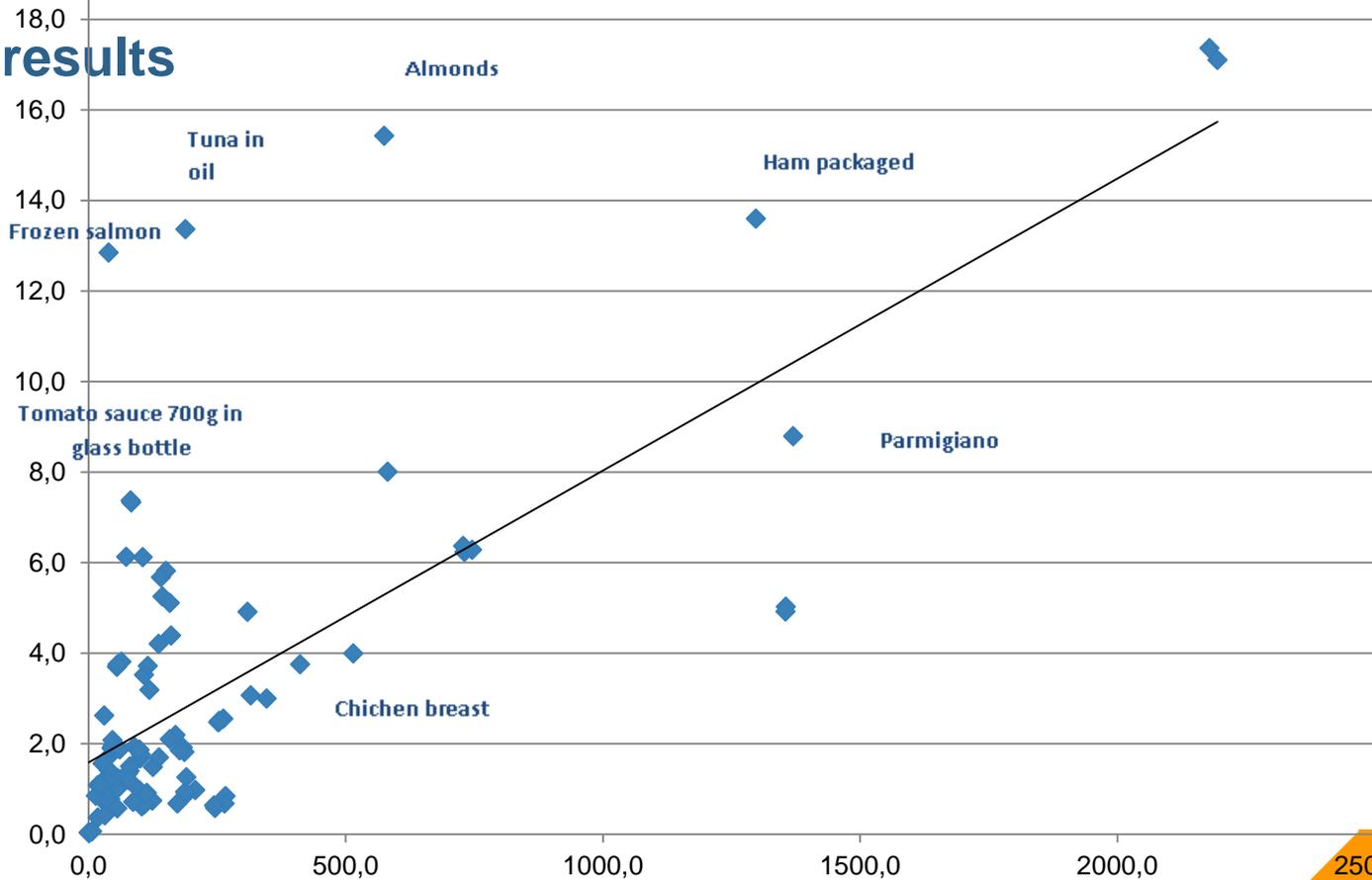
# LCIA results



The reference unit is 1 kg of food consumed.



# LCIA results



## First results

Preliminary results show that innovative packaging technologies can improve the packaging situation in two directions:

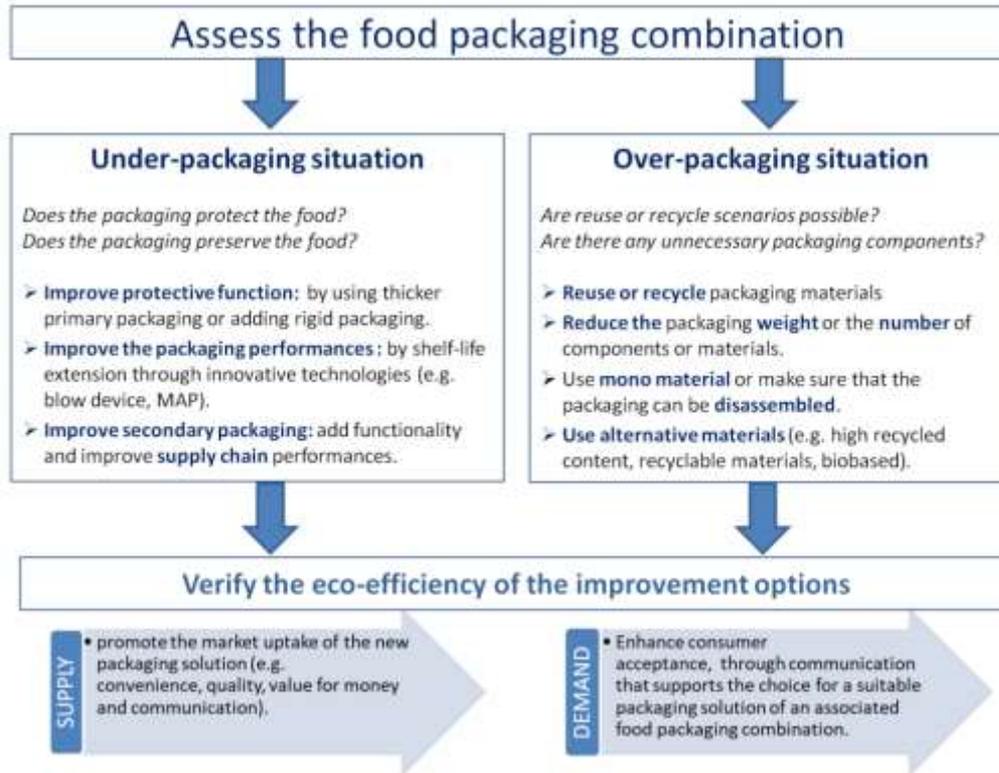
- Under-packaging: packaging film for pre-cut salads can be improved by the use of a blow device, allowing gas exchange between the inside and the outside of the packaging film, increasing shelf-life and reducing food waste.
- Over-packaging: rigid plastic trays for baby food can be improved by the use of recycled materials, reducing impacts while keeping the food waste rate unaltered.



## Learning points

- The environmental evaluation of packaging should be done in relation to the food product covering the entire life cycle, including use and end-of-life.
- Often, food has a higher contribution to the environmental burden of food packaging combinations than packaging.
- The use of innovative packaging solutions can improve the protective function of packaging and by doing this reduce waste and associated impacts.
- In case food is well protected and food waste is already minimized, reuse and recycle scenarios can reduce the packaging impact.
- Environmental impacts of packaging are related to consumer habits; often only postponed consumption can justify the use of more complex packaging.

# Decision tree



# Conclusions

- Food packaging combinations are complex systems, influenced by consumer behaviour.
- A “one fits all” solution does not exist: a decision tree can provide support.
- Under- or over-packaging is a starting point that triggers the discussion on eco-efficient food packaging combinations. Other key issues are consumer acceptance, procurement planning, portioning, shelf life and packaging innovation.



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# Thank you

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