FEST . A CROPAK

Plitvice 2014/05/30

Plastic packaging: born to protect

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PlasticsEurope
Association of Plastics Manufacturers

Subjects of the presentation

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1. Analysis of the plastics demand per geografical area, with particular reference to Europe (EU27+2), applications sectors and resin types;

2. Overview on the benefits deriving by the use of plastics packaging and its contribution in achieving further energy efficiency & climate protection;

3. Analysis of the EU Relevant Regulatory Framework on Materials and Articles intended to come into Contact with Food.

1. Analysis of the plastics demand per geografical area, with particular reference to Europe (EU27+2), applications sectors and resin types

World
Plastics Production 1950 – 2012

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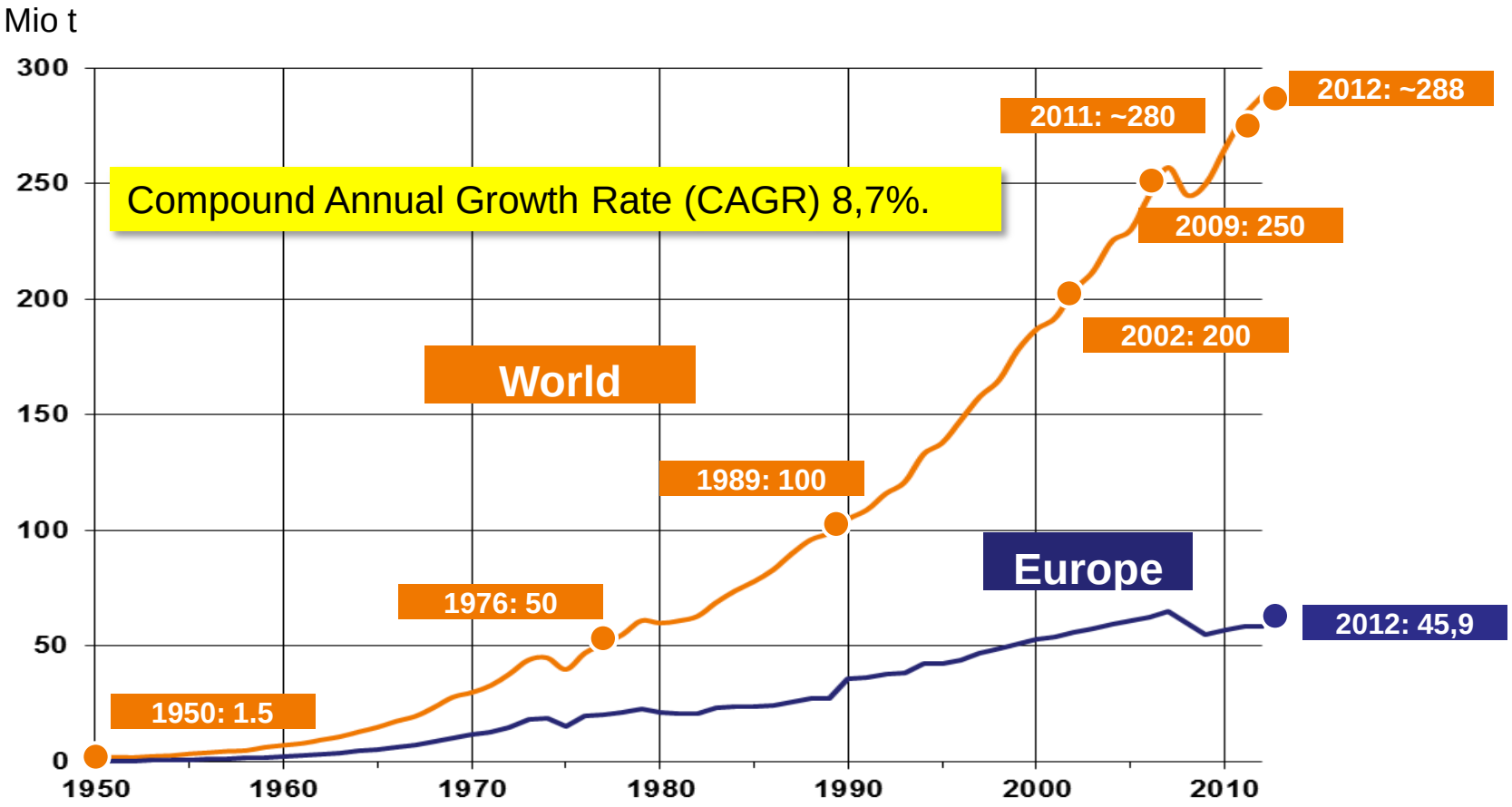

Includes Thermoplastics, Polyurethanes, Thermosets, Elastomers, Adhesives, Coatings and Sealants and PP-Fibers. Not included PET-, PA- and Polyacryl-Fibers

Source: PlasticsEurope Market Research Group (PEMRG) / Consultic Marketing & Industrieberatung GmbH **e = estimation**

Europe (WE + CE)
Plastics Demand* by Countries 2012

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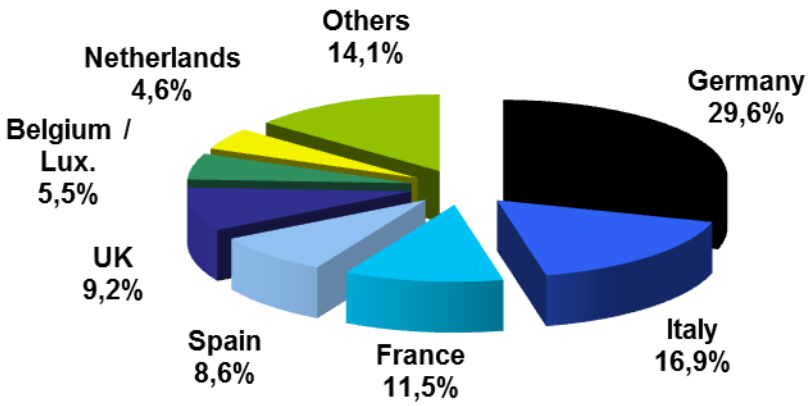
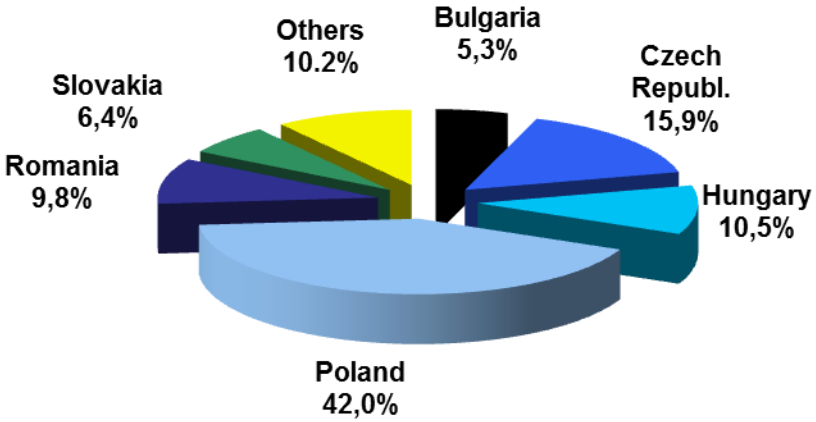
Demand by Countries Western Europe (WE)



Demand by Countries Central Europe (CE)



45.9 Mio t (100%)

39.3 Mio t (86%)

6.6 Mio t (14%)

*** EU27+N, CH incl. Other Plastics (~5.5 Mio t)**

Source: PlasticsEurope Market Research Group (PEMRG) - for Central Europe in cooperation with Eastern and Central European Business Development (ECEBD) / Consultic Marketing & Industrieberatung GmbH

Europe
Plastics Demand* by Segments 2012

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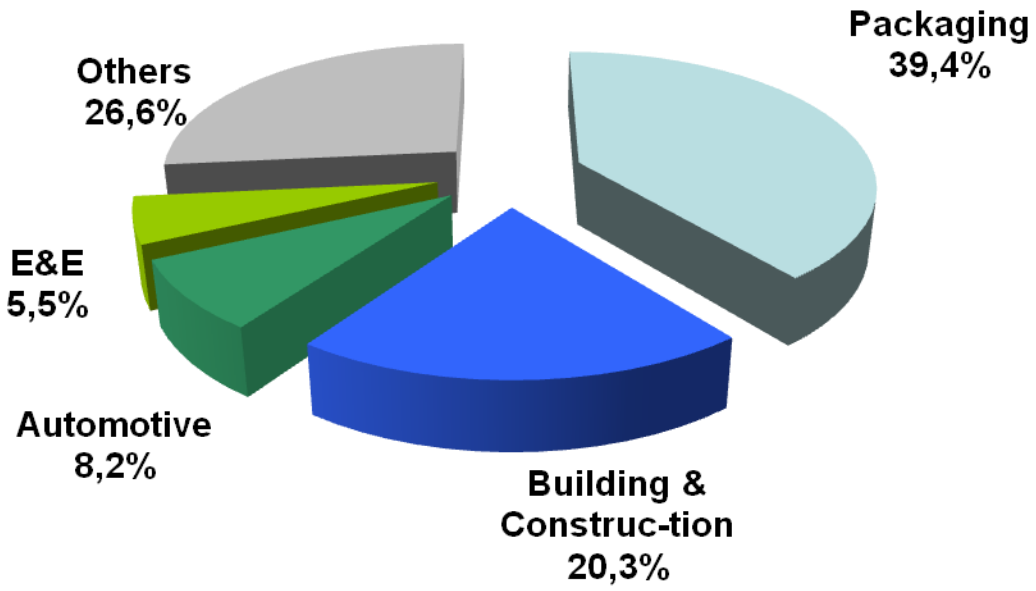

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Europe (WE + CE)
Plastics Demand* by Segments 2012

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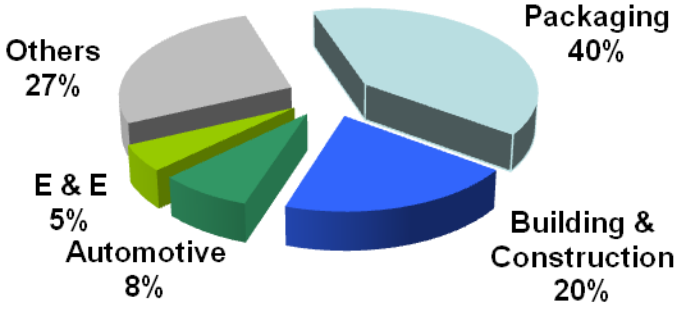
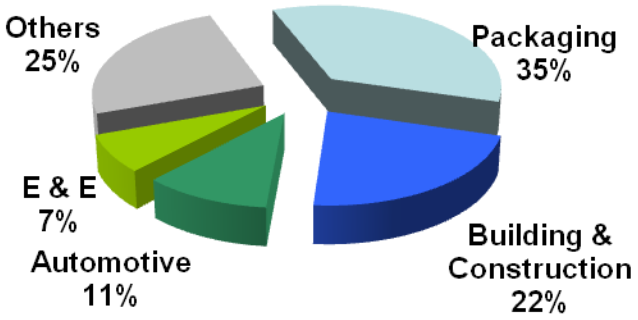
Demand by End Use Segments Western Europe (WE)



Demand by End Use Segments Central Europe (CE)



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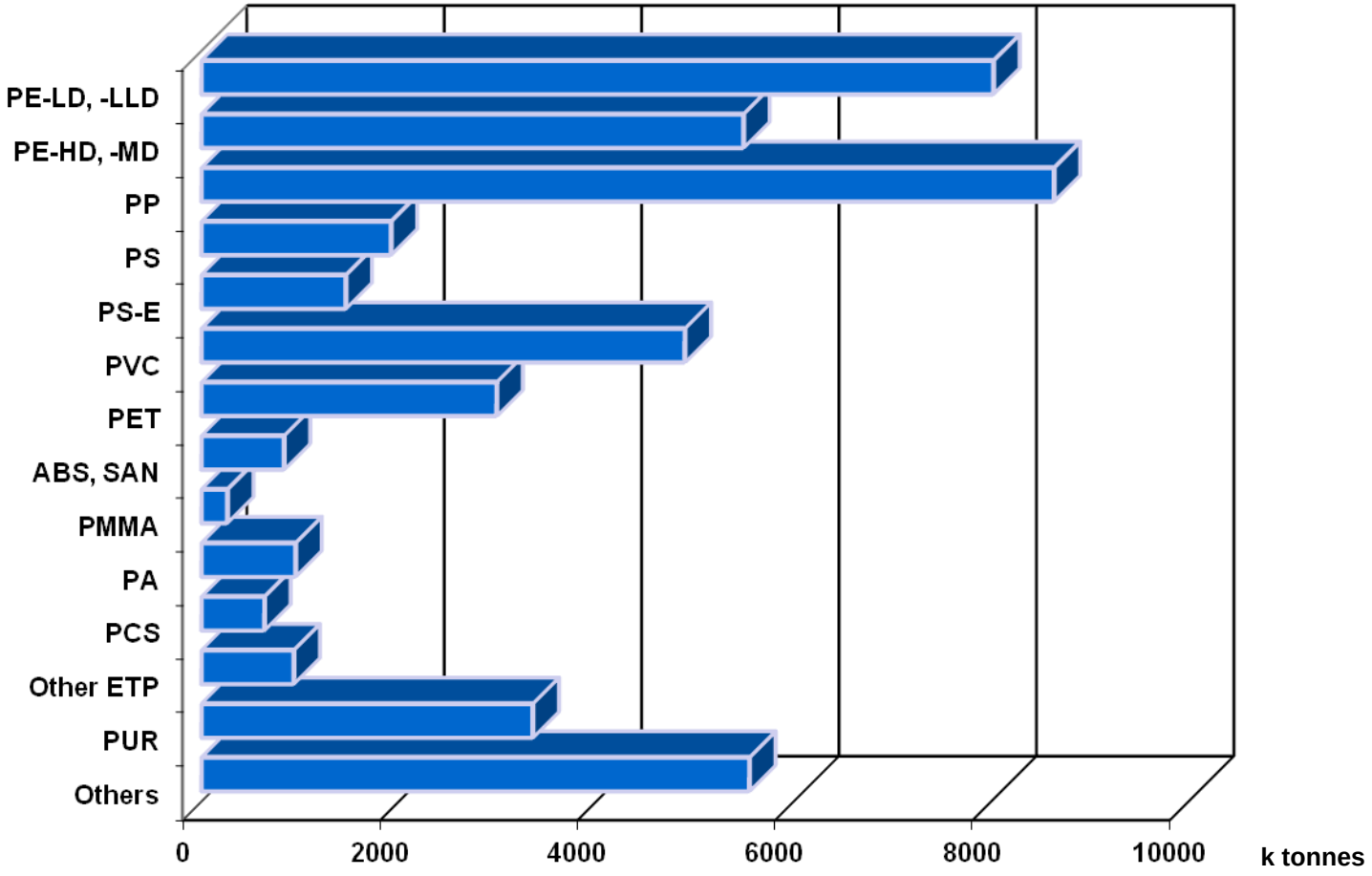
Europe
Plastics Demand by Resin Types 2012



Source: PlasticsEurope Market Research Group (PEMRG) - for Central Europe in cooperation with Eastern and Central European Business Development (ECEBD) / Consultic Marketing & Industrieberatung GmbH

Europe
Plastics Demand by Segments 2012*

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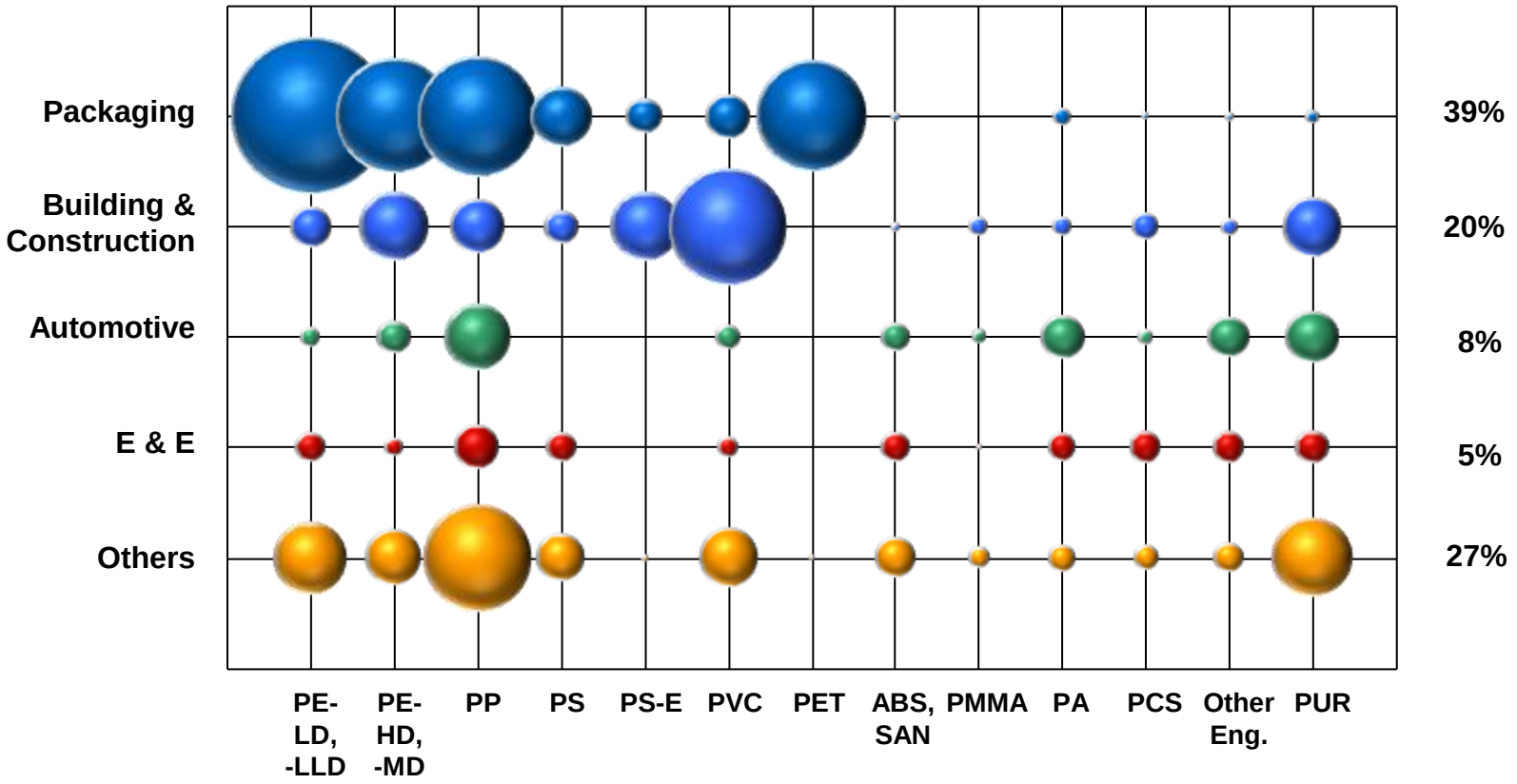
Total: 45.9 Mio t

*** EU27+N, CH incl. Other Plastics (~5.5 Mio t)**



Source: PlasticsEurope Market Research Group (PEMRG) - for Central Europe in cooperation with Eastern and Central European Business Development (ECEBD) / Consultic Marketing & Industrieberatung GmbH

2. Overview on the benefits deriving by the use of plastics packaging and its contribution in achieving further energy efficiency & climate protection

Plastic packaging

Keeping food fresher, for longer

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In developing countries 40% of food losses occur at post-harvest and processing levels. This is partly due to the lack of appropriate packaging solutions.

Source***: FAO report "Global Food Losses and Food Waste"***

Plastic reduces waste by extending shelf life

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Extended shelf life means less preservatives plus extended life in the home

LONGER ON THE SHELF

LONGER IN THE FRIDGE

LONGER LIFE AT HOME

PARTICULARLY SUITABLE FOR PRESERVING PERISHABLE GOODS

Benefits for fresh food

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According to the UK´s Advisory Committee on Packaging [ACP, 2008]:

An unwrapped cucumber loses moisture and becomes dull and unsalable within 3 days, whereas **only 1,5 grams of wrapping can keep it fresh for 14 days**.

Selling grapes in trays or bags has **reduced in-store waste of grapes by 20 %.**

In the UK, a retailer who switched meat packaging from MAP (modified atmosphere packaging) to skin packs has increased shelf life from 5 to 10 days. **Food losses in stores were reduced from 16 % to 4 %,** i.e. -12%!

Source: Denkstatt study on the impact of plastic packaging on energy consumption and GHG emissions

Plastic is the lightest of all packaging materials and has the lowest environmental footprint

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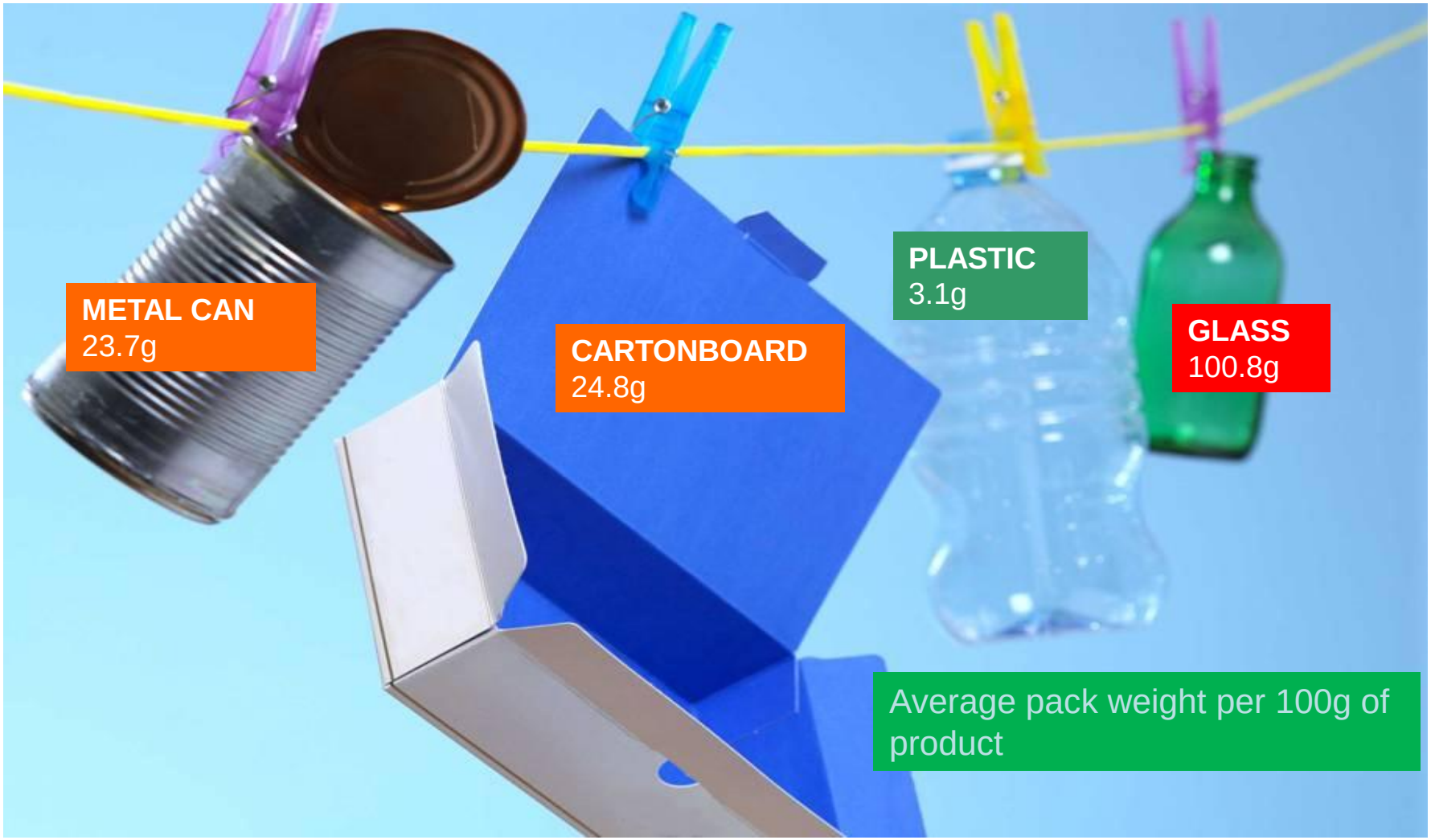

Reduction in transport, warehousing and associated environmental damage

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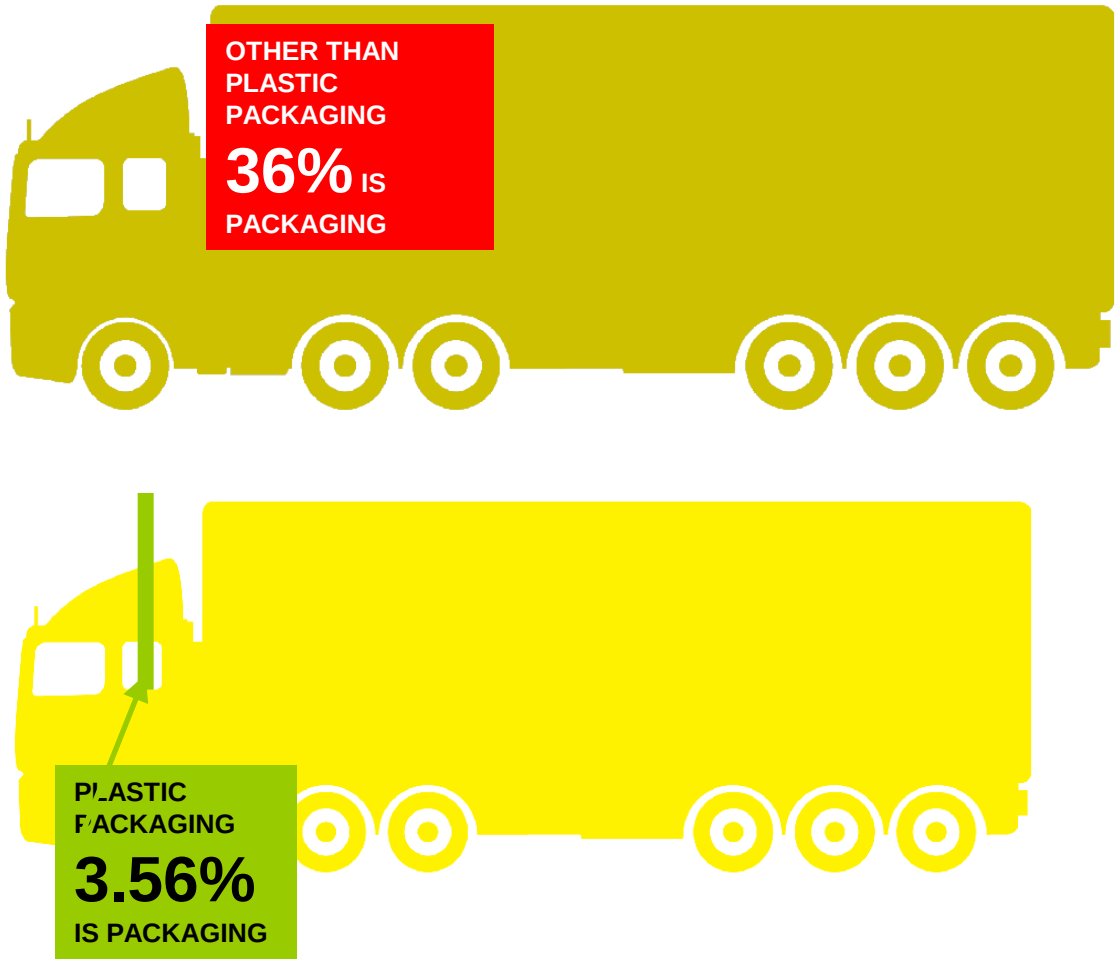
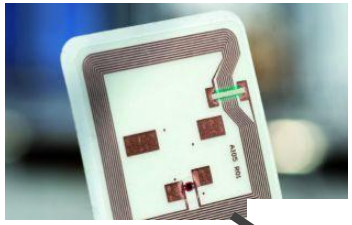
Without plastic packaging, a retailer's vehicle fleet would make 50% more journeys



A glimpse of the future

Plastic packaging can already triple shelf life *thanks to its unique properties that allow for resealable portioned films and packs, anti-microbial agents, humidity control systems and modified atmosphere packaging solutions*



In the future;

•***Printable RFID tags (Radio-frequency identification)*** that provide warnings of changes in and humidity levels that might affect the integr the product.

•***Absorbers and emitters of natural occurring gaseous substance*** prolong shelf life are already entering the market.

•***Biosensors that detect bacteria and viruses*** will pave the way to safeguard the quality and safety of food for consumers whilst further reducing food waste.

Source: Denkstatt study on the impact of plastic packaging on energy consumption and GHG emissions

2. Overview on the benefits deriving by the use of plastics packaging and its contribution in achieving further energy efficiency & climate protection

Packaging & sustainability

Packaging prevents food losses

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- 70 % of **all food packaging** (plastics and other materials) prevent the loss of **20 %** of the food packed (compared to distribution of goods without packaging).
  - ➢ This accounts for 190 Mt of prevented CO_2 emissions, i.e **nearly half of France's annual emissions !**

- **Plastic** packaging used to pack **fresh food** prevents at least **10 % more** food losses than alternative packaging materials (coated wrapping paper, for instance).
  - ➢ The benefit of this reduction is approximately 22 Mt of prevented CO_2 emissions, i.e. **Croatia's annual emissions !**




Source: Denkstatt study on the impact of plastic packaging on energy consumption and GHG emissions

Benefits for fresh food

- Fresh food which is not pre-packed (meat, cheese, salad, ...) often has a short shelf life. Using plastic can significantly increase shelf life and thereby reduce food wastes in stores

Example : plastic-packaged meat

6.7 kg CO2 per kg of meat

26 grams packaging per kg of meat, leads to 0.05 kg of CO2

With 10% of prevented food loss, **plastics packaging helps spare 670g CO2**

Benefit is 13 times higher than burden of packaging production

CO2 emissions related to meat are **130 times higher** than CO2 emissions of packaging !

The benefit of 10 % prevented food loss is **13 times higher** than the CO2 emissions caused by plastic packaging

Source: Denkstatt study on the impact of plastic packaging on energy consumption and GHG emissions

What if plastics were replaced?

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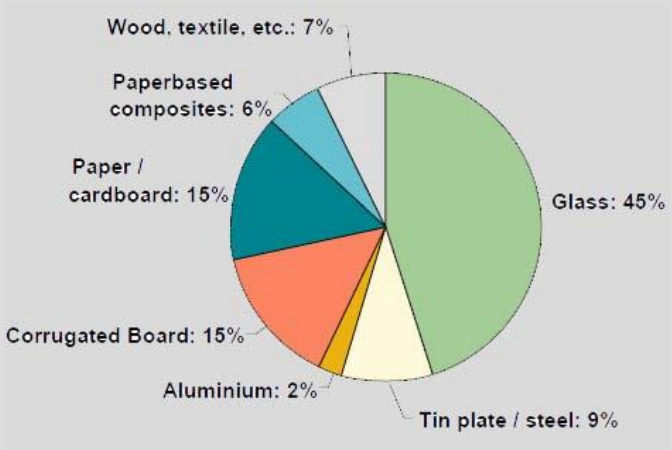
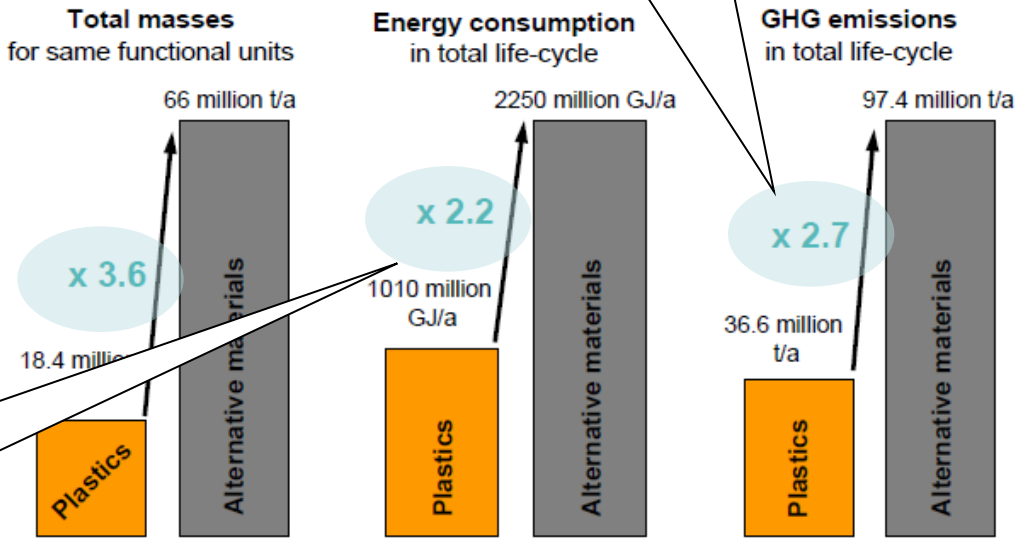
Replacing plastics packaging with:



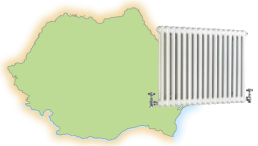
Substitution model developed by German market research institute GVM, based on 32 packaging categories, more than 70 different materials, and a database containing 26,000 data sets of packaging materials, sizes, volumes, and masses.

= 21 million more cars on the road, i.e. the total **CO2 emissions of Denmark !**

Would lead to…



= 20 million more heated homes, i.e **the annual consumption of Romania's population!**



Source: Denkstatt study on the impact of plastic packaging on energy consumption and GHG emissions

The benefits of plastics packaging

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- Plastic packaging enables:
  - **significant savings** of energy and GHG emissions
  - **resource efficient** packaging solutions
- The **substitution of plastic packaging** with other materials will in most cases increase energy consumption and GHG emissions.
- Plastic packaging often facilitates **reduced material consumption**.
- Plastics used for food packaging enable extraordinary **benefits in the use phase** (prevented food losses and efficient transportation).
- A "**carbon balance**" shows that the estimated use benefits of plastics packaging are at least 5 times higher than the emissions from production & recovery.

Source: Denkstatt study on the impact of plastic packaging on energy consumption and GHG emissions

3. Analysis of the EU Relevant Regulatory Framework on Materials and Articles intended to come into Contact with Food.

Function of food packaging

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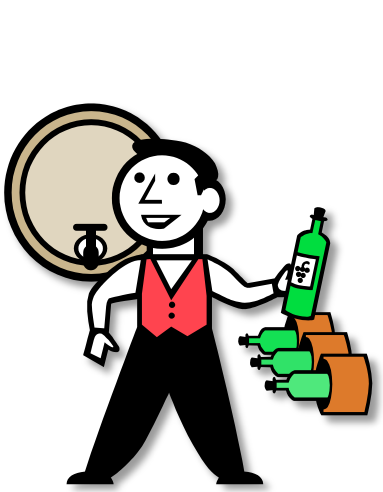
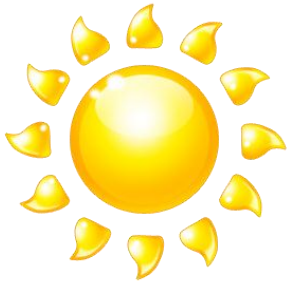
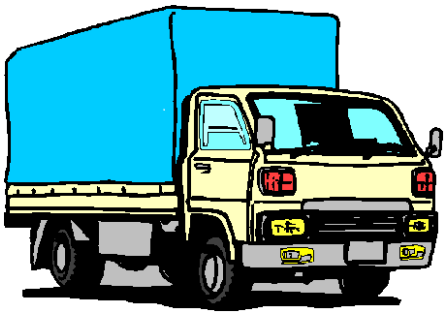
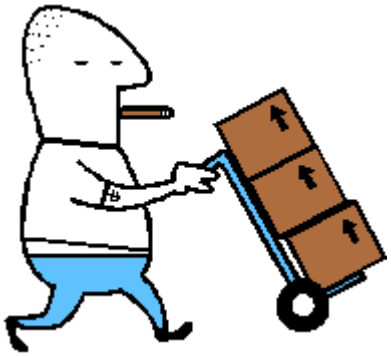
To guarantee that in the “path” between producer and consumer, food is safe, without significant modifications of its composition and its organoleptic characteristics.



Producer







Consumer

Ideal Packaging

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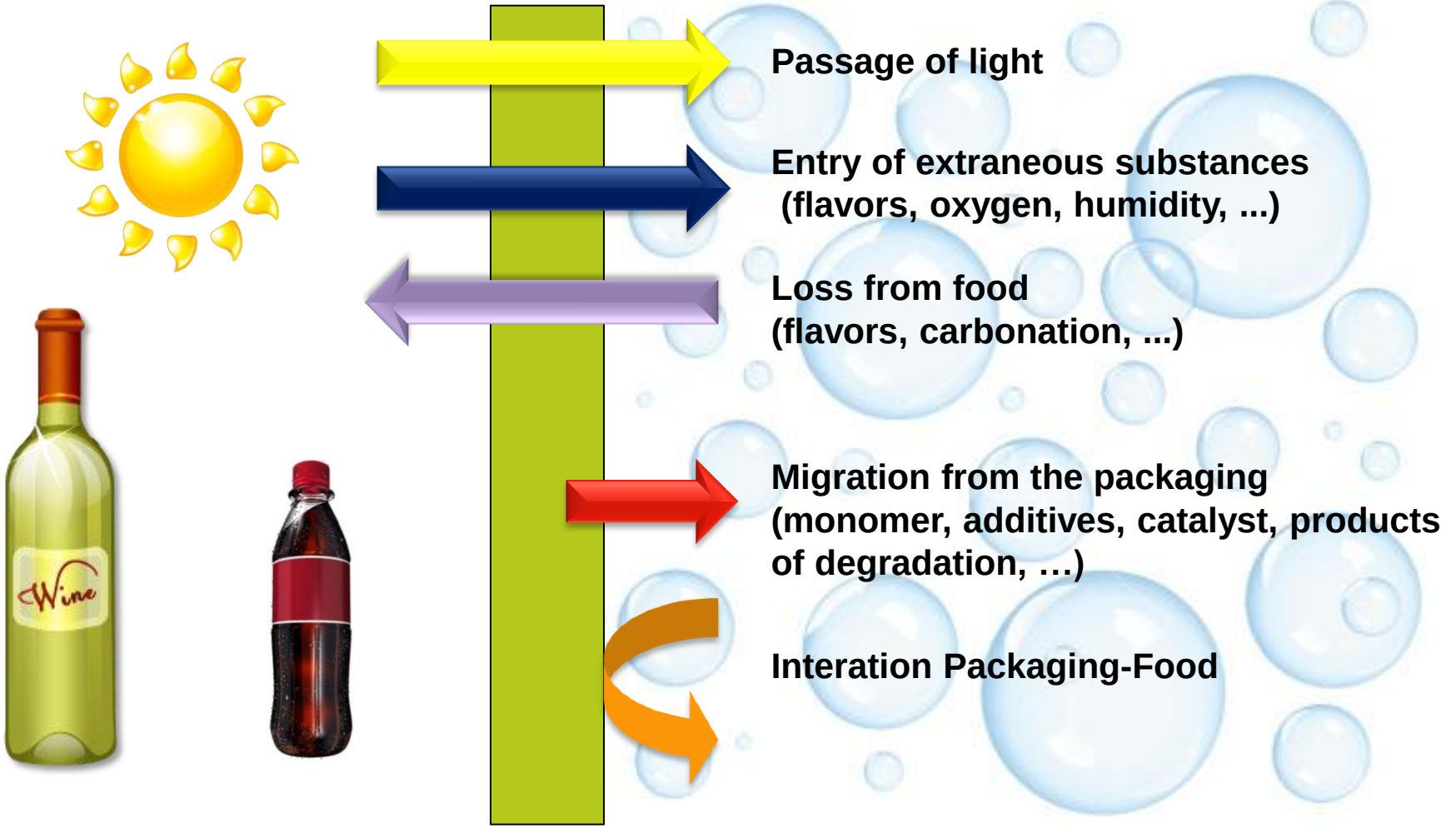
- **Absolute barrier** against the external environment
- **Inert** towards food

Packaging = System

- Container
- Closure
- Label

Interaction Packaging - Food



Real Packaging

It is not an Absolute barrier against the external environment

- Must protect and preserve food for a long enough period (shelf life)
- Best before…

It is not fully Inert towards food

- Must not leave harmful substances
- Must not alter the characteristics of the food

The Relevant Regulatory Framework on
Materials and articles intended to come into contact with food

- **Regulation (EU) 1935/2004 – on materials and articles intended to come into contact with food**
- **Regulation (EU) 2023/2006 – Good Manufacturing practice for materials and articles intended to come into contact with food**
- **Regulation (EU) 282/2008 –on recycled plastic materials and articles intended to come into contact with food**
- **Regulation (EU) 10/2011 – on plastic materials and articles intended to come into contact with food**

- **Member State Regulatory Framework, e.g. Italy**

- **Ministerial Decree 21.3.1973 - on materials and articles intended to come into contact with food-General framework**
- **Ministerial Decree n. 113 of 2010/05/18, and Ministerial Decree, n. 139 2012/07/09– on recycled PET for the production of bottles for soft drinks**

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Regulation (EU) 1935/2004 – on materials and articles intended to come into contact with food and repealing Directives 80/590/EEC and 89/109/EEC

Article 3

1. Materials and articles, including active and intelligent materials and articles, shall manufactured in compliance with good manufacturing practice so that, under normal or foreseeable conditions of use, they do not transfer their constituents to food in quantities which could:

a) endanger human health;

or

b) bring about an unacceptable change in the composition of the food;

or

c) bring about a deterioration in the organoleptic characteristics thereof.

2. The labeling, advertising and presentation of a material or article shall not mislead consumers.

Regulation (EU) 1935/2004

- **General Provisions**
  - Apply to any material / article
  - Reference in the absence of regulations
- **Procedure of european autorization of new substances**
  - Petition
  - Evaluation(EFSA)
  - Decision (European Commission)
- **Field of application of the national legislation**
  - It is applied in the absence of Community provisions
  - Principle of free circulation of the goods
  - National regulations possible if justified (health protection)
- **Comunication**
  - Declaration of Compliance
  - Labelling
- **Control** (Member State)

- **Fines** (effective, proportionate and dissuasive)

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Regulation (EU) 2023/2006 – Good Manufacturing practice for materials and articles intended to come into contact with food

- Good Manufacturing Practices (GMP)
- Quality assurance system
- Quality control system
- Documentation

In Italy the concept has been further developed in the **Progetto CAST,** which is a «working document / guidelinee» shared between Industry and Autority

Regulation (EU) 10/2011
Specific Requirements for Plastic Materials and Articles

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Regulation (EU) 10/2011 – on plastic materials and articles intended to come into contact with food

- Composition requirements
  - Authorised Substances (positive list)
  - Authorised Substances (producer responsability)
- General and specific requirements
- Restrictions
- Overall migration limit
- Specific migration limits
- Plastics multi-layer materials and articles and multi-material multi-layer materials and articles
- Declaration of Compliance
- Supporting Documents
- Compliance

Regulation (EU) 282/2008 –
recycled plastic materials and articles for food contact

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Regulation (EU) 282/2008 –on recycled plastic materials and articles intended to come into contact with food and amending Regulation (EU) n. 2023/2006

- National laws will no be more valid when the regulation enter into force
- Field of application: mechanical treatment of post-consume materials
- Requirements for recycled plastic materials and articles
- Condition for the authorisation of recycling processes
- Application for authorisation of a recycling processes and opinion of Authority
- Authorisation of a recycling processes
- Community register
- Official control

Finally…

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"Other than packaging, it is doubtful if there is anything in this world linked to so many diverse business sectors, which improves the daily lives of billions, prevents waste and yet is regarded negatively by most people".

Julian Carroll - EUROPEN

Plastics

The Material for the 21st Century