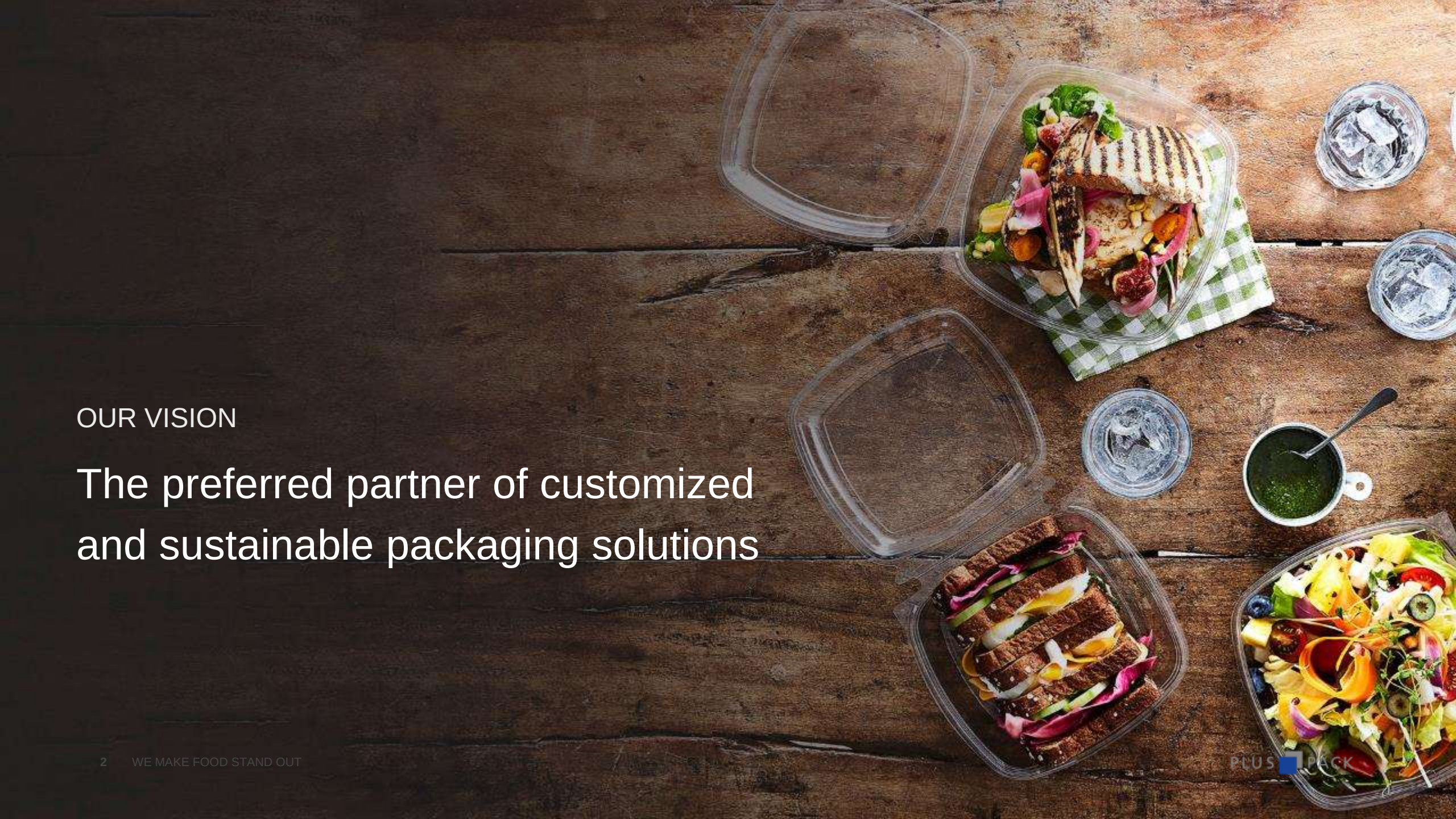
PLUS PACK

WE MAKE FOOD STAND OUT

Towards a sustainable future for packaging, design and materials

Ksenija Garbacenka, Plus Pack



OUR VISION

The preferred partner of customized and sustainable packaging solutions

Plus Pack in facts and figures

4th generation family owned

Two factories DK + BE

DK: 180 employees
BE: 50 employees

4 million meals daily

1,200 customers

Sales to more than 50 countries

€79 mill. turnover in 2019

10% of turnover from innovation

SUSTAINABLE DEVELOPMENT GOALS

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We focus on SDG 12 to deliver 100% recyclable products with zero CO_2 emissions

Target 12.2

By 2030, achieve the sustainable management and efficient use of **natural resources**.

WE MINIMIZE FOOTPRINT

- Minimize CO_2 in production
- Minimize scrap
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- Green electricity

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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.

WE FIGHT FOOD WASTE

- Premium protection
- Extended shelf life
- Reclosable solutions
- Right-sized portions

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WE THINK CIRCULAR

- Focus on mono-materials
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Target 12.8

By 2030, ensure that people everywhere have the relevant **information and awareness** for sustainable development and lifestyles in harmony with nature.

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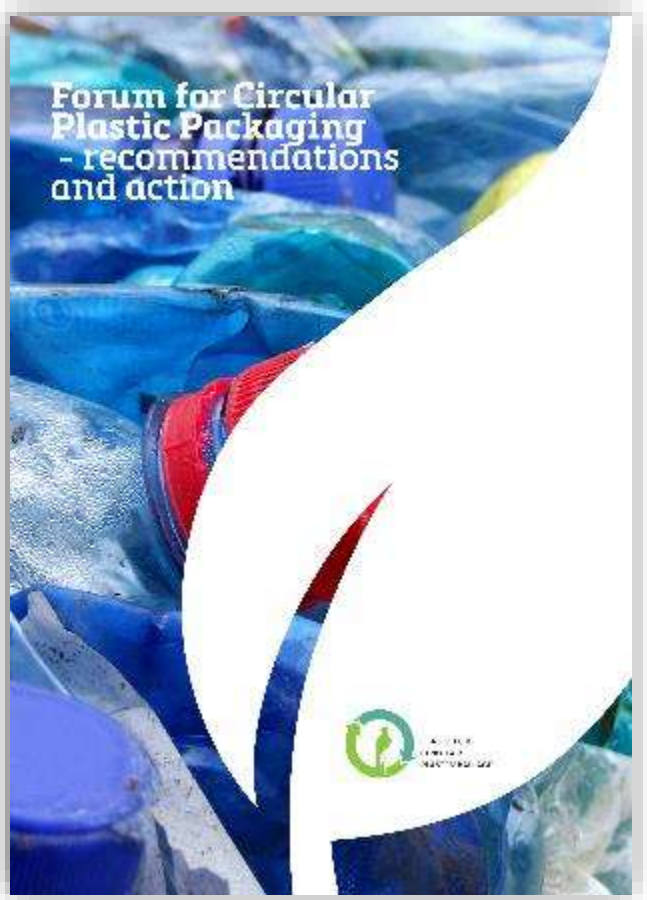
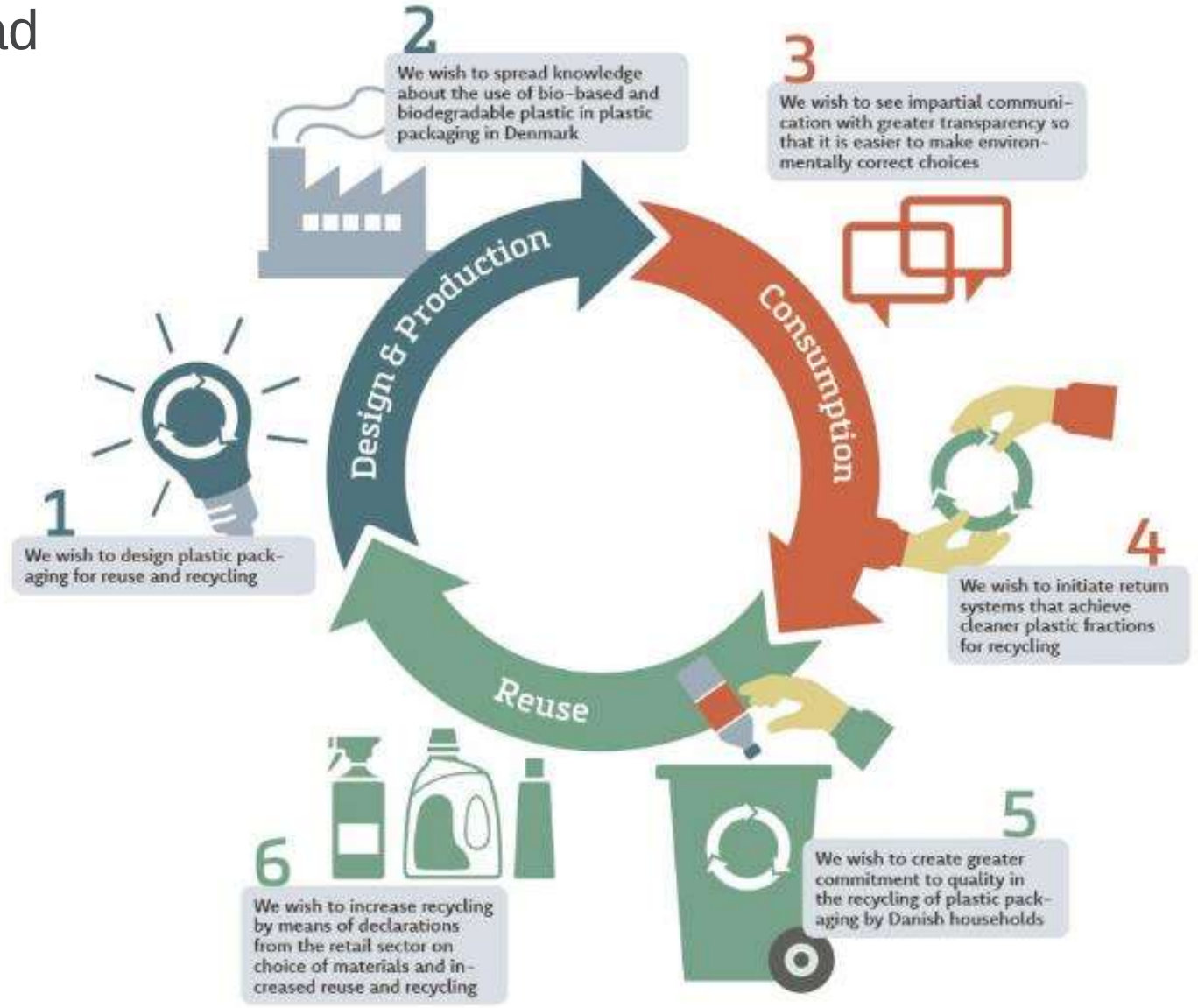
Network for circular Plast Packaging

Plastindustrien.
Brancheforeningen for danske plastvirksomheder

Network for circular Plastic Packaging



The road ahead



Designguide vol. 2

The design guide was developed by a working group established by the Netværk for cirkulær plastemballage (Network for circular plastic packaging), which is operated by the trade association, the Danish Plastics Federation. The working group consisted of representative from:

The design guide's content is also supported by

Vision for the Design Guide

The design guide’s vision is to strengthen the market for recycling of plastic packaging and to make Denmark a global leader in circular recycling and the reuse of plastic packaging.

In order to succeed, we will need to be ambitious and adopt a long-term vision. This is a major transition and it will take place gradually over a number of years. In order to establish objectives in this effort, the design guide highlights the following dogmas:

- The quality of the packaging streams for both food and non-food packaging must be strengthened and made more uniform so that the recycled raw material becomes the focus of design, sorting and recycling.
- The plastic's properties must be retained in the recycling process in order to maintain market value and to maintain usability.
- This design guide shall serve to open opportunities for innovation - not restrict them.
- Users of this design guide shall be able to make an informed choice when selecting a business model and packaging and shall be aware of the impact these choices have on the recycling possibilities for the packaging.
- Design alone cannot enhance quality; sorting must also be improved so that clear, black and mixed colour plastics are properly sorted at the sorting plants, and a distinction must be able to be made between food and non-food packaging.

Key global agendas form the framework for the design guide

The four central objectives are to:

- **Prevent food waste.** The main purpose of food packaging is to protect its contents so that food waste is prevented and shelf life is extended. Barrier and sealing properties are essential for the prevention of food waste in the process between the producer and the consumer. The design of the packaging must not have a negative effect on the food product's shelf life.

- **Ensure high food safety.** It is essential to maintain a focus on non-intended substances and their impact on options for reuse and recycling of, e.g., food contact materials.

- **Minimise the global climate and resource footprint from the manufacture and use of plastic packaging.** The planet has limited resources that must be used with care and consideration for future generations, and CO_2 emissions must be minimised. We must therefore minimise resource consumption to the fullest extent possible by ensuring we reuse and recycle the resources used in the production of plastic packaging.

- **Minimise the risks of plastic waste in the natural environment.** Each and every year, a tremendous amount of plastic ends up in the world's forests, lakes, rivers and oceans. There is therefore a need for robust, worldwide collection and processing systems for plastic waste which ensure that plastic packaging does not end up as a part of nature's cycles.

Three approaches to plastic recycling

1. **Mechanical recycling** – the most commonly used method for plastic recycling.
   Plastic waste is sorted mechanically using a scanner (e.g., NIR, MIR) float-sink equipment or other equipment (e.g., ballistic separator, film separation, electrostatic separation). The plastic is then washed and re-melted.
   Challenge: Material loss.

2. **Biological recycling** – a developing market.
   Only suitable for biodegradable plastics. The plastic is degraded by bacteria, enzymes or other means into basic chemical building blocks, which are then re-introduced into the biological loop. Therefore, it is important that input material does not contain any substances that are harmful to the biological loop.
   Challenge: Creating cohesion between the biodegradable plastic (the individual plastic type) and the receiving plants.

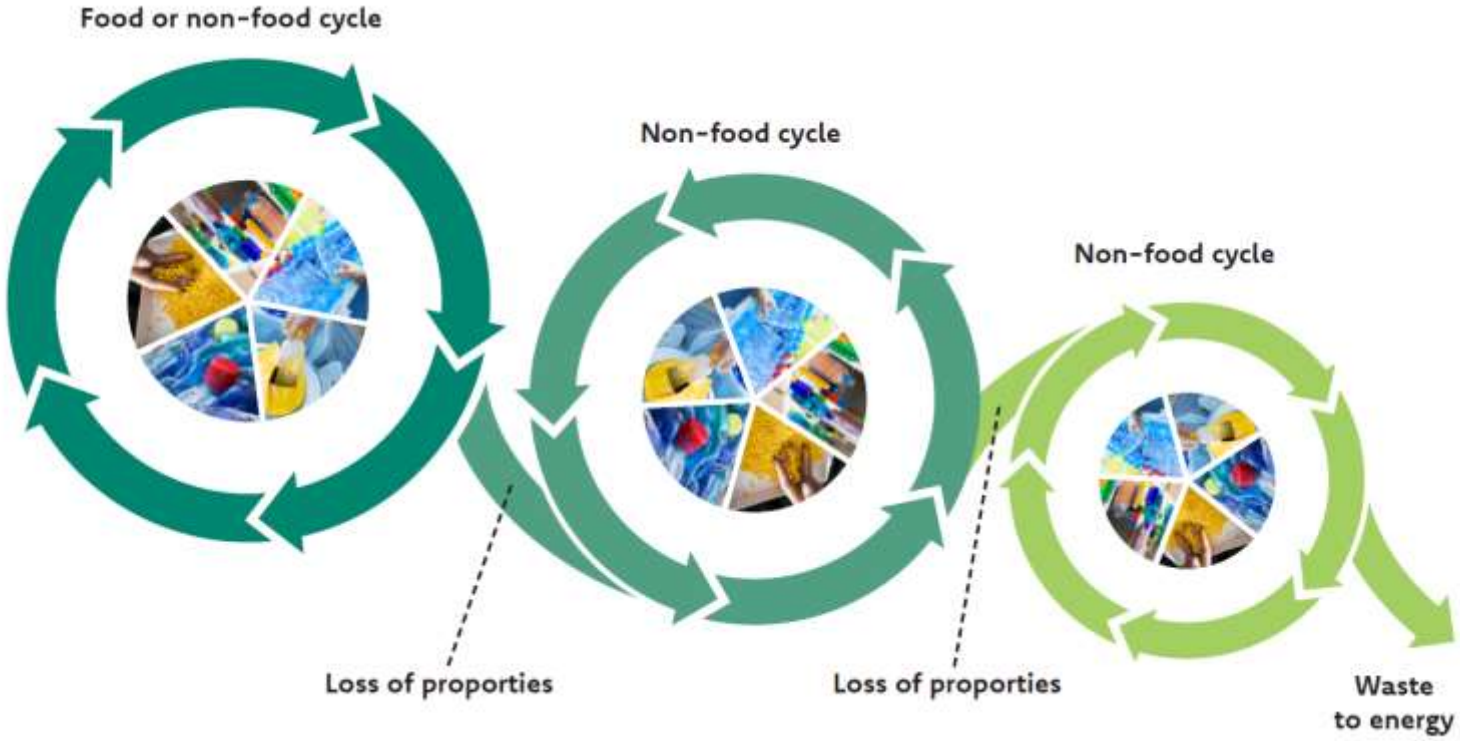
3. **Chemical recycling** – a developing market.
   Here, plastic is degraded through thermochemical processes, solvents or other means into basic chemical building blocks, which can then be used as base materials for new products (e.g., new plastic, oil, fuel for transport). Chemical recycling is seen as a complement to mechanical recycling - not a substitute.
   Challenge: High energy consumption.

The circular recycling principle

- Recycled material may be used in the packaging, and be used as recycled material in the same type of product.
- It must be possible to sort the packaging correctly.
- The packaging must not affect other recycled materials with non-intentionally added substances

The spiral recycling principle

When a material cannot be recycled 1:1, its specific properties are downgraded and it leaves the circular cycle, after which the material can be recycled according to the spiral recycling principle.



Bioplastics and biodegradable plastics

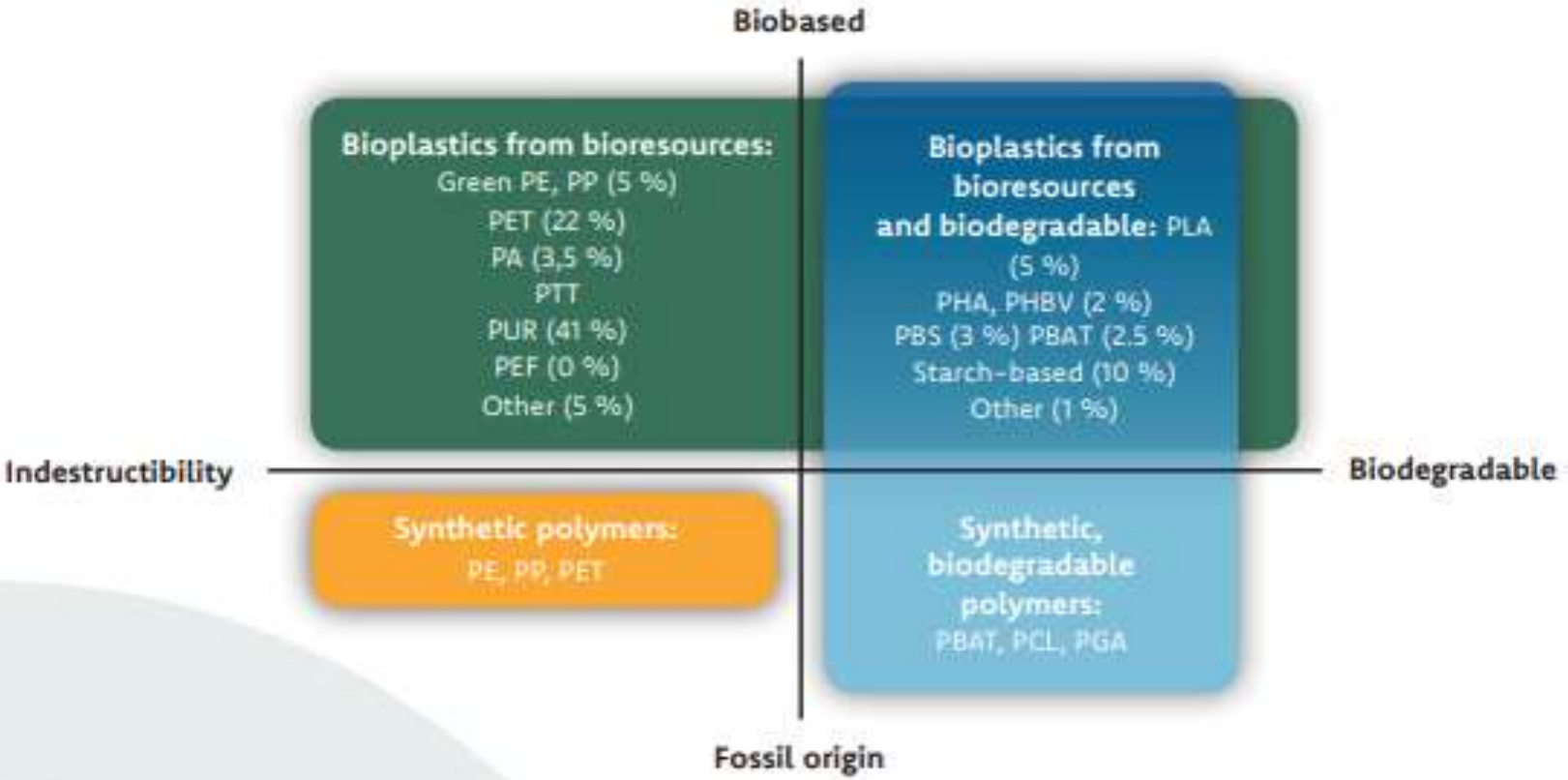


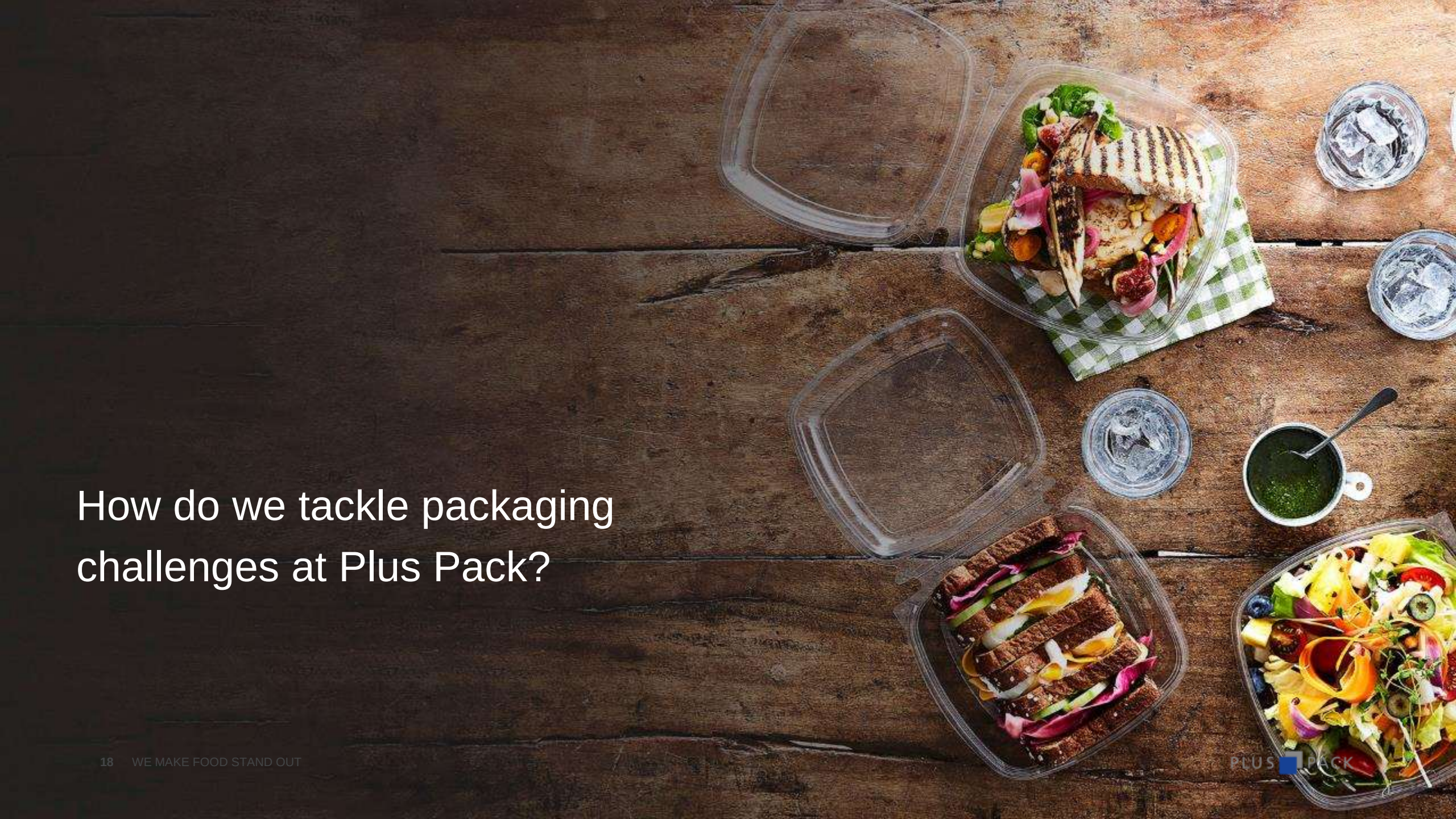
Figure: Bioplastics and biodegradable plastics. The percentages indicate the share of global bioplastics production of 4.2 million tonnes in 2015 according to European bioplastics, Nova-Institute 2016. By comparison, 322 million tonnes of polymer was produced globally in 2015. Biodegradability includes compostability, as tested according to EN 14995:2006 Plastics. Evaluation of compostability. Test scheme and specifications.

Biodegradable plastics in packaging

- Biodegradable plastics, in practice, seldom degrade fully in nature and therefore must NOT end up in the natural environment.
- Biodegradable plastics must be collected and degraded in industrial plants that are designed for this purpose. However, there are differences in the types of plants where municipal compost is sent to in Denmark. Not all biodegradable plastics are sent to biogas plants where they are potentially degraded, therefore, much of this plastic is sorted for incineration.
- If biodegradable plastic ends up being collected with “regular” plastic for recycling, it will often be sorted out as a residual product in the sorting process then sent for incineration. Biodegradable plastic cannot be recycled with other recyclable plastics, since biodegradable plastic cannot be recycled and reused in new plastic products.
- In Denmark, biodegradable plastic should only be used for packaging IF it is ensured that it will end up in an industrial composting plant or dry biogas plant where it can be degraded rather than sorted out. Biodegradable bags are used for handling biowaste when biowaste is sent to a plant that can handle it.

Biobased plastics in packaging

- Biobased plastics offer advantages and disadvantages. The relevant parameters are agricultural land use, carbon footprint, pesticides and water use. The plastic's environmental and climate impact depends on the calculation method used and the source of the biomass.
- Biobased PP, PET and PE plastics can easily be recycled with fossil-based PP, PET and PE plastics and can therefore be included in mechanical recycling.



How do we tackle packaging challenges at Plus Pack?

We focus on SDG 12 to deliver 100% recyclable products with zero CO_2 emissions

THE GLOBAL GOALS
For Sustainable Development

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The linear system is not working – we MUST minimise waste and promote a circular economy

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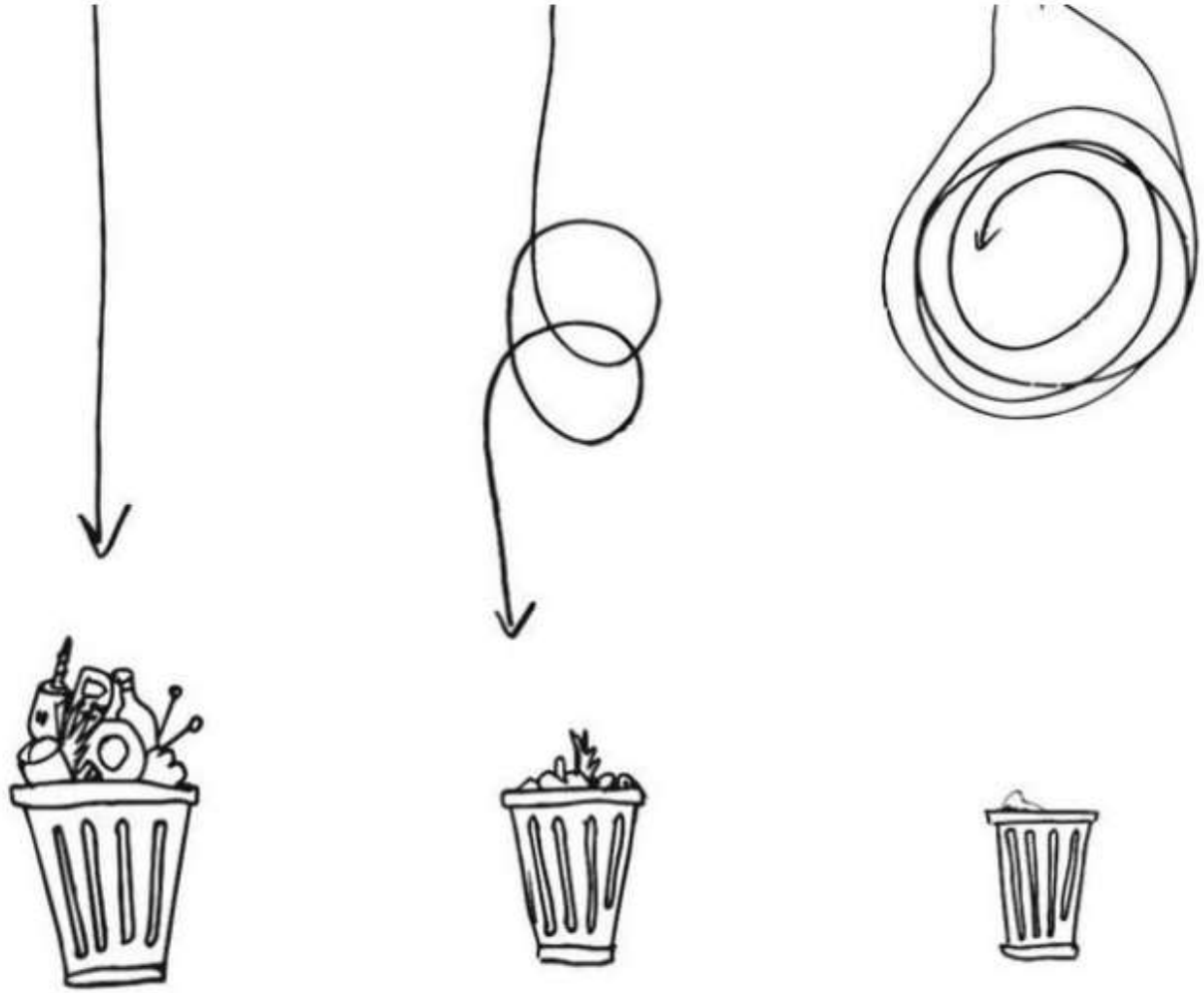

The talking Thread, 2018.

Design from a holistic life-cycle perspective

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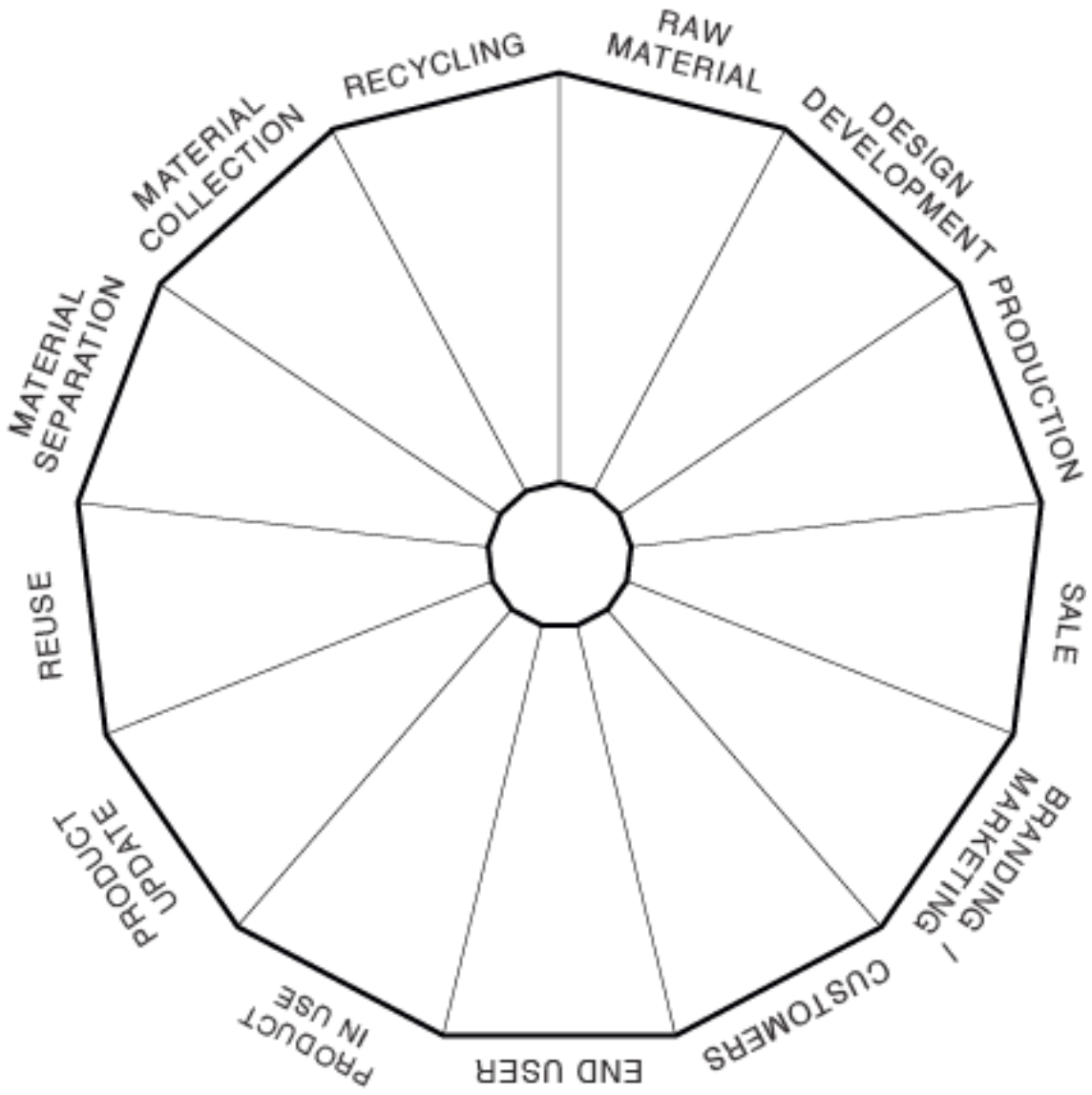

PLUS PACK


85%
of our plastic product portfolio is easy-to-recycle today


100%
recyclable.
The champion in a circular economy
95%
energy saved when recycled

The right packaging for the right situation. Not too much and neither too little!

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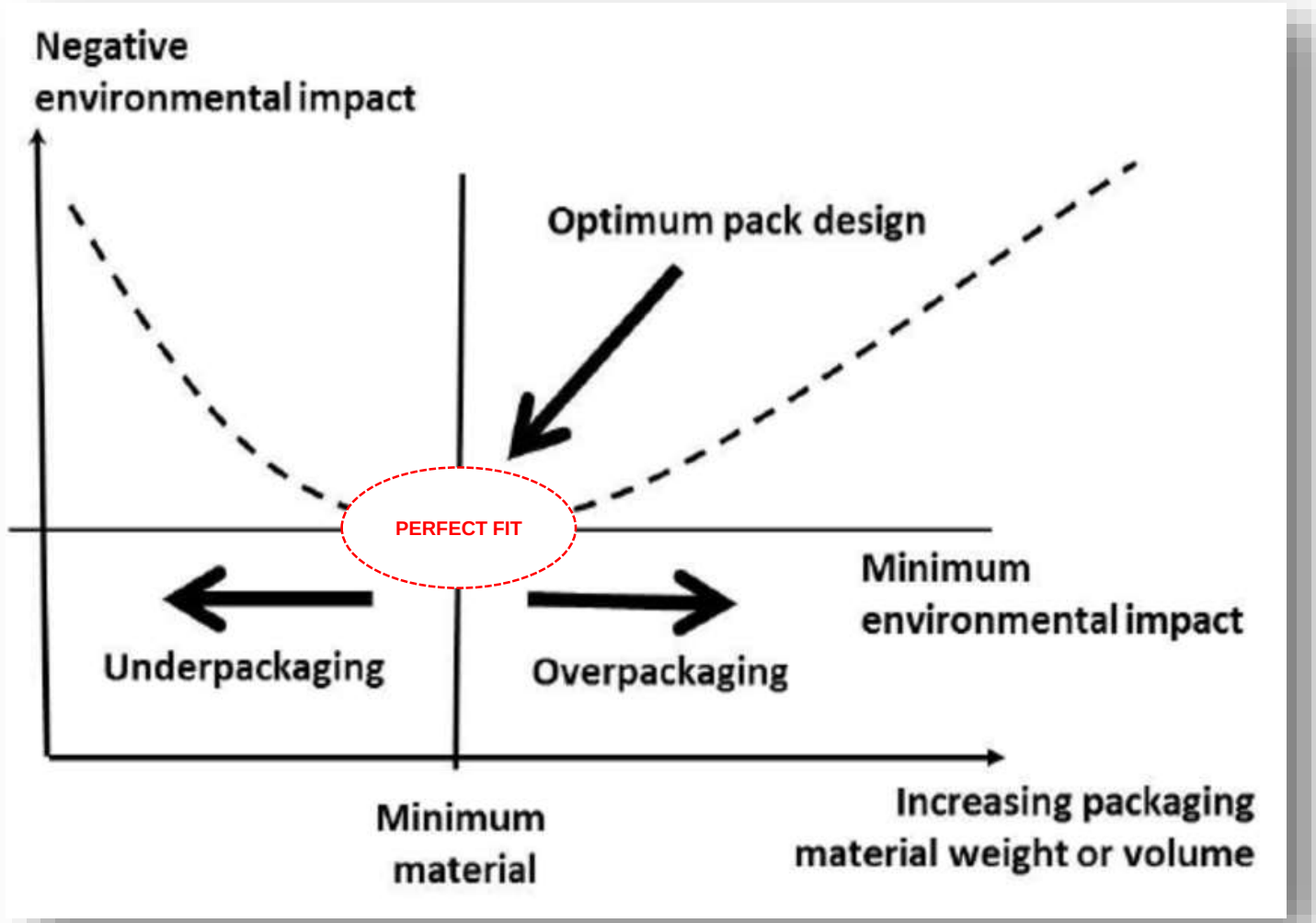

The Consumer Goods Forum Sustainability.

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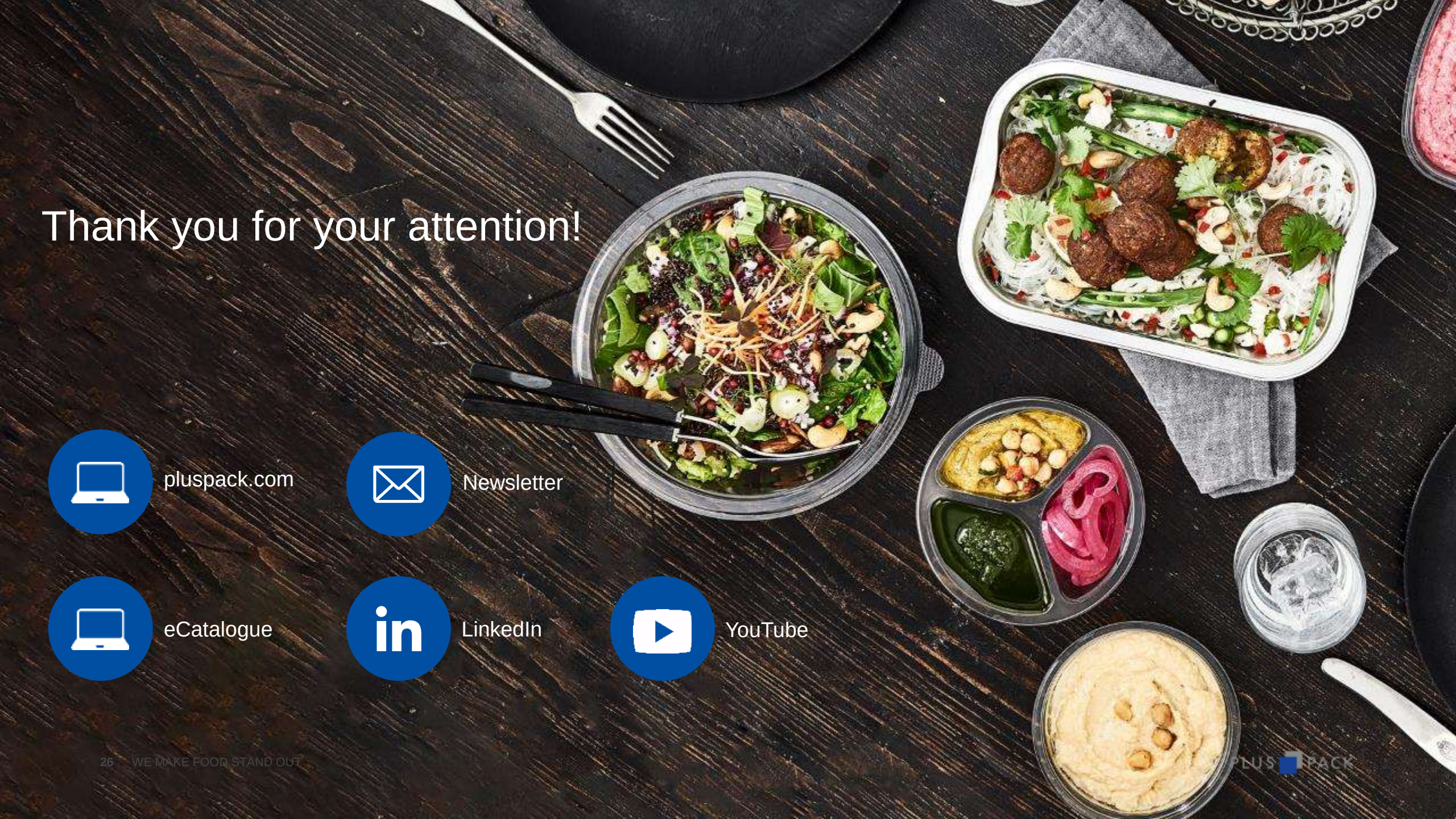

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