Limitations & Opportunities of Circular Economy and PPWR

Future opportunities for Biopolymers

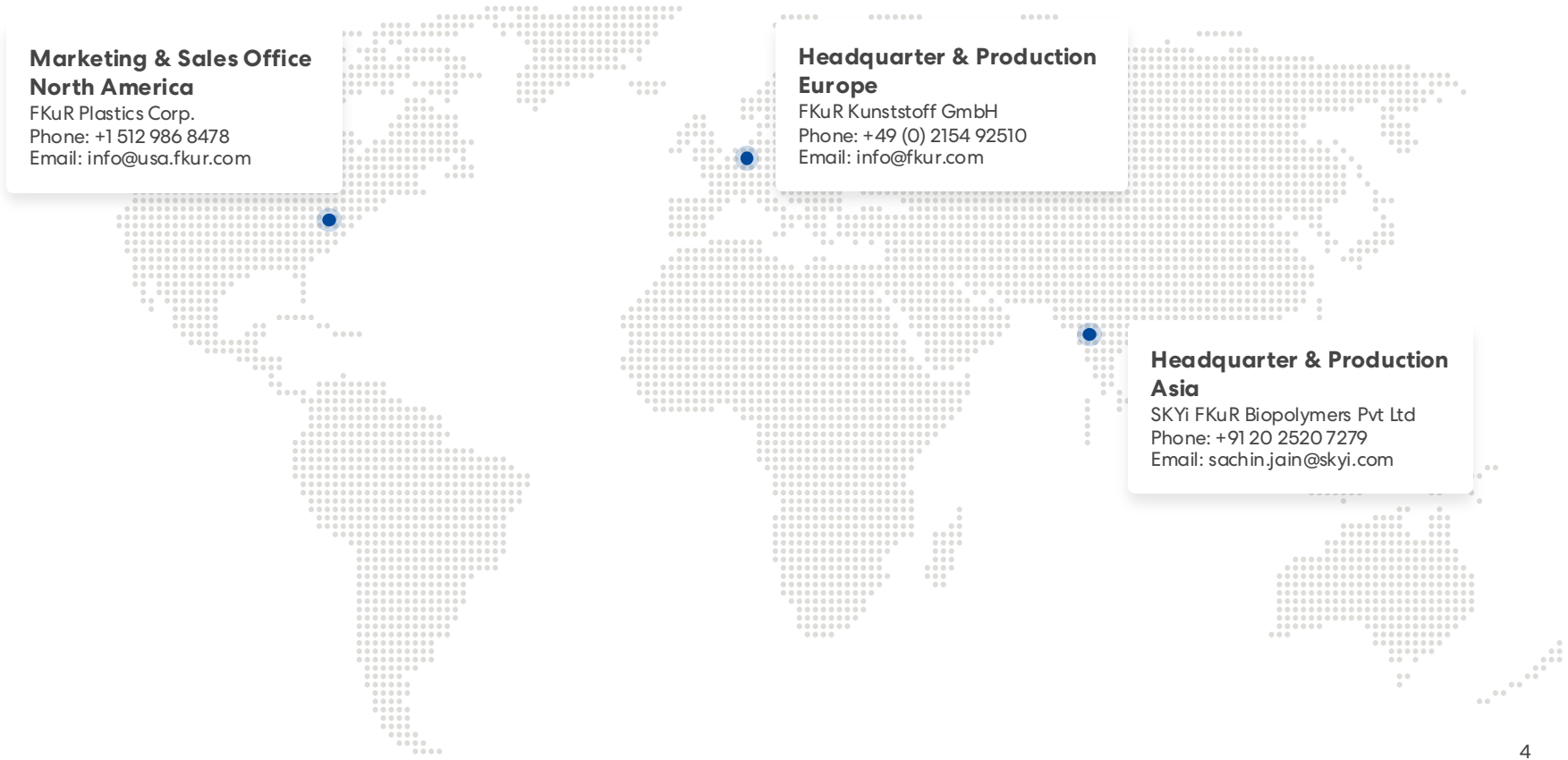
Plastics care for Future

FKuR Background & Vision

Nature as guideline – Plastic as passion – Customers as partners

- **Who we are:** Medium-sized, private corporate group passionate about developing, producing, and distributing plastics and compounds designed for various global end-of-life applications global end-of-life applications.
- **What we do:** Tailored plastic solutions, focusing on biodegradable, bio-based, and recycled materials with an emphasis on domestic end-of-life solutions and addressing evolving societal needs.

FKuR Group – Worldwide Customized Compound Solutions



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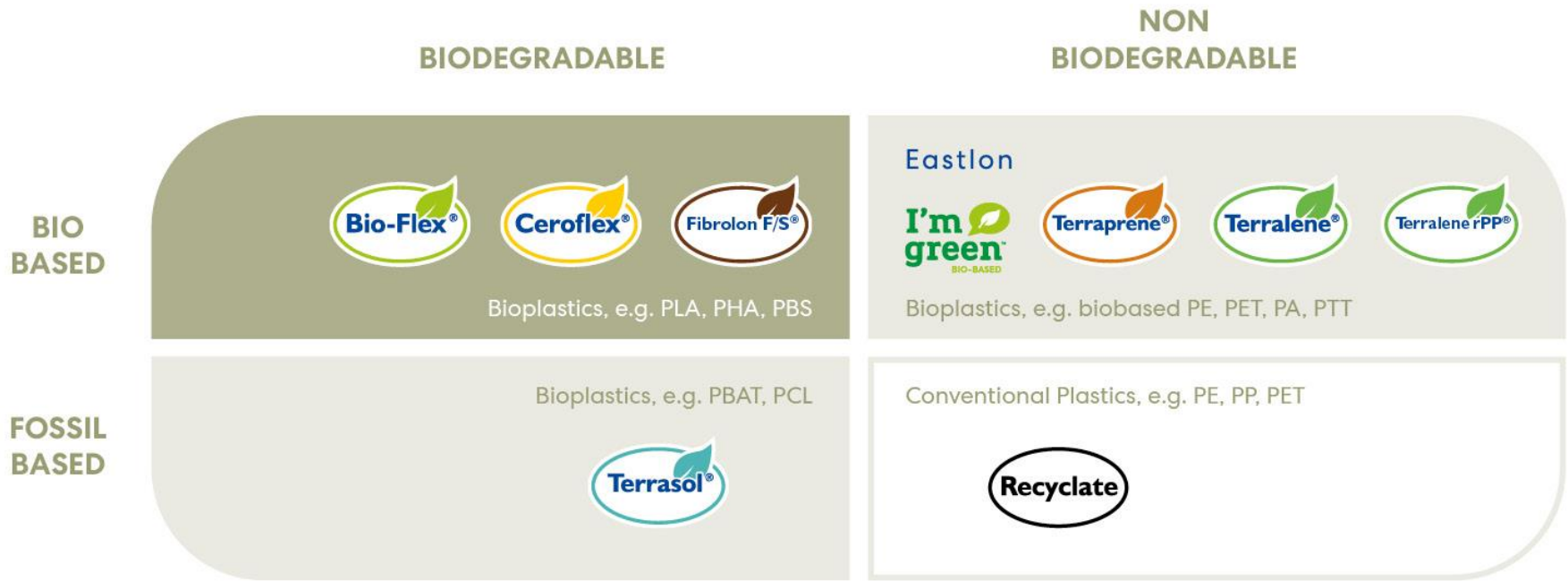
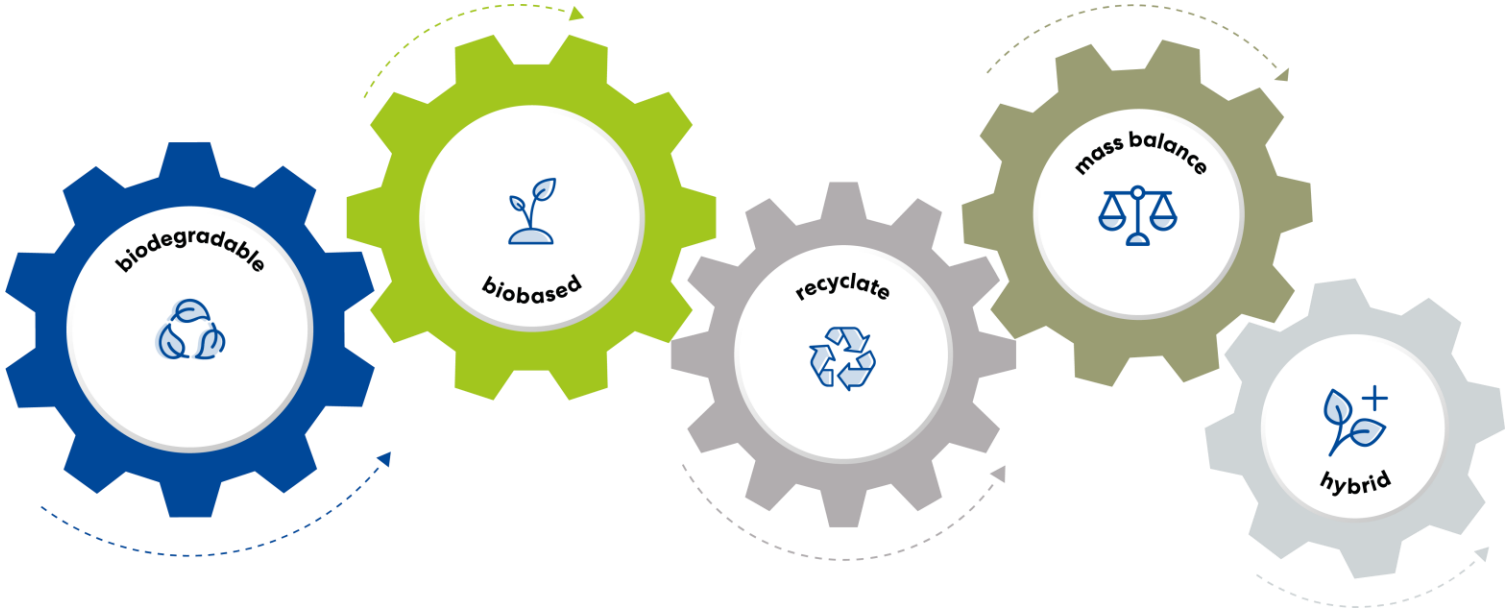
What we supply:
Versatile Polymer & Compound Solutions



One stop shop: Different regions & different markets require tailored material solutions



Every market, every region and every application demand an individual, sustainable raw material solution based on the available and preferred end-of-life options in that specific context!

PPWR & Circular Economy

Cure the symptoms - not the causes

Main understanding of sustainability...

Sustainability
=
CO_2 reduction &
CO_2 neutrality

But ...

... sustainability is about much more than just CO_2 reduction, which makes gaining broad societal acceptance even more challenging.

How sustainable can the "1st world" be?

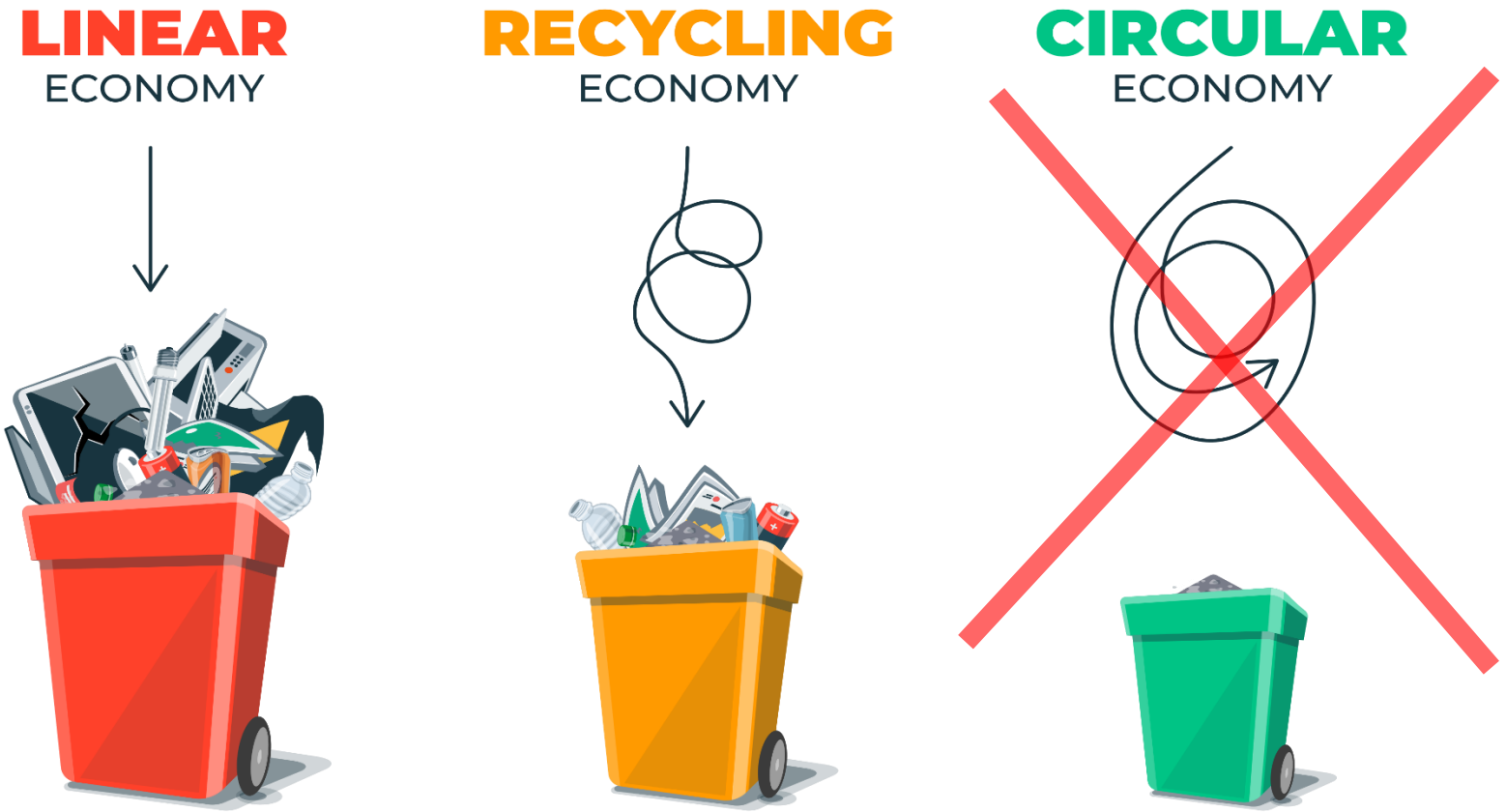
The PPWR and the "Circular Economy" will not change over-consumption nor will it save resources for the next generations!

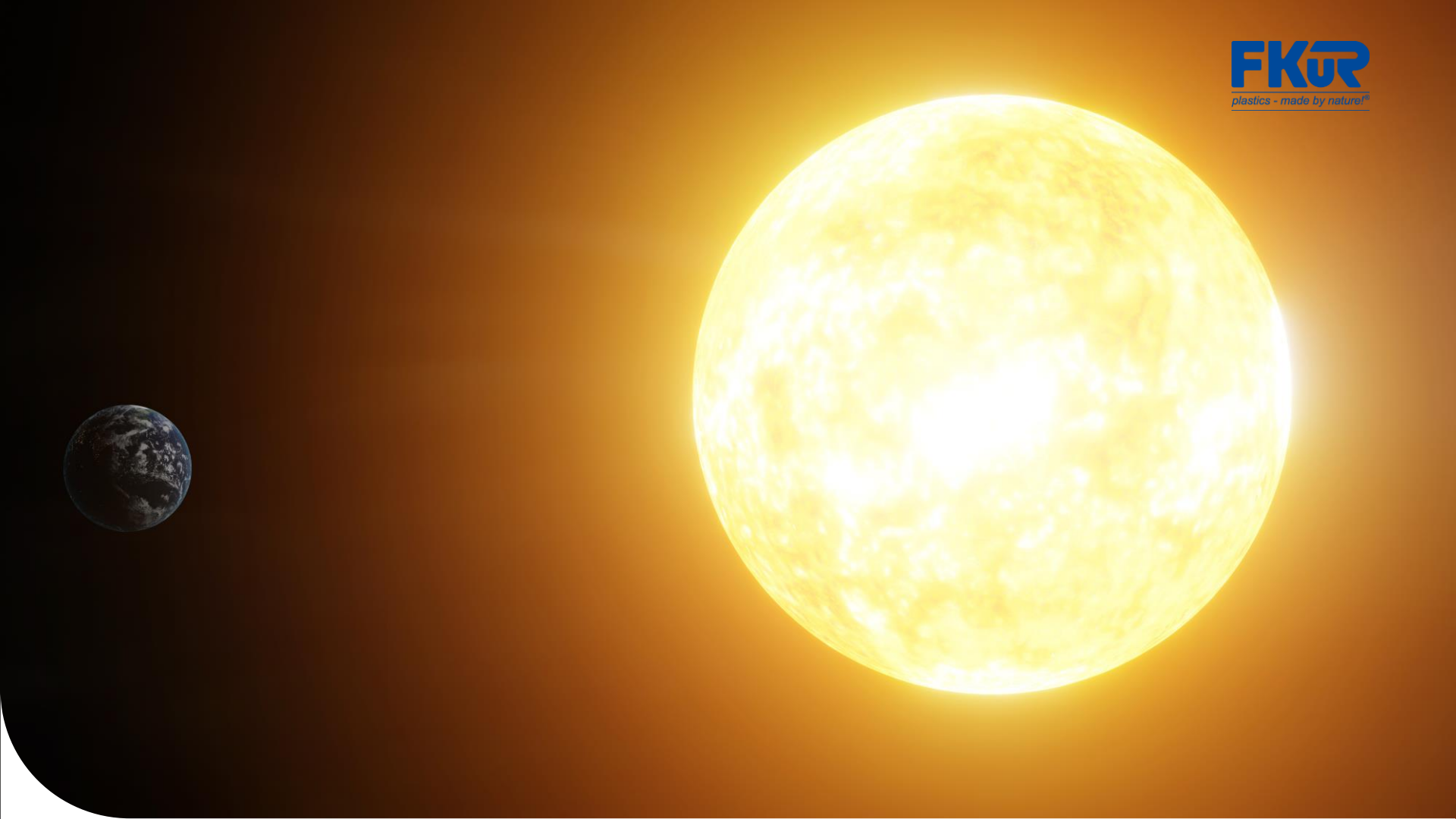
- Endless growth is not possible with finite resources on a finite planet.
- Today, on average, humans use ecological resources at a rate as if we were living on **1.75 Earths**.
- Would everyone in the world consume as much as Germany is, it would take the resources of **3 Earths**.

Is Circular Economy a legend?

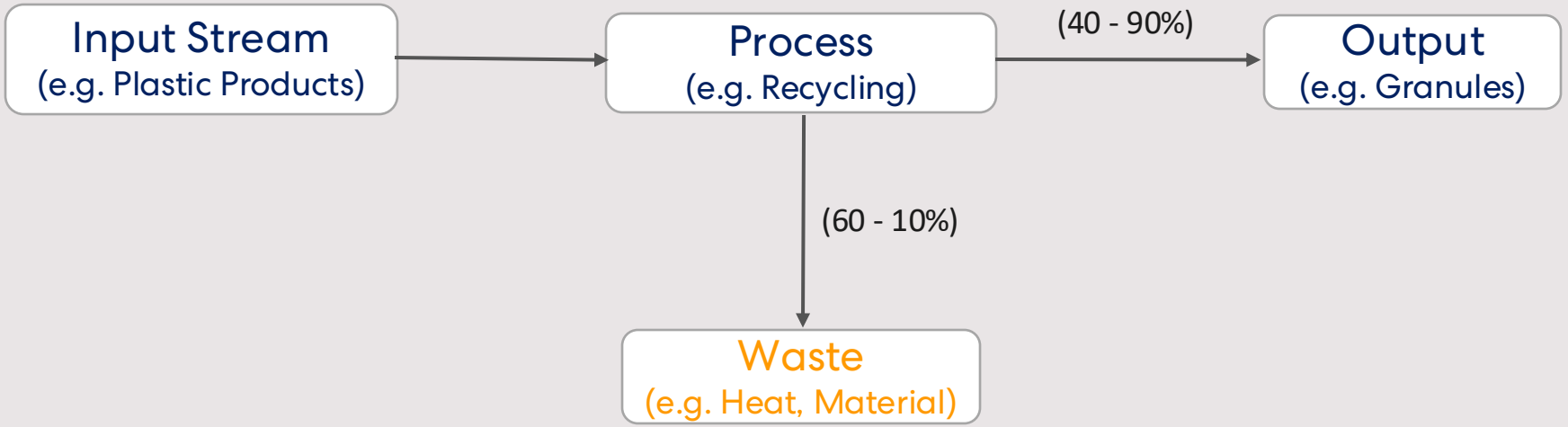
Limitations & Innovations

Circular Economy – A Dream comes true?

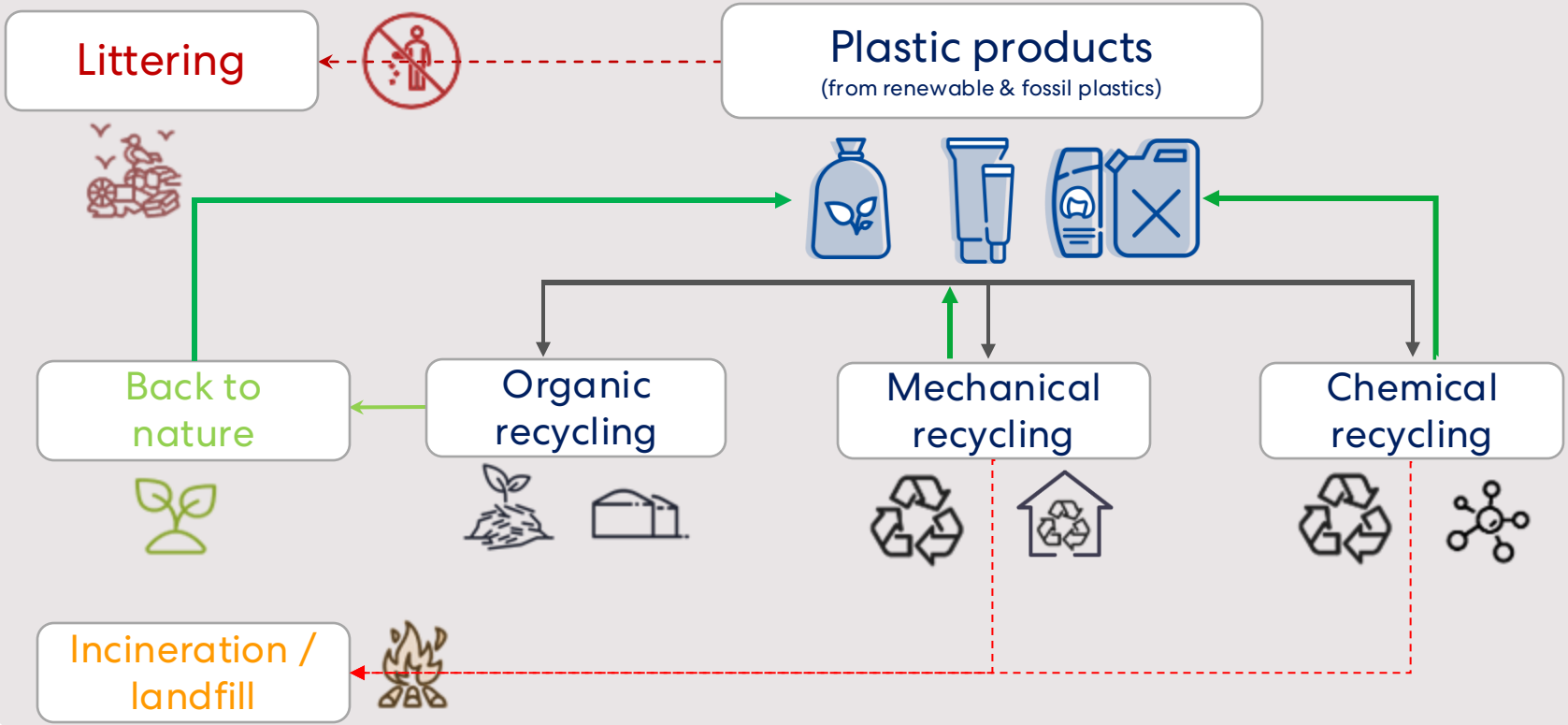



FKuR
plastics - made by nature!®

We cannot change physics - even if we try to tell!



Increasing efficiency is the only solution for a certain kind of circularity, but we will always generate waste!



More Collecting + Better Sorting = More Circularity

Better Sorting – Better Quality

PPWR – a lost Chance for Circularity and CO2 Neutrality

Opportunities of PPWR for biopolymer solutions

PPWR – to cure the symptoms, not the causes.

The 8 R's of the circular economy as a guiding principle

The biggest impact for **saving resources** is the r**eduction in consumption** and **not the PPWR!**

Expectations for end-of-life solutions in Europe may differ from those in other countries and regions. However, the 8R principles offer a global approach to addressing the challenges of finite resources.

Recycling: The discrepancy between reality and wish

Where should all the white / natural PCR materials come from?

PPWR – heading right, but not far enough

- Recycling as a key mission to do something with our waste
- Main view on existing polymer solutions and too few opportunities for new & innovative materials **(recycling at scale!)**
- CO2 reduction only when it comes to replacing fossil virgin materials

PPWR – heading right, but not far enough

- Mechanical recycling loops of polymers are limited
- Emission of fossil CO2 will persist with recycled materials-when incinerated
- **Keeping CO2 in the loop will only be possible with biobased sources**
- **Limited use of organic recycling**
- **No promotion of biobased / renewable sources**

Missed chances of PPWR

- Using biobased materials is mandatory to close the CO2 loop and comply with the Green Deal to achieve CO2 neutrality by 2050.
- Collecting more organic waste while making compostable bags mandatory.
- Using the natural and intrinsic property of biodegradation whenever it provides an advantage.
- Article 7 could have been clearer with a stronger mandate for the use of compostable bags and applications.

Biobased Drop-In Solutions are already integrated

Biobased Drop-In solutions like biobased PE (PP, PET) are already an integrated part of a circular economy:

- Art. 8 provides some outlook on the future
- Same performance as their fossil counterparts
- Recyclable in existing PE/PP/PET recycling streams
- The only logical option to keep carbon in the loop but still not mandatory, while recycling is

Compostable and biobased packaging films - gone?

- Natural breathability due to higher permeability to oxygen and water vapor compared to conventional fossil plastics
- Keep fruits and vegetables fresh and durable for a longer period
- Positive side effect: less food has to be thrown away
- Recyclability is technically achievable, but the volume is not there yet
- **Recyclability at scale is mandatory** in the PPWR – killer of innovation for e.g. biopolymers

The missed chances: Compostable Waste Bags

- In order to collect more organic waste as a raw material source, these bags should be mandatory
- Clean, hygienic, simple and convenient collection of organic waste
- Cascade use of fruit & vegetable bags as waste bags, not mandatory for all of Europe

Keep up with the USP of biodegradable materials

- Packaging might be attractive, but the solutions biodegradable materials offer are manifold
- Ecological solution to support the growth of plants: stable during use
- Plastic particles completely degrade over time
- No soil contamination from persistent microplastics / plastics as such

Summary

What are the main points to note?

- Regarding the PPWR, **“certified”** biodegradable/compostable materials should be used as waste bags, to collect more organic waste from private households. Composting times should certainly be adjusted to existing processes.
- Compostable fruit stickers, labels, and coffee capsules make sense, as the packaging does not need to be separated from organic waste.
- In general, **“certified”** biodegradable/compostable materials should be used when the product remains in nature and will be not collected, or collection is too complex.
- PPWR has missed the chances to drive for more plastic innovations, to achieve more CO2 neutrality and to boost organic recycling.

What are the main points to note?

- Biobased Drop-In's should always be used whenever products are already collected separately (e.g. yellow bin, green dot) and/or the product is already disposed in corresponding collection systems.
- To reduce fossil carbonization, bio-based plastics or a combination of bio-based and recycled plastics should always be preferred.
- To close the carbon loop, bio-based plastics should be mandatory for those polymers where such solutions are available.
- The use of fossil resources should be minimized and should only occur when it is technically unavoidable.

Take off those rose-tinted glasses!

Glad to answer your questions