


Paradigm Shift in the plastics industry: from Linear to Circular

Recy & DepoTech Leoben
9 - 11. November 2022 | Andreas Leitner

An underwater photograph showing a sea turtle swimming towards the left. The water is filled with various pieces of plastic waste, including a clear plastic bottle, a green straw, and other debris. The turtle's head and front flipper are visible in the lower left corner.

Today's linear, wasteful way is a problem

Waste from energy inefficiency & carbon loss
Waste of natural resources
Waste through leakage into environment

*Today, only 14% of our plastic waste gets recycled.
Only 2% is “effectively recycled”; converted into an
equally useful item.*

Source: World Economic Forum & Ellen MacArthur Foundation.

Welcome to the Future-Positive Plastic Revolution



It starts with A / B / C ...

Carbon circularity
will end reliance on
fossil-based
carbon.



Atmosphere
...direct carbon
capture



Biomass
...using carbon
from plant-based
feedstocks

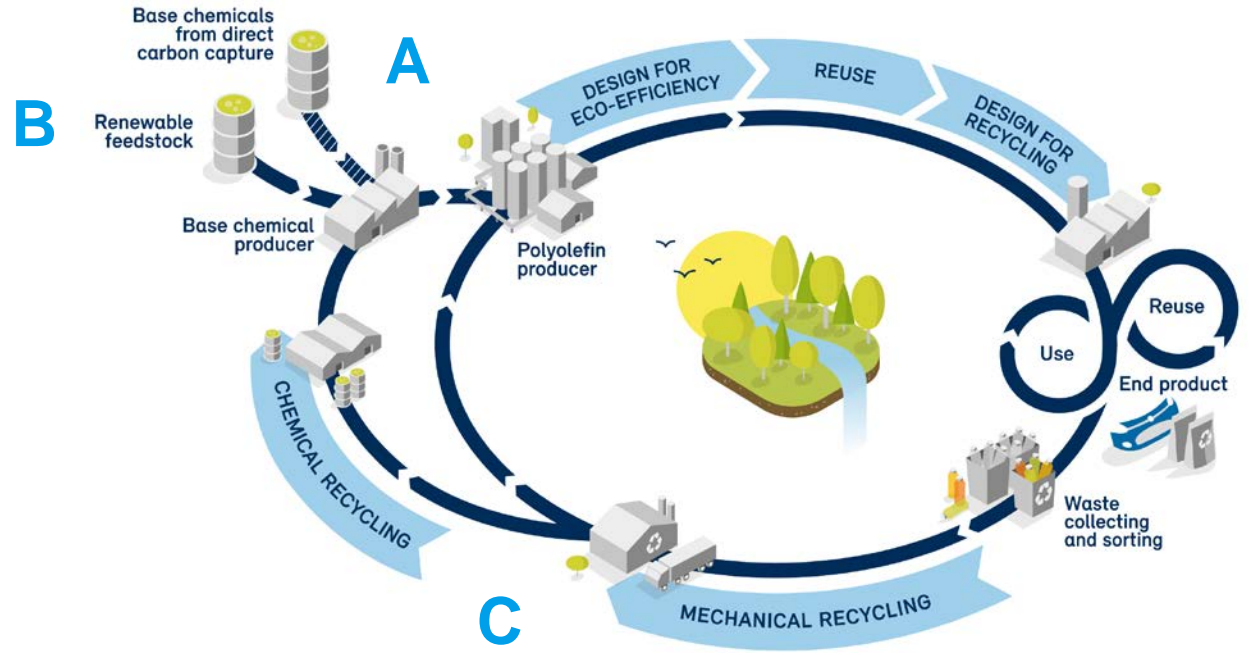


Circular Tech
...recycling fossil-
based carbon in
mixed waste streams

Borealis aims to keep plastics and carbon in the loop to become 100% circular

Introducing the **circular cascade**

- A** Atmosphere
- B** Biomass
- C** Circular Tech



Acceleration of circular production

We will increase circular product capacity to 1.8 mt by 2030



Six-fold increase in share of circular products and solutions from today's 100 kt to 600 kt by 2025 and further to 1.8 million tons by 2030

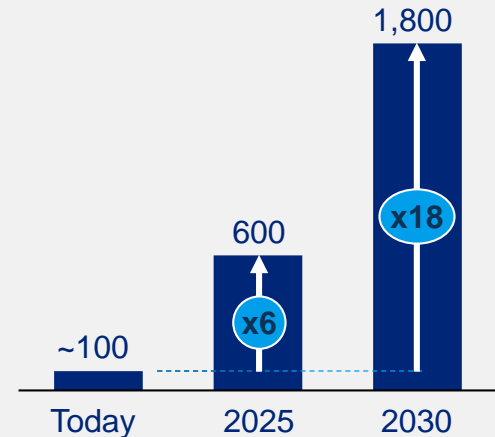


Moving from a linear towards a circular economy will also significantly reduce Scope 3** emissions



Invest in compounding and adjacencies to accelerate value creation through innovation

Circular products and solutions in kt*



Includes recycled and renewable polymers and chemicals as well as renewable hydrocarbons

** Scope 3 are indirect GHG emissions that are a consequence of company activities but occur from sources outside or not controlled by the company.

Borealis and Reclay Group form new joint entity, Recelerate, to make plastic circularity a reality



- Formed of the waste management expertise of Reclay and the high-quality recycling capabilities of Borealis, Recelerate will grow from existing shared strengths across European markets
- The new entity will be powered by a smart systems-thinking approach to ensure more post-consumer lightweight packaging (LWP) is sorted and recycled into high quality materials

PO Circular product portfolio

High performance recyclates

Drop-in solutions / Food contact



Recyclates

Commercial



**First
generation
launched**

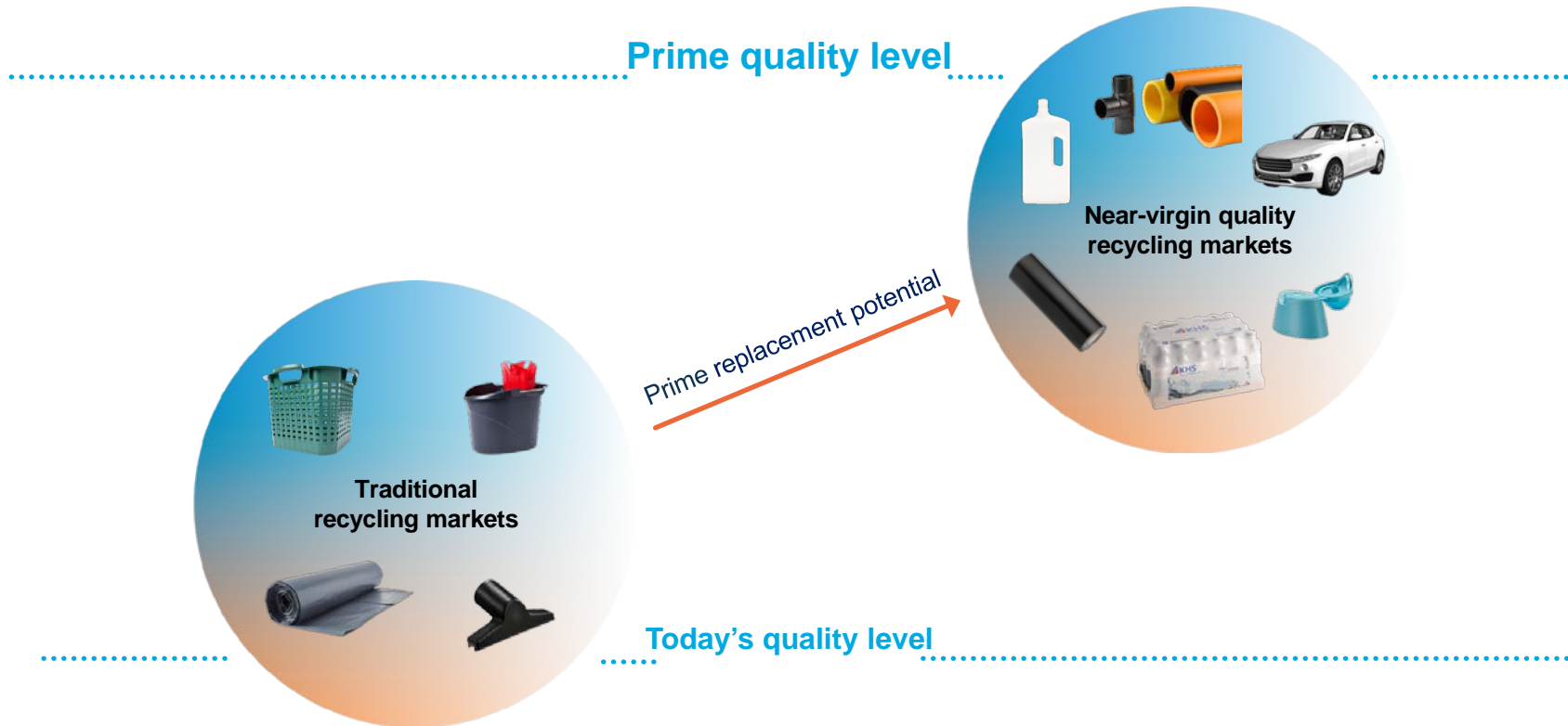


**First
generation
launched**



**The
Borneables™**
Commercial

Improving the quality of available recycling solutions



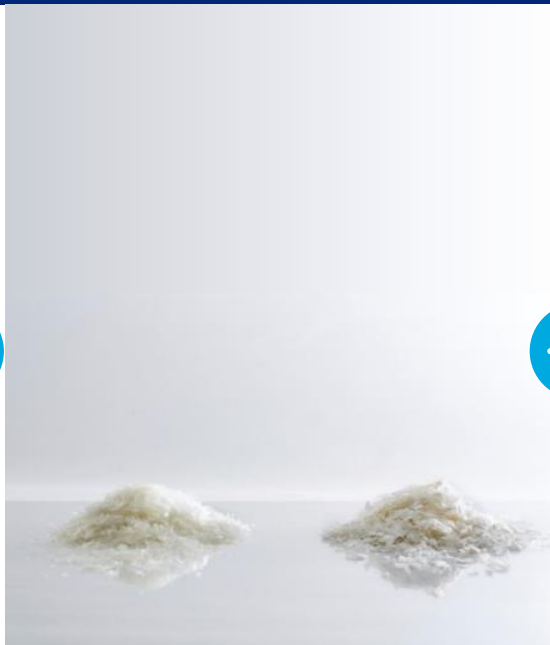


Borcycle™ advanced mechanical recycling turns mixed waste feedstock into recyclates for demanding applications

Mixed waste



Washed flakes



Final pellets



Renasci to exclusively supply Borealis with chemically recycled output material

Enabling Borealis to offer commercial volumes of Borcycle™ C polyolefins

- Exclusive supply of chemically recycled output material of **Renasci Oostende Recycling NV**, Belgium, a high-tech recycling centre with a projected 20kT output/year.
- The waste feedstock processed is derived from mainly dried household waste and some industrial waste.
- First, the waste is sorted multiple times to extract the best value plastic material for mechanical recycling.
- The waste feedstock which cannot be mechanically recycled is then chemically recycled.
- This chemically-recycled feedstock will be subsequently processed in the Borealis steam crackers, initially at its production location in Porvoo, Finland.



Bornewables™ - offering virgin quality and a significant reduction in CO₂

Making the right choices



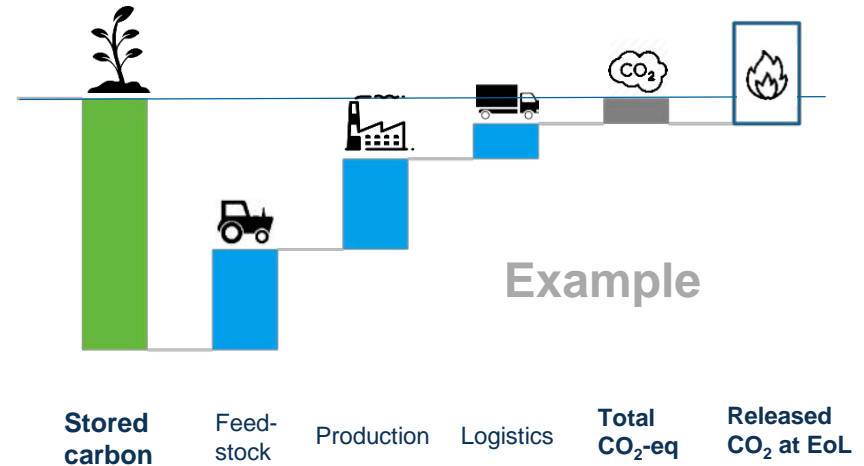
2nd generation

Renewable feedstock not suitable for consumption (non-food crops, waste)

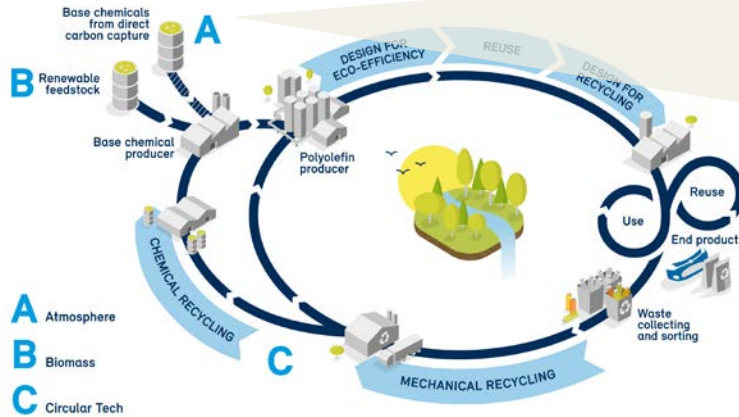
Such as:

- Waste and residues from vegetable oil refining
- Used cooking oil (UCO) collected from food industry and restaurants

Reducing carbon footprint with Bornewables



Closing the loop and addressing climate change with A-B-C Circular Economy Solutions in action



© ON

On shoes made from carbon emissions in partnership with **LanzaTech, Borealis and Technip Energies**

Thank you!

Let's re-invent!

Andreas Leitner

Director Circular Economy Solutions

Andreas.Leitner@borealisgroup.com

The ideas documented in this presentation are property of Borealis AG unless otherwise stated. The content and layout of this presentation is protected by copyright laws. Unauthorized use or reproduction, as well transmission to third parties, in whole or in part, is not permitted unless explicitly authorized.