

# Borealis Circular Economy Solutions



**BOREALIS**

Keep Discovering

**Borealis – taking on the challenges of tomorrow  
for more than 50 years**



**BOREALIS**

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**Keep Discovering**




# Borealis at a glance

**2** 2nd largest polyolefin producer in Europe

**1** Borouge operates world's largest integrated PO site in Ruwais, UAE

6,600 employees



+3,500 in Borouge

EUR 7.5 billion sales revenue in 2017 (>EUR 9 billion with Borouge)




Operates in over 120 countries on 5 continents



Head office in Vienna, Austria



EUR 1.095 million net profit for 2017




Production and sales of polyolefins, base chemicals and fertilizers



Ownership structure

64%  
36%

Mubadala, UAE  
OMV, Austria



# Borealis Polyolefins are indispensable in many segments of the economy



**Automotive**



**Energy**



**Pipe and fittings**



**Consumer Products**



**Healthcare**



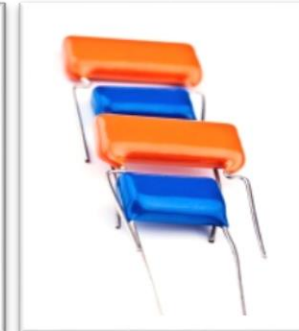
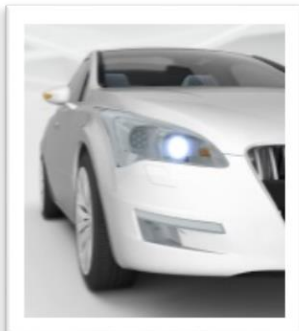
**Polymer Solutions**



**Circular Economy Solutions**

# Polyolefins are eco-efficient enablers for a sustainable future...

- Polyolefins (PO) have a **low carbon footprint** compared to traditional materials
- The **low density of polyolefins** makes them ideal for lightweight solutions
- Polyolefins **protect and preserve food** – polyethylene wrapped around cucumber extends its shelf life by up to 3x



# Plastics value chain to assume responsibility for second life of products and leverage opportunity

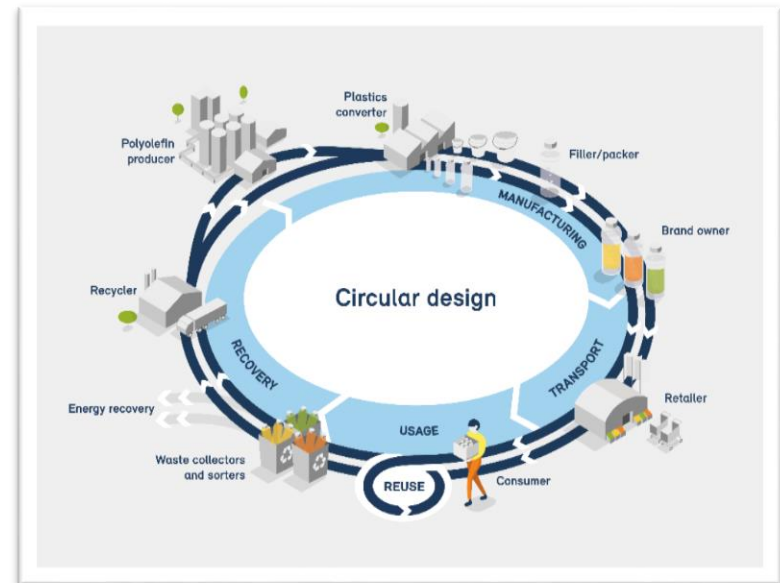
## The imperative

Plastic waste is the Achilles heel of the plastics industry



## The opportunity

Circular economy could deliver considerable economic value for Europe



# Borealis sustainability strategy and deliverables

*Borealis vision*

To be THE leading provider of innovative plastics, chemical and fertilizer solutions that create value for society

*Focus areas / Strategic objectives*

**Circular Economy**



**Energy & Climate**



**Health & Safety**



*Enhance sustainability in our operations and the supply chain*



Reduce packaging & waste

Strive towards Zero Pellet Loss

Explore 2<sup>nd</sup> generation renewable feedstock & chemical recycling of plastics

Increase Borealis' energy efficiency and reduce flaring

Leverage opportunities to use locally produced renewable energy

Reduce CO<sub>2</sub> emissions in transportation

Implement a pro-active strategy on chemicals safety and substitution planning

Ensure occupational health & safety and process safety

*Support profitable business growth*

Become recycling technology leader and increase circularity of PO

Enhance sustainable farming services & technologies

Enhance PO product portfolio that increases the use of renewable energy, energy efficiency and reduces emissions

Enhance our AdBlue® business

Launch new innovations that provide enhanced safety in food packaging, automotive, healthcare, energy and communication infrastructure

*Enhance capabilities and stakeholder engagement*

Employee training & capability building  
Stakeholder engagement & advocacy

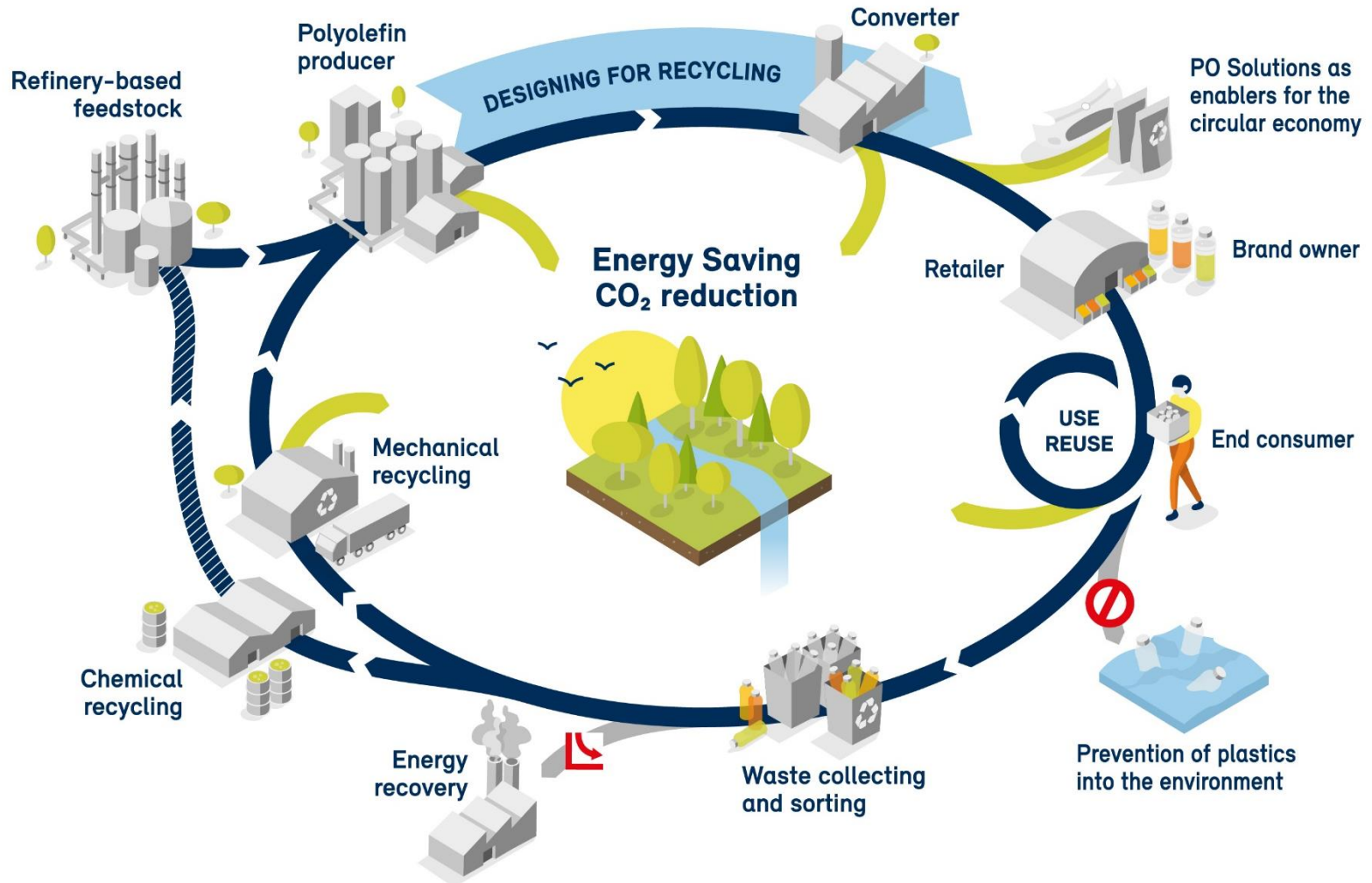
Sustainability reporting  
Community & Social Engagement



**Enablers**



# Borealis places focus on mechanical recycling but takes a wider view on the value chain







## **Borealis circular PO vision**

***Borealis establishes plastic waste as just another standard feedstock as the new normal in a circular PO industry***

# Borealis is pioneering collaboration between a virgin producer and plastics recycler

- Founded in 1994, part of the Borealis group since 2016
- Leading European post-consumer recycler for rigid polyolefins
- Two sites in central Germany with 90 employees
- EUR 15 million investment program will turn mtm into one of the biggest European post-consumer recycling sites mid 2018



## Dipolen®



Dipolen® is a polyolefin blend for use in either extrusion or injection moulding, either unmodified or treated with additives according to the customer's specifications.



© mtm plastics GmbH (Photo: Kötz)

## Purpolen®



Purpolen® is a high-quality polyolefin recyclate, available in a wide range of colours for the manufacture of products for demanding applications.



© edding Vertrieb GmbH



© mtm plastics GmbH (Photo: ben.fn-fotografie)



# Acquisition of Ecoplast deepens our commitment of plastics recycling within the circular economy

- Founded in 1989, part of the Borealis group since 2018
- Leading European post-consumer recycler for flexible polyolefins
- Production site in Wildon, Austria with 55 employees
- On-going expansion project will increase processing capacity to approx. 70,000 tonnes per year
- Own waste water treatment system thermal energy from biogas plant



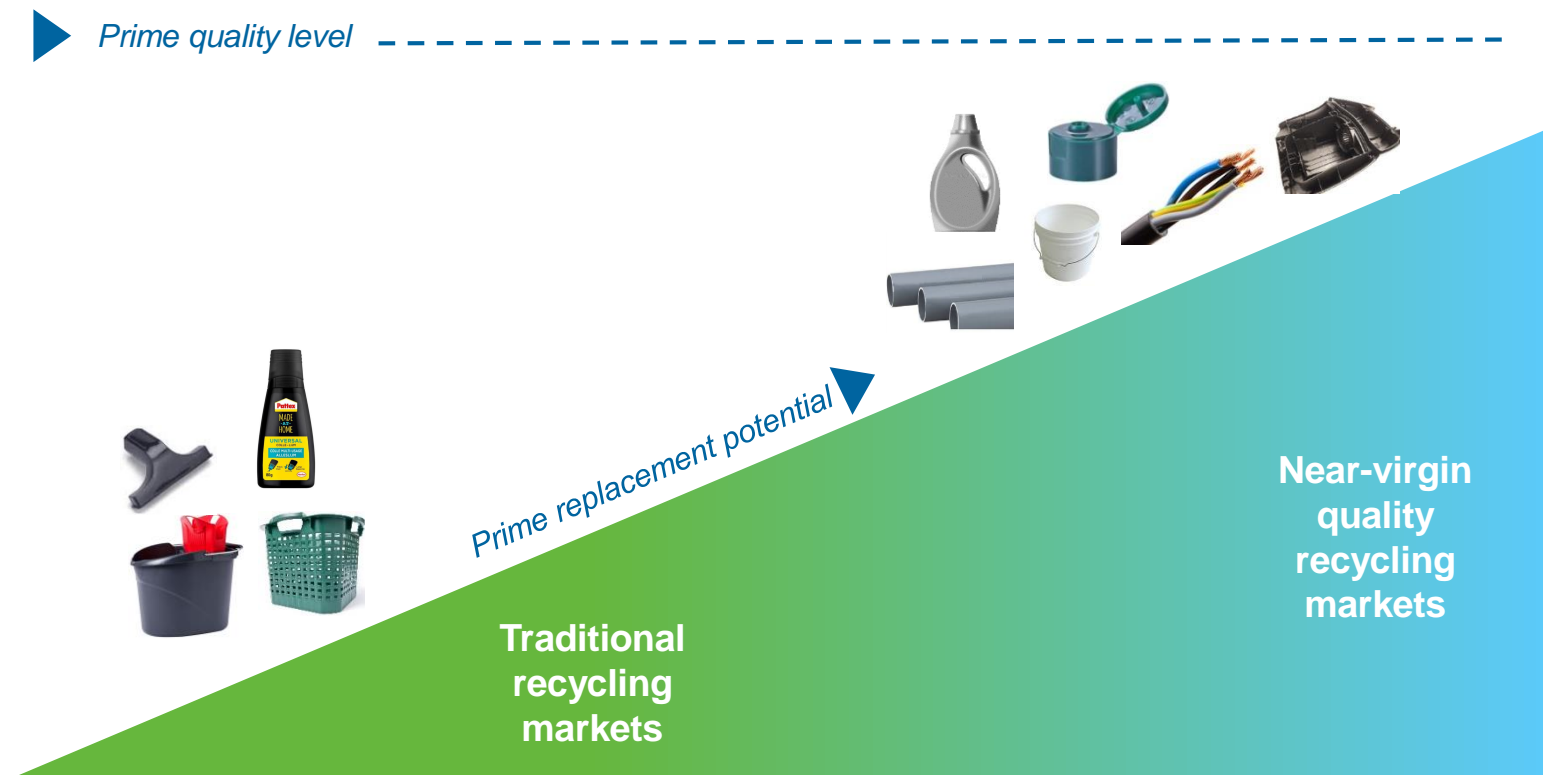


# Since 2014, Borealis has been offering PCR compounds

- Daplen™ PCR for automotive application was launched already in 2014
- Combination of post-consumer recyclate (PCR) with virgin PP grades and fillers for producing advanced compounds
- Daplen™ PCR portfolio comprises three innovative materials combining high quality with improved sustainability:
  - **Daplen ME225SY** (25% PCR) for vehicle interiors such as door trim and trunk linings
  - **Daplen MD250SY** (50% PCR) for under-the-hood and exterior applications
  - **Daplen MD325SY** (25% PCR) for exterior applications



# Borealis strategic focus is to improve the quality of available recycling solutions



# Walking the talk: new circular economy solutions from Borealis recently introduced



100% recycle inside

© Henkel AG & Co. KGaA



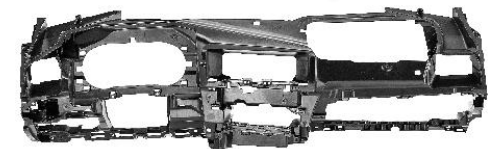
25% recycle + 75% virgin PO inside

*Illustrative example*

100% recycle inside



50% recycle + 50% virgin PO inside



*Illustrative example*



# Plastic packaging recycling begins with design

- Design for recycling (DfR) is an important aspect of **eco-efficient design** which – on the basis of a **life cycle approach** – needs to carefully and intelligently **balance** the production, usage, and after usage phases of a product
- DfR means designing a product so it can be **collected, sorted, and recycled**, by making appropriate **material choices** and intelligent **design decisions**

## Deploy HMS PP to replace difficult-to-recycle existing cup solutions

100% recyclable HMS PP foam developed for food service (cups), automotive, and construction



## Full PE laminate to replace non-recyclable multilayer packaging

100 % recyclable full PE stand-up pouch, developed in cooperation with various value chain partners



# Borealis is a driving force behind advocacy and value chain initiatives

Borealis was the first PO company that joined the **Ellen MacArthur Foundation's New Plastics Economy** (NPEC) programme



Borealis is founding member and chair of the **Polyolefins Circular Economy Platform (PCEP)**



Borealis is an active member of the new **CEFLEX** project, successor to the former FIACE and REFLEX



Borealis is an active member of the **Round Table Eco Design of Plastic Packaging**, launched by the German Industrial Association for Plastic Packaging



# Project STOP



AN INITIATIVE CO-FOUNDED  
BY BOREALIS AND SYSTEMIQ

**Goal is to implement city partnerships for zero leakage for circular waste management in Indonesia.**

**Ambition is to enable systemic change**

- Zero (plastic) waste leakage
- Increased circularity
- Improved livelihood & community health

Strategic Partners:



Supporting and Technical Partners:



With the collaboration and support of:



Indonesia is one of the five Asian countries that account for more than 55% of the plastics waste in the ocean





**Let's make the circular economy happen together!**



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# Thank you

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# Borealis Circular Economy Solutions footprint

25kt of production waste sold into recycling markets Europe-wide from various production locations

vPO design for recyclability products (e.g. Daploy™ HMS PP, Full PE Laminate) sold Europe-wide into consumer products

70 kt recycling output, mainly PCR (Ecoplast and mtm)

r/vPO compounds (25-50% PCR content) sold Europe-wide into automotive, consumer products, infrastructure



Daploy™ HMS PP recycling cooperation with Reach Plastic



Recycling activities prepared by Borouge New Business Dev.



r/vPO compounds (25-50% PIR content) sold into automotive



STOP project in SE Asia to build up waste mgmt. infrastructure