

CHEMISTRY THAT MATTERS™



THE ROLE OF ADVANCED RECYCLING IN CLOSING THE LOOP FOR PLASTICS AND CIRCULAR ECONOMY

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Sreepad Karanam
Director, APAC
Sustainability & Circular Economy



AGENDA



- INTRODUCTION
- INDUSTRY CHALLENGE
- THE ROLE OF ADVANCED RECYCLING & KEY BENEFITS
- SUCCESSFUL CUSTOMER APPLICATIONS
- CONCLUSIONS

SABIC

WHO WE ARE

SABIC AT A GLANCE



1976

Company established



32,000

Employees around the world



50

Countries of operations



3rd

Largest global chemical company*



212th

Largest public company in the world*

4.017

US\$ bn

Estimated Brand Value**

79

US\$ bn

Total assets

17.8

US\$ mn

Net income

31

US\$ bn

Annual revenue



≈ 150

New products each year



9,946

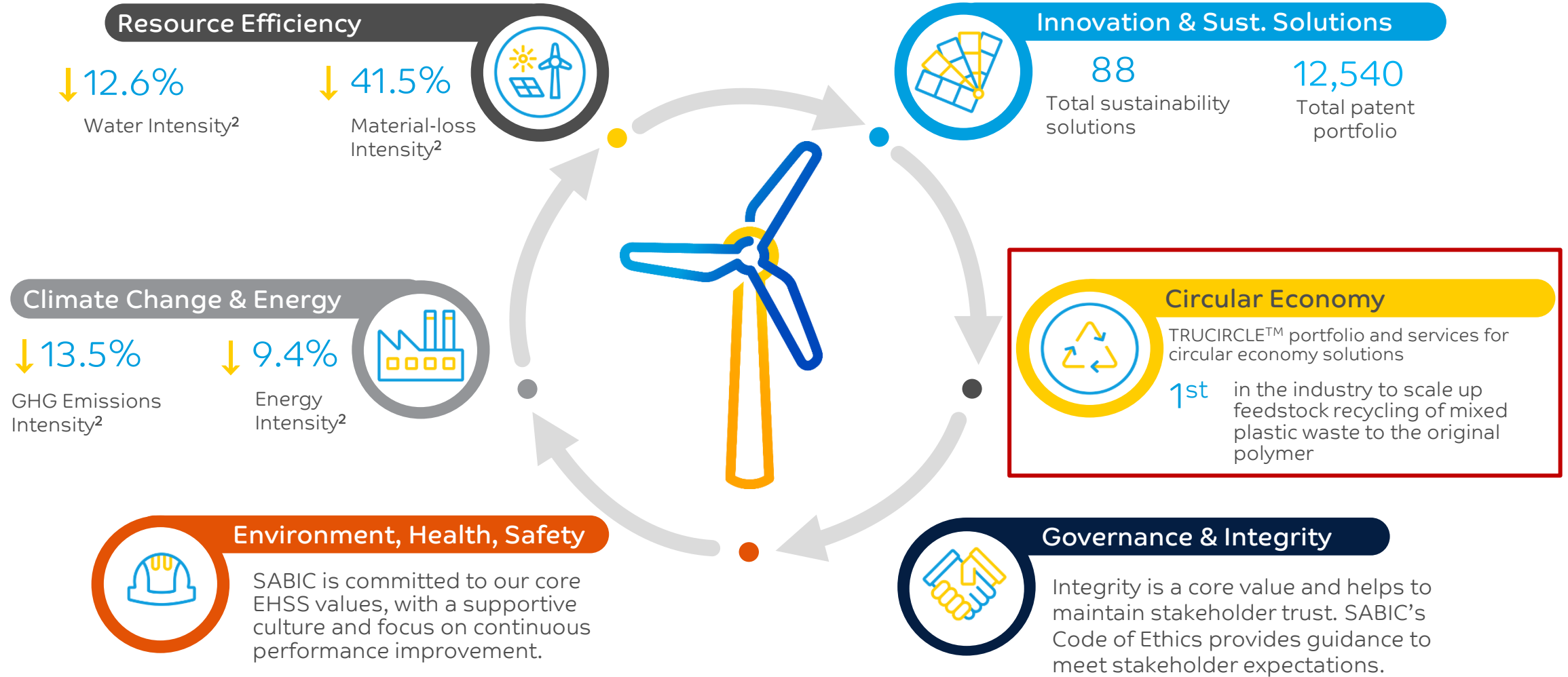
Global patent filings



68

World-class plants worldwide

SUSTAINABILITY IS ONE OF THE FOUNDATION ELEMENTS OF SABIC'S STRATEGY



THE COMMON CHALLENGE

EXISTING BENEFITS



LIGHTWEIGHT - STIFFNESS -
IMPACT - DURABILITY - COST -
SAFETY - APPEARANCE

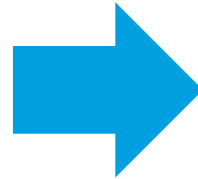
ISSUES TO BE SOLVED



INCREASING LEGISLATION
NEGATIVE PUBLIC OPINION

THINK OF ...

PREVENTING PLASTIC PACKAGING



FROM BECOMING WASTE



THE STARTING POINT FOR SABIC

NO COMPROMISE ON PACKAGING SAFETY



**SUPPORTS COMPLIANCE
WITH REGULATIONS**



**HELPS LIMIT THE POTENTIAL
MIGRATION OF SUBSTANCES
INTO FOOD, PERSONAL CARE, ...**

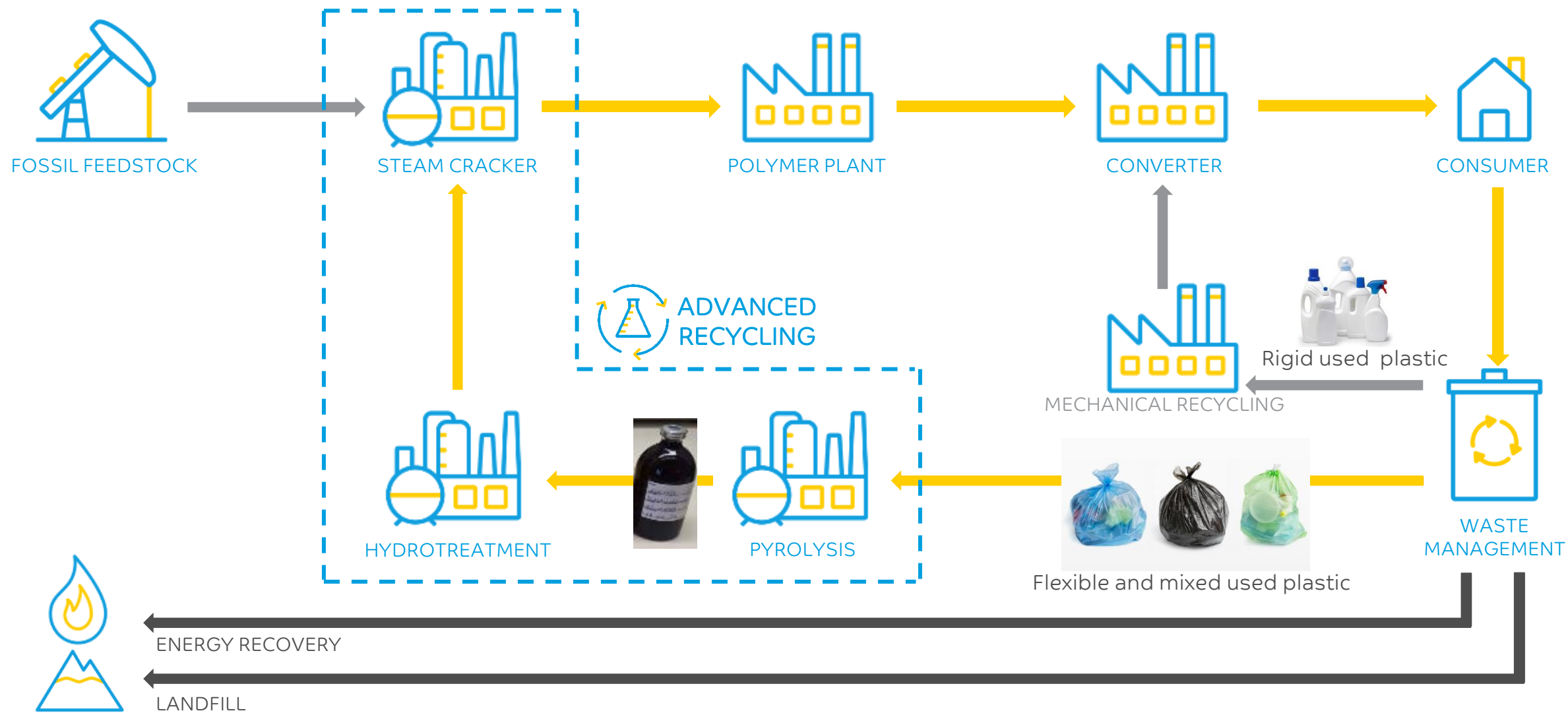


**OFFERS ORGANOLEPTIC
PERFORMANCE**

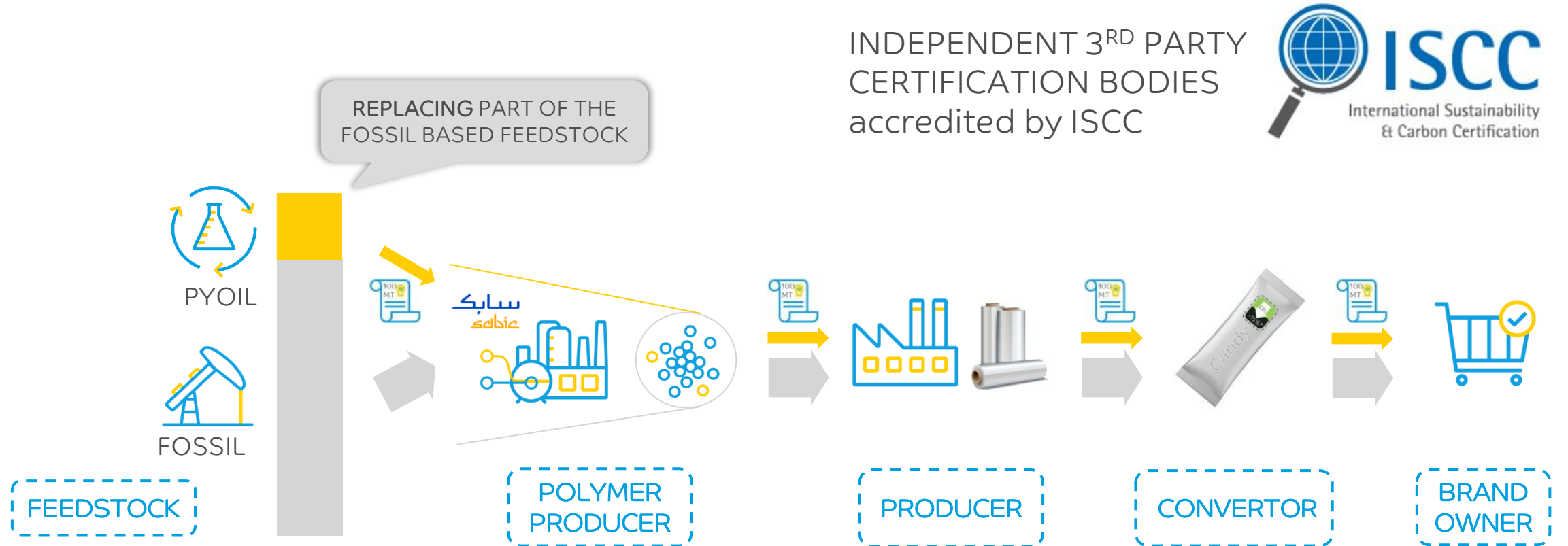


THE ROLE OF ADVANCED RECYCLING

"FROM LINEAR TO CIRCULAR" VIA ADVANCED RECYCLING



MASS BALANCE CHAIN OF CUSTODY: TRACEABILITY OF CERTIFIED CIRCULAR PE & PP SOLUTIONS



- Ensure compliance with the mass balance chain of custody – transparent and auditable
- SABIC will send a sustainability statement with recycled content with its certified circular polymers

Alternative feedstock might not be physically traceable throughout the production processes when used together with non-renewable feedstock. Application of Mass Balance to attribute the alternative feedstock to an end-product in a fully transparent and auditable way.

KEY BENEFITS OF ADVANCED RECYCLING AND CERTIFIED CIRCULAR POLYMERS



80% lesser fossil depletion potential



Drop in solution -
Virgin quality guaranteed



Avoids about 2 tons of CO₂ emissions¹



Turns waste into valuable product



Food contact applications



Contributes to sustainability targets



Offers complete design freedom



Builds brand reputation



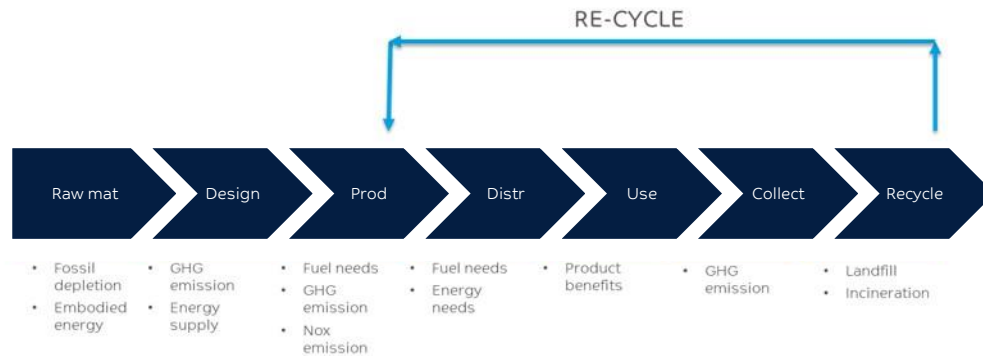
Help improve consumer's footprint



Aligned with global ambitions

LIFECYCLE ASSESSMENT (LCA)

SABIC CERTIFIED POLYMERS – LCA CONSIDERATIONS

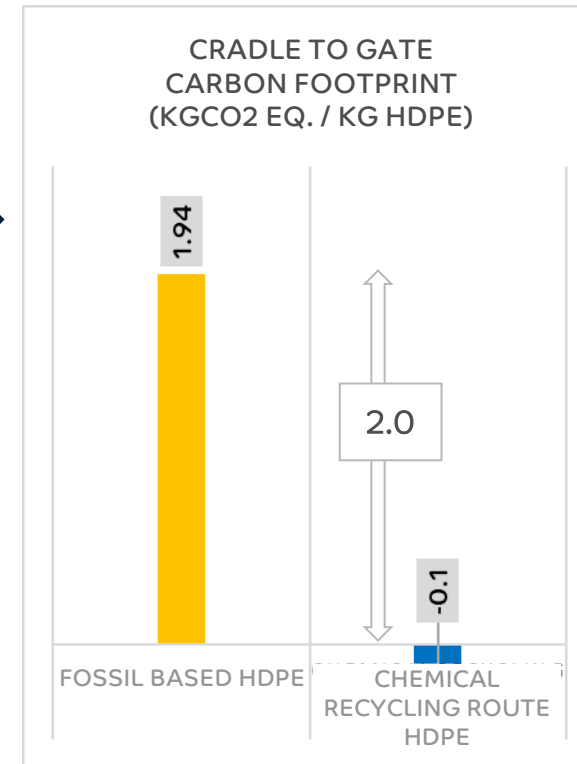


Re-use

- Credit for avoided disposal route (e.g. incineration)
- Credit for avoided production up to the re-entry point
- Charge for additional steps in the RE-CYCLE loop

Based on results of “Cradle to Gate” study on SABIC Certified Circular Polymers, carbon footprint reduction is about **2 kilograms of CO₂ for every kilogram** of polyolefins produced via chemical recycling route in comparison to fossil route*.

CERTIFIED CIRCULAR POLYMERS

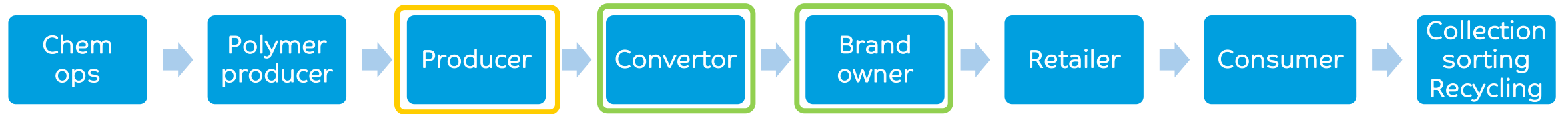


This reduction includes the benefit realized from avoidance of mixed plastic waste diversion to energy recovery.

* The above studies have successfully passed ISO Critical Review

1) Values are indicated for HDPE, other polyolefins have slightly different absolute footprints but the relative effect is similar

CREATING SUCCESS THROUGH COLLABORATION IN THE VALUE CHAIN



Not disclosed



FIBERTEX PERSONAL CARE

Not disclosed



Resin specifier

Packaging specifier

Packaging converters and Brand owners are the specifiers of the packaging. Film & cup producer translates this specification in resin specification.

CASE 1

MAGNUM - ICE CREAM CUP

SABIC'S CERTIFIED CIRCULAR POLYMERS ENABLING TO HELP MEET THE SUSTAINABILITY TARGETS OF UNILEVER



PURE AND SAFE

- NO COMPROMISE ON PRODUCT PACKAGING QUALITY
- FOOD CONTACT APPROVED



DROP-IN SOLUTION

- IDENTICAL PRODUCT SPECIFICATIONS TO CONVENTIONAL PP
- NO PROCESS MODIFICATIONS OF NEW PACKAGING ON EXISTING EQUIPMENT



TRULY RECYCLABLE

- NO LIMITATIONS IN NUMBER OF RECYCLING STEPS (VS MECHANICALLY RECYCLED PP CUPS)



WORLD'S FIRST PREMIUM ICE CREAM BRAND

MAGNUM LAUNCHES NEW TUBS MADE WITH RECYCLED PLASTIC

"This year, more than 7 million tubs will be introduced across Europe. And from 2021 onwards, the new packs will be rolled out globally."



CASE 2

WORLD'S FIRST NONWOVEN MADE WITH SABIC'S CERTIFIED CIRCULAR POLYPROPYLENE


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ABOUT PRODUCTS INDUSTRIES SUSTAINABILITY CAREERS INVESTORS NEWS & MEDIA

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sabic

SABIC AND FIBERTEX PERSONAL CARE TO BRING WORLD'S FIRST NONWOVEN MADE WITH CERTIFIED CIRCULAR POLYPROPYLENE

01/10/2020



f t in

HOME > NEWS & MEDIA > LATEST NEWS > SABIC AND FIBERTEX TO BRING WORLD'S FIRST NONWOVEN MADE WITH...

- Collaboration based on SABIC's TRUCIRCLE™ portfolio and Fibertex Personal Care's extensive expertise within nonwovens addresses need for sustainable solutions for hygiene products.
- Use of high-purity recycled material in nonwovens can be adopted in downstream processes with no compromise in production efficiency and product performance.

SABIC, a global leader in the chemicals industry, is collaborating with Fibertex Personal Care, one of the world's largest manufacturers of spunbond nonwovens for the hygiene industry, to create a range of nonwovens using high-purity recycled plastics from SABIC's TRUCIRCLE™ portfolio and services. This will be the world's first nonwovens range based on recycled plastics in the hygiene industry. The initiative is seen by the two partners as an exciting step towards a more sustainable supply chain and greater recyclability for nonwovens.

The new nonwovens will be made from SABIC's circular polypropylene, using feedstock derived from previously used plastics, certified under the ISCC PLUS (International Sustainability & Carbon Certification) system. The material is part of the SABIC PURECARES™ portfolio of polypropylene for Personal Hygiene applications that was introduced at the beginning of this year. The certified circular PP

World's first nonwoven made with SABIC TRUCIRCLE™ solutions

Start to receive an interest from customers in Asia

Find out more, [click here](#)

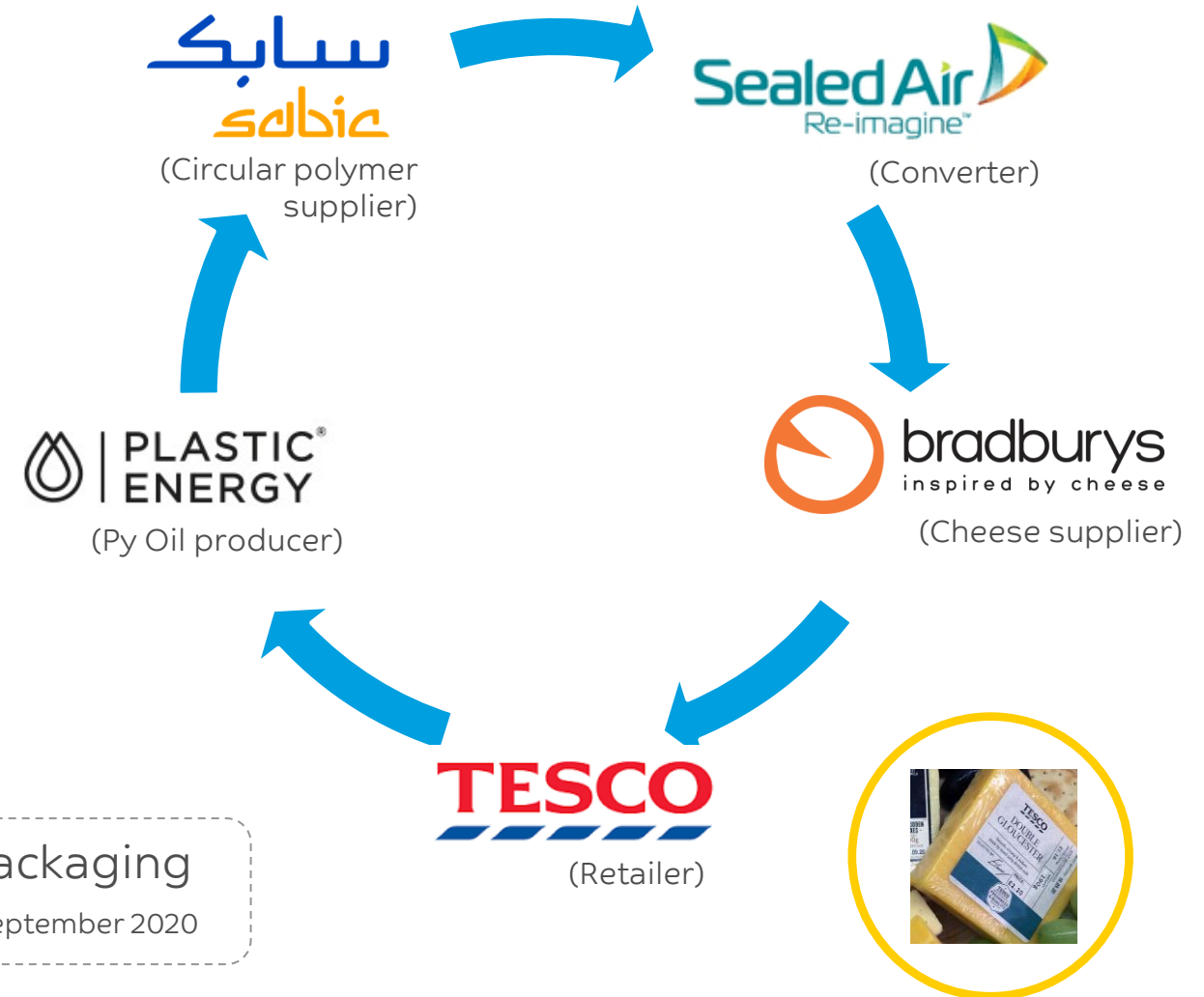
CASE 3

SABIC COLLABORATION RESULTS IN INDUSTRY FIRST CLOSED LOOP PROJECT

Trial involving an entire supply chain proves that **CIRCULARITY FOR PLASTICS** is achievable through **VALUE CHAIN COLLABORATION**.

PARTNERS of this closed loop recycling system:

- TESCO collected post-consumer flexible packaging in ten stores in the UK
- PLASTIC ENERGY converted the packaging into pyrolysis oil
- SABIC used the alternative feedstock to produce certified circular polymers
- SEALED AIR produced the film for cheese producer BRADBURYS



“First produce in food-grade recycled flexible packaging hits Tesco shelves” Bristish Plastics and Rubber Magazine, 8 September 2020

KEY CHALLENGES TO ACCELERATE ADVANCED RECYCLING

1

Cost competitive large commercial scale viability of pyoil

Increased reactor size, feedstock flexibility

Higher yields, energy performance

2

Access to waste and waste infrastructure

Quality and quantify of waste including collection and sorting

Consumer behavioural changes via awareness and education

3

Legislation, regulation and supporting Systems

Recognize advanced recycling – Allow recycling credits

Incentives to scale the technology

Food contact regulation – Include advanced recycled materials

4

Acceptance of mass balance principle

To shift from linear to circular economy leveraging existing assets

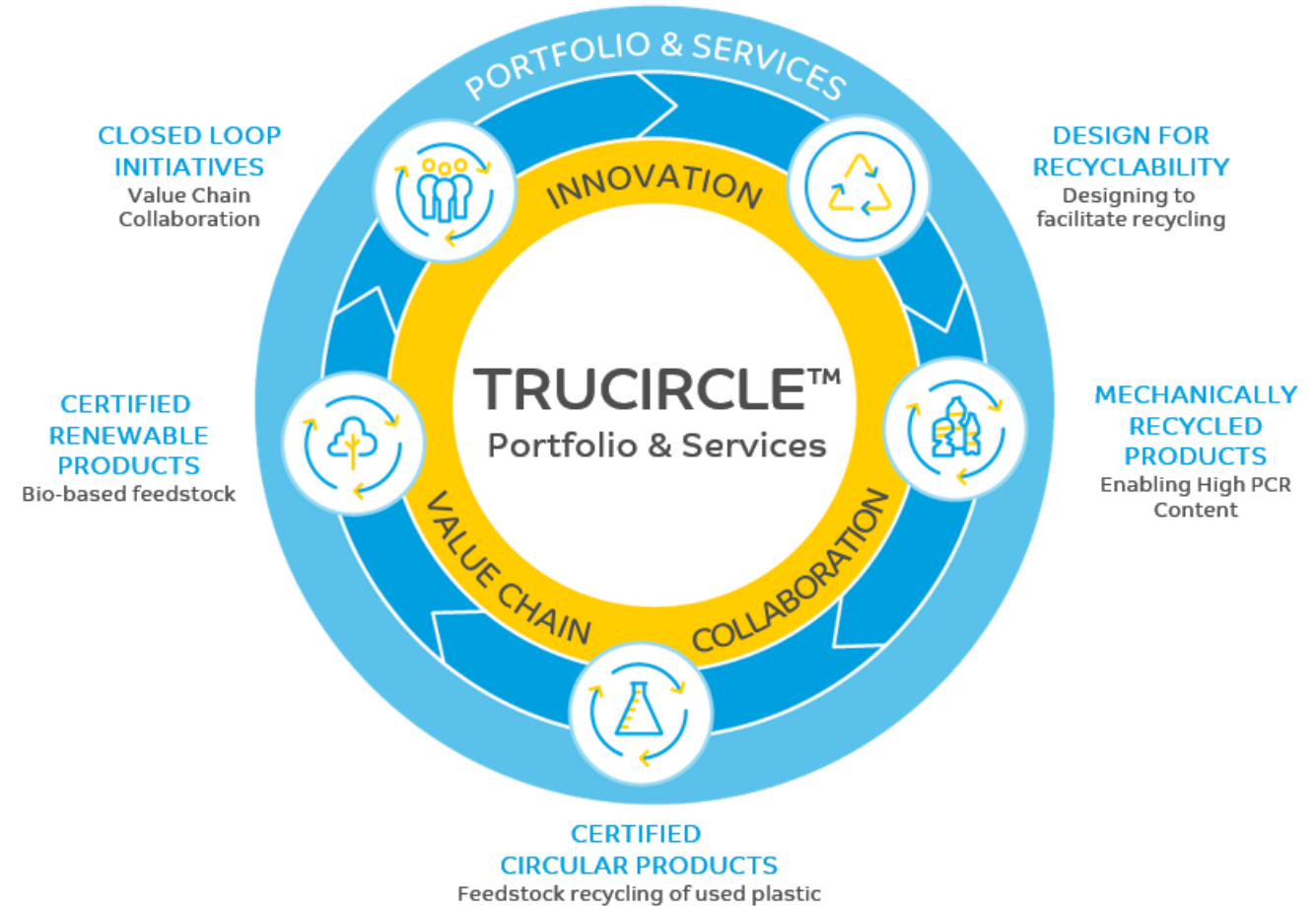
 **Strong collaboration approach needed across industry, regulators, customers and consumers**

WE BELIEVE..

THE FUTURE IS BUILT ON
INNOVATION

&

COLLABORATION
WILL DELIVER STRONGER
SOLUTIONS



Together we can reach 100% recycled packaging



THANK YOU



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SABIC'S SUSTAINABILITY YOUTUBE CHANNEL

SABIC TRUCIRCLE™

= short introduction to TRUCIRCLE™ initiatives

<https://www.youtube.com/watch?v=A1cCUCmGrmg>

SABIC'S VIRGIN POLYMERS FROM MIXED PLASTIC WASTE

= movie explaining certified circular polymers as a TRUCIRCLE™ solution

https://www.youtube.com/watch?v=qf_4jxcP2sY

SABIC – MASS BALANCE METHOD

= animation movie explaining mass balance chain of custody

<https://www.youtube.com/watch?v=-imvDD6i6Lo>

TRUCIRCLE™ - THE JOURNEY SO FAR

<https://youtu.be/wYK5JW6gegs?list=PLvrbA1nA2I8oQYw0o-xq16Qou4cNLeU69>

SABIC'S CERTIFIED CIRCULAR PRODUCTS THROUGH FEEDSTOCK RECYCLING

= attractor film from booth at K-show

<https://www.youtube.com/watch?v=REamRj4xXPs>

SABIC'S CERTIFIED CIRCULAR PRODUCTS FROM MIXED PLASTIC WASTE

= 2D animation movie explaining chemical/feedstock recycling

<https://www.youtube.com/watch?v=WbEh2NtLrb0>



YOUTUBE SUSTAINABILITY CHANNEL SABIC

<https://www.youtube.com/playlist?list=PLvrbA1nA2I8oQYw0o-xq16Qou4cNLeU69>

