CHEMISTRY THAT MATTERS™

PLASTIC FOOD PACKAGING AND ADVANCED RECYCLING SOLUTIONS

WEBINAR ON RECYCLED PLASTICS IN INDIA- PFNDAI 03/12/2021

Gert Coun & Maurice Simenon

GLOBAL TRENDS TRANSFORM THE WAY WE LIVE AND WORK

THE WORLD IN 2050

AROUND **9.7 BILLION PEOPLE** ARE EXPECTED TO BE LIVING ON OUR PLANET.

MEGATRENDS PUSHING INDUSTRIES TO FOCUS ON SUSTAINABLE SOLUTIONS FOR FUTURE

SOURCE: UNITED NATIONS REPORT

WORLD WITH MANY CHALLENGES

A CHALLENGING CONTEXT

ECONOMICS

+

ENVIRONMENT

+

SOCIETY

- LCA
- REGULATIONS
- BRAND-OWNER PLEDGES
- CONSUMER FEEDBACK
- RETAILER GUIDELINES
- NGO VIEWS

TRUCIRCLE™ SOLUTIONS

PORTFOLIO

MECHANICALLY RECYCLED PRODUCTS

CERTIFIED CIRCULAR PRODUCTS

CERTIFIED RENEWABLE PRODUCTS

SERVICES

DESIGN FOR RECYCLABILITY

CLOSED LOOP INITIATIVES

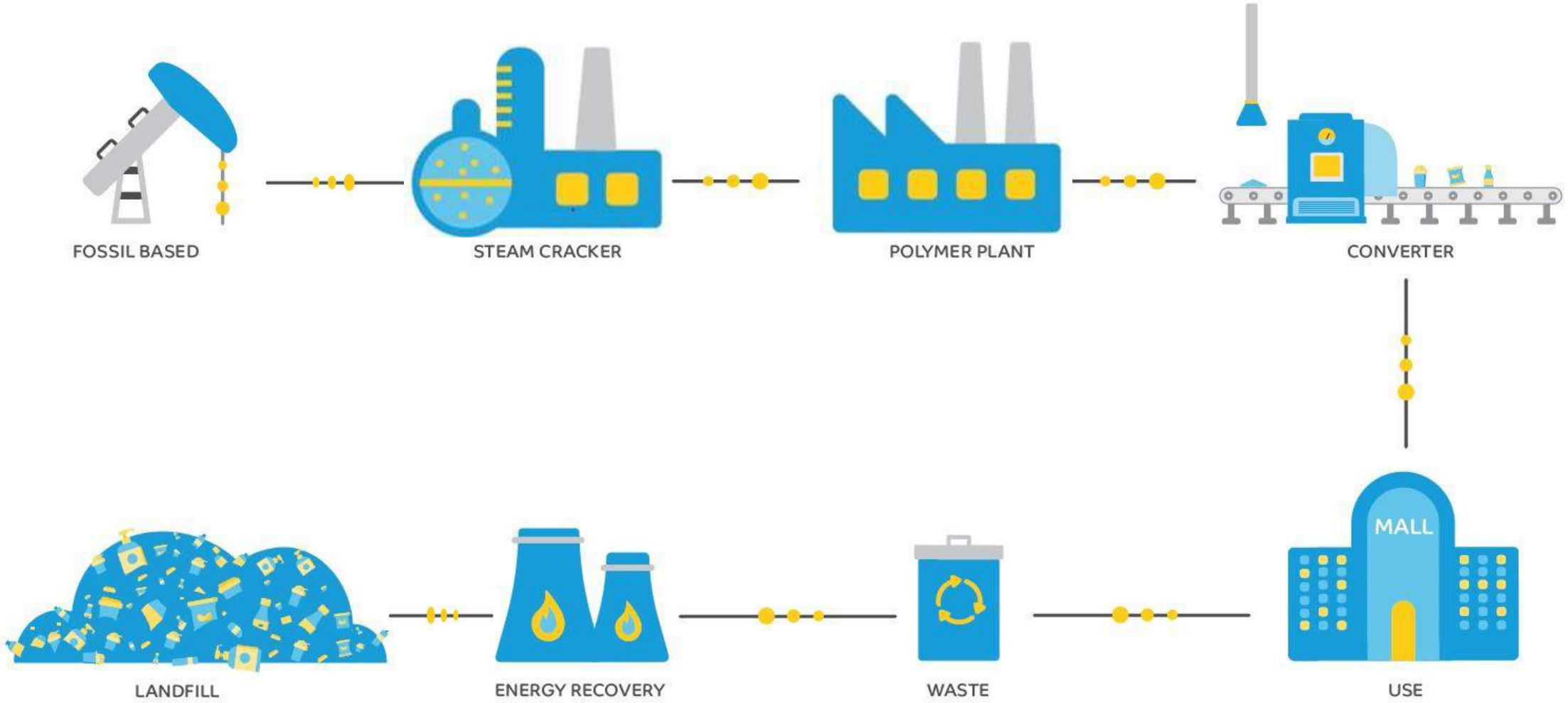
CLOSING THE LOOP AND CREATING A CIRCULAR ECONOMY FOR PLASTICS

THINK OF ...

PREVENTING PLASTIC PACKAGING

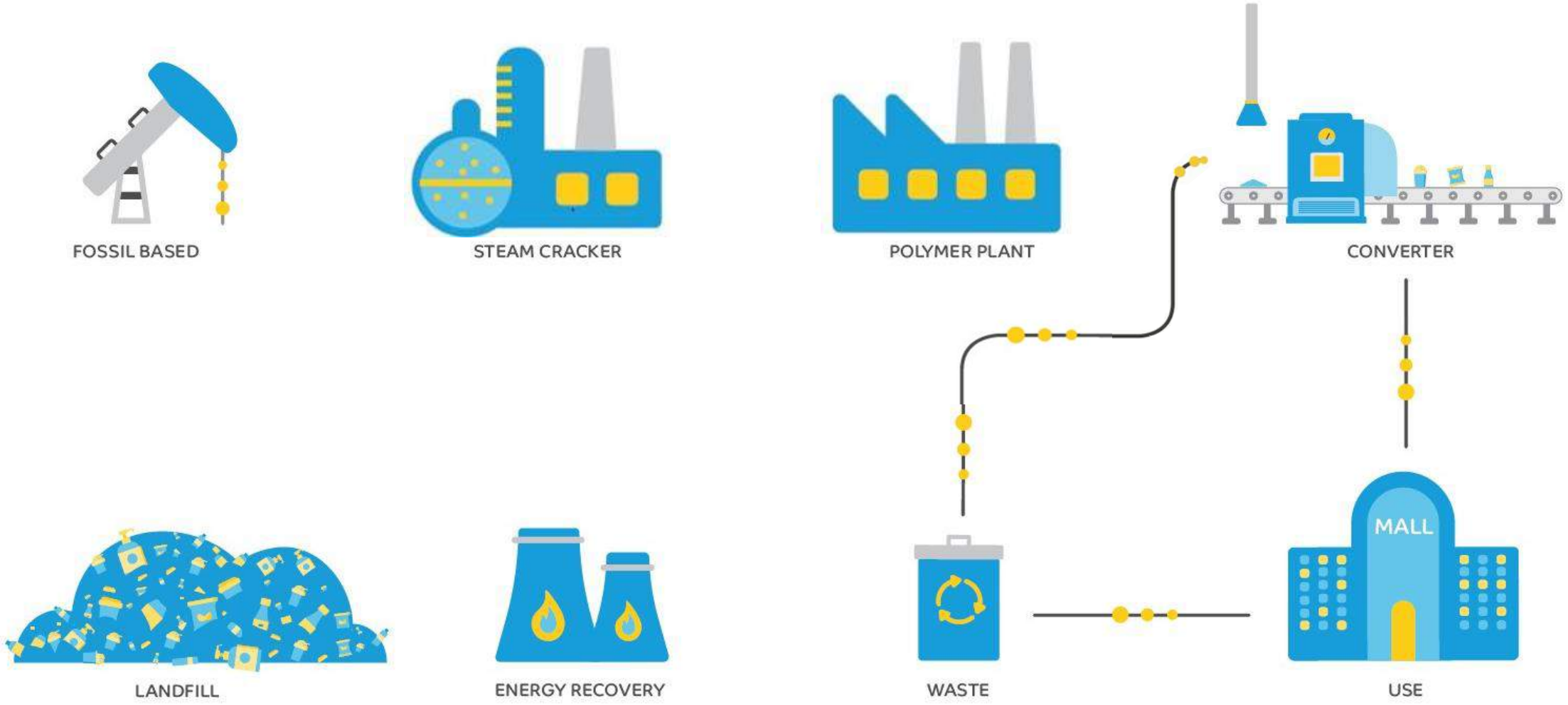
FROM BECOMING WASTE

PLASTIC WASTE TO FEEDSTOCK FOR POLYMERS: FROM LINEAR TO CIRCULAR



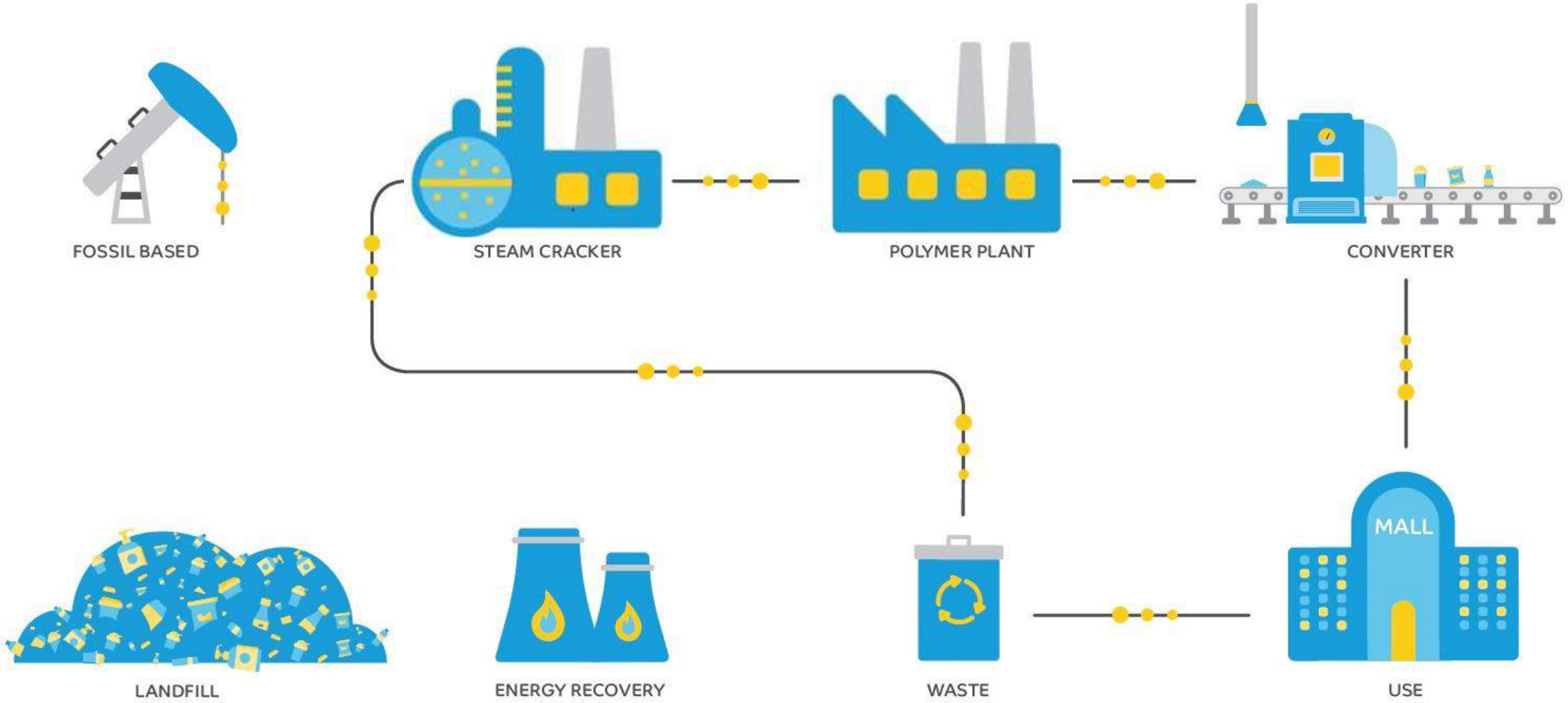
THE CURRENT MODEL CAUSES MOST OF OUR NATURAL RESOURCES TO END UP IN LANDFILL

PLASTIC WASTE TO FEEDSTOCK FOR POLYMERS: FROM LINEAR TO CIRCULAR



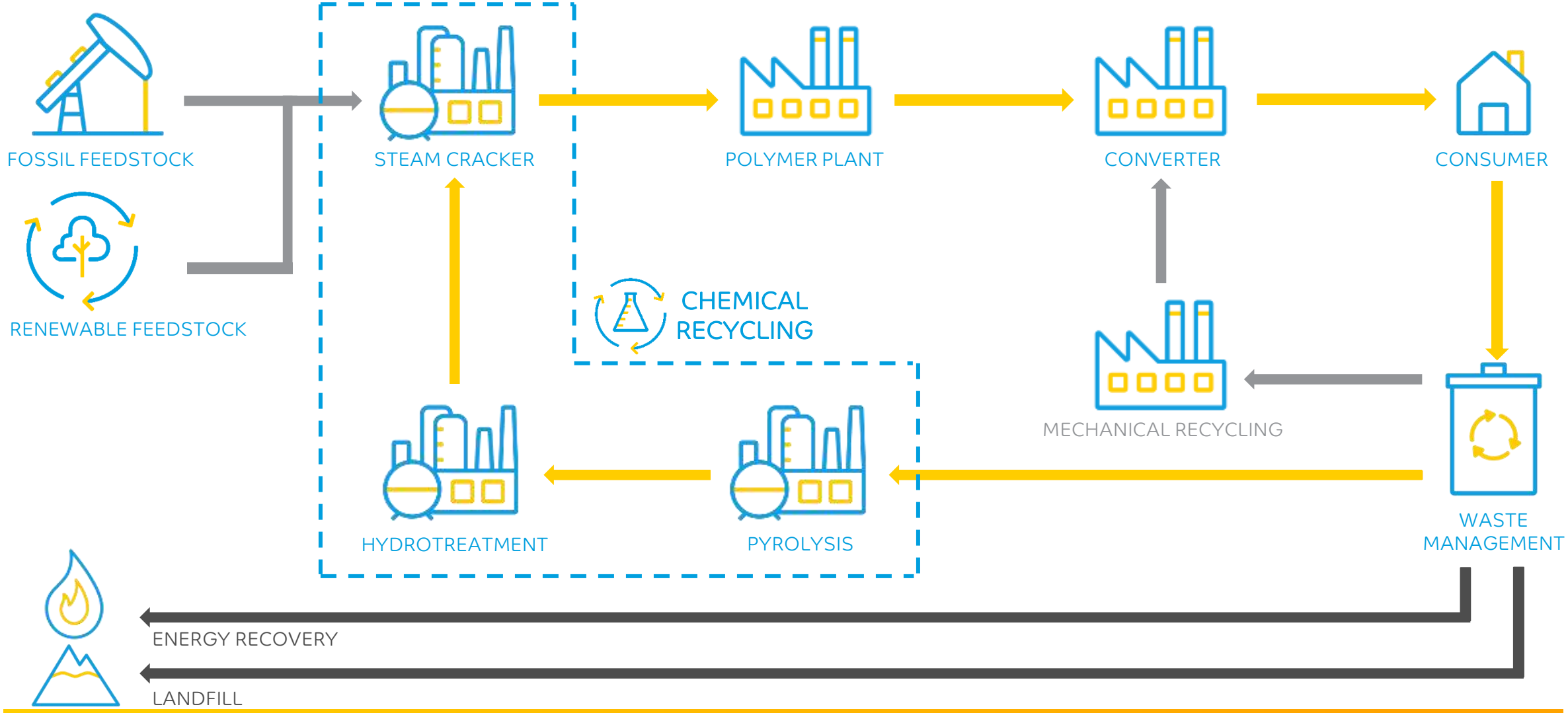
MECHANICAL RECYCLING IS CURRENTLY LIMITED BY PRODUCT PROPERTIES

PLASTIC WASTE TO FEEDSTOCK FOR POLYMERS: FROM LINEAR TO CIRCULAR

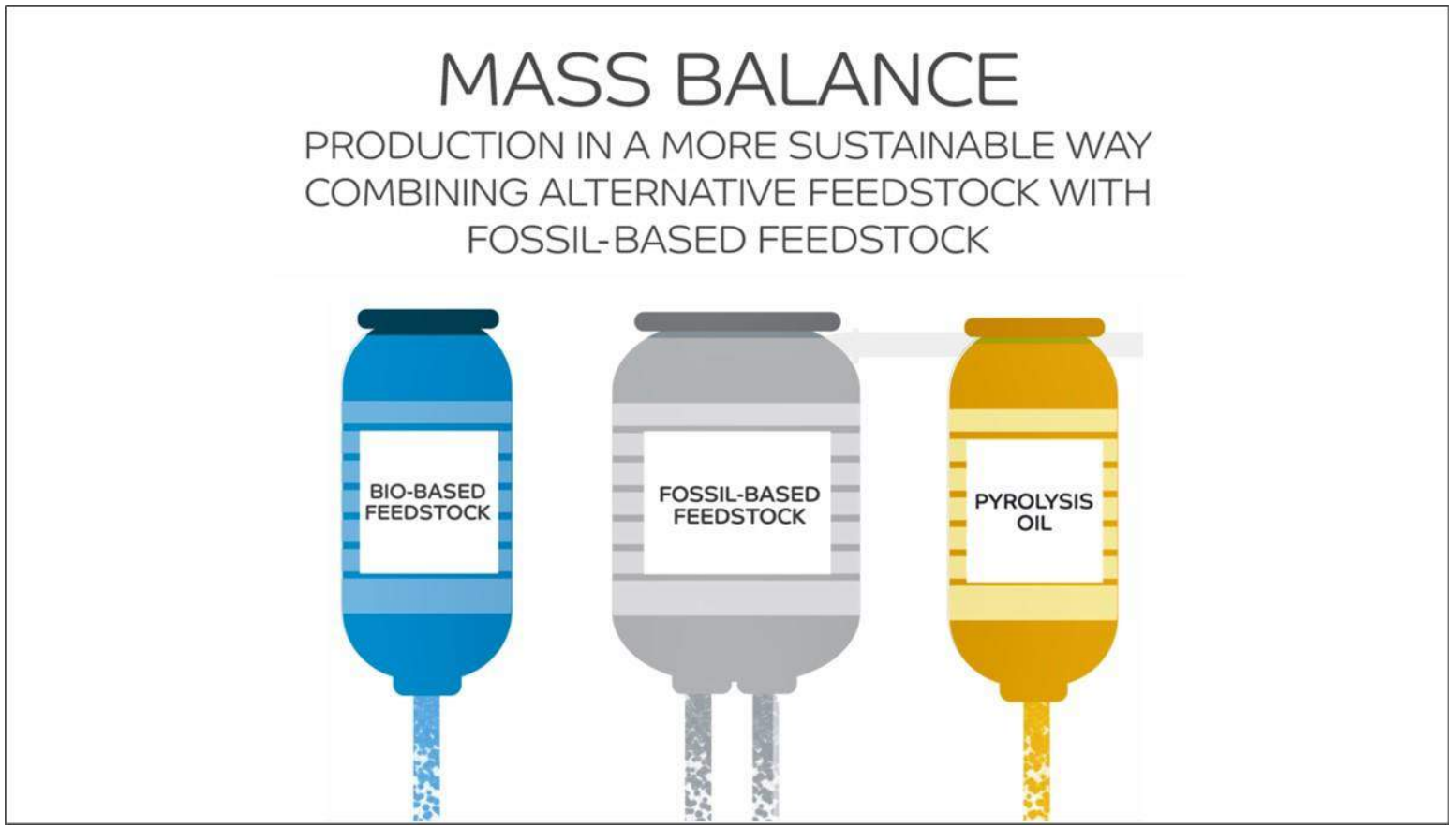


ADVANCED RECYCLING CREATES FEEDSTOCK FROM DIFFICULT-TO-RECYCLE PLASTICS

UPSCALING NEW TECHNOLOGIES



ACCEPTANCE OF THE MASS BALANCE CONCEPT IS A VITAL STEP



MASS BALANCE IS A SYSTEM WHERE THERE IS A CERTIFIED BALANCE BETWEEN THE AMOUNT OF 'INPUT MATERIAL' INTO A PROCESS AND THE AMOUNT OF 'OUTPUT MATERIAL' FROM THE PROCESS

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

NO COMPROMISE ON PACKAGING SAFETY

SABIC'S CERTIFIED CIRCULAR POLYMERS

PURE AND SAFE
NO COMPROMISE ON PRODUCT PACKAGING PROPERTIES
BIG WINDOW OF PACKAGING APPLICATIONS, INCLUDING F&B CONSUMER PACKAGING

DROP-IN SOLUTION
IDENTICAL PRODUCT SPECIFICATIONS TO OUR CURRENT POLYOLFIN GRADE PORTFOLIO
PROCESS NEW PACKAGING ON EXISTING EQUIPMENT WITHOUT MODIFICATIONS
DOWN GAUGING OPPORTUNITIES (COMPARED TO MECHANICAL RECYCLING)

TRULY RECYCLABLE
NO LIMITATIONS IN NUMBER OF RECYCLING STEPS

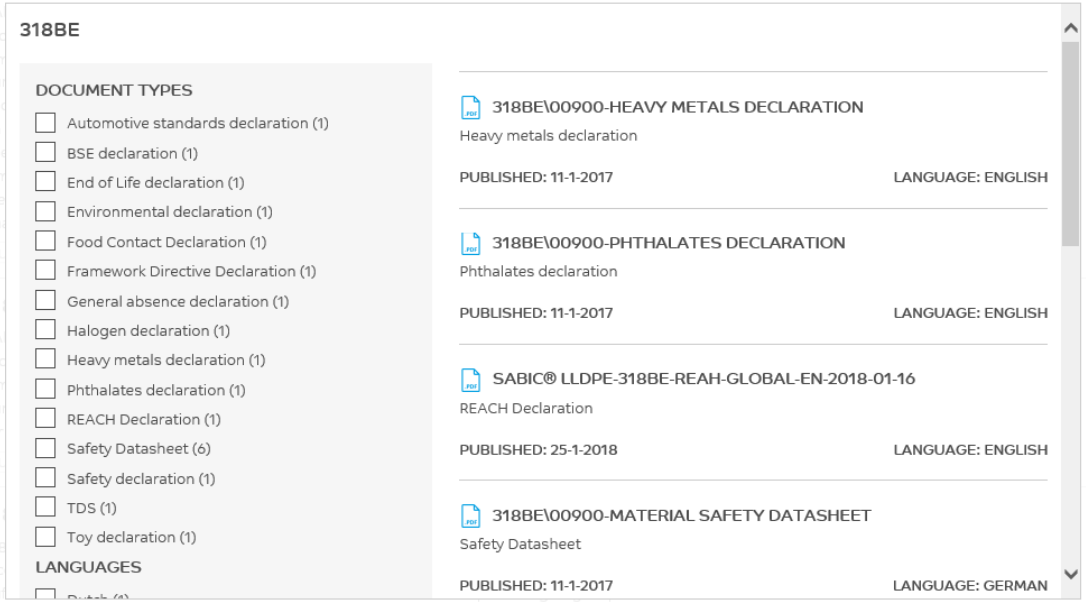
A LONG HISTORY WITH QUALITY AS KEY

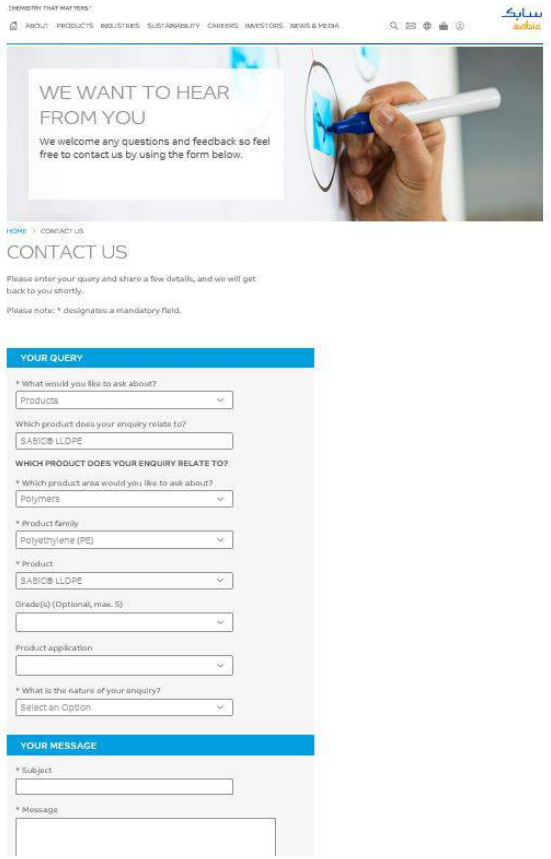
- SABIC has proven track-record as high quality supplier of virgin polymers used in food contact applications.
- Compliance with the requirements of major global food contact regulations (EU, USA, China and Japan) is a key aspect.
- TRUCIRCLE™ renewable/circular polymers enable SABIC to offer polymers that also meet these stringent food contact requirements.
- Management Systems are in place to manage these products: Responsible Care RC14001, Good Manufacturing Practices, ISO9001, food contact compliance and continuous improvement programs.
- SABIC is well recognized for its customer and regulatory support activities to cover relevant technical, product safety and compliance aspects with very short lead times.

STATEMENTS ON IDENTICAL CHEMISTRY

- “Feedstock recycling” or “Conversion” is a type of chemical recycling
- The alternative feedstocks that SABIC uses are mixed with fossil based feedstocks in a fixed ratio, keeping the mixed feedstock within the specification of the original fossil based feedstock to ensure stability of the steam-cracking process.
- All chemicals generated in the steam cracking process undergo the normal physical and chemical separation and/or purification processes and are within their original quality specifications.
- The chemicals produced using feedstock recycling, including monomers for polyolefin production, maintain the original product performance characteristics and specific material qualities of their virgin counterparts, regardless of recycled content as feedstock.
- Feedstock recycling, and monomers obtained from this process, will remain out of the scope of the new to be published EU regulation on recycled plastic materials and articles intended to come into contact with foods.

SABIC ON-LINE SUPPORT ON GRADE LEVEL WITH COMPLIANCE AND REGULATORY STATEMENTS





MASS BALANCE & CONSUMER INTERFACE

KNORR® PROFESSIONAL USES RECYCLED PLASTICS*

Providing background information for end-customers is crucial : including mass balance, re-use, recycle and dispose recommendations

Images courtesy of Unilever food services

SUCCESFULL CLOSED LOOP

Tesco introduces recycled food-grade soft plastic packaging made from materials returned by customers

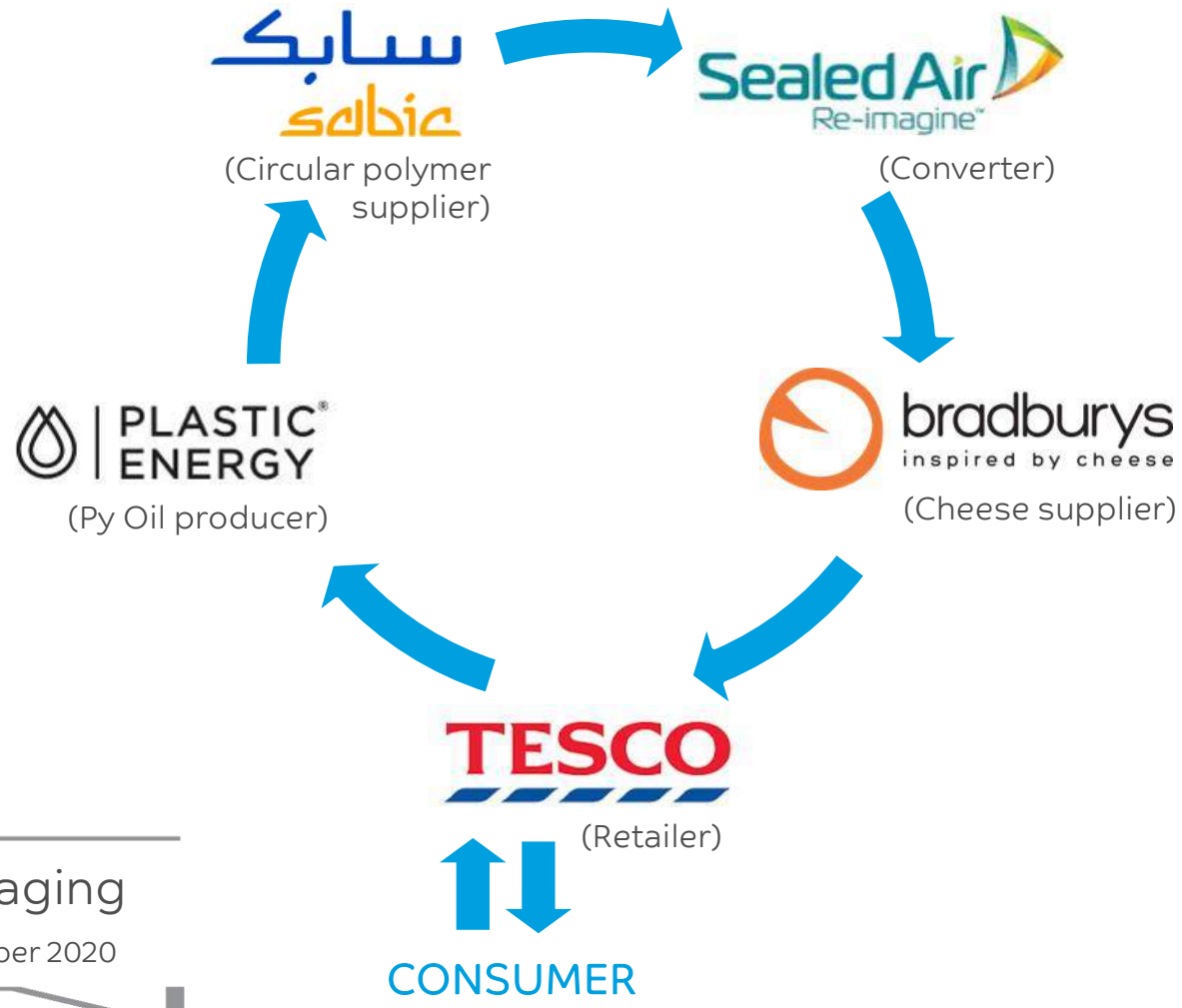
9 SEPTEMBER 2020

SABIC COLLABORATION RESULTS IN INDUSTRY FIRST CLOSED LOOP PROJECT

CIRCULARITY FOR PLASTICS
is achievable through
VALUE CHAIN COLLABORATION.

COLLABORATION PARTNERS of this closed loop recycling system:

- TESCO collected post-consumer flexible packing 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" British Plastics and Rubber Magazine, 8 September 2020

ADVANCED RECYCLING UNIT

WORLD'S FIRST COMMERCIAL UNIT FOR THE ADVANCED RECYCLING OF USED PLASTIC

- SABIC and Plastic Energy have **started construction** of world's first commercial unit to significantly upscale production of **SABIC's certified circular polymers** derived from used plastic
- Considerable milestone on the journey towards **closing the loop** and creating a **circular economy for plastics**
- This pioneering project in Geleen, The Netherlands is expected to become **operational in the second half of 2022**.

OUR JOURNEY

2018

Unilever, Tupperware & Vinventions as early adaptors

2018 DAVOS

SABIC statement on recycling plans

2019 DAVOS

Partners Joining

MID 2020

Commercial unit 18kt sold out
(40 partners)

2019

Foundation: First circular show cases

END 2020

JV with Plastics Energy

2022

start-up 18 kt plant

Upscaling

World Scale Unit

2020

Closed loop with Tesco

2021

Launch of Ocean Bound Plastic

CONCLUSIONS

- Advanced recycling is complementary to mechanical recycling and enables a transition from linear to circular business models .

- Several brand-owners /supermarkets started in Europe with introduction of TRUCIRCLE™ advanced recycling solutions in advanced food packaging.

- Further upscaling requires value chain collaboration with a legislative framework embracing this innovation.

CHEMISTRY THAT MATTERS™

COLLABORATION. IT'S MAKING THE CIRCULAR ECONOMY GO ROUND.

As we adapt to a new normal, we're helping support more sustainable economies.

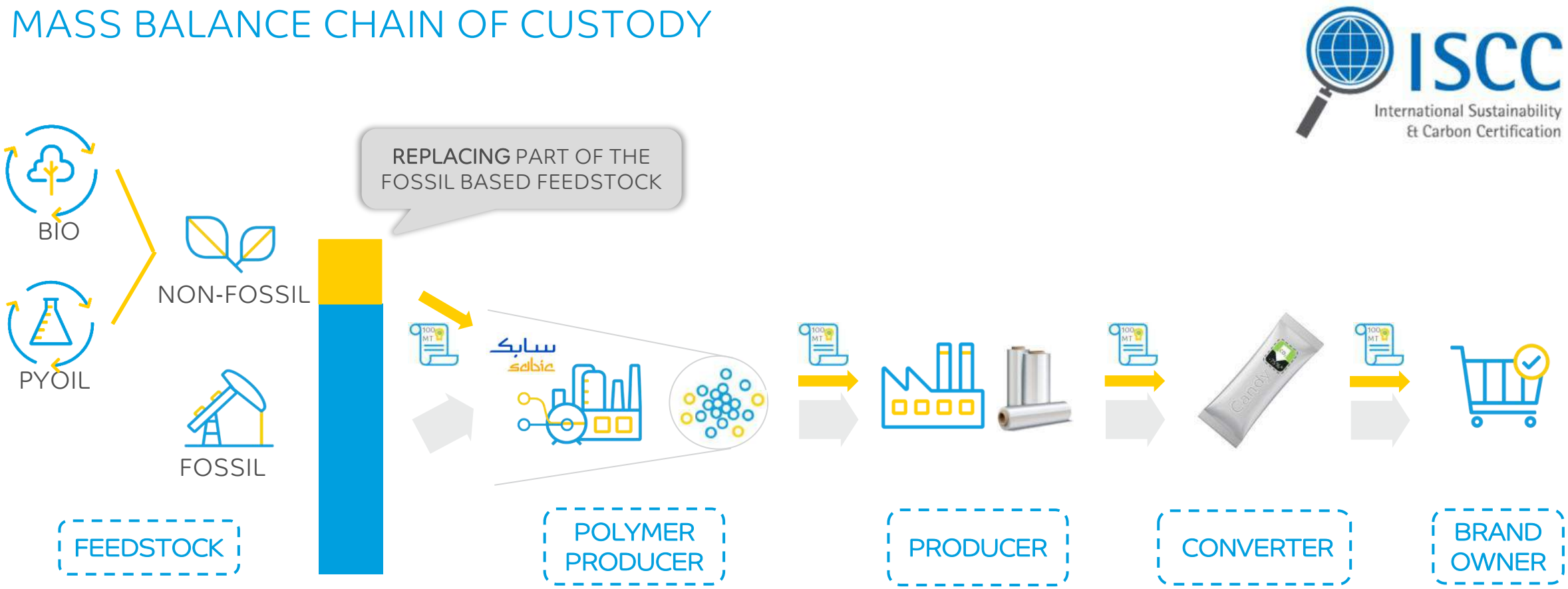
That's why SABIC introduced the TRUCIRCLE™ initiative to work with our collaboration partners to rethink recycling. SABIC's collaborations are making it possible to create materials of high enough quality for food packaging by breaking complex, low quality waste plastics down to their original state. We can use, reuse and repurpose more of our resources without using new ones. It's innovative technology that's making the circular economy reality with Chemistry that Matters™.

Meet one of the world's leading chemical companies at SABIC.com

BACK-UP

TRACEABILITY OF CERTIFIED PE & PP SOLUTIONS

MASS BALANCE CHAIN OF CUSTODY



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 transparent and auditable way.

SABIC'S SUSTAINABILITY YOUTUBE CHANNEL

CLOSED LOOP COLLABORATION
= animation to explain closed loop initiative with Tesco
https://www.youtube.com/watch?v=5NVEMplvi5Y

SABIC TRUCIRCLE™ ANIMATION
= short introduction to TRUCIRCLE™ initiatives
https://www.youtube.com/watch?v=AIcCUCmGrmg

SABIC'S CERTIFIED CIRCULAR POLYMERS FROM MIXED PLASTIC WASTE
https://www.youtube.com/watch?v=qf_4jxcP2sY

SABIC – MASS BALANCE METHOD
https://www.youtube.com/watch?v=-imvDD6i6Lo

TRUCIRCLE™ - THE JOURNEY SO FAR
https://youtu.be/wYK5JW6gegs?list=PLvrbA1nA2I8oQYw0o-xq16Qou4cNLeU69

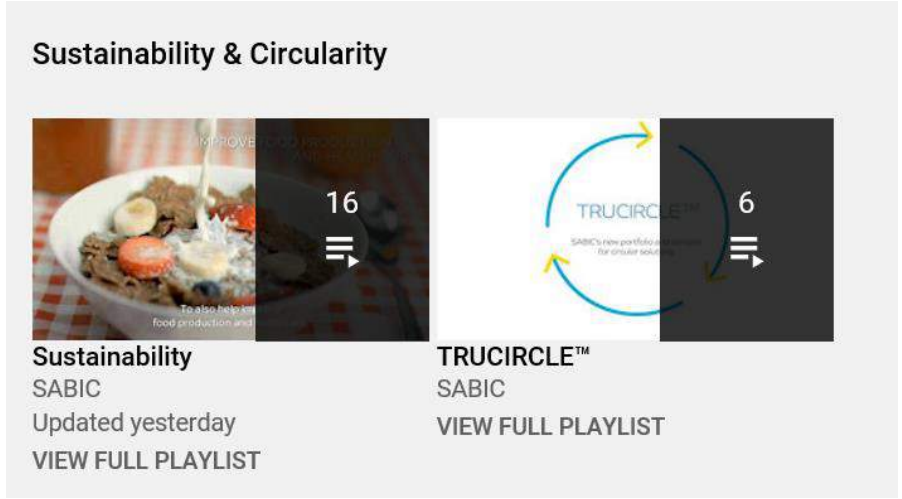
SABIC'S CERTIFIED CIRCULAR PRODUCTS THROUGH FEEDSTOCK RECYCLING
= attractor film from booth at K-show
https://www.youtube.com/watch?v=REamRj4xXPs

SABIC'S CERTIFIED CIRCULAR PRODUCTS FROM MIXED PLASTIC WASTE
= 2D animation movie explaining advanced recycling
https://www.youtube.com/watch?v=WbEh2NtLrb0

YouTube

https://www.youtube.com/c/SABIC/featured

TRUCIRCLE PLAYLIST
OR
SUSTAINABILITY & CIRCULARITY PLAYLIST
https://www.youtube.com/playlist?list=PLvrbA1nA2I8qR8MfoHAOWVRHCJvgEjtBF




THANK YOU

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