



We create chemistry

Driving sustainability with microorganisms

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BASF Research Press Conference, November 17, 2022

Multiple challenges ahead

**Climate
neutrality**

**Circular
economy**

**Digital
transfor-
mation**

**Non-toxic/
zero
pollution**

Continuous commitment to sustainability

Climate neutrality

- Invest in wind energy, PPAs
- CO₂-free hydrogen
- Electrification of processes
- Product carbon footprint

Digital transformation

- Strong focus on digitalization in R&D
- Supercomputer
- Process optimization through digitalization

Circular economy

- ChemCycling™
- Recycling of polymers
- Battery recycling

Non-toxic/zero pollution

- Portfolio steering
- Ecoefficiency analysis
- Biodegradables

Our global innovation setup benefits our customers and supports the transformation towards sustainability



Product research embedded in operating divisions to **adapt fast to rapidly evolving market trends, cater to customer requirements and drive innovation**

Research capabilities bundled in one research division with presence in all regions **to leverage BASF's Know-how Verbund**

Global network of top universities, research institutes and companies **drives innovation**

¹ BASF's Academic Research Alliances, academia, industry partners, startups

We operate the industry-leading innovation platform: Facts and figures 2021

10,000

Employees in R&D



Our target:

Resource-efficient solutions and business models to decouple growth from the consumption of finite resources

€2.2bn

Global expenditures for R&D, world leader in the chemical industry

>€11bn

innovation sales¹

Our success factors

- Customer focus
- Digitalization
- Creativity
- Efficiency
- Collaboration with partners



New patents filed

820

¹ Sales generated with products launched on the market in the past five years that stemmed from research and development activities

Driving sustainability – a value chain perspective

Feedstock

From fossil-based to circular and alternative raw materials



Product

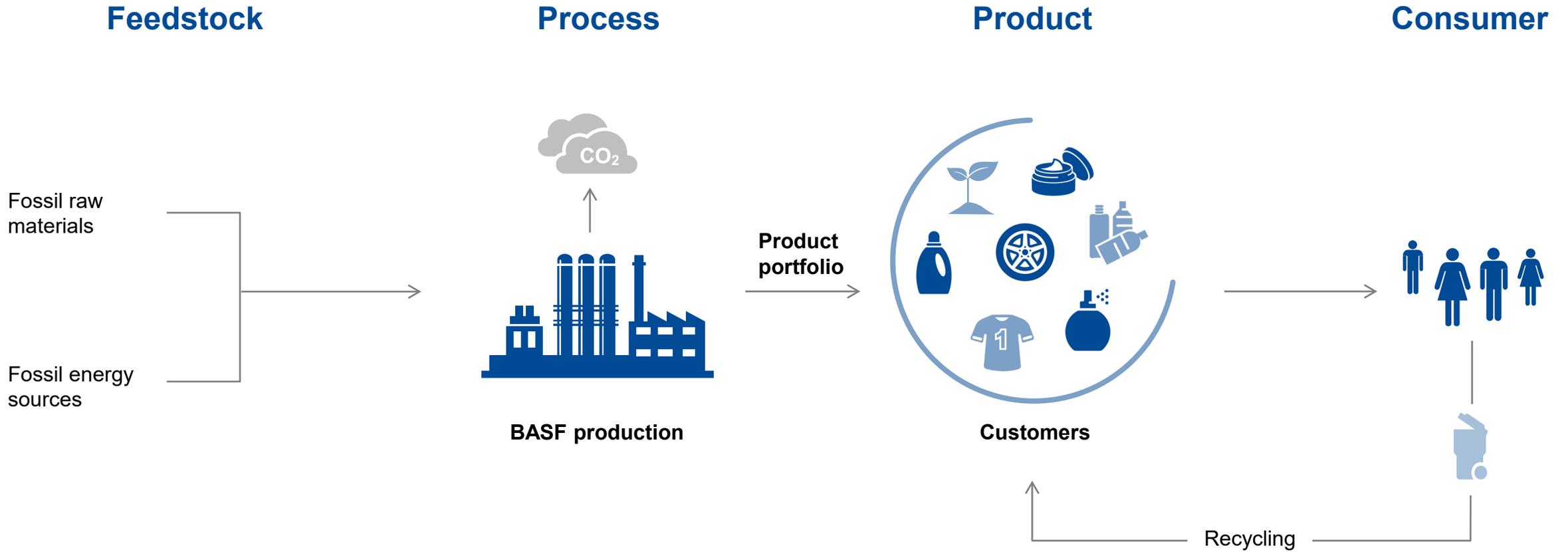
From risk-based to safe and sustainable by design



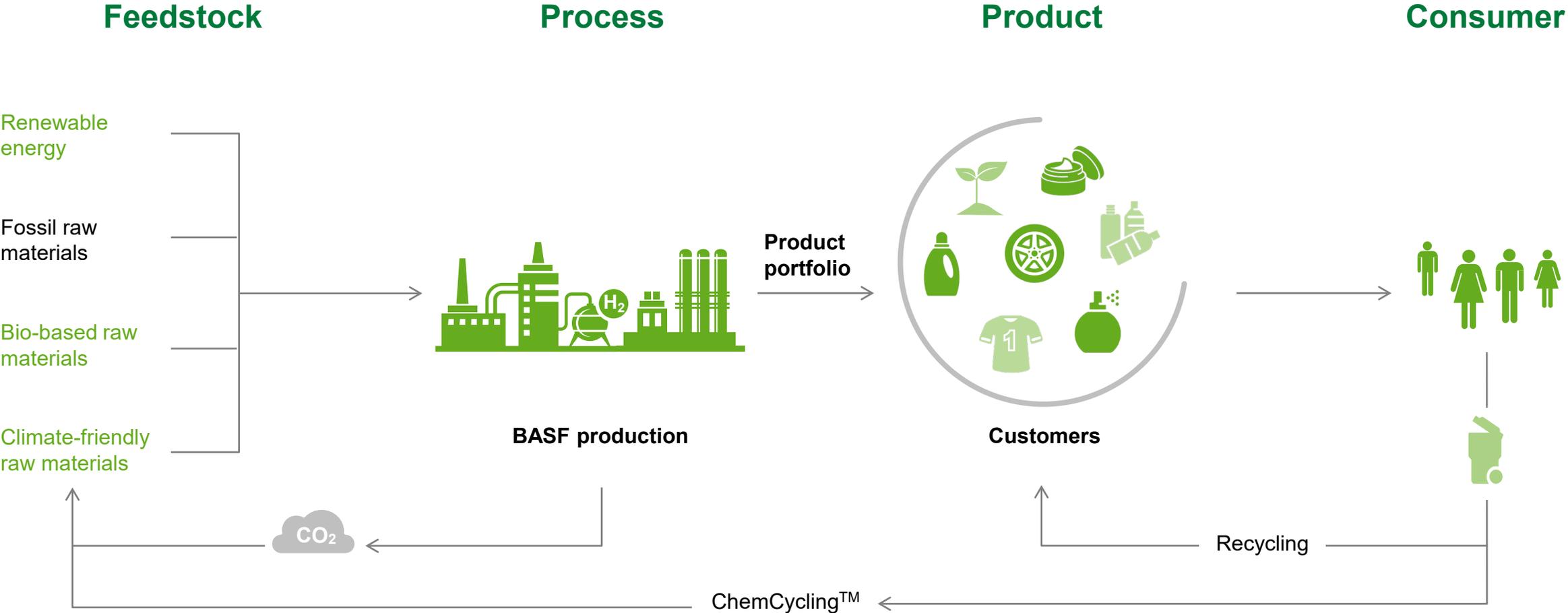
Process

From energy-efficient to CO₂-free

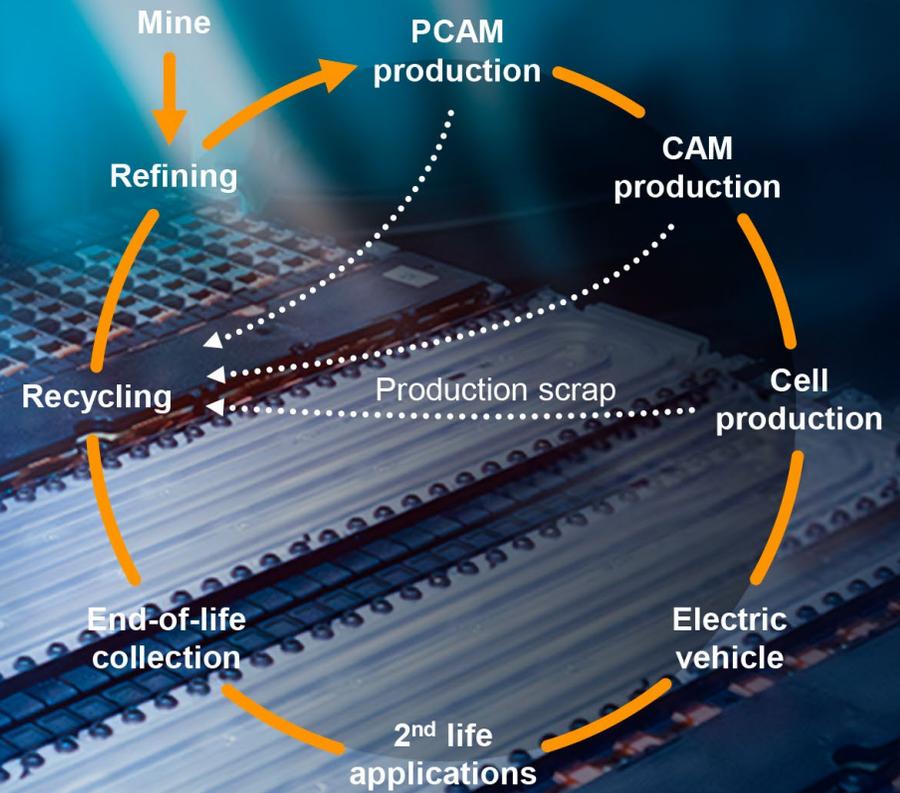
A conventional chemical value chain...



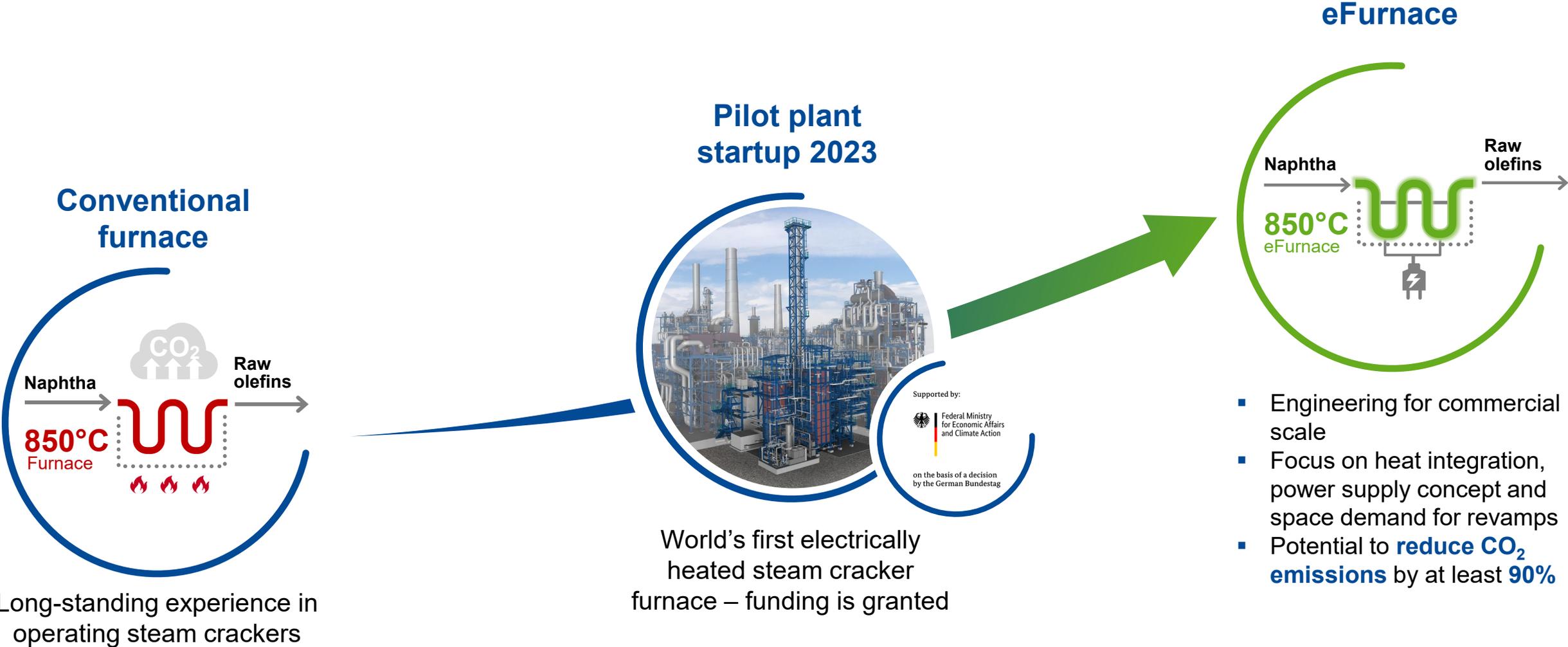
... and the result of a sustainable transformation



Feedstock: Battery recycling



Process: From idea to commercialization



Product: Create additional value for our customers

Low-PCF products via mass balance



Product carbon footprint reduction¹
(compared to the fossil-based products)

-85%

-66%

-55%

-70%

¹ PCF values according to ISO 14040/44

Driving sustainability with microorganisms

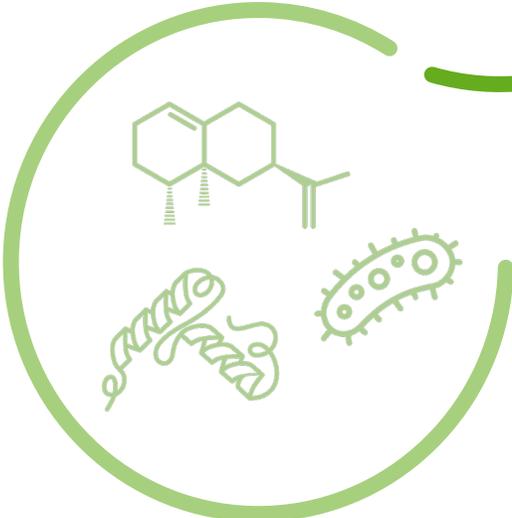
Feedstock

Renewable-based
Fossil-based
Traceable, recycled and circular
waste streams and off-gases



Product

(Bio)chemical/natural ingredients
Biosolutions (microorganisms)
Enzymes
Chemicals

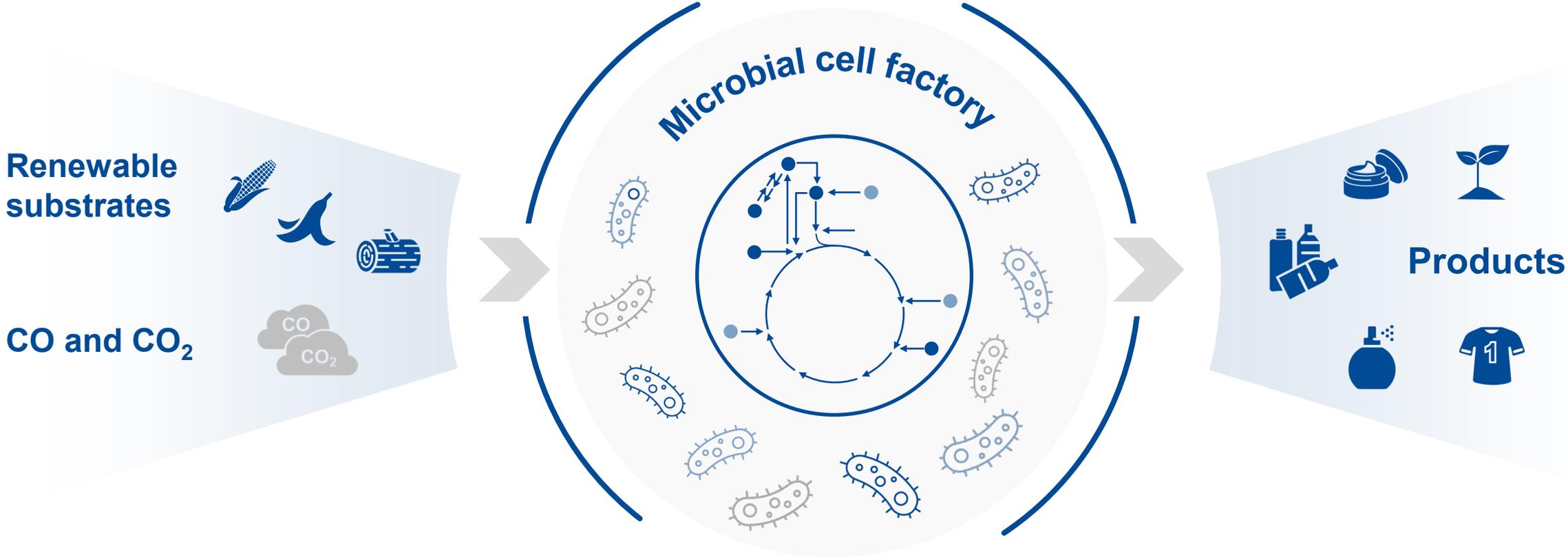


Process

Fermentation and biocatalysis
Genetic engineering
Computational biology
Directed evolution



Microorganisms produce molecules

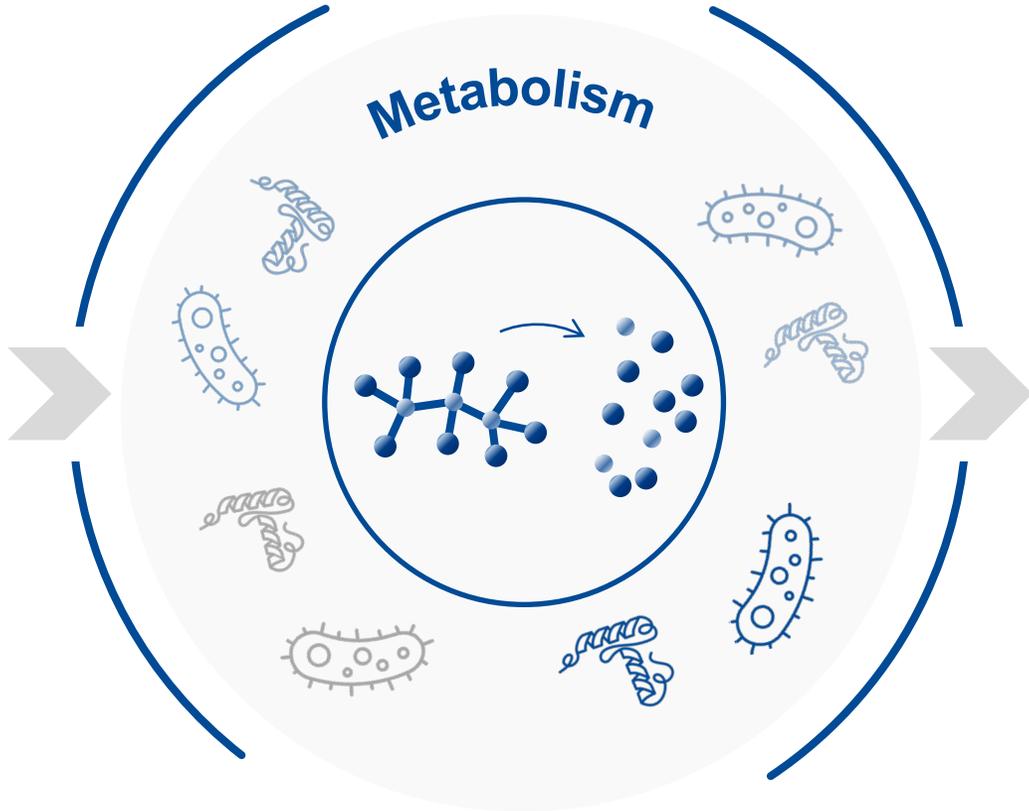


Microorganisms digest molecules

Structural materials



Functional materials



Energy and biomass



Biotechnology and biodegradability broaden BASF's capability to shape a sustainable future



Global **R&D** setup will support the strong growth in the upcoming years.

>€3.5bn
Sales 2021¹

5 / 6

BASF segments

- Chemicals
- Materials
- Industrial Solutions
- Nutrition & Care
- Agricultural Solutions

>3,000

Products

Chemicals, surfactants, aroma ingredients, biosolutions for agriculture, proteins, biodegradable materials and polymers, enzymes



¹ Sales with products from white biotechnology and biodegradable materials/polymers

Today's topics



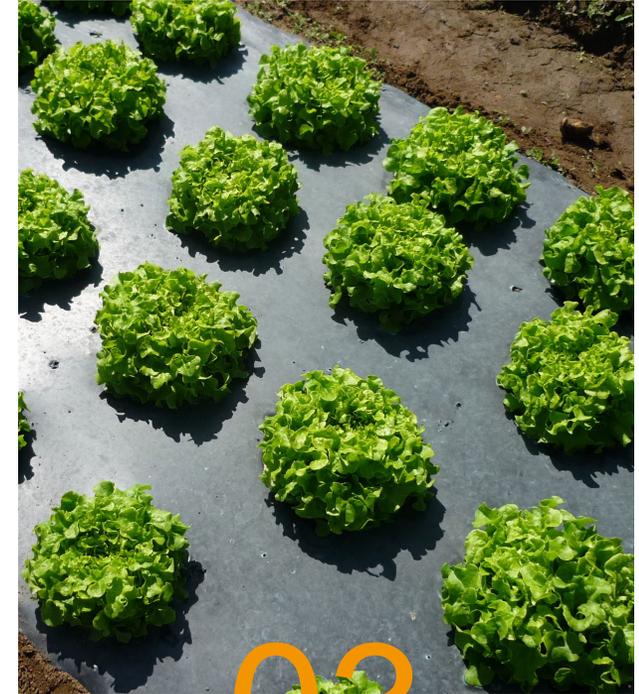
01

White biotechnology as one key element of BASF's toolbox



02

BASF and LanzaTech – Alternative carbon sources for chemical value chains



03

From the fundamentals of biodegradability to sustainable products

A large sailboat with a tall, dark sail is sailing on a bright, shimmering sea under a clear sky. The sail has the number '10271' and the letters 'ISAF' printed on it. Several crew members are visible on the deck. The text is overlaid on the right side of the image.

To successfully meet the challenges
of today's world...

**... we rely on innovative minds,
partnerships and cooperation.**



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