



We create chemistry

We create chemistry for a sustainable future

Dr. Christoph Jaekel, Vice President
Corporate Sustainability, BASF SE

Virtual ESG Roadshow, November 22, 2021

Cautionary note regarding forward-looking statements

This presentation contains forward-looking statements. These statements are based on current estimates and projections of the Board of Executive Directors and currently available information. Forward-looking statements are not guarantees of the future developments and results outlined therein. These are dependent on a number of factors; they involve various risks and uncertainties; and they are based on assumptions that may not prove to be accurate. Such risk factors include those discussed in Opportunities and Risks on pages 158 to 166 of the BASF Report 2020. BASF does not assume any obligation to update the forward-looking statements contained in this presentation above and beyond the legal requirements.

Resource efficiency – BASF's Verbund is ideal for CO₂ emission reduction



- Combined heat and power plants and integrated energy Verbund prevented 6.2 million metric tons of CO₂e emissions in 2020
- Synergies in logistics and infrastructure, minimization of waste
- BASF uses fossil raw materials responsibly: 75% of carbon converted to products, 25% consumed for process energy and converted to CO₂ equivalents¹
- European emissions trading benchmarks show that BASF's chemical plants operate at above-average energy efficiency

Our commitments to reaching the Paris Climate Agreement

2030

25%

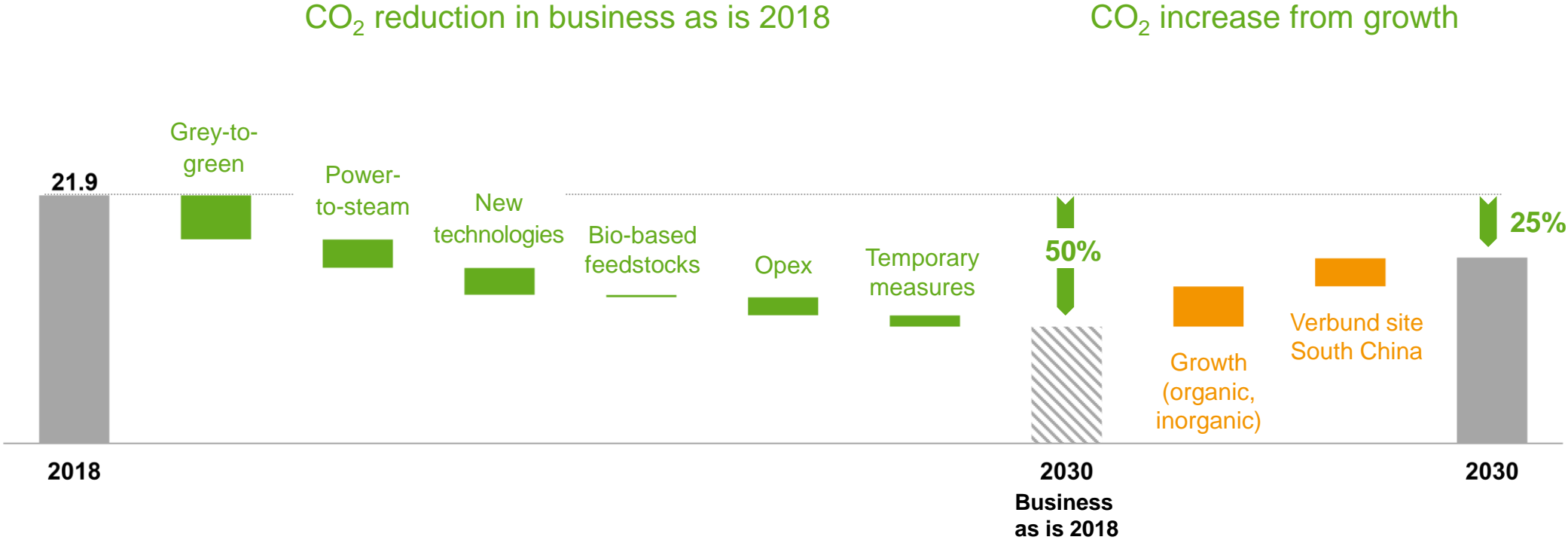
CO₂ emissions reduction
(compared with 2018)¹

2050

net zero
CO₂ emissions¹

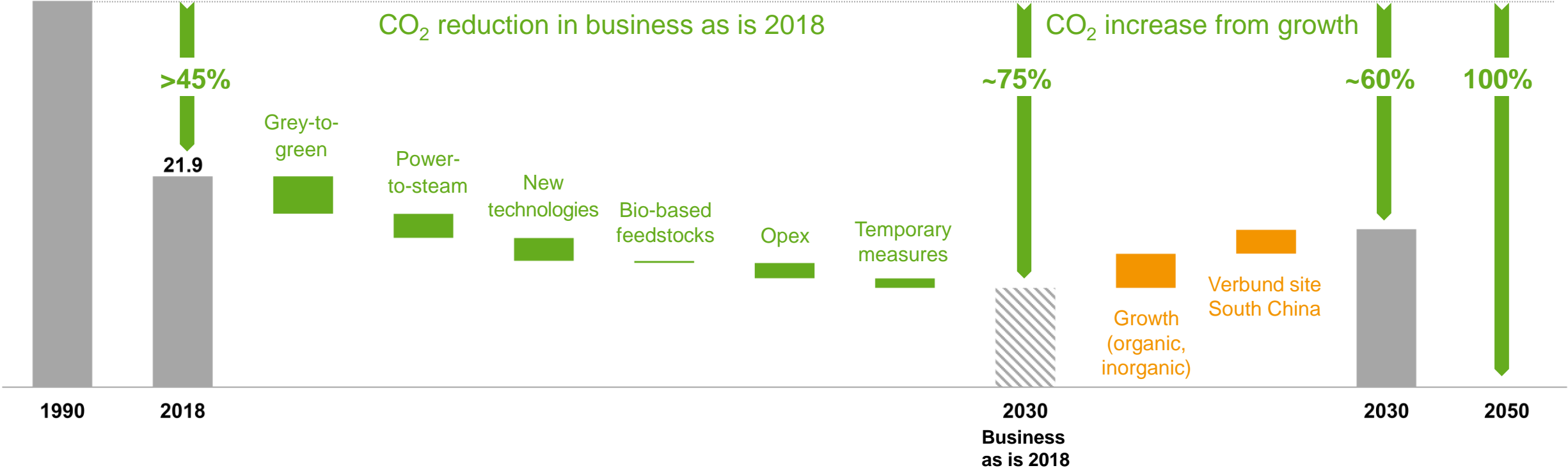
Our path to reduce BASF emissions from 2018 to 2030

BASF greenhouse gas emissions (Scope 1 and Scope 2) 2018–2030



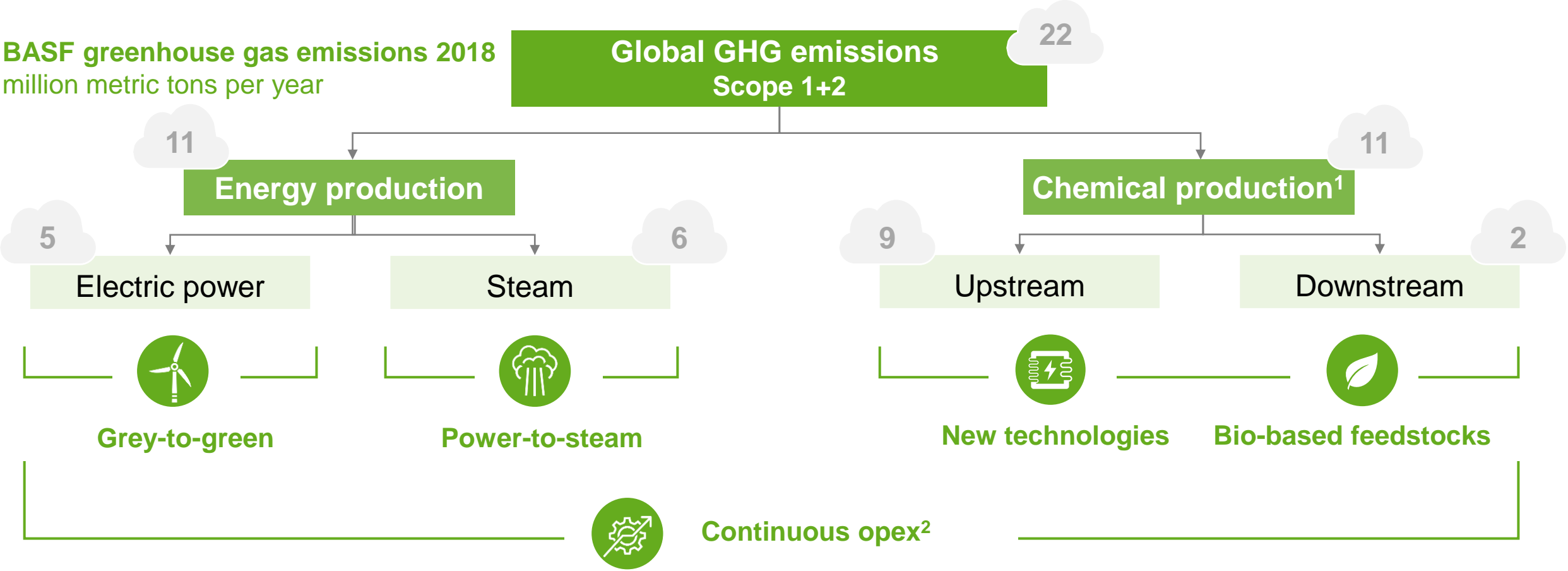
Our path to reduce BASF emissions from 1990 to 2050

BASF greenhouse gas emissions (Scope 1 and Scope 2) 1990–2050



No downstream decarbonization without upstream decarbonization

BASF greenhouse gas emissions 2018
million metric tons per year



Major capex for further transformation only expected beyond 2030

Renewable energy
 Test plants
 Pilot plants
 Heat pumps
 Lab phase
 New processes

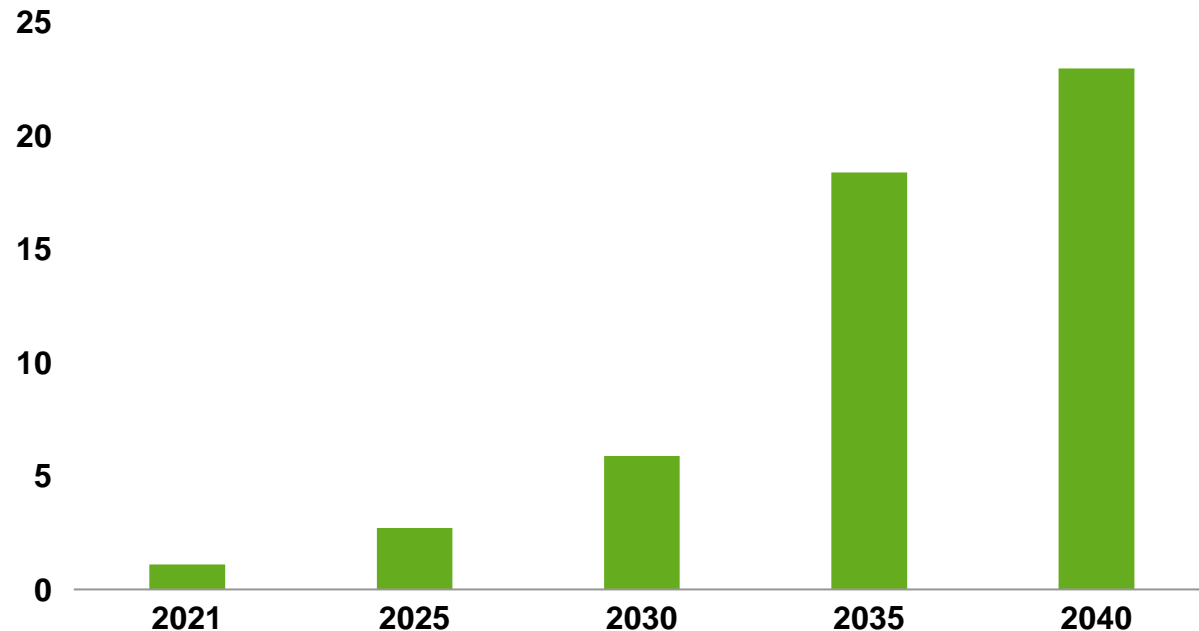


Projected capex	billion €
2021–2025	<1
2026–2030	2–3
2030+	>10

To meet our high demand for renewable energy, we will focus on two pillars ensuring additionality



BASF's additional green power demand for large European sites
Ludwigshafen, Antwerp and Schwarzheide, terawatt hour per year



Make: Invest in own assets

- Building up portfolio of own assets
- Goal: Secure long-term supply at producer economics



Buy: Purchase green power from third parties

- Contracting power purchase agreements and renewable energy certificates (PPA/REC)
- Goal: Diversified portfolio (technologies, regions) at current, attractive prices

We will combine both pillars – make and buy – to one diversified portfolio taking into account costs, flexibility and availability

BASF to buy 49.5% share in the offshore wind farm Hollandse Kust Zuid

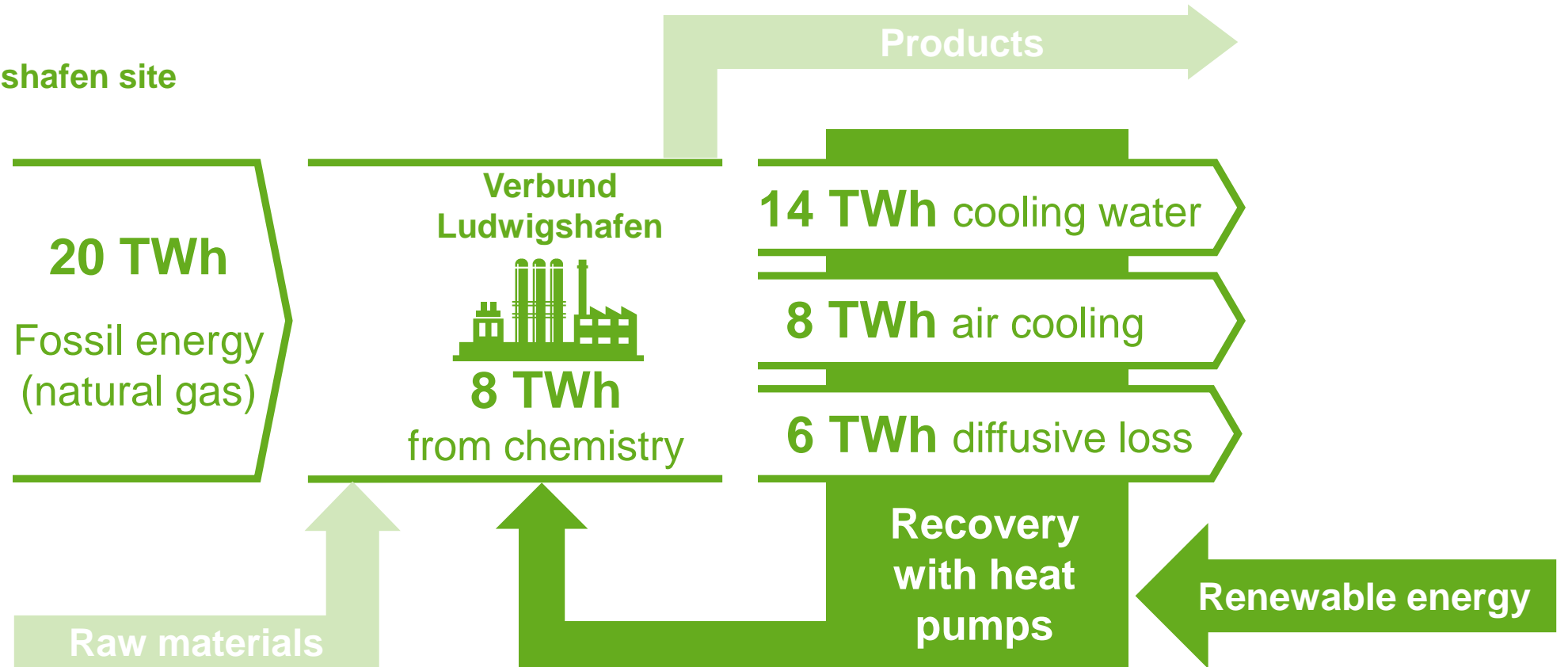


- Once **fully operational in 2023**, Hollandse Kust Zuid (HKZ) will be the **largest offshore wind farm in the world** with a total installed **capacity of 1.5 gigawatts**
- Vattenfall will use HKZ to supply fossil-free electricity to its customers in the Netherlands, BASF to support chemical production in sites across Europe, mainly in Antwerp, Belgium
- **Purchase price of €0.3 billion**, BASF's initial **total commitment** is **~€1.6 billion**; BASF intends to reduce its investment by selling shares to a financial co-investor
- **Closing** took place **on September 1, 2021**

CO₂-free steam production in the BASF Verbund with heat pump technology at unprecedented scale



Energy flow at Ludwigshafen site

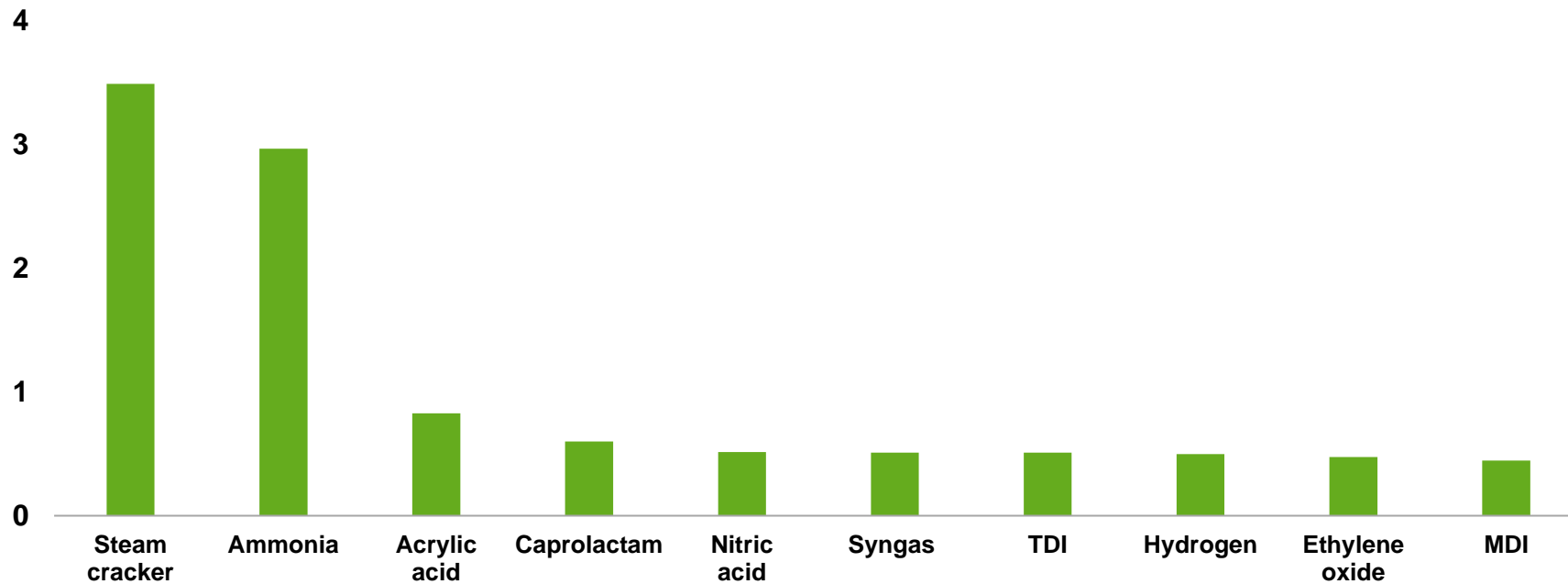


BASF will install heat pumps and steam compressors to use waste heat from chemical plants for steam production

Ten base chemical production technologies cause the majority of BASF's CO₂ emissions

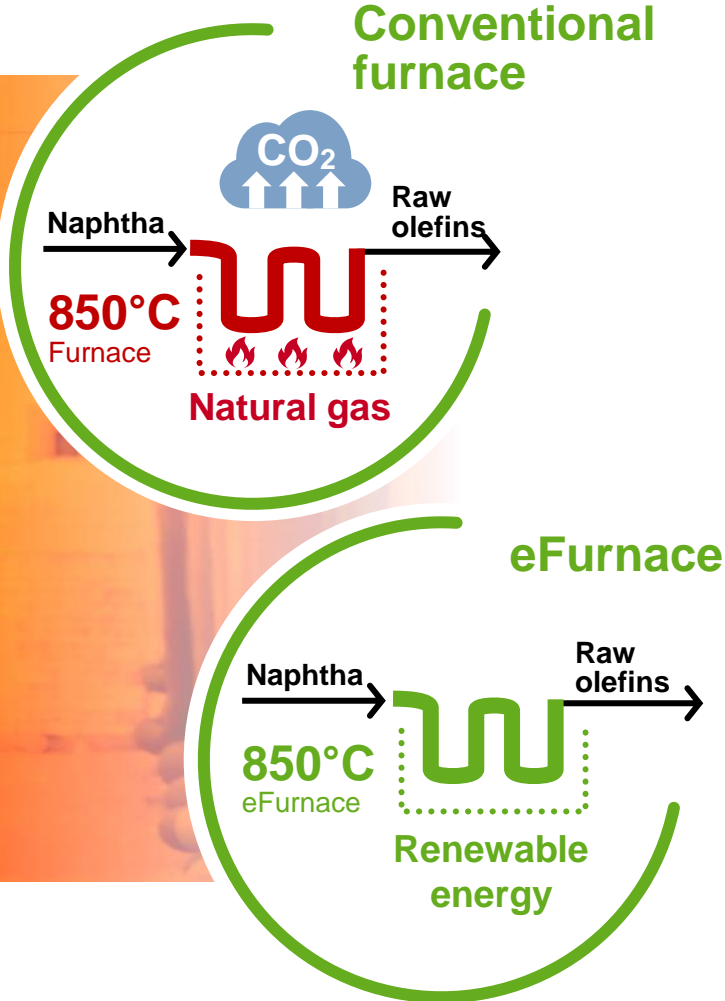
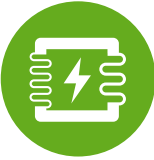


Greenhouse gas emission profile of BASF technologies
Energy and chemistry emissions, million metric tons per year¹



BASF has identified its CO₂-intensive processes and is addressing them

BASF, SABIC and Linde join forces to realize the world's first electrically heated steam cracker furnace

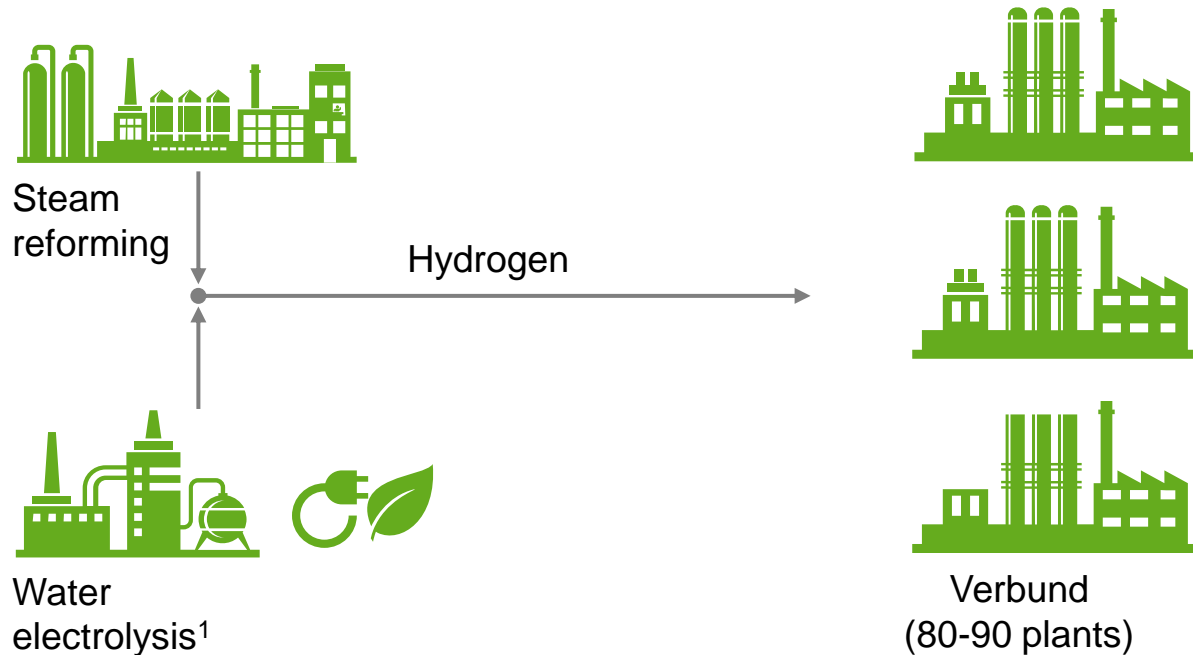


- Goal is to drive concepts and faster implementation through combined strengths
 - ▶ BASF and SABIC: extensive know-how and intellectual property in developing chemical processes; long-standing experience and knowledge in operating steam crackers
 - ▶ Linde: expertise and intellectual property in developing and building steam cracking furnace technologies and driving future industry commercialization
- Construction of a demonstration plant depending on funding granted – application to E.U. Innovation Fund and German funding program “Decarbonization in Industry”
- If funding is granted, startup could happen as fast as 2023

Water electrolysis plant will integrate internally produced green hydrogen into our Verbund



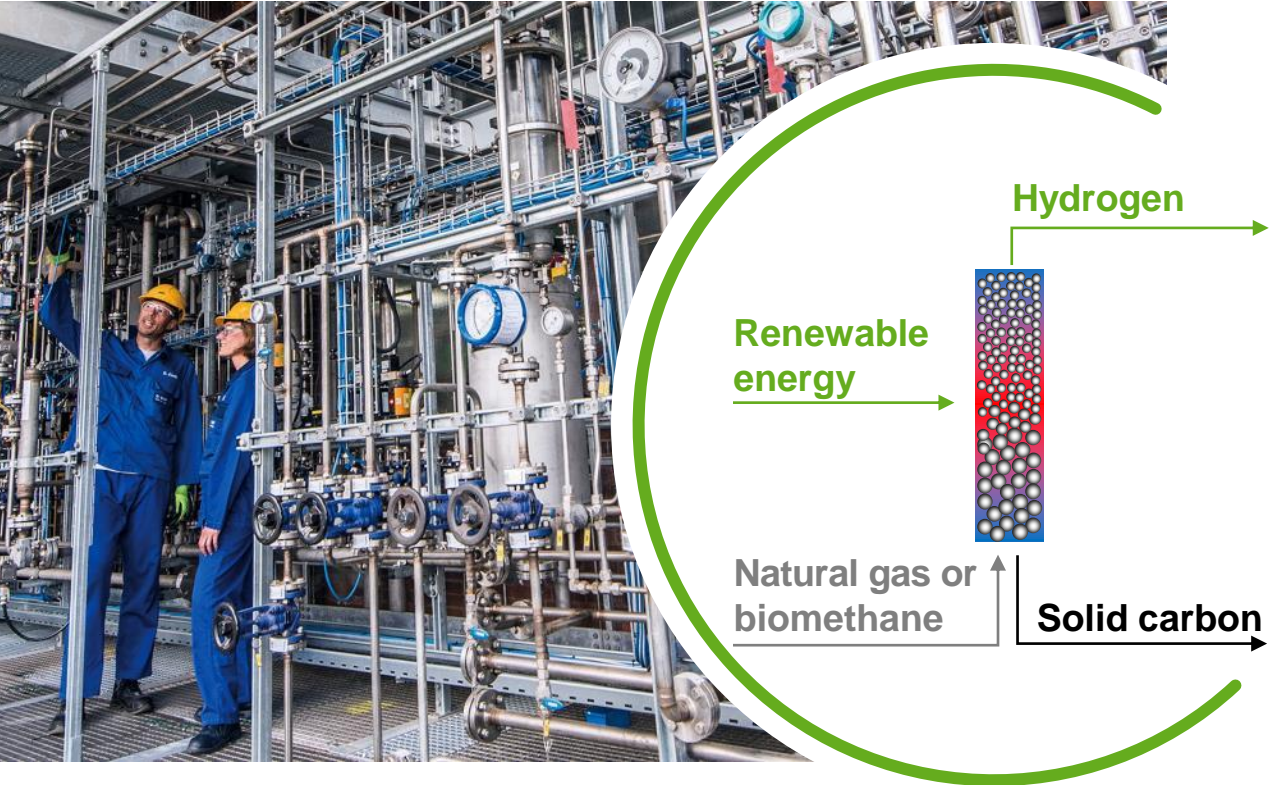
Seamless integration into BASF Verbund Schematic



- Application for funding through **IPCEI** Hydrogen Technologies and Systems (Important Project of Common European Interest) has been shortlisted
- **Start-up** of water electrolysis **targeted for 2024**, investment of more than €90 million, capacity of 8,000 metric tons
- Hydrogen to be used in **BASF Verbund** and for **local community hydrogen mobility market**

Water electrolysis is a commercially available technology but consumes large amounts of electricity

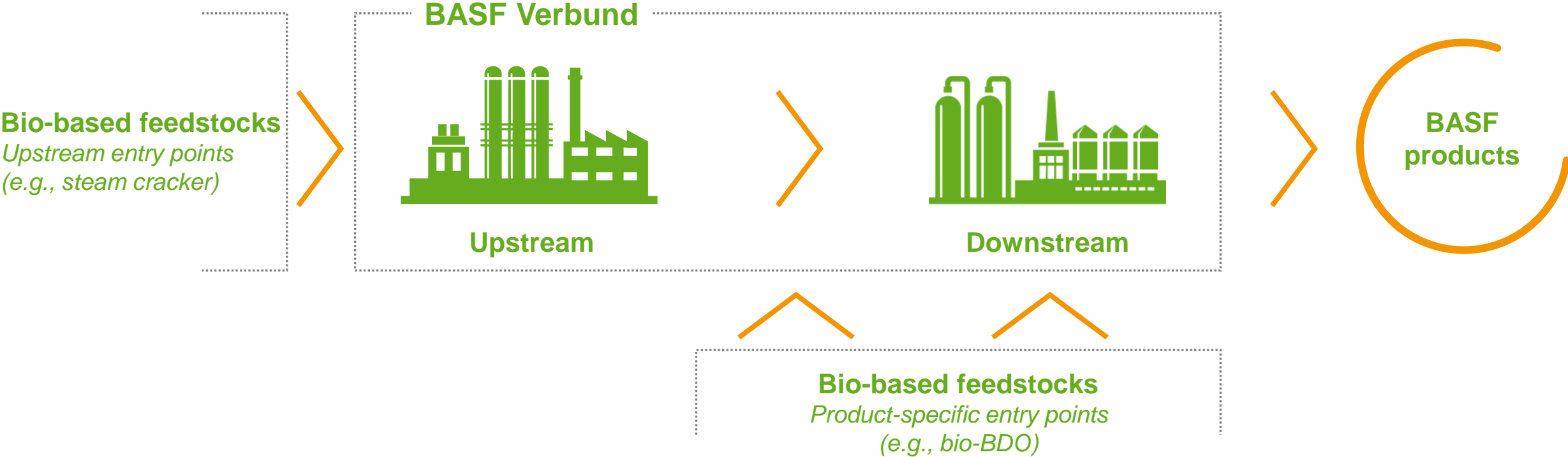
Methane pyrolysis combines low emissions with low energy demand



- **Methane pyrolysis** requires around **80% less electricity** than water electrolysis
- **Funding** for pilot reactor **was granted** by German Federal Ministry of Education and Research
- **Pilot reactor** at the Ludwigshafen site
- Start-up of **first commercial plant projected for 2030**

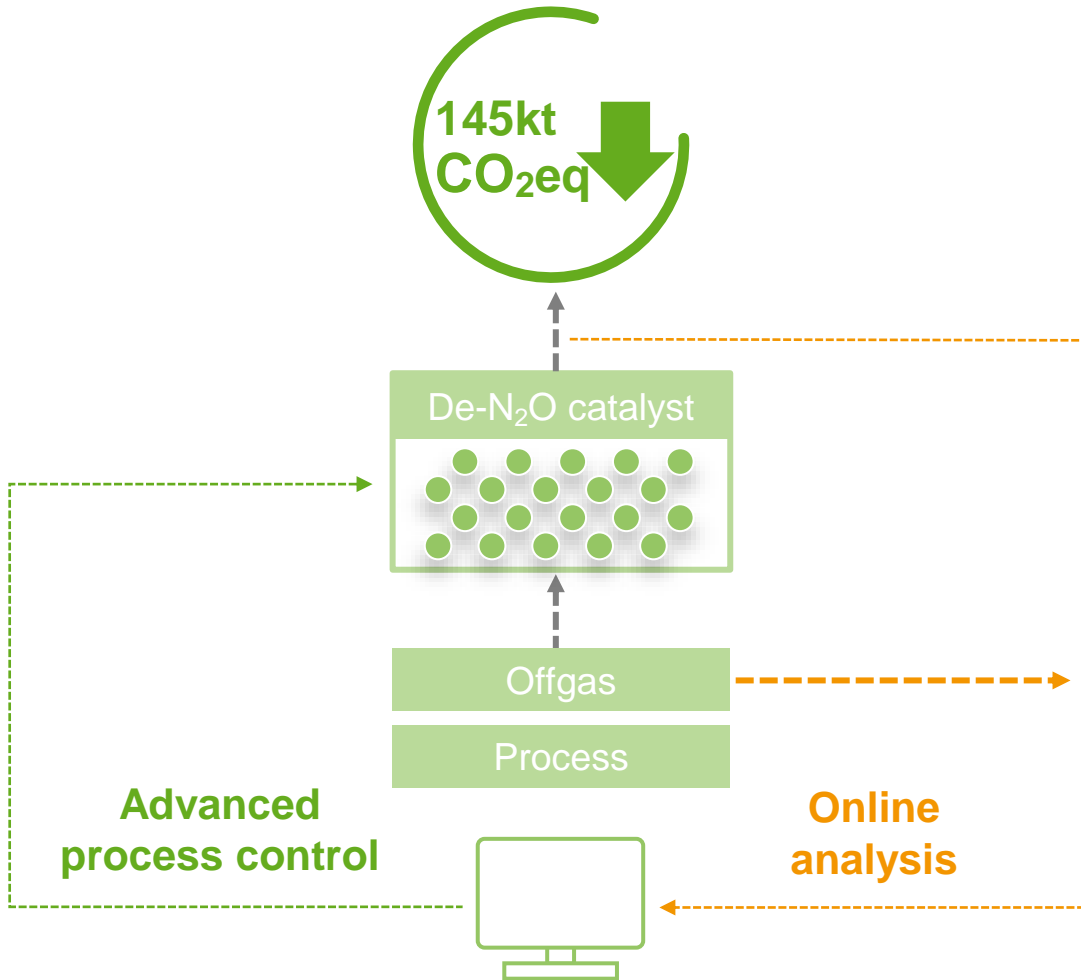
We have achieved a milestone in scaling up our groundbreaking methane pyrolysis process for hydrogen production

Entry points for bio-based feedstocks in BASF value chains



In the BASF Verbund, bio-based feedstocks can be used as a drop-in solution, in part using new, dedicated processes

Our upstream integration allows large improvements with single measures



- **Avoiding 145,000 tons of CO₂ equivalents** per year through optimized process control
- **Nitrous oxide (N₂O) decomposition** in nitric acid cluster was **further improved from 99% to 99.9%**, residual N₂O was reduced by a factor of 10 to 0.1%
- Key to success were state-of-the-art process modelling capabilities; improvement could be achieved **without major plant modifications or investments**
- One of more than 1,500 operational excellence measures we are currently pursuing to reduce CO₂ emissions and improve energy efficiency

Turning Carbon Management into business opportunities

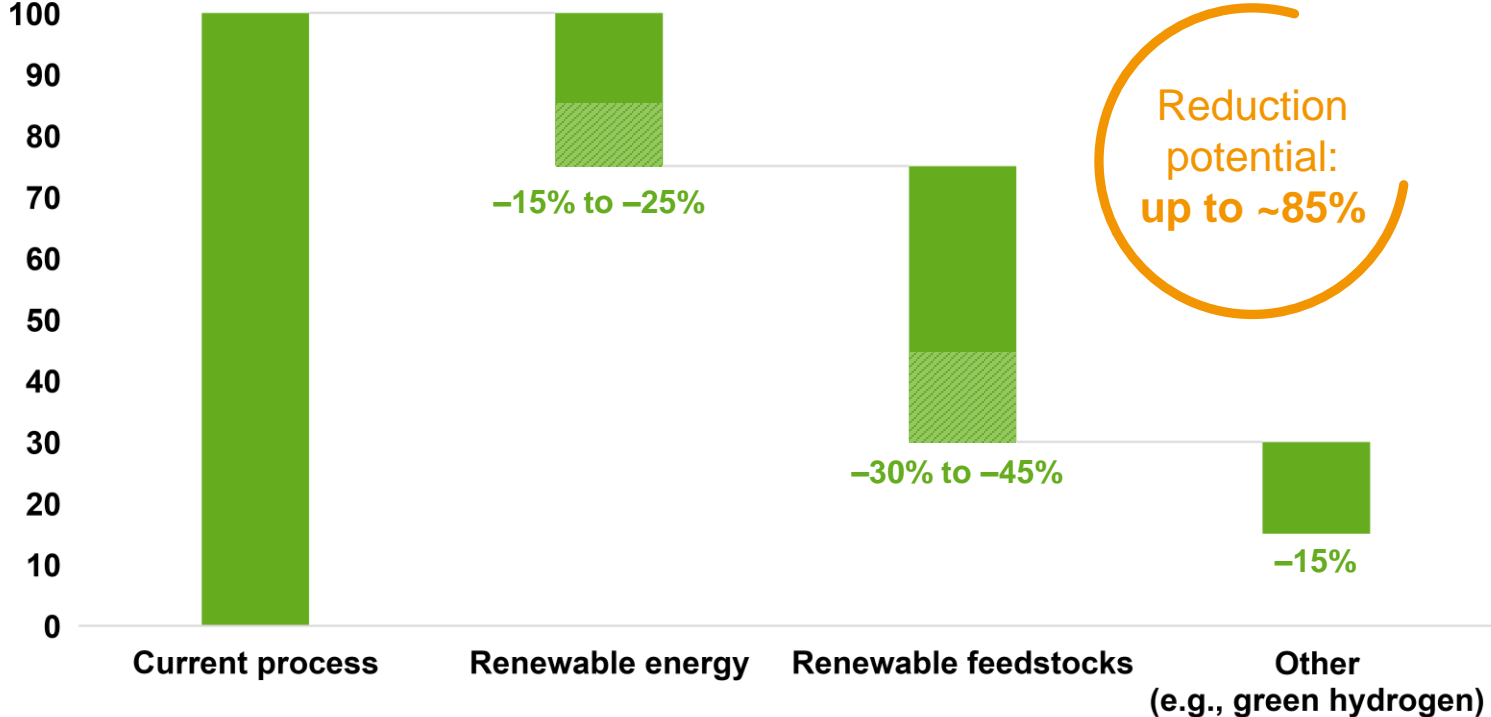


Cradle-to-gate Product Carbon Footprints for BASF’s portfolio available by end of 2021 based on process emissions, energy demand and upstream emissions

Product Carbon Footprint allows targeted discussions with customers on desired sustainability properties of products

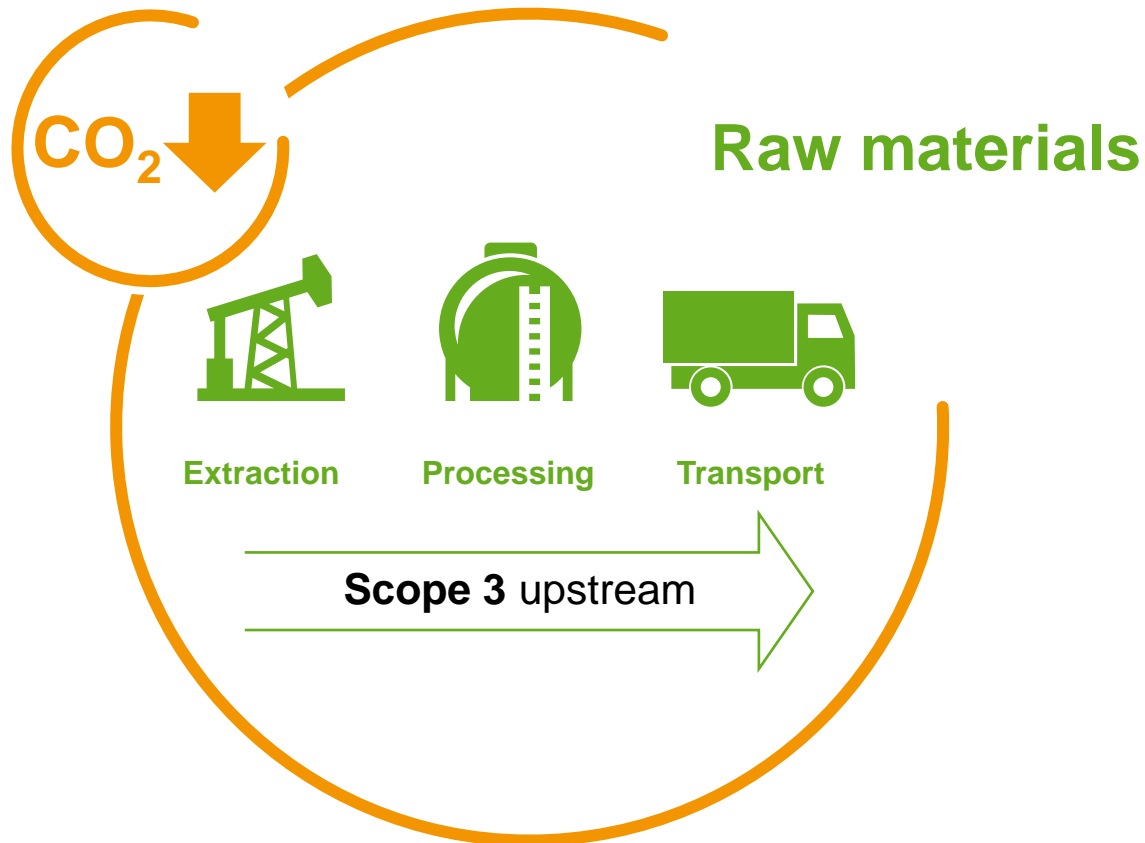
Aroma ingredient example

Cumulative reduction of CO₂ emissions, %



- Product Carbon Footprint ensures **unprecedented transparency** along the value chain
- Choice of raw materials, technology or energy supply helps **tailor product properties to customer needs**
- Cross-industry standardization required** around calculation of CO₂ footprints of products

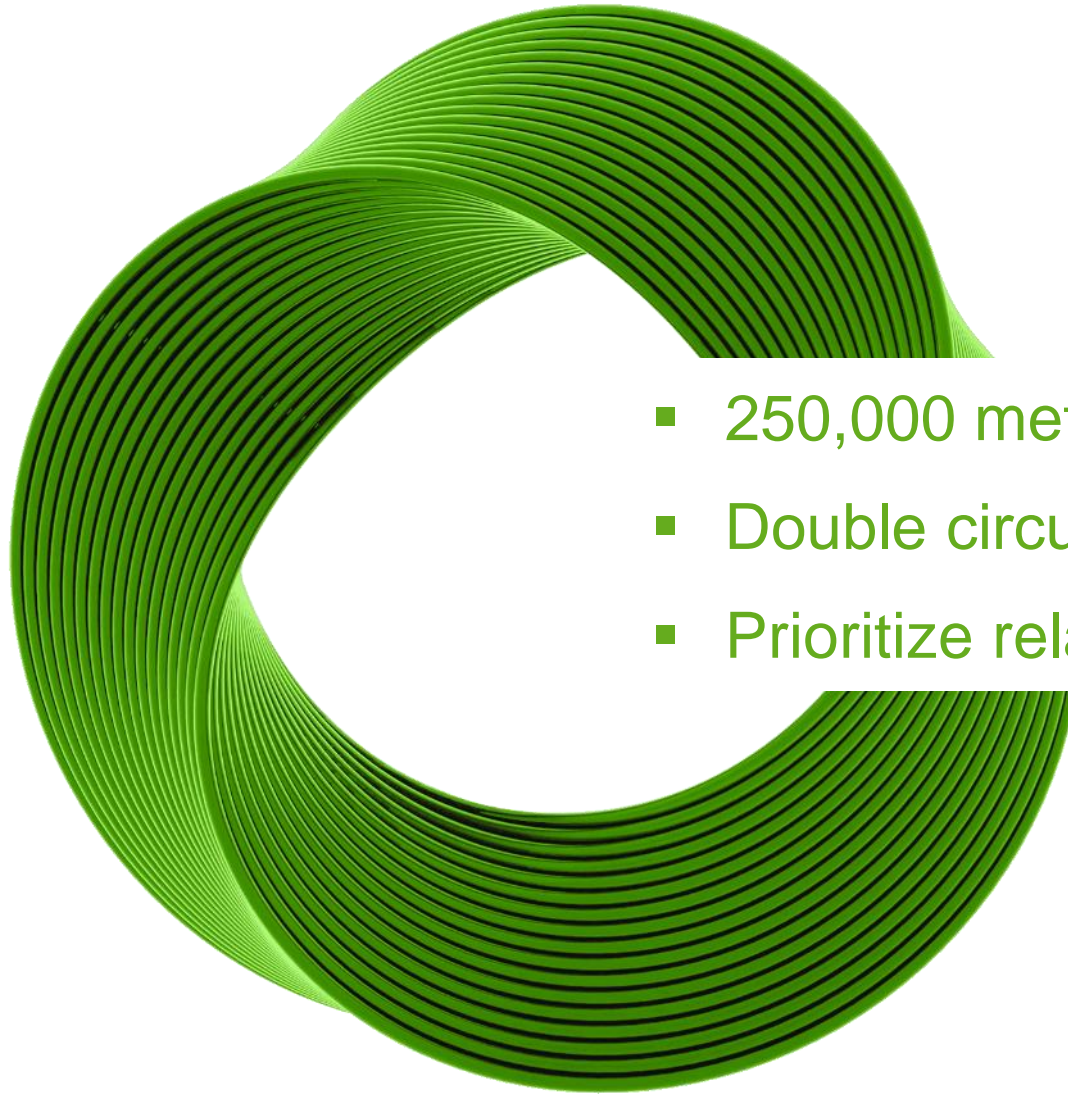
What we expect from our suppliers: Transparency on and reduction of CO₂ emissions



- BASF is establishing certified, full CO₂ tracing (Product Carbon Footprint) and needs transparency from its suppliers for this
- To support its suppliers and the industry, BASF will share its knowledge to create an international standard for CO₂ transparency tools
- BASF will work together with its suppliers and expects them to reduce the CO₂ footprint of their products

BASF will work all levers to reduce CO₂ emissions

BASF's Circular Economy Program: Targets



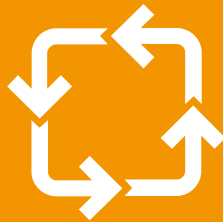
- 250,000 metric tons of circular feedstock by 2025
- Double circular sales to €17 billion by 2030
- Prioritize related capex, M&A, R&D

From a linear to a more circular economy – BASF contribution: ChemCycling™

Close the loop

ChemCycling™

- + can handle mixed plastic waste
- + produces virgin grade raw materials
- + replaces virgin fossil resources
- + CO₂ emissions prevented¹



- Investments into Quantafuel (pyrolysis of mixed plastic waste) and Pyrum (pyrolysis of end-of-life tires) and uptake supply agreements with both companies
- Agreement with New Energy for uptake of pyrolysis oil derived from end-of-life tires and for a joint feasibility study for adaption of technology to other plastic waste streams

Plastic waste and end-of-life tires are converted into liquid feedstock and fed into BASF's value chains

Linear economy



Mechanical recycling



Landfill



Incineration



Littering

ChemCycling™ – from tires to trousers



Photo: VAUDE

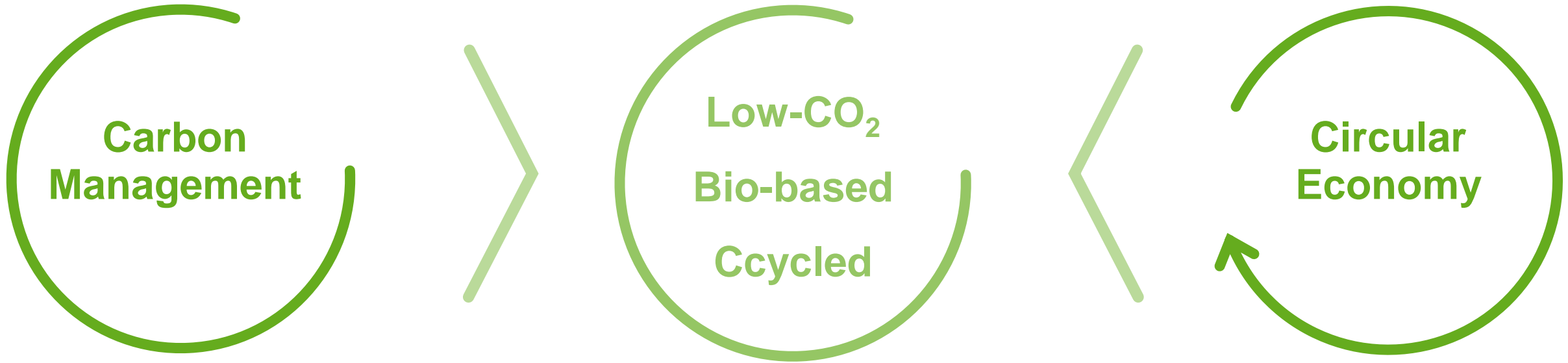
- BASF and VAUDE take a step towards sustainable textiles
- Polyamide fibers manufactured from chemically recycled tires according to a mass balance approach form the basis for robust outdoor pants
- Saving fossil raw materials whilst offering the same high quality as conventional polyamides
- Available in stores as of March 2022
- Potential for further recycled equipment, e.g., backpacks
- Further outdoor equipment producers expressed interest to cooperate with BASF

IrgaCycle™ – additives for mechanical recycling of plastics



- IrgaCycle™ improves the properties of mechanically recycled plastics for different target industries
- Novel plastic additive combinations for recyclers, compounders and converters
- Enhances processing, protects polymers from degradation during recycling, improves long-term material stability
- Tailored to enhance the quality of post-consumer and post-industrial polyolefin material for re-use in rigid and flexible applications
- Newest addition to VALERAS™, BASF's brand for its plastic additives portfolio that enables customers to achieve their sustainability goals

Transformation requires a broad technology portfolio



CO₂ avoidance potential per megawatt hour of electrical energy used (metric tons of CO₂/MWh)

- Methane pyrolysis ~0.9
- Heat pumps ~0.6-1.0
- eDrive NH₃ ~0.7
- eFurnace ~0.2
- Water electrolysis ~0.2

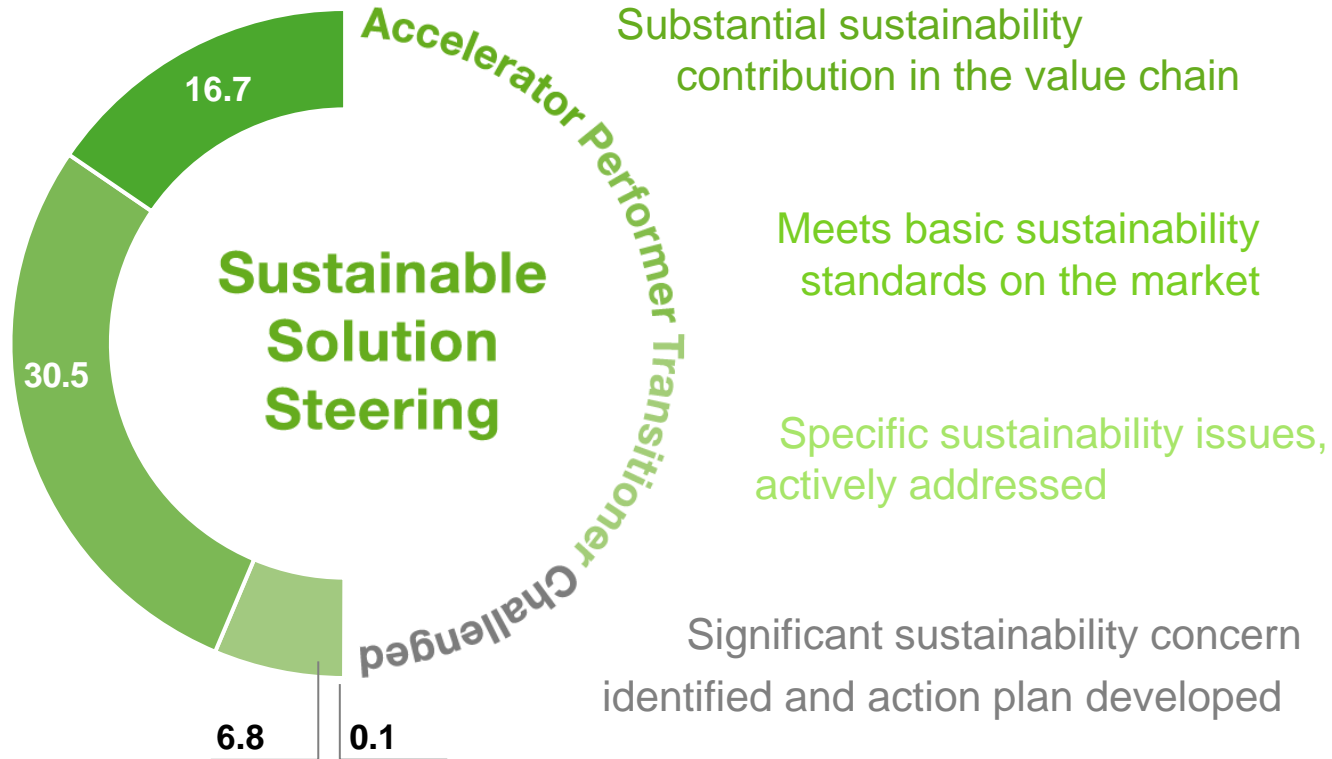
Target: We aim at doubling our circular sales to reach €17 billion by 2030

Focus on closing the loops

- Renewable-based feedstocks
- Recycled-based feedstocks
- Enable recyclability and/or biodegradability

€16.7 billion of BASF Group sales from sustainable solutions – leveraging our innovation power

Absolute sales 2020
billion €

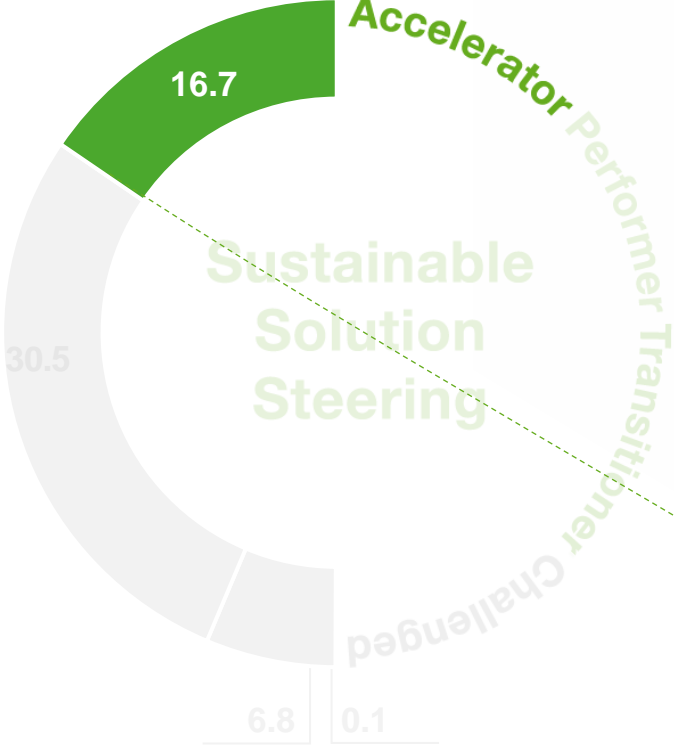


- Portfolio segmentation: >57,000 specific product applications analyzed by 2020 (€54.1 billion in sales, 98.4% of relevant portfolio¹)
- Accelerator margins on average ~6 percentage points above the rest of assessed portfolio
- Goal: €22 billion of sales with Accelerator products by 2025 (2020: €16.7 billion)
- Stronger integration in R&D pipeline, business strategies and M&A projects
- We will stop selling Challenged products within maximum five years after classification

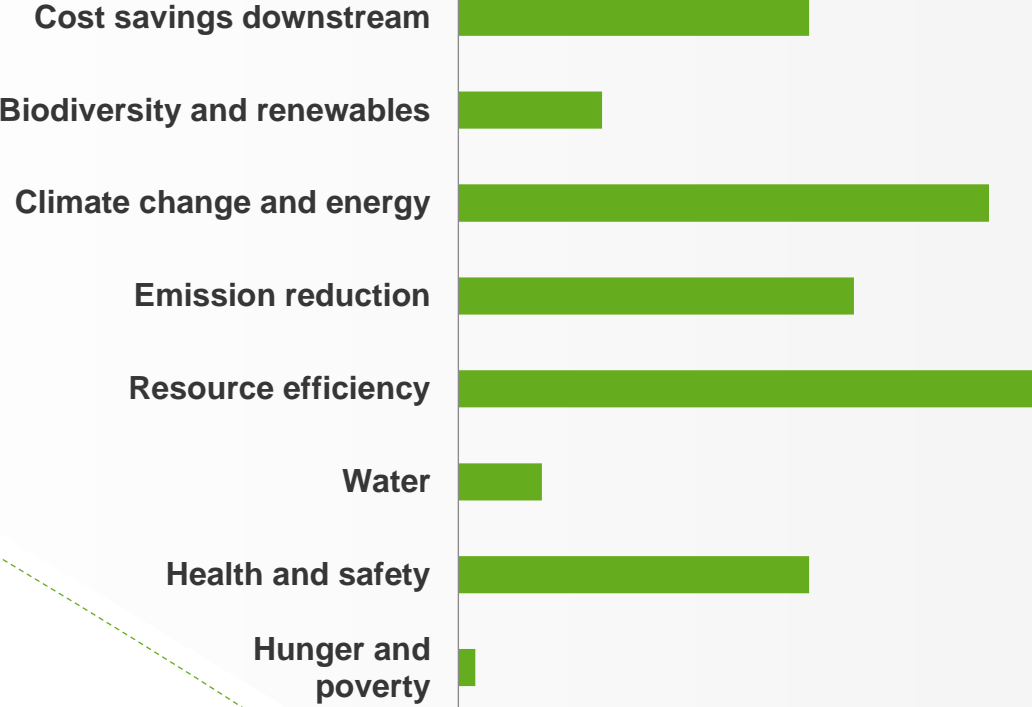
Sustainable Solution Steering

BASF's Accelerators contribute to the UN Sustainable Development Goals

Absolute sales 2020
billion €



Sales shares of contributing Accelerators (%)



Primarily addressed SDGs



(including double nominations)

Innovations for a sustainable future – Accelerator examples



Lipofructyl® Argan LS 9779 – Oil for skin and hair care



Mattex® PRO – Additive in coatings with lower emissions



Serifel® – Biological fungicide against crop diseases



Elastopir® – PIR system with good insulation properties



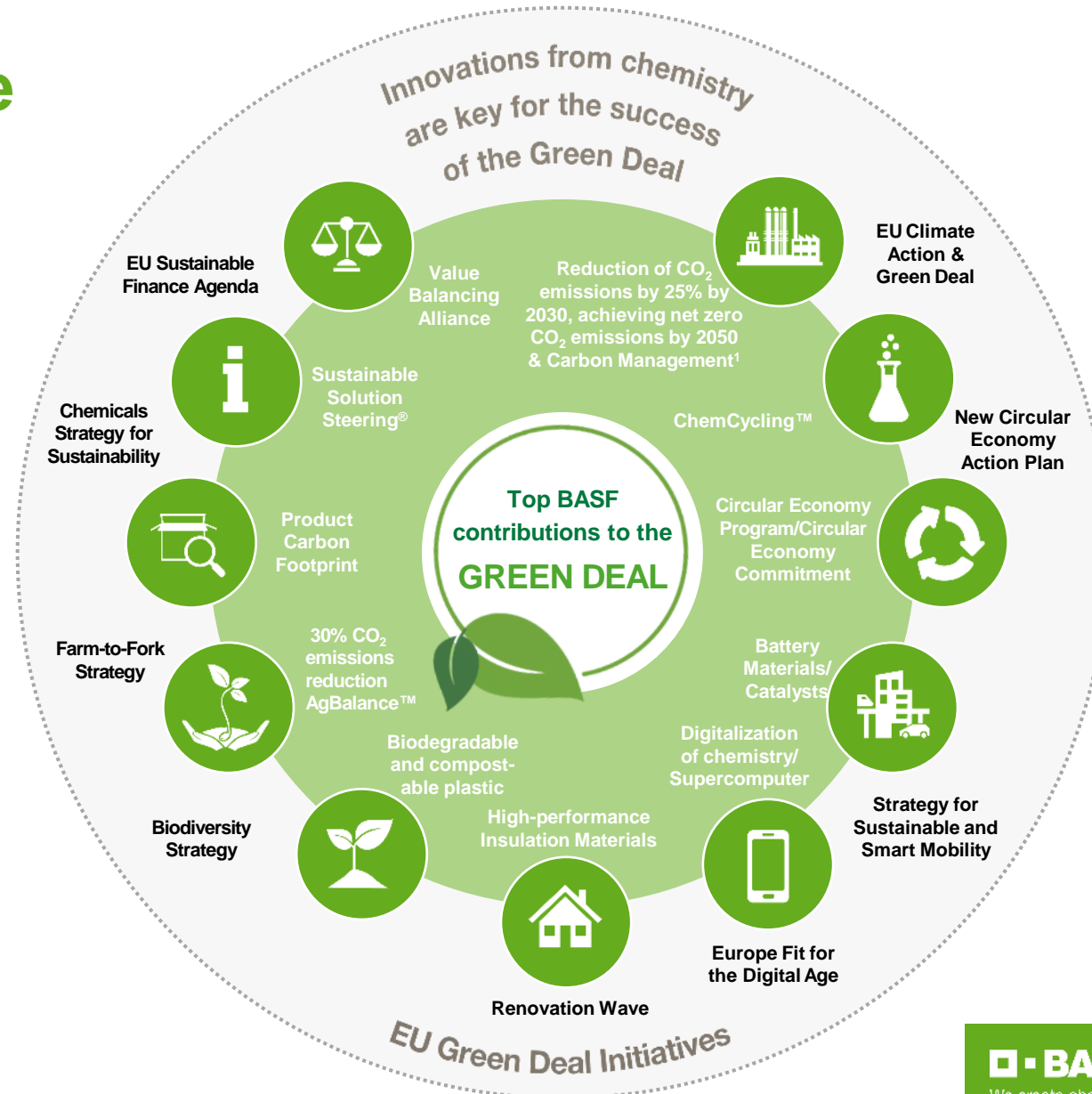
Tinuvin® NOR® 356 – Light stabilizer to reduce plastic waste



Baxxodur® EC 301 – Epoxy system for cost-competitive wind blades

The EU Green Deal from a BASF perspective

- BASF supports the objective of the Green Deal and the ambition to climate neutrality by 2050, in combination with a strong industrial policy
- Innovations and initiatives from BASF have the potential to help make the EU Green Deal come true
- A key prerequisite to realize the industrial transformation of the chemical sector is an enabling policy framework



Protecting biodiversity is a key element of our commitment to sustainability



- We published our position on Forest Protection in June 2020
- We are working on increasing supply chain sustainability, for example through our Palm Sourcing Policy

- We take into consideration preservation of biodiversity in the management of our sites
- We systematically assess sustainability aspects for expansions or constructions of sites

- We ensure our products are appropriately used by offering customer trainings
- We commit to the Responsible Care® charter of the International Council of Chemical Associations (ICCA)

Initiatives



We are engaging in dialogs with a variety of stakeholders, for example:

- the Roundtable on Sustainable Palm Oil (RSPO)
- the Alliance to End Plastic Waste (AEPW)
- the BASF FarmNetwork Sustainability
- the MataViva® Initiative

We source responsibly and strive to improve sustainability performance in the supply chain



- Goal: Cover 90% of our relevant spend¹ with sustainability evaluations by 2025 (2020: 80%), and have 80% of our suppliers improve their sustainability performance upon re-evaluation (2020: 68%)
- Supplier Code of Conduct rooted in internationally recognized standards such as the principles of the UN Global Compact and the International Labor Organization
- Engaged in more than 20 initiatives to improve sustainability performance and working conditions in the supply chain, e.g., Global Battery Alliance (GBA), Responsible Cobalt Initiative (RCI), Roundtable on Sustainable Palm Oil (RSPO)
- Founding member of the “Together for Sustainability” initiative for the joint evaluation of suppliers:
 - 4,675 online assessments and 258 audits carried out by an independent service provider for member companies in 2020
 - BASF itself is assessed and was one of the best-rated companies in 2020



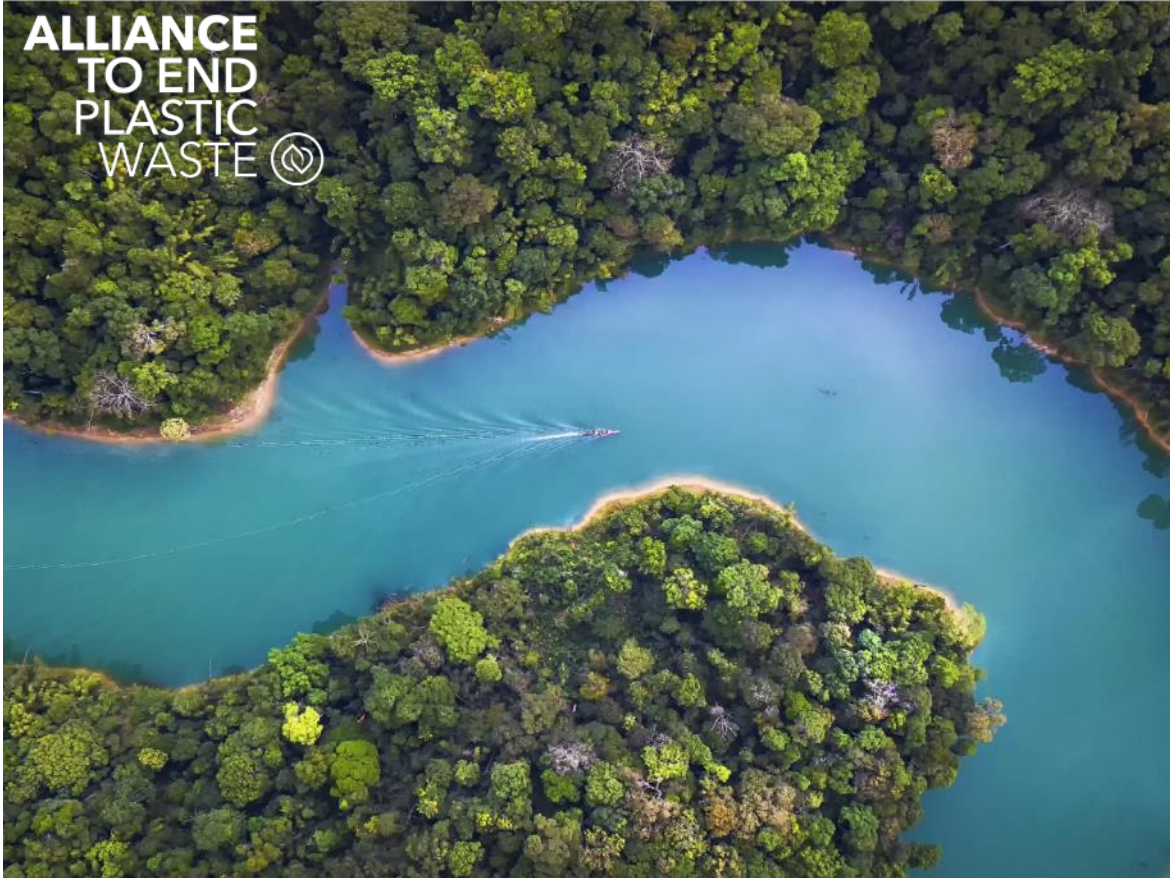
RSPO

Roundtable on Sustainable Palm Oil

¹ We understand relevant spend as procurement volumes with relevant suppliers. We define relevant suppliers as Tier 1 suppliers showing an elevated sustainability risk potential as identified by our risk matrices and our purchasers' assessments. We also use further sources of information to identify relevant suppliers such as evaluations from Together for Sustainability (TfS), a joint initiative of chemical companies for sustainable supply chains.

Alliance to End Plastic Waste (AEPW)

– take action, develop solutions and catalyze investment



- In 2019, BASF co-founded the Alliance to End Plastic Waste
- More than 65 members from entire plastics value chain and several strategic allies
- Commitment to spend US\$1.5 billion over five years for infrastructure development, innovation, education, engagement and clean-up
- Project example: Closing the Loop in Ghana
 - Working with the ASASE Foundation an NGO in the greater Accra region of Ghana
 - Helping women build and boost their own plastic recycling businesses and take ownership of recycling with profits from clearing plastic waste

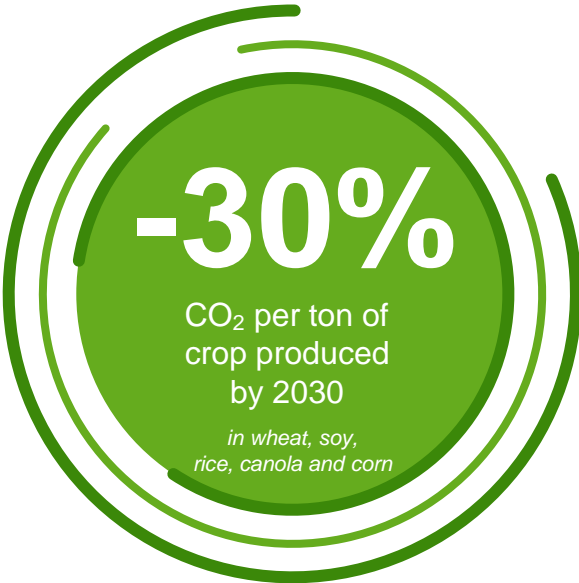
Global water stewardship – strong commitment to local water management



- Further increase of water stress areas expected worldwide (climate change, population growth and economic development)
- Growing competition among water users expected (e.g., households, agriculture, industry)
- In 2020, BASF was again included in CDP’s “Water A List” for sustainable water management
- Goal: Introduction of sustainable water management at all Verbund sites and sites in water stress areas by 2030, representing 93% of BASF’s entire water abstraction
 - Water stress areas are regions where more than 40% of available water is used by industry, household and agriculture
 - Status 2020: 46.2%

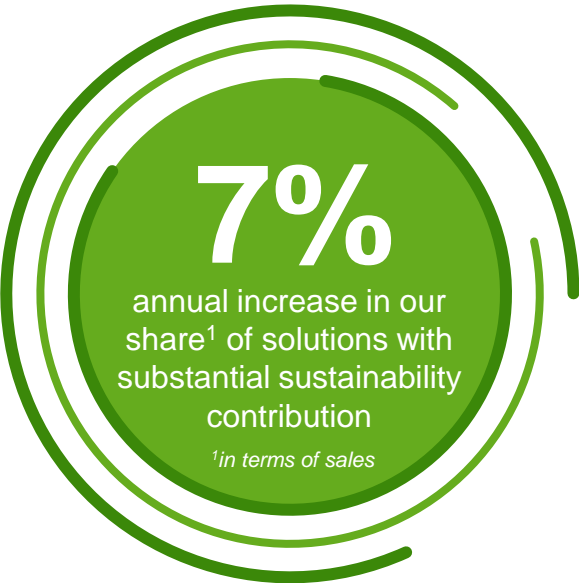
Our sustainability commitments as a leader in agriculture

Climate Smart Farming



Supporting farmers to become more **carbon efficient** and **resilient** to volatile weather conditions

Sustainable Solutions



Steering our portfolio systematically to increase the share of **sustainable solutions** we bring to farmers year by year

Digital Farming



Helping farmers to grow **profitably** and reduce their **environmental footprint**

Smart Stewardship



Striving for zero farming incidents that impact human health and the environment

Engaged employees – proud ambassadors for what BASF stands for



- BASF’s employees and their engagement are key to enable our long-term business success
- Annual goal: More than 80% of our employees feel that at BASF, they can thrive and perform at their best
- To measure the engagement, we
 - collect regular feedback of our employees
 - engage our employees in discussions on the results
 - identify improvement areas and drive follow-up activities
 - report on the current status in the BASF Report
- Global survey “Employee Voices” in 2020: 82% of all participants agreed to the statement that at BASF they can thrive and perform at their best

Value balancing alliance – consistent assessment in monetary terms of the impact of business activities on the well-being of people

Member companies



Pro-bono consultants



Policy advisor



Funding



- Founded in June 2019, BASF is a founding member of the value balancing alliance
- Standardizing accounting methodologies to assess value to society and value to business along entire value chain
- From traditional reporting of input and output (e.g., raw materials, CO₂ emissions) to impact valuation (e.g., social cost of carbon)
- Increase transparency by
 - standardizing calculations for comparable results
 - piloting in management accounting
 - making outcomes publicly available
- Ambition: Transform business from maximizing profits to optimizing value creation



Corporate Governance – Two-tier management system of BASF SE

Board of Executive Directors



- appoints the Board of Executive Directors
- monitors the Board of Executive Directors
- advises the Board of Executive Directors
- reports to Supervisory Board

6 members

appointed by the Supervisory Board

Chairman

appointed by the Supervisory Board

Supervisory Board




12 members
6 shareholder representatives elected by the Annual Shareholders' Meeting and 6 employee representatives
Chairman
elected by the Supervisory Board

- Transparent and effective separation of company management and supervision
- Reasonable level of diversity, e.g., with respect to gender:
 - Board of executive directors: 33% female
 - Supervisory Board: 33% female

We create chemistry for a sustainable future – overview on sustainability goals and KPIs¹

Effective climate protection

We want to **reduce our absolute CO₂ emissions²** by 25 percent by 2030 (development of carbon emissions compared with baseline 2018)³



Target	2020 status	SDG
≤ 16.4 million metric tons	20.8 million metric tons	

We aim to achieve **net zero CO₂ emissions²** by 2050.




Resource efficiency and safe production



Reduce worldwide **process safety incidents** per 200,000 working hours to ≤ 0.1 by 2025

Target	2020 status	SDG
≤ 0.1	0.3	 

Reduce the worldwide **lost-time injury rate** per 200,000 working hours to ≤ 0.1 by 2025





Target	2020 status	SDG
≤ 0.1	0.3	

Introduce **sustainable water management** at our production sites in water stress areas and at our Verbund sites by 2030

Target	2020 status	SDG
100%	46.2%	 


Sustainable product portfolio

Achieve **€22 billion in Accelerator sales⁴** by 2025


Target	2020 status	SDG
€22.0 billion	€16.7 billion	   

Employee engagement and diversity

Increase the proportion of **women in leadership positions** with disciplinary responsibility to **30%** by 2030



Target	2020 status	SDG
30%	24.3%	

More than **80%** of our **employees** feel that at BASF, they can **thrive and perform at their best**

Target	2020 status	SDG
> 80%	82%	

Responsible procurement

Cover **90%** of our relevant spend⁵ with **sustainability evaluations** by 2025
Have **80%** of our suppliers **improve their sustainability performance** upon re-evaluation

Target	2020 status	SDG
90%	80%	
80%	68%	

¹ Targets as published in the BASF Report 2020, CO₂ targets updated on March 26, 2021

² The goal includes Scope 1 and Scope 2 emissions. Other greenhouse gases are converted into CO₂ equivalents according to the Greenhouse Gas Protocol.

³ 2030 target compared with 1990: 60% CO₂ reduction

⁴ Products with substantial contribution to sustainability

⁵ Relevant spend; based on risk matrices, purchasers' assessments and other sources

BASF in sustainability ratings and rankings

CDP

In 2020, BASF achieved a score of “A-” in the climate category, thus attaining leadership status again. As a first-time participant, BASF achieved a score of “A-” in the forest category. BASF was included in the “Water A list” of leading companies for sustainable water management.



Sustainalytics

BASF ranks among the top 10% of performers in diversified chemicals. The raters positively highlighted that sustainability targets are reflected in board compensation, underlining an overall strong management of ESG issues.



MSCI ESG Research

In 2021, BASF was rated “A.” The analysts highlighted that BASF is present in clean tech markets and has a robust carbon mitigation strategy.



FTSE4Good Global Index

BASF was included again in the FTSE4Good Global Index 2021, ranked best in class in Basic Materials as well as in the sub-sector Commodity Chemicals.



2021 UN Global Compact

BASF was recognized as a Global Compact LEAD company for demonstrating ongoing commitment to the UN Global Compact and its Ten Principles for responsible business and the Sustainable Development Goals.





We create chemistry