

Langfristige Energieversorgungskonzepte als Schlüsselement beim Klimaschutz in der chemischen Industrie

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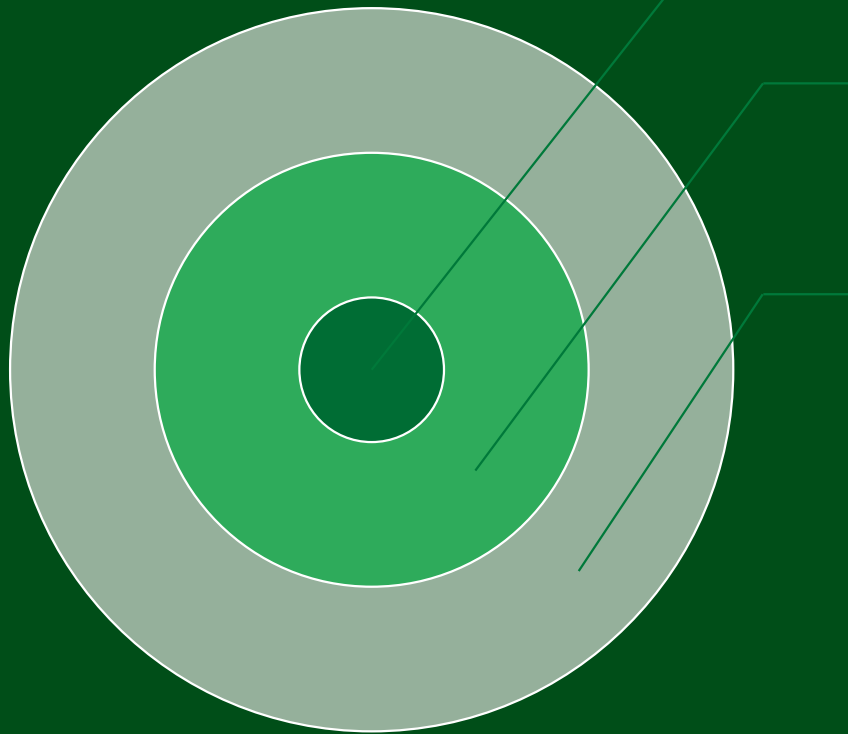




Our purpose:

We create
chemistry for a
sustainable future

Agenda



Why?

What?

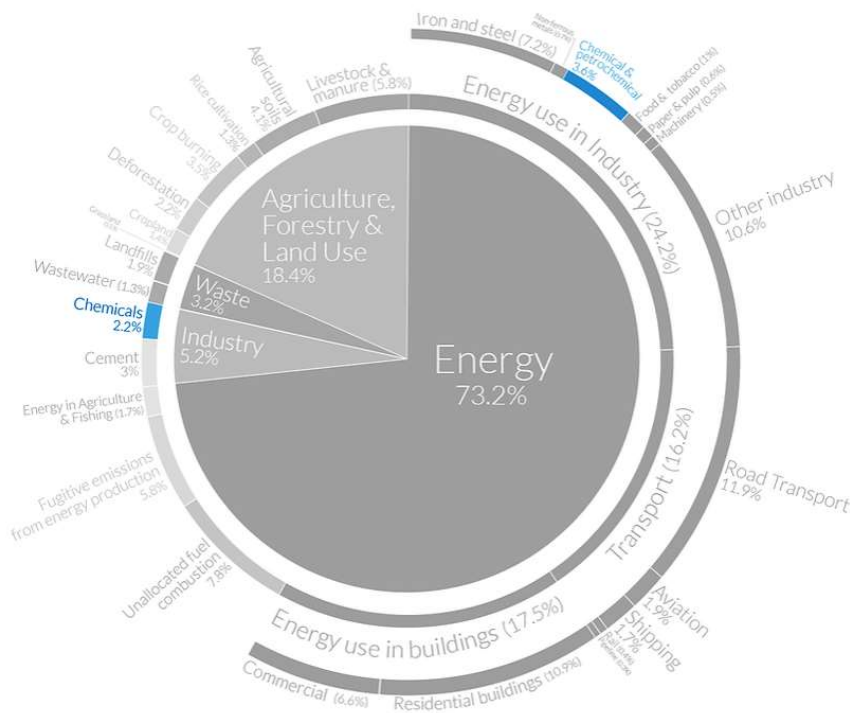
How?

The Why



Does the carbon footprint of chemicals matter?

With 6% of total contribution, the chemical industry is a large GHG emitter. In addition, chemical products impact nearly all value chains



“ Over **95% of all manufactured goods rely on some form of industrial chemical process.** Most industry sectors make use of chemical products, from energy generation and transportation, to information and communication technology (ICT) and construction. ”

Source: 1 Hanna Ritchie, 2020 - Sector by sector: where do global greenhouse gas emissions come from? Chemical sector highlighted; 2 ICCA, 2019, The Global Chemical Industry: Catalyzing Growth and Addressing Our World's Sustainability Challenges

Responsibility is ambition

Primary energy demand of BASF in 2021, specific GHG emissions

Additional key indicators for energy and climate protection in BASF operations

	2021	2020	2018 (baseline)
Specific greenhouse gas emissions ^a (metric tons of CO ₂ equivalents per metric ton of sales product ^b)	0.564	0.639	0.577
Primary energy demand ^c (million MWh)	57.627	60.256	60.586
Energy efficiency (kilograms of sales product ^b per MWh)	621	540	626

a Scope 1 and Scope 2 (market-based) according to the GHG Protocol, excluding emissions from the generation of steam and electricity for sale to third parties, including offsetting

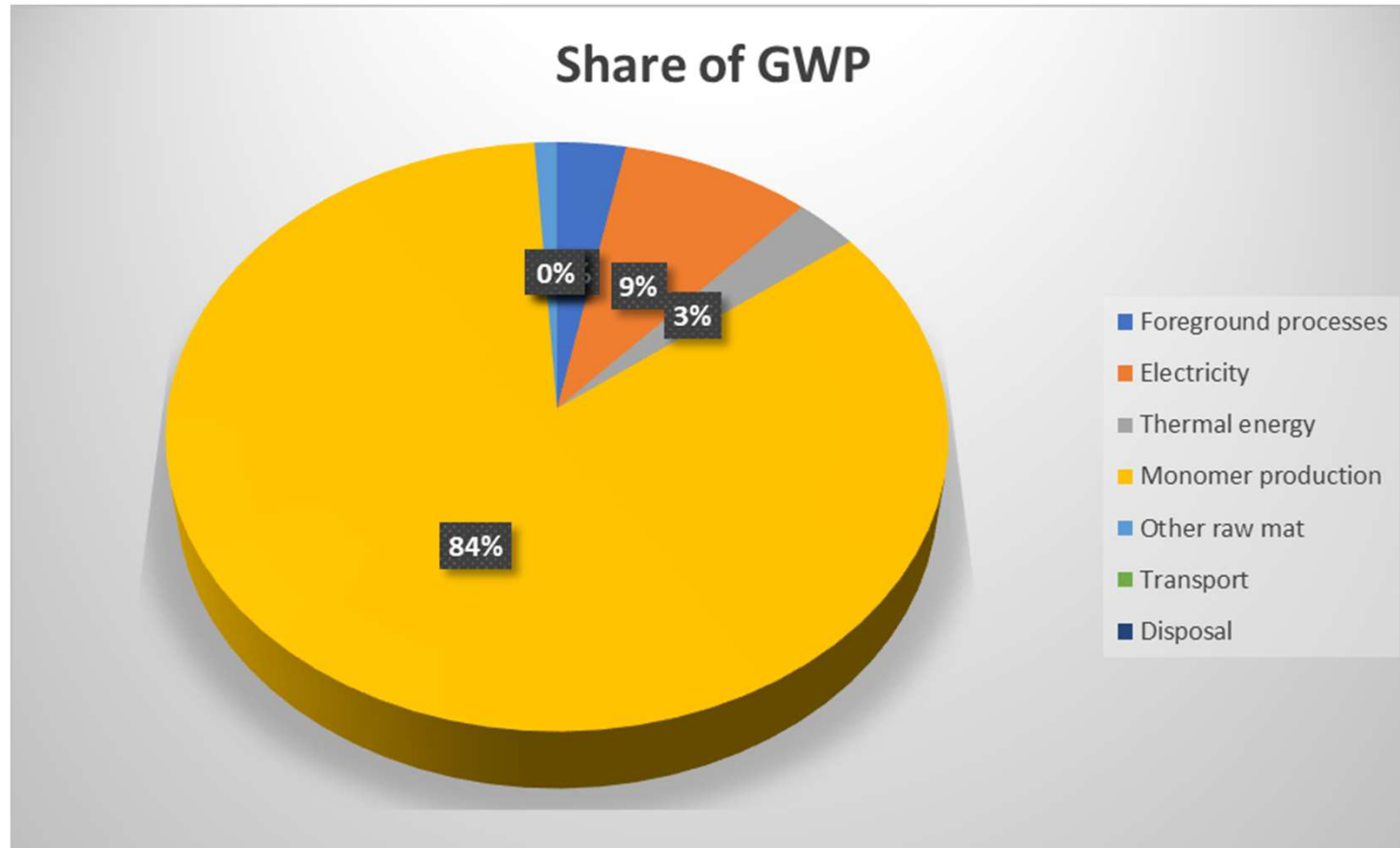
b Sales product volumes include sales between BASF Group companies; merchandise is not taken into account.

c Primary energy used in BASF's plants as well as in the plants of our energy suppliers to cover energy demand for production processes
Purchased renewable energy has a primary energy conversion efficiency rate of 100%.

Example

Product Carbon Footprints – Polypropylene from Plastics Europe

Monomer production is by far the most important contribution



PCF: 1.6 kg CO₂/kg

Monomer production includes mainly oil and gas as fossil resources

Why

There is an urgent need for an efficient way to gain transparency in carbon footprints and for a level playing field



The entire industry has a responsibility in contributing to **curbing climate change**



Customers along the **value chain** ask for carbon footprint **disclosures** and **reduction** commitments



Authorities are announcing more **restrictive regulations**, and investors look for **better sustainability** disclosures

But...



How to **steer the product portfolio** without the required **transparency** on carbon footprint at product level (Product Carbon Footprint, PCF)?



How to effectively engage with partners in the value chain without a common and consistent **standard** in determining PCFs?



How to determine PCFs of complex portfolios **at scale**, without recurring to a costly ad-hoc Life-cycle Assessment consulting approach, if no commercial software solution is on the market?

The What



Responsibility is ambition

Our way to net zero 2050

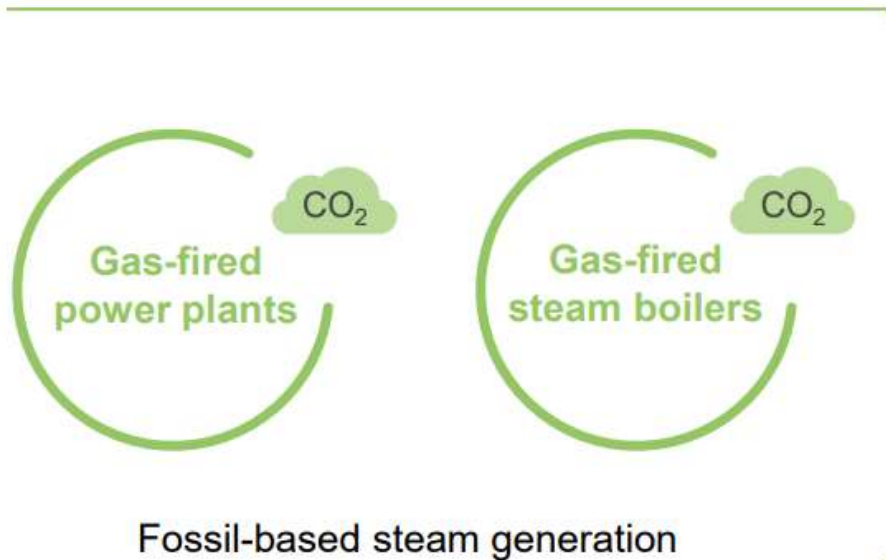
- We are a **key enabler** in the net zero transformation of base chemicals and downstream value chains
- Globally, we want to reduce our absolute CO₂ emissions **by 25% by 2030 compared with 2018**
- This means that, **compared with 1990**, we aim to reduce our global **CO₂ emissions by 60% by 2030**
- We aim to achieve **net zero CO₂ emissions at BASF by 2050**
- We are a **front-runner** in offering customers a portfolio of **products with lower carbon footprints** to enable their decarbonization



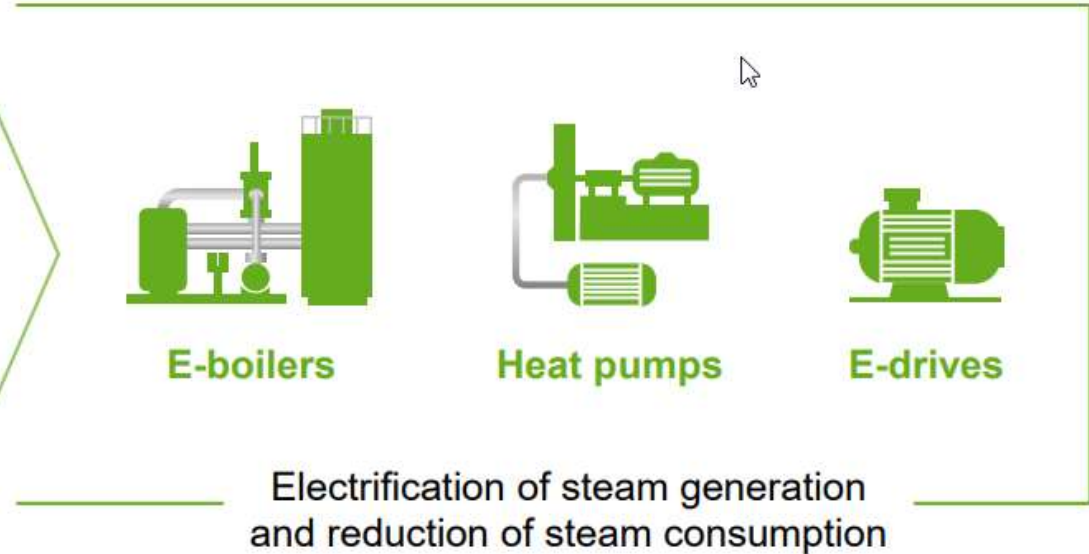
High potential from changing to power-to-steam allows decoupling from electricity supply



Current situation

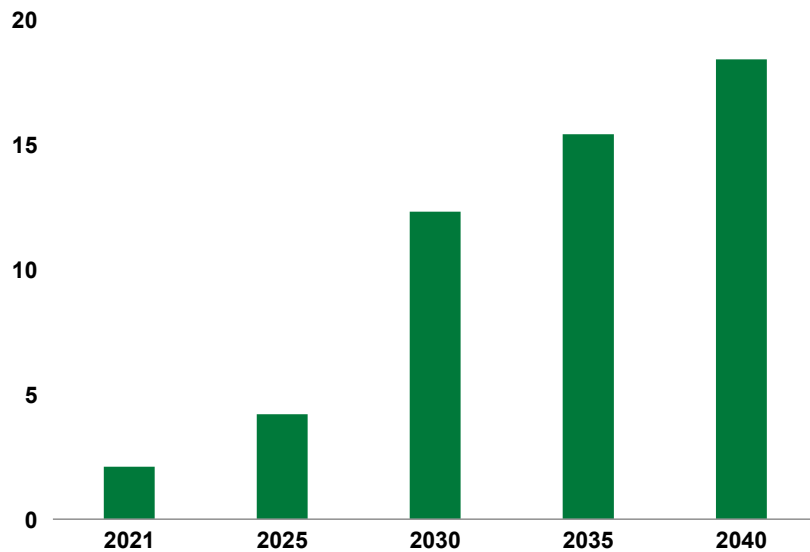


Future situation



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

BASF's green power demand for Europe
(terawatt hour per year)



Invest in own assets

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



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

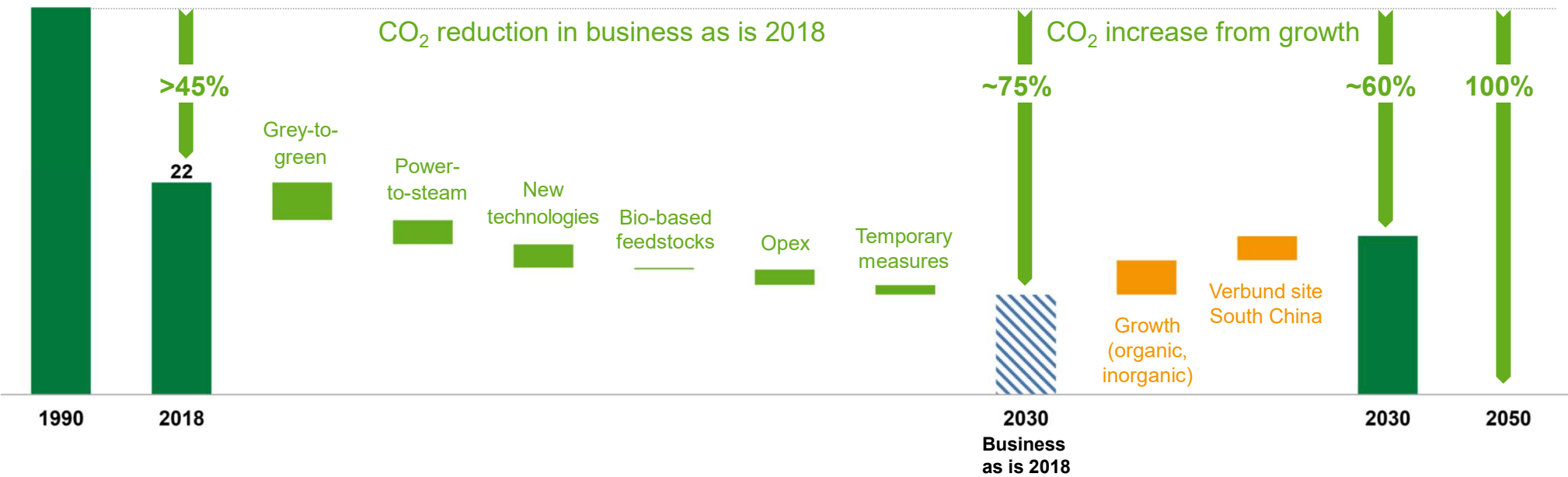
We will combine both pillars to one diversified portfolio, taking into account costs, flexibility and availability

The How

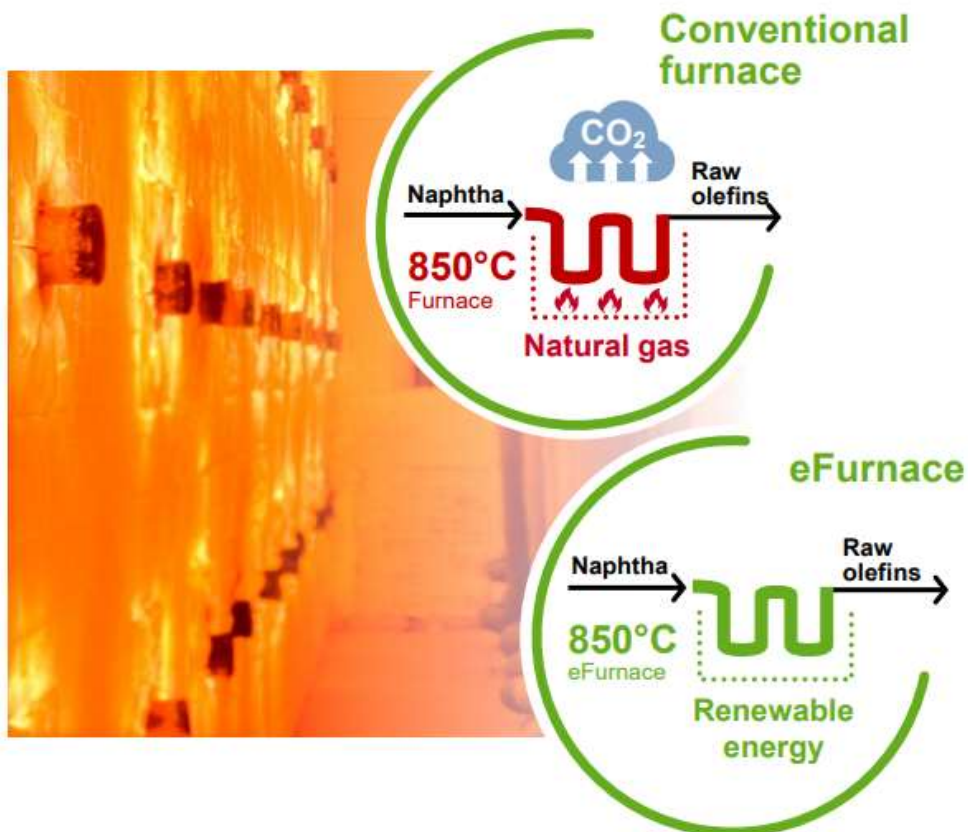


Our path to reduce BASF emissions from 1990 to 2050

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

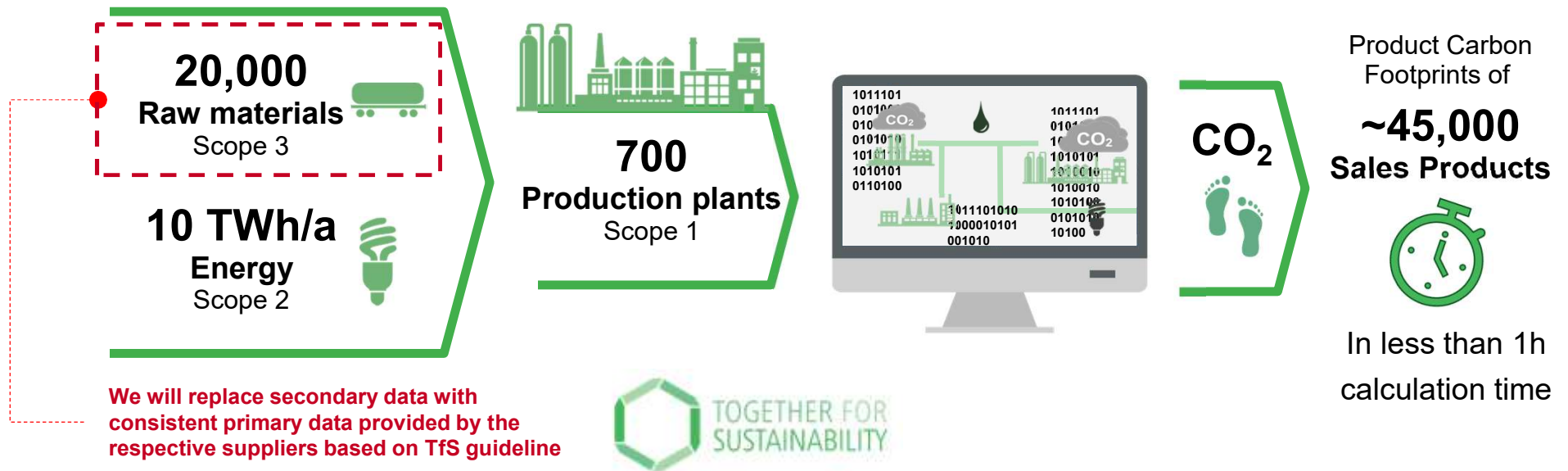


Preparations for the world's first electrically heated steam cracker furnace on track



- Goal is to scale up electrically heated steam cracker furnace concepts in **cooperation with Linde and SABIC**
- **Application for funding submitted** to Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection
- Startup of the **pilot plant planned for 2023** subject to positive public funding decision

Strategic CO₂ Transparency Tool (SCOTT): Assessing and steering complex product portfolios from carbon emission perspective



We are ready for the next level in our transformation – sustainable growth with products with reduced carbon footprints

- The market for products with reduced carbon footprints is expected to **grow strongly**
- BASF prepares to offer **net-zero products at scale calculated with a certified digital solution** and expects that the market will be short by 2030
- At BASF's integrated sites, **absolute CO₂ emissions can be reduced significantly** with a limited number of measures
- The scale of our Verbund sites allows **lower specific capex for CO₂ reduction**
- This will translate into affordable net-zero and low-PCF products to meet **increasing customer demand**

BASF's transformation provides the basis for future profitable growth

Questions? Discussion!





We create chemistry