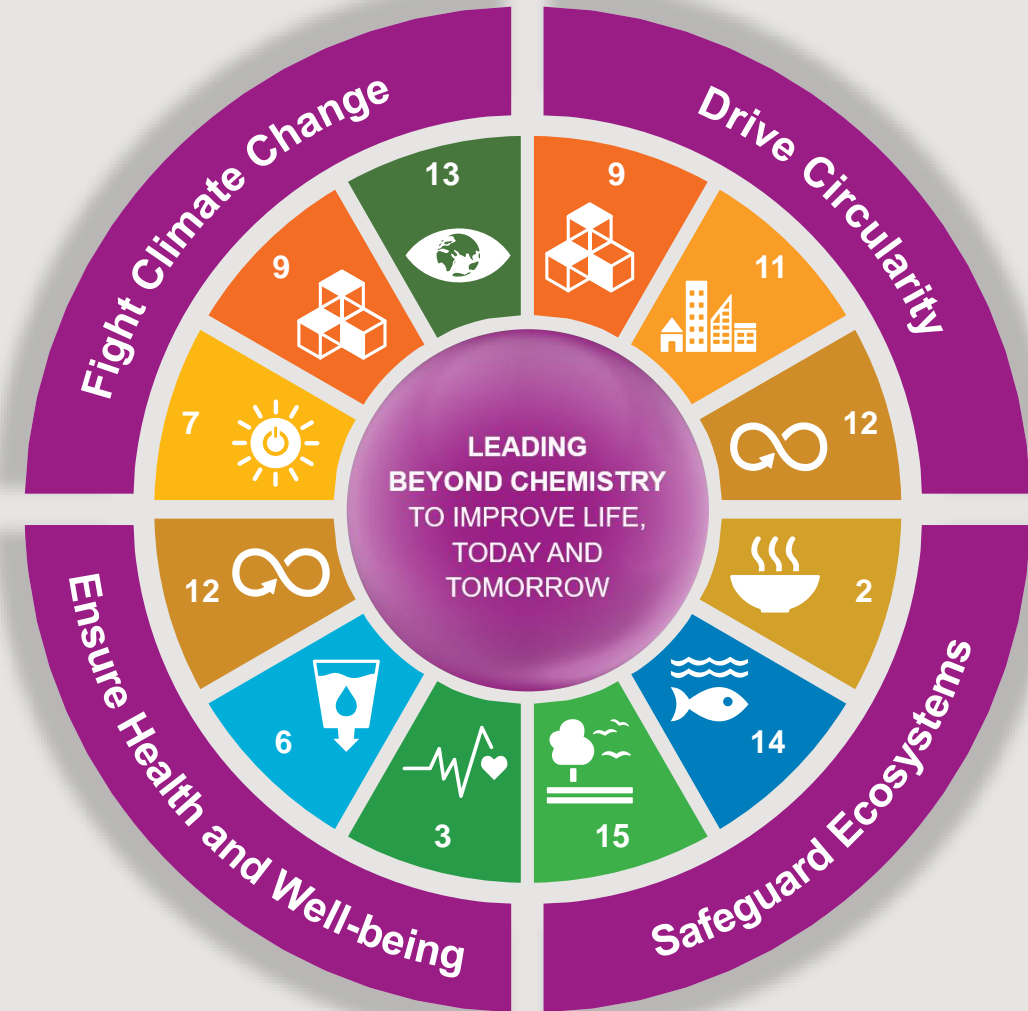


# To improve life, today and tomorrow.

Capital Markets Day  
May 11, 2022

Thomas Wessel, CHRO

Next Generation Sustainability



# Sustainability as backbone of Evonik's purpose and strategy

## Setting the frame

### Sustainability is an integral part of our purpose

LEADING  
BEYOND CHEMISTRY  
TO IMPROVE LIFE,  
TODAY AND  
TOMORROW

"We see profitable growth and assuming responsibility as **two sides of the same coin.**"

### Key growth driver...

#### Our Handprint



"Sustainability is a key growth driver and the cornerstone of our product portfolio, our investments and our innovation management."

### ...and saving resources

#### Our Footprint



"We take responsibility by caring about our resources."

### Core elements of our sustainability approach

1 Evonik fully integrates sustainability in its **Strategic Management Process**



2 Evonik intends to **increase the portfolio share** of products with **sustainability benefits**



3 Evonik is committed to foresighted **resource management**



4 Evonik with high standards for **governance** and continuous **improvement of its reporting**



# Sustainability as backbone of Evonik's purpose and strategy

## Table of contents

---

### 1. Full integration into Strategic Management Process



### 2. Increase the portfolio share of products with sustainability benefits



### 3. Committed to foresighted resource management



### 4. Setting high standards for governance

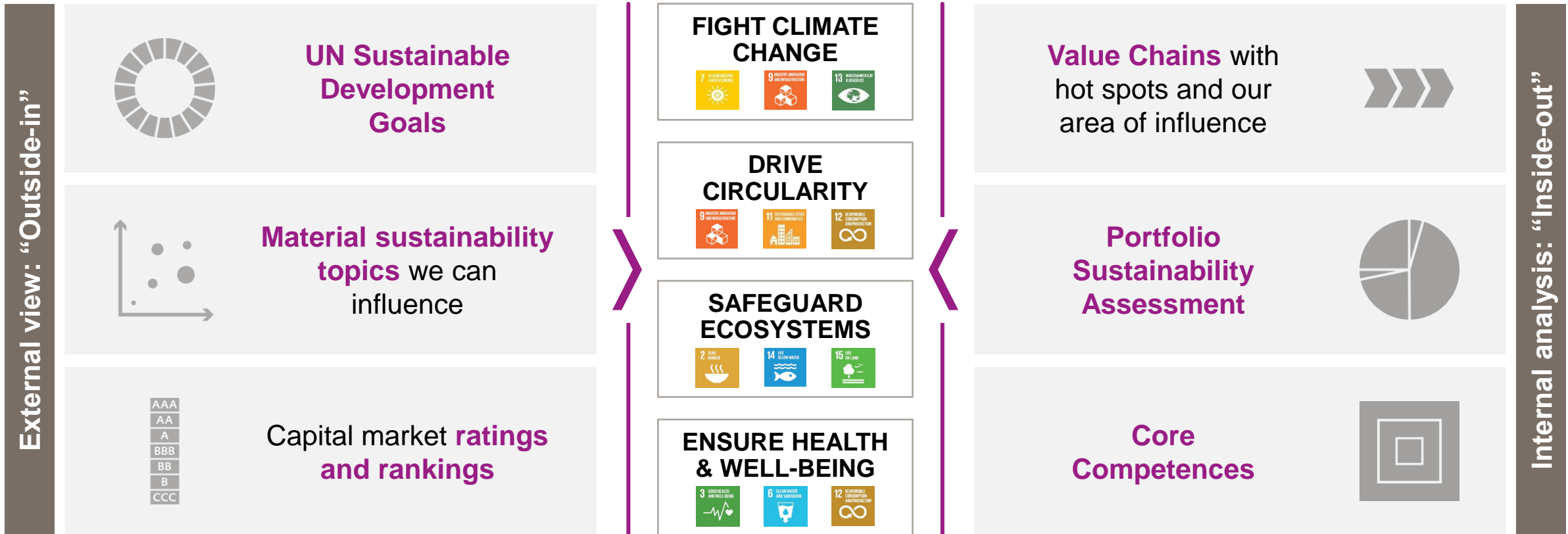


# Our Sustainability Focus Areas defining footprint & handprint measures

## Result of external views and Evonik portfolio and competencies



### Our Sustainability Focus Areas



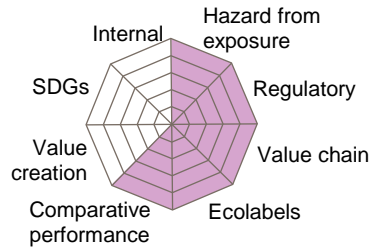
# Sustainability fully integrated in corporate strategy

## PSA and Emission Data Cube: core tools for strategic management process



### “Portfolio Sustainability Analysis” (PSA)

Assessing products vs. market signals



#### Categorization of product portfolio

- >500 PARC<sup>1</sup>s analyzed
- Classification into 5 product sustainability clusters with ranking from C-- to A++

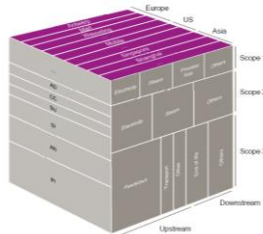
### Outcomes for Strategic Management Process

- Portfolio circle with sustainability clusters, to be aligned with strategic roles of product groups
- Portfolio guidelines for product and innovation steering



### “Emissions Data Cube” (Evonik GHG summary)

Emissions' analysis



#### 3-dimensional emission data

- By business lines and divisions
- By type: scope 1-3 emissions, up- & downstream
- By site and region

- Targets considered in asset strategy and accounted for in resource planning
- Simulation of scenarios in all dimensions (e.g. portfolio moves, regional choices)

Portfolio management

Innovation management

Capital allocation

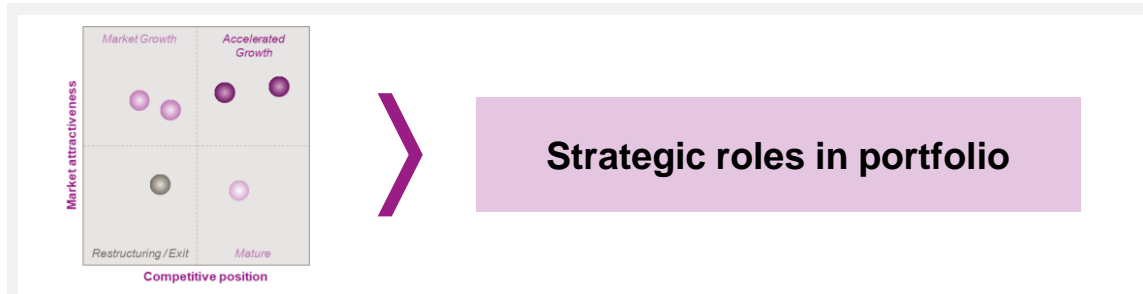
1. PARC: product-application-region combinations

# Portfolio management: Adding sustainability as integral dimension

## Alignment of sustainability clusters and strategic roles in strategy dialogues

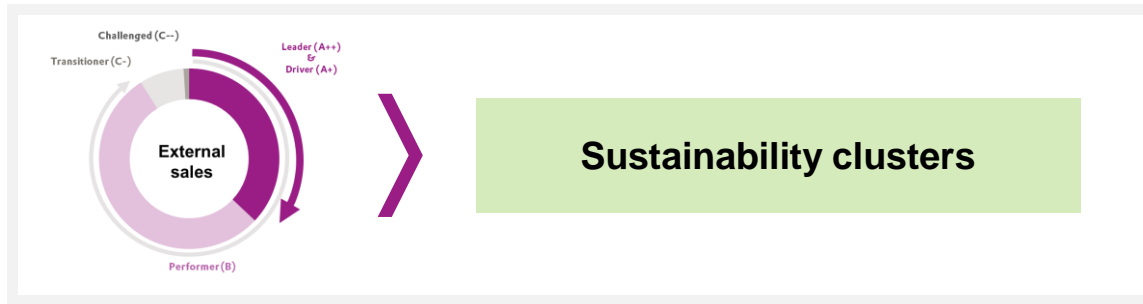


### Bringing together two approaches



### Traditional strategy matrix

### “Portfolio Sustainability Analysis”



### To derive new strategic actions

Sustainability clusters	Leader				
	Driver				
	Performer				
	Transitioner				
	Challenged				
		Restructuring	Mature	Market Growth	Accelerated Growth
Strategic roles in portfolio					

# Sustainability as backbone of Evonik's purpose and strategy

## Table of contents

---

1. Full integration into Strategic Management Process



**2. Increase the portfolio share of products with sustainability benefits**



3. Committed to foresighted resource management



4. Setting high standards for governance

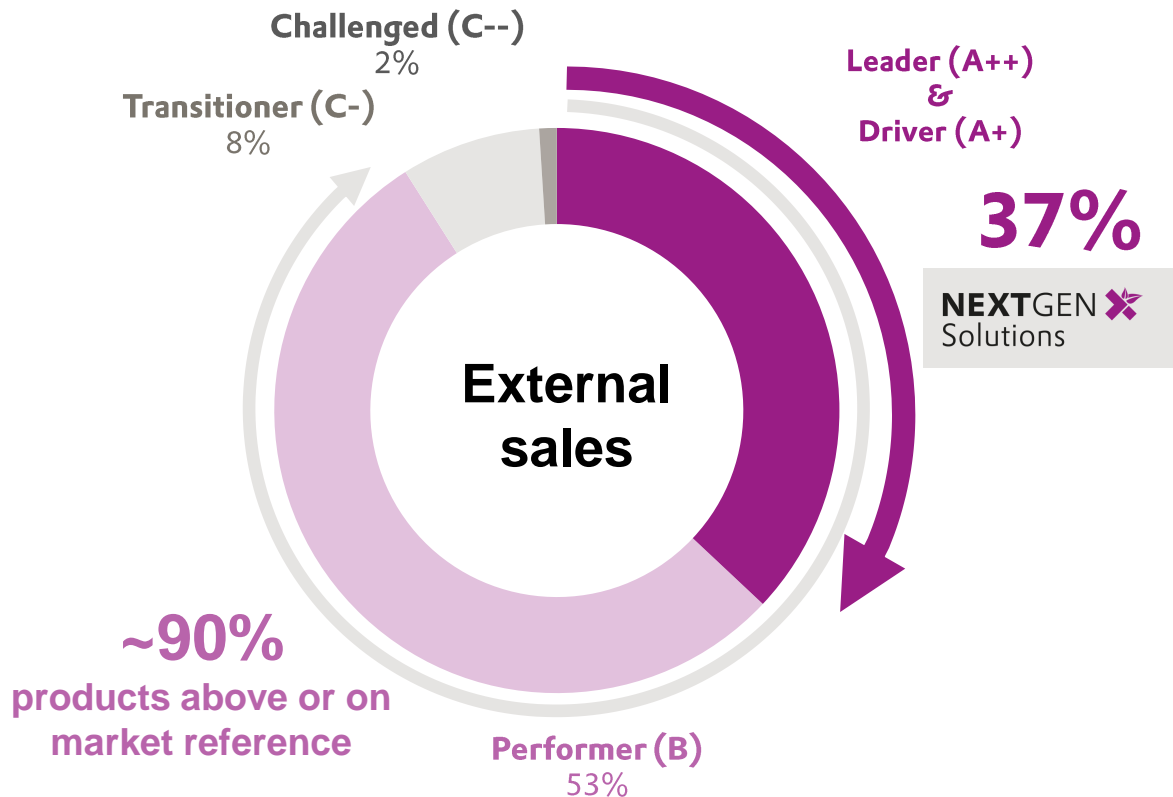


# Handprint: “Next Generation Solutions”

## 37% of Evonik’s portfolio with superior sustainability benefits



### Result of PSA analysis



### Best-in-class products in Evonik’s portfolio which...

...deliver **above-average growth**

...address **increasing customer demand** for sustainable solutions

**NEXTGEN**   
Solutions

...deliver **superior sustainability benefits** to our customers

NGS: “Next Generation Solutions” include “Leader” (A++) and “Driver” (A+) products and solutions

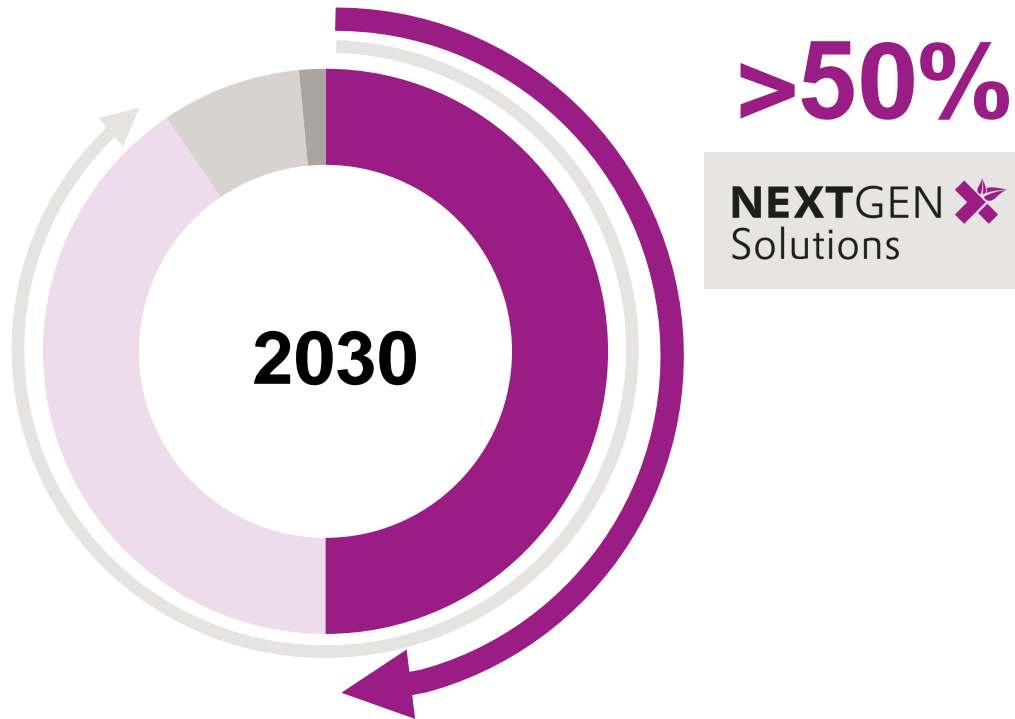


# Handprint: “Next Generation Solutions” to grow beyond 50% by 2030

## Ambitious new sales share target to be achieved through three levers



### Increase “Next Generation Solutions”



### Three levers to increase the share of NGS

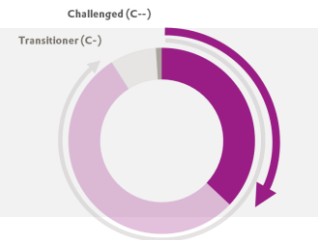
Existing “Next Generation Solutions” with **superior sales growth rates**



New sales from **innovations** becoming “Next Generation Solutions”



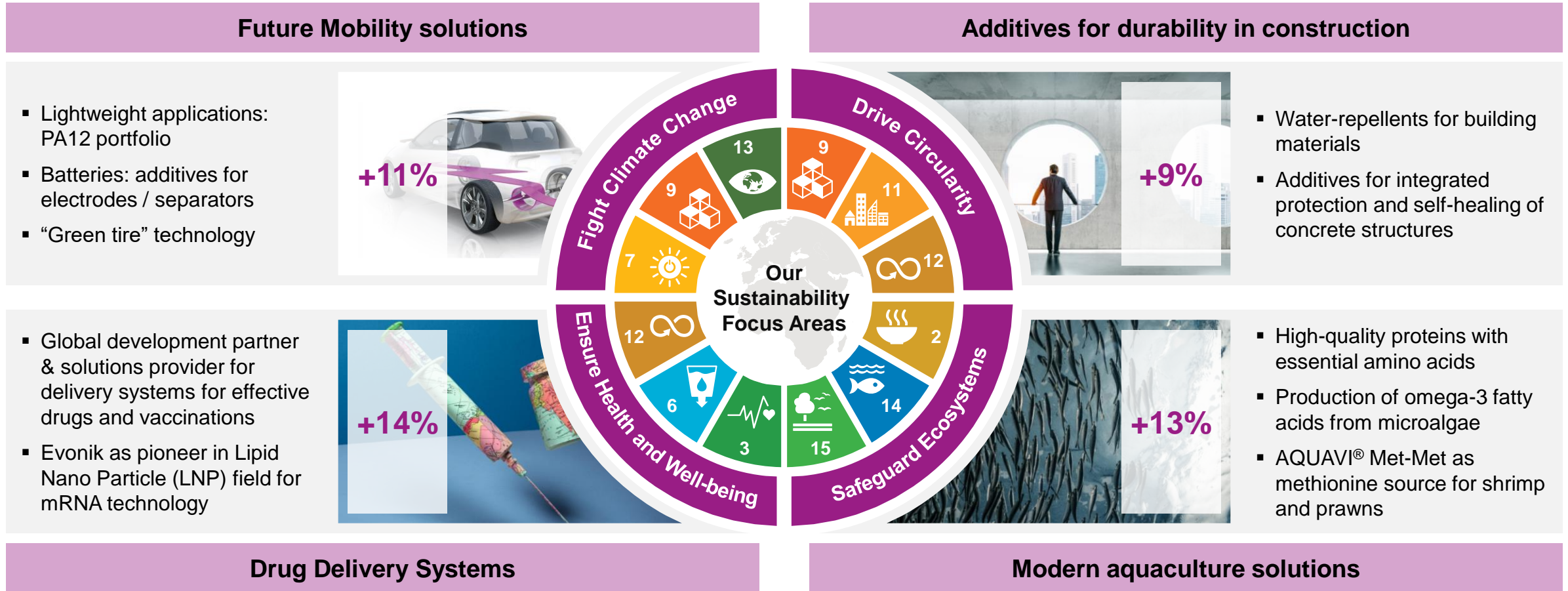
“**Challenged**” and “**Transitioner**” products exiting or with new formulations



NGS: “Next Generation Solutions” include “Leader” (A++) and “Driver” (A+) products and solutions

# Above-average growth of existing “Next Generation Solutions”

## Selected examples addressing our four Sustainability Focus Areas



% values: Target CAGR 2021-2030 defined in Strategy Dialogue

# Sustainability as backbone of Evonik's purpose and strategy

## Table of contents

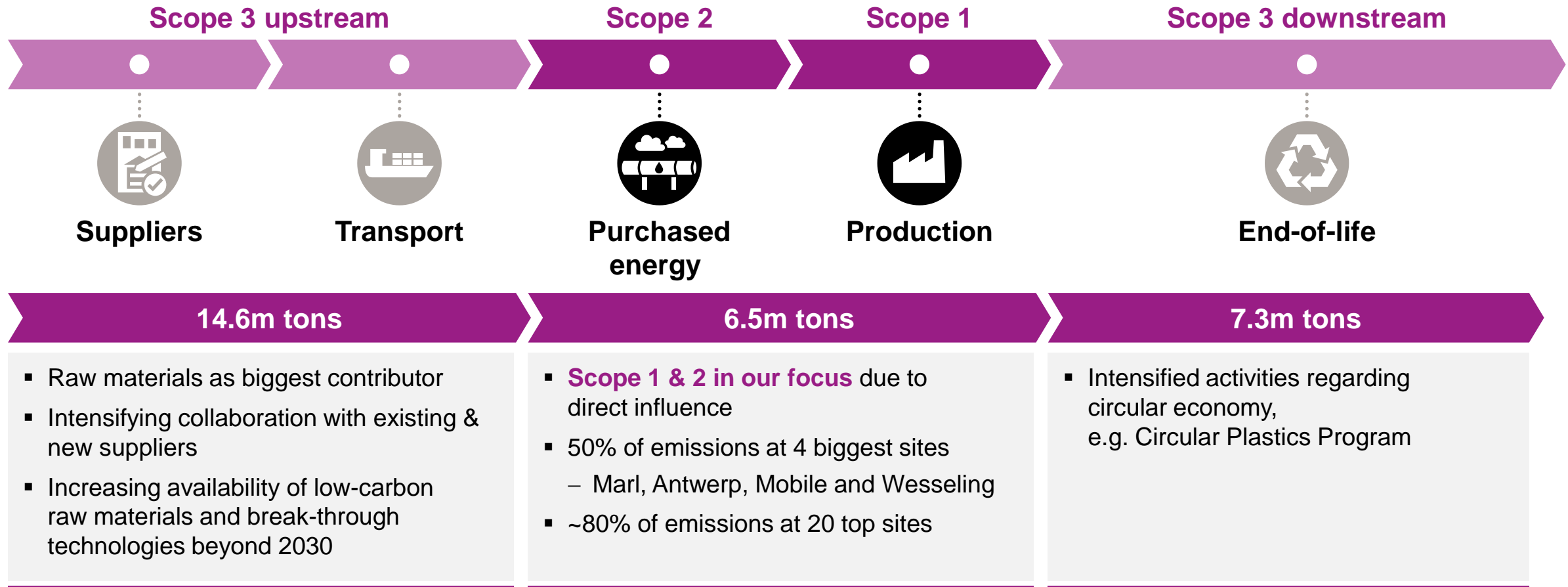
---

1. Full integration into Strategic Management Process
2. Increase the portfolio share of products with sustainability benefits
- 3. Committed to foresighted resource management**
4. Setting high standards for governance



# Footprint: Evonik Carbon Footprint 2021

Focus on Scope 1&2, intensifying efforts on Scope 3



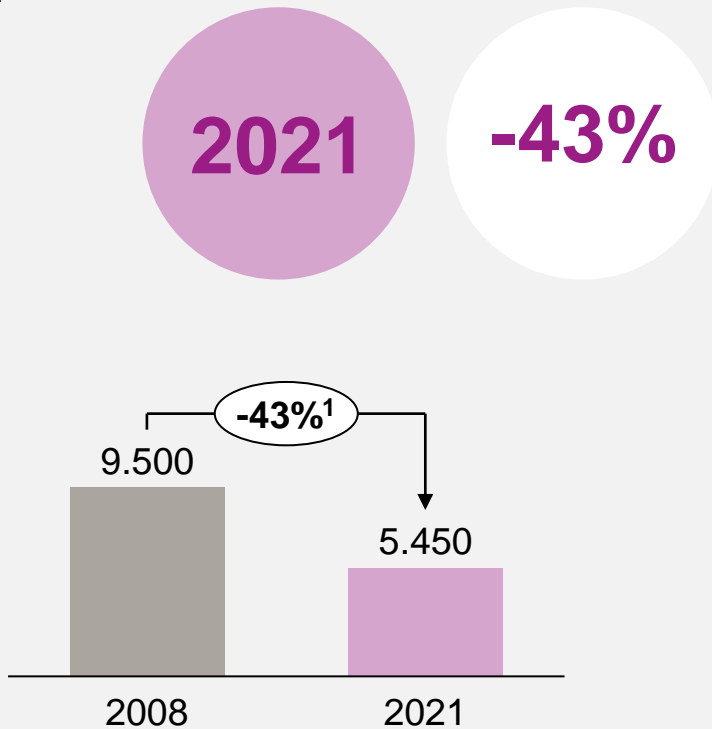
# Our commitments to reaching the Paris Climate Agreement

## Evonik will be climate neutral by 2050. Committed to SBTi.



### Achievements on GHG emissions' reduction

#### Scope 1&2



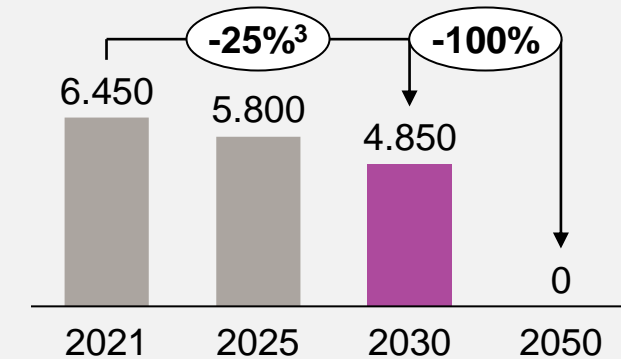
### New targets for GHG emissions scope 1&2

**Scope 1&2**  
Well below 2°C<sup>2</sup>

**Scope 3**  
Committed<sup>2</sup>



**2030** **-25%**



**2050** **-100%**

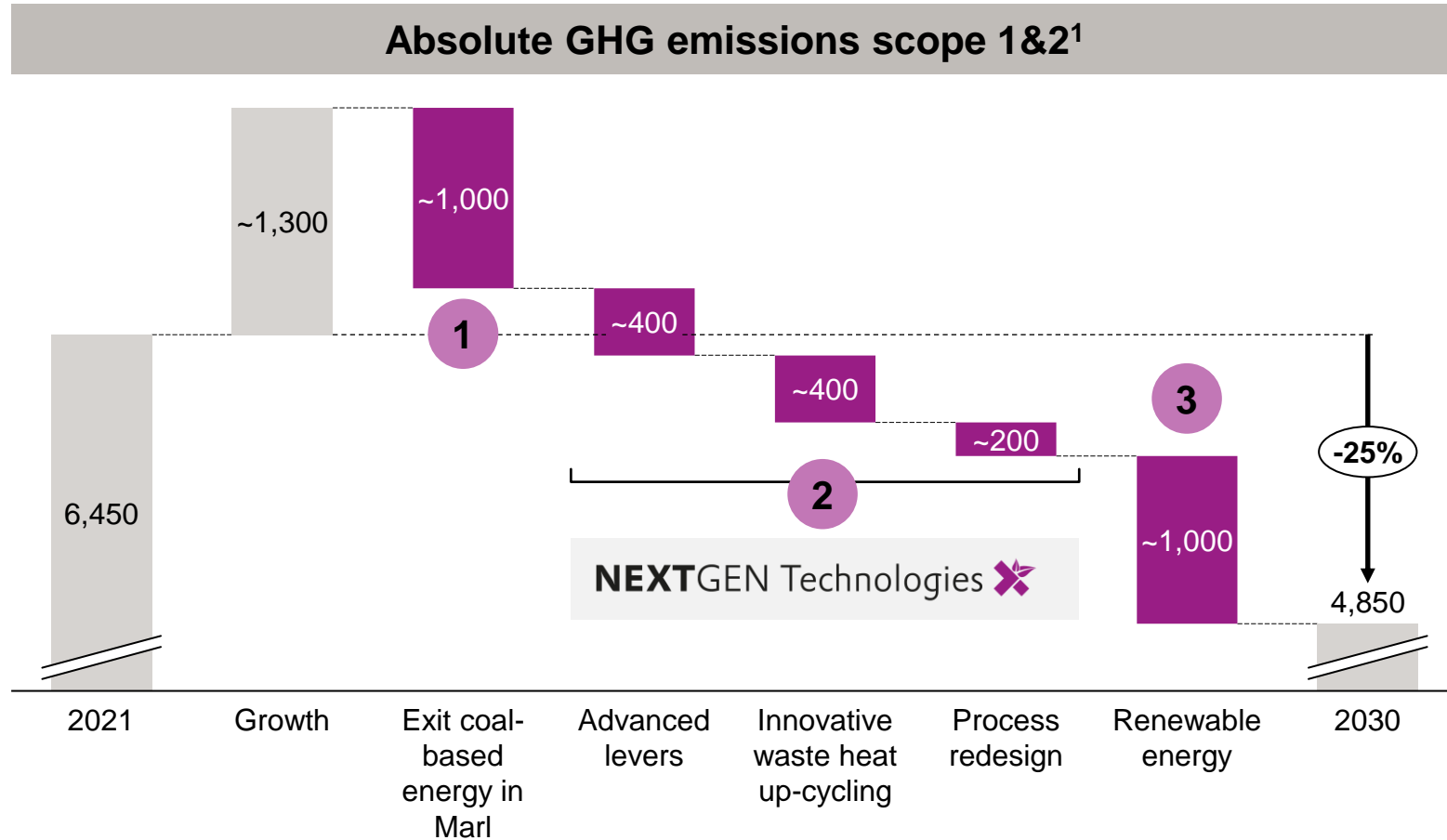
1. Net emissions (= gross emissions minus power and steam sold externally); reference year 2008; on initial -50% target by year 2025

2. Commitment letter signed and handed in for SBTi, 25<sup>th</sup> April 2022

3. Gross emissions; reference year 2021, target year 2030

# Clear roadmap to achieve Scope 1 & 2 targets by 2030

## Three clusters with economically attractive measures defined



### Reduction measures

1. Exit coal-based energy in Marl
2. “Next Generation Technologies”
  - a. Advanced levers, e.g. Adv. Process Control
  - b. Innovative waste heat up-cycling, e.g. heat pumps
  - c. Process redesign
3. Renewable energy, e.g. procuring green electricity

1. Gross emissions in kt CO<sub>2</sub>e



# 1 Exit coal-based energy in Marl



## Modernization of Evonik's power plant park

Replacement of last coal-fired power plant at Marl Chemical Park by a **flexible combined cycle gas power plant**

Global **scope 1** GHG emissions to be cut **by ~20%**, mainly due to **annual reduction of up to 1 million metric tons CO<sub>2</sub>**

Plant expected to come on stream in **Q2 2022**, an additional generating unit scheduled to be connected to the grid shortly thereafter

Total power output of 270 megawatts with an **efficiency exceeding 90%**

## Flexibility due to current energy market situation:

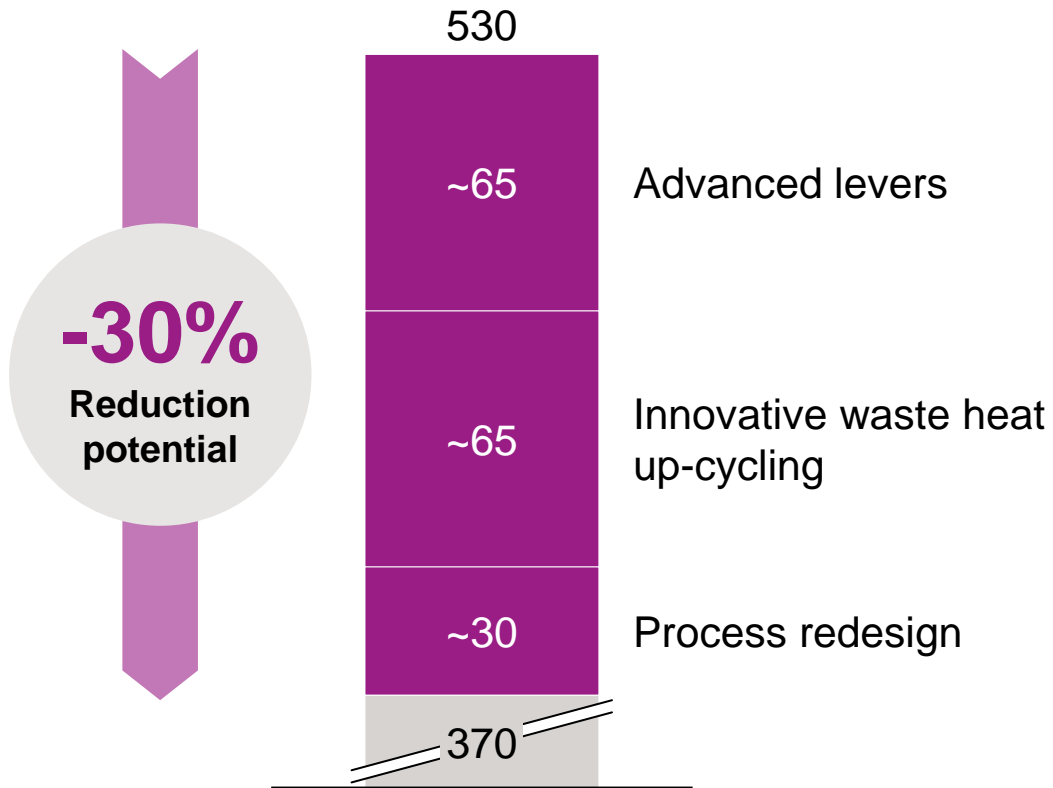
Temporary prolongation of runtime of coal-fired power plant under evaluation in order to increase security of supply, before readopting initial plan to replace coal with gas

## 2 “Next Generation Technologies”

### Example Antwerp as blueprint for other sites



#### Reduction<sup>1</sup> by economically attractive measures



#### “Next Generation Technologies” (selected examples)

2a

- Advanced Process Control (APC) ensuring production at ideal operating point
- Heat exchangers for improved heat integration

2b

- High temperature heat pumps for valorization of waste heat
- Mechanical vapor recompression

2c

- CO<sub>2</sub> reuse in production processes
- Adaptation of reaction conditions for increased energy efficiency

1. Gross emissions in kt CO<sub>2</sub>e



## 2 New EAGER program to assess main CO<sub>2</sub> emitting sites

### Definition of 2030 implementation plan with reduction measures



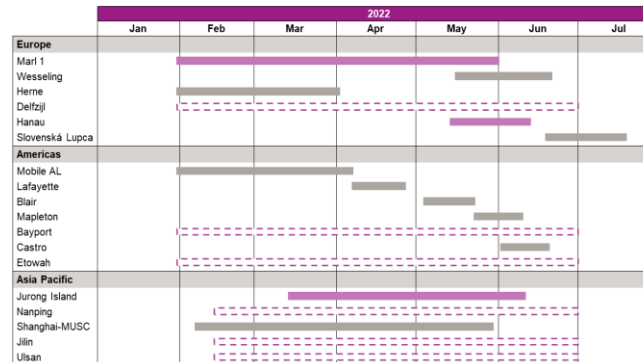
#### 2021: Starting point

- Detailed analysis of options for Antwerp and Rheinfelden sites
- Definition of most important reduction levers with necessary investments
- Blueprint for other sites



#### 2022: On-going

- Project EAGER<sup>1</sup> to develop a clear perspective for top sites to collect and prioritize suitable reduction measures
- New data collection on waste & water



#### 2022-2030

- “Next Generation Technologies” implementation plan ready end of 2022
- Investment into selected projects
- Execution of CO<sub>2</sub> reduction measures

**NEXTGEN**   
Technologies

**IMPLEMENTATION PLAN**

1. EAGER: Evonik Assessment of Greenhouse Gas Emission Reduction



## 3 Renewable energy

### Increase share of renewable grid electricity



- Advanced negotiations for first photovoltaic-based PPAs (Power Purchase Agreements)
- Increasing electrification of processes e.g. by heat pumps leading to increasing demand of green electricity

### Other renewable energy sources

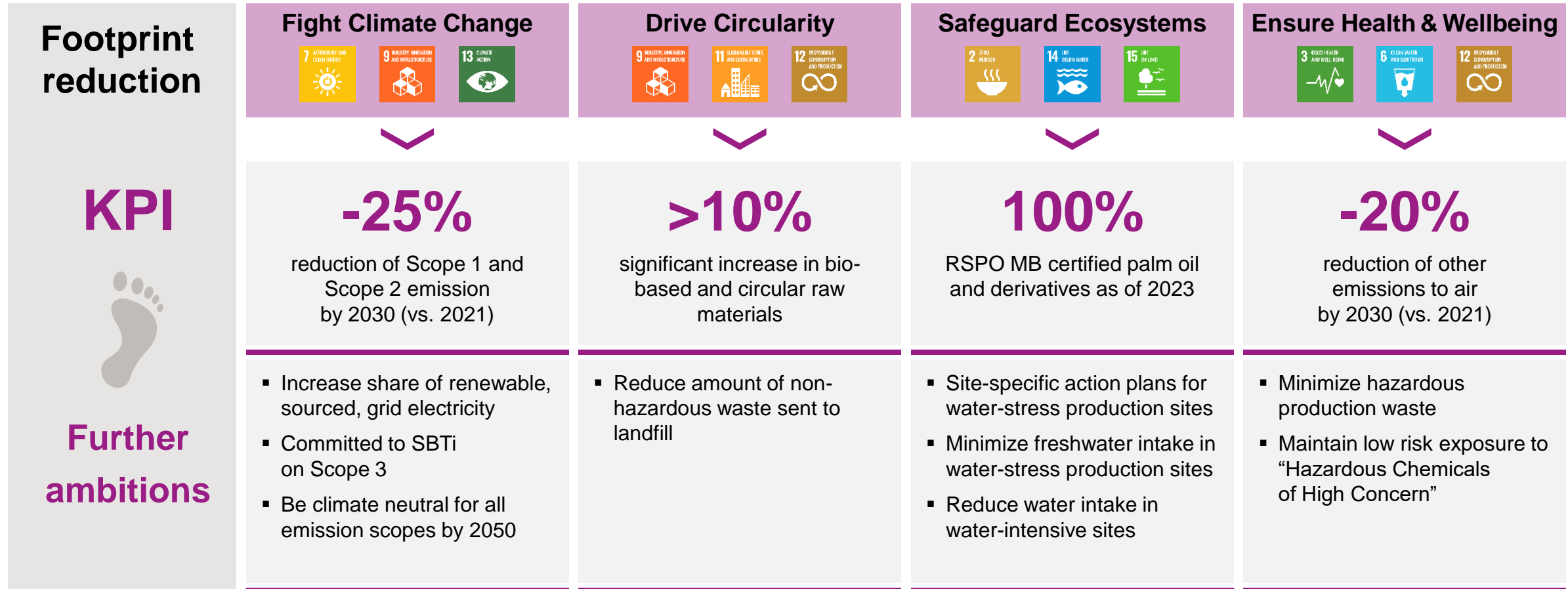
Other options for renewable energy include:

- Biomethane or biomass for self-generation of steam and electricity<sup>1</sup>
- Green hydrogen supplementing or replacing natural gas

1. CO<sub>2</sub> reduction occurs in GHG protocol scope 1 or 3, dependent on selected accounting methodology (incl. or excl. biogenic carbon removals and emissions)

# Reducing our footprint in all our sustainability focus areas

## Measurable set of KPIs in place, more to come with EAGER results



1. RSPO MB: Roundtable on Sustainable Palm Oil Mass Balance

# Sustainability as backbone of Evonik's purpose and strategy

## Table of contents

---

1. Full integration into Strategic Management Process
2. Increase the portfolio share of products with sustainability benefits
3. Committed to foresighted resource management
4. **Setting high standards for governance**



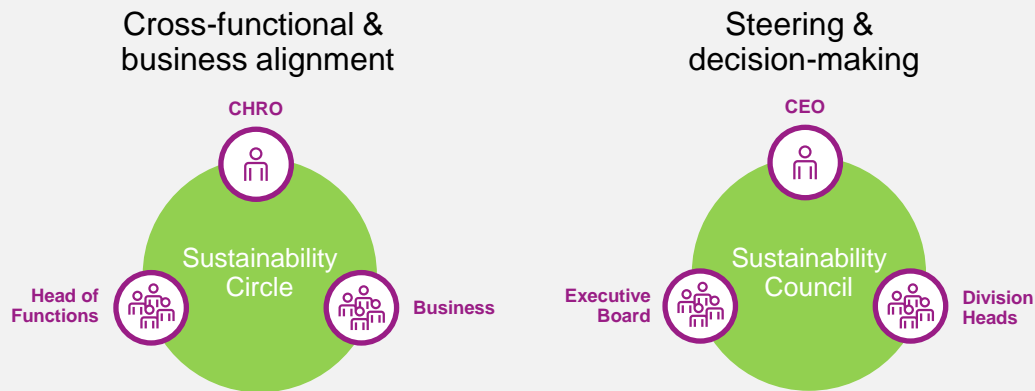
# Complementing the governance on ESG

## Reflected in organizational set-up and remuneration



### Clear responsibilities

- **Executive Board** has overall **responsibility** for sustainability
- Setting **strategic framework** and **executing measures** in close cooperation with operating divisions



### Part of remuneration

- Occupational safety part of remuneration of the executive board since more than a decade
- New ESG goals to be **integrated in remuneration schemes** of Executive Board

New element for approval at AGM 2022

20%  
ESG

Long-term incentives based on strategic ESG KPIs, e.g.:

- **Sales share of “Next Generation Solutions”**
- **CO<sub>2</sub> emission reduction**

# Sustainability strategy - Key take-aways

To improve life, today and tomorrow.

Sustainability is an **integral part of our purpose** – four focus areas as guiding principle for Evonik

**Sustainability is fully integrated** into strategic management processes: portfolio & innovation steering, capital allocation

**Handprint:** increase NGS<sup>1</sup> sales share to **>50% by 2030**

**Footprint:** reduce CO<sub>2</sub> emissions by **25% by 2030<sup>2</sup>**

Complementing **ESG governance**

**NEXTGEN** ✦  
Solutions

**>50%**



**-25%**

1. NGS: "Next Generation Solutions"







2. Commitment letter signed and handed in for SBTi, 25<sup>th</sup> April 2022, gross emissions reduction with reference year 2021, target year 2030



**EVONIK**

**Leading Beyond Chemistry**

# Our top ESG targets

		Status 2021	Target
 <b>Strategy and growth</b>	▪ Sales share to be generated from “Next Generation Solutions” by 2030	37%	>50%
	▪ Generate >€1 bn in additional sales <sup>1</sup> in our six innovation growth fields by 2025	>€500 m	>€1 bn
 <b>Value chain and products</b>	▪ TfS assessments of all raw materials suppliers with annual procurement volume >€100.000 by year-end 2025	69%	100%
	▪ RSPO MB certified palm oil and derivatives as of 2023	>70% (Care Sol.) >10% (Oil Add.)	100%
 <b>The environment</b>	▪ Reduce green house gas emissions – absolute scope 1 and scope 2 emissions by 2030 (reference: 2021)	--	-25%
	▪ Reduce other emissions to air <sup>2</sup> by 2030 (vs. 2021)	--	-20%
 <b>Employees</b>	▪ Intercultural mix <sup>3</sup> in top management by 2023	14.6%	20%
	▪ Women in top and senior management by 2023	17.7% / 17.6%	23%
 <b>Safety</b>	▪ Safety		
	– Accident frequency rate <sup>4</sup>	0.19	≤0.26
	– Incident frequency rate <sup>5</sup>	0.48	≤0.40
	▪ Occupational health performance index	5.6	≥5.0
 <b>Governance and compliance</b>	▪ Sustainability Council reporting directly to CEO	--	✓
	▪ 20% of Long-Term Incentive linked to Sustainability targets <sup>6</sup>	--	✓

1. With products introduced in or after 2015 | 2. See table T12 in Sustainability Report | 3. Non-German Employees | 4. New reference parameter from 2021 | 5. Modified calculation basis from 2021 | 6. to be approved at AGM 2022



# Handprint: Fight Climate Change



## Focus “Future mobility”

### Cooling and A/C



Lightweight through metal / rubber replacement

- Weight reduction supports CO<sub>2</sub> and NO<sub>x</sub> reduction
- Smart battery temperature management

### Materials for Li-Ion-Batteries



Nanostructured high-quality metal oxide and silicon particles improve safety, lifetime and energy density

- Metal oxides extend cathode lifetime by ~50%

### Silica / Silane “green tires”



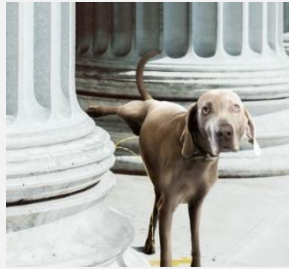
First Silica/Silane system for natural-rubber-based truck tires

- Fuel savings as high as 8%
- Pilot plant quantities available Q1/2022



## Focus “Durability”

### TEGOVISIN®



Water-repellents for building materials:

- Strong reduction of water uptake and efflorescence
- Long lasting stability and aesthetics reduce the need for resource and emission intensive maintenance

### SITREN®



Additives for integral protection of concrete structure:

- Durability for new and renovated concrete surfaces by protection against environmental influences
- Less emissions and reduced resource use by longer lifetime of constructions

### WallCraft – Upcoming launch



Self-healing concrete:

- Bacteria-based additive extends the longevity of concrete by stimulating its self-healing properties
- Cracks can grow together again resulting in a durable construction

# Handprint: Safeguard Eco-systems



## Focus “Aquaculture”

### Essential amino acids



The key to high quality proteins

- Modern, environmentally sound formulation techniques based on nutrient value, on supplementation with crystalline EAAs, and on animal nutrient requirement

### Veramaris



Production of omega-3 fatty acids from microalgae

- Potential to reduce the fish-in-fish-out ratio to zero
- 1 ton EPA DHA replaces 60 Tons wild-caught fish

### AQUAVI® Met-Met



Ideal solution for precision protein dosing, especially for bottom feeders

- Higher nutritional value than any other Methionine source available today
- Reduces fishmeal use; reduction of overfishing

# Handprint: Ensure Health & Well-Being



## Focus “Drug Delivery Systems”

### Drug Delivery Systems



- Global development partner & solutions provider for delivery systems for effective drugs and vaccinations
- Evonik as pioneer in Lipid nanoparticles (LNP) field for mRNA technology

### Next generations of LNP-based gene therapies

#### Vaccines

**Cancer immunotherapy** expected to be the next breakthrough of mRNA therapeutics

#### Protein therapeutics

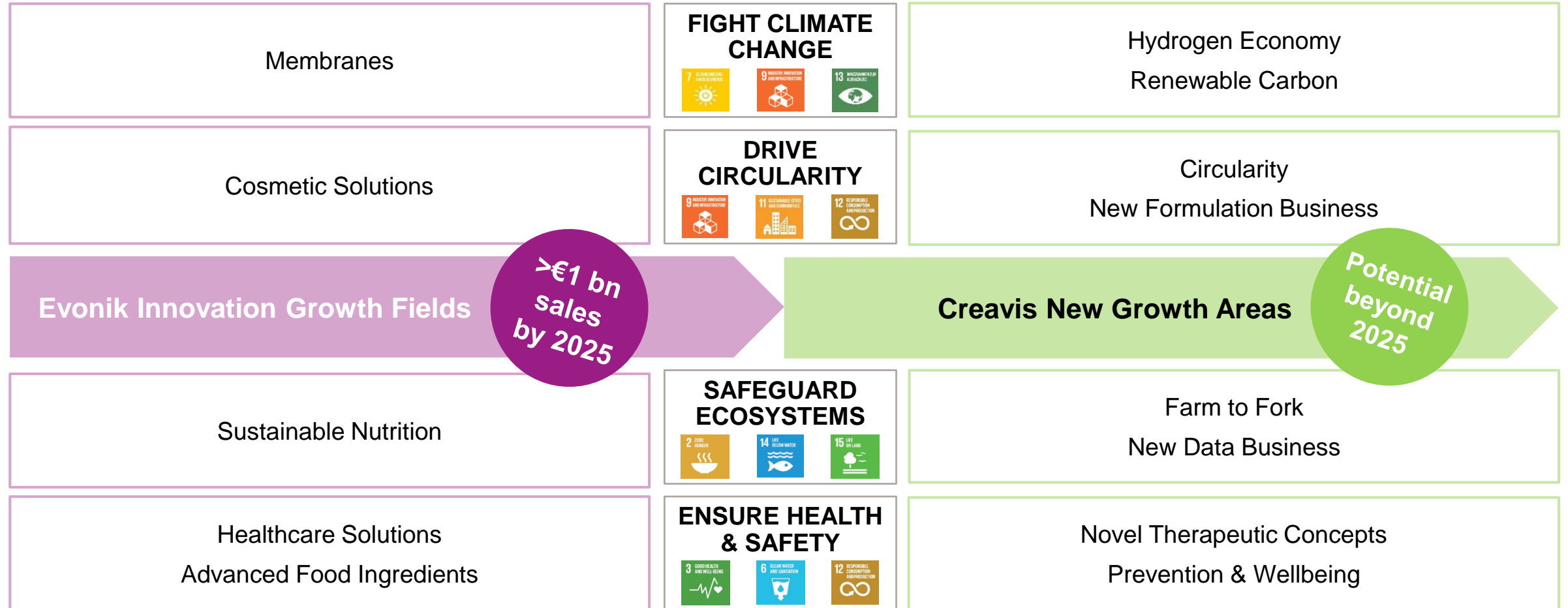
mRNA-based therapies can potentially **treat hereditary diseases**

#### Gene editing

**In-vivo modification of genes** to prevent diseases expected to be commercial within the next years

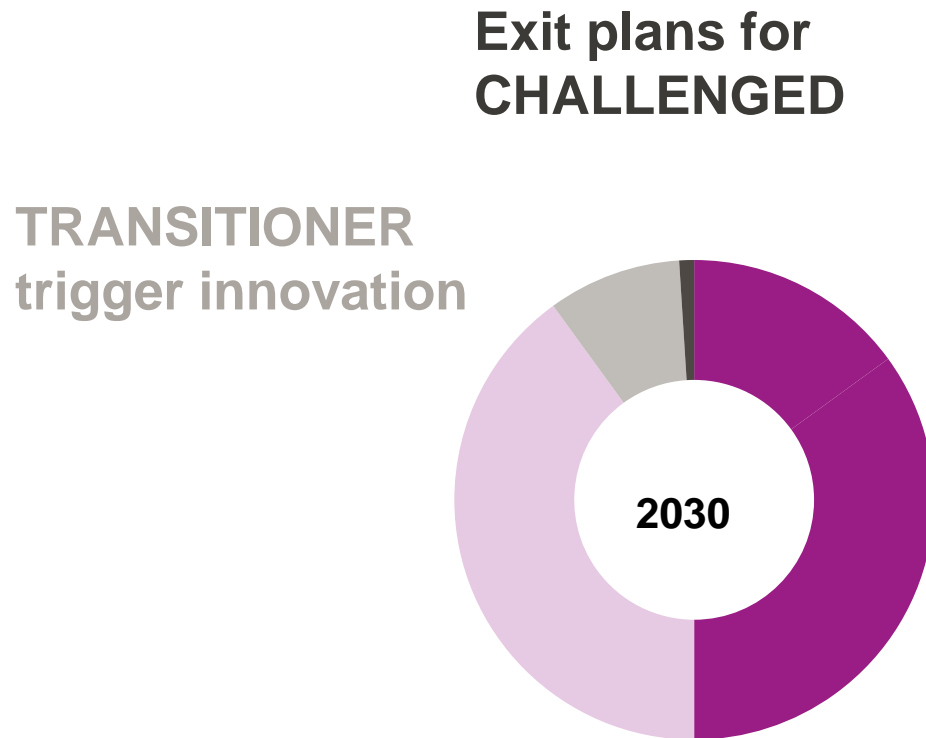


# Innovation with clear focus on Sustainability Focus Areas



# Actively managing “Transitioners” & phase-out “Challenged” products

Either improvement or exit



## “Challenged” products addressed with exit strategies

- Alternative, new product solutions without any negative signals are offered
- “Challenged” products included in financial risk-management

## “Transitioners” as driver for innovation

- Early identification of negative sustainability signals
- Valuable trigger for innovation and customer engagement in reformulation

**Further products will be exposed to negative signals as higher sustainability requirements develop**



# EAGER to support sound decision making on site investments

## Program EAGER<sup>1</sup>

### Setup



#### Organization

Cross-functional approach allows for fast and flexible execution



#### Methodology

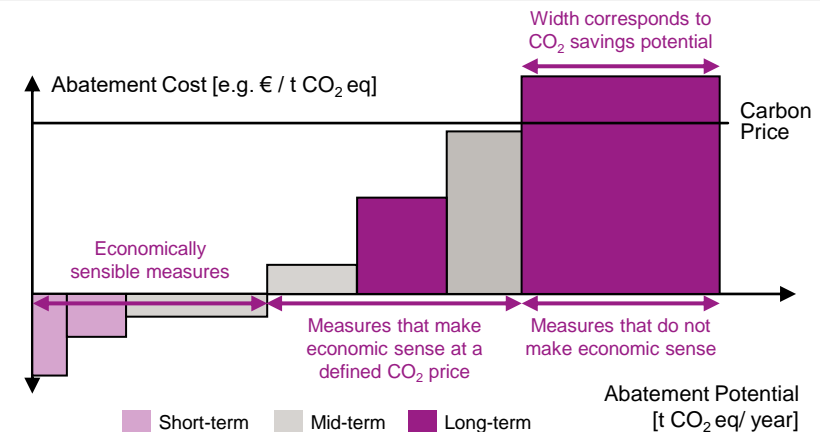
Holistic assessment of top 20 sites, incorporating existing ideas, analyses and measures



#### Calibrated Point of Truth

Ensuring a harmonized approach to allow for cross-site comparison

### Results



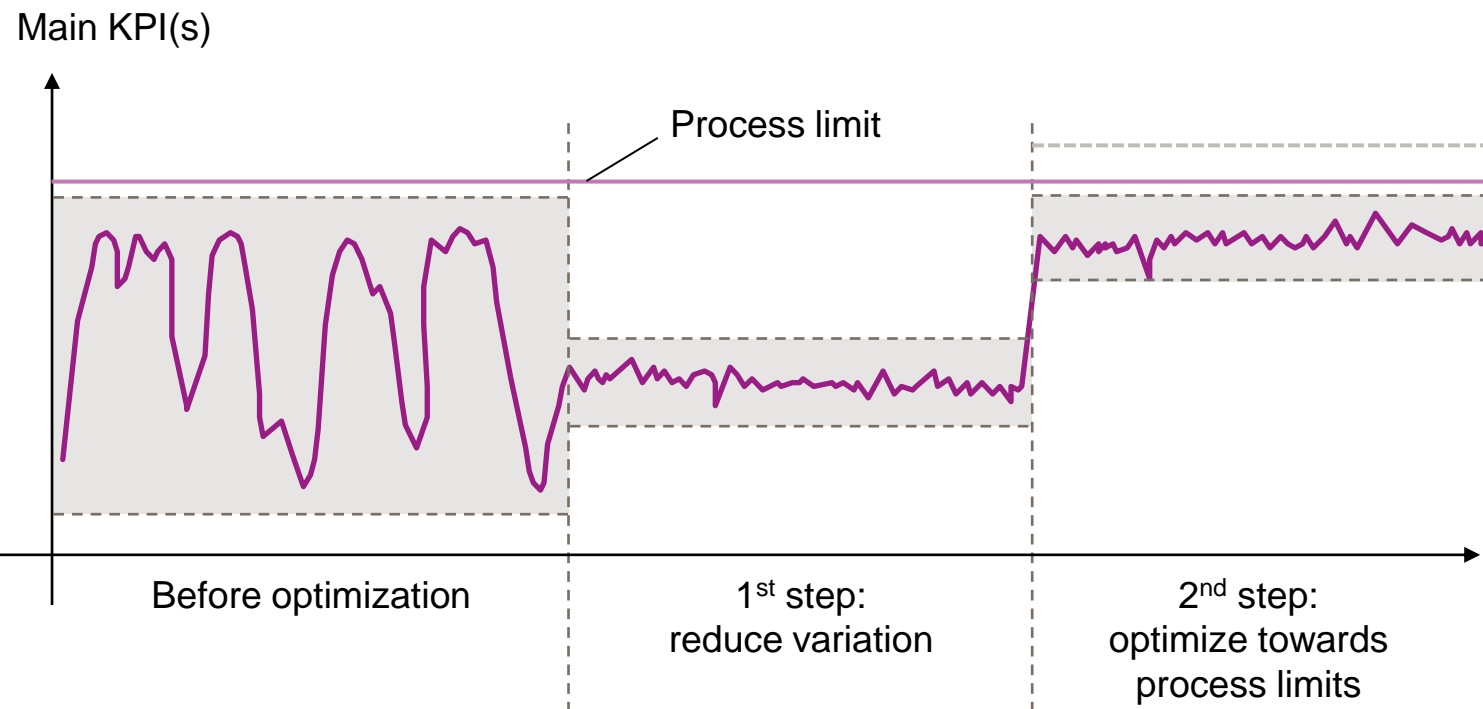
- Abatement Cost Curve: Specific measures on site level
- Validated CapEx/OpEx requirements considering real values and typical estimate accuracy
- Additional findings on water and waste data

1. EAGER: Evonik Assessment of Greenhouse Gas Emission Reduction

## 2a “Next Generation Technologies”: Advanced levers Example



### Advanced Process Control (APC)



**APC optimizes** complex production processes under consideration of many process parameters and ensures production at the **ideal operating point**

- Before optimization: High fluctuation
- 1<sup>st</sup> step: Reduce variation up to 50%
- 2<sup>nd</sup> step: Optimize towards process limits, typical benefit 5 % (throughput increase, specific energy/raw material consumption)



## 2b “Next Generation Technologies”: Innovative waste heat up-cycling Example

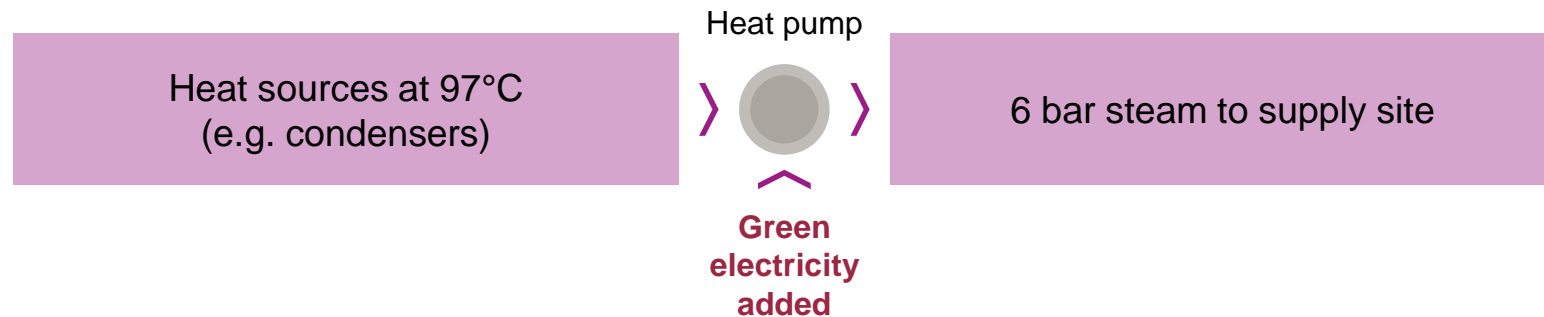


### Heat Pump deployment to switch entire site to renewable steam generation

#### Today



#### Future



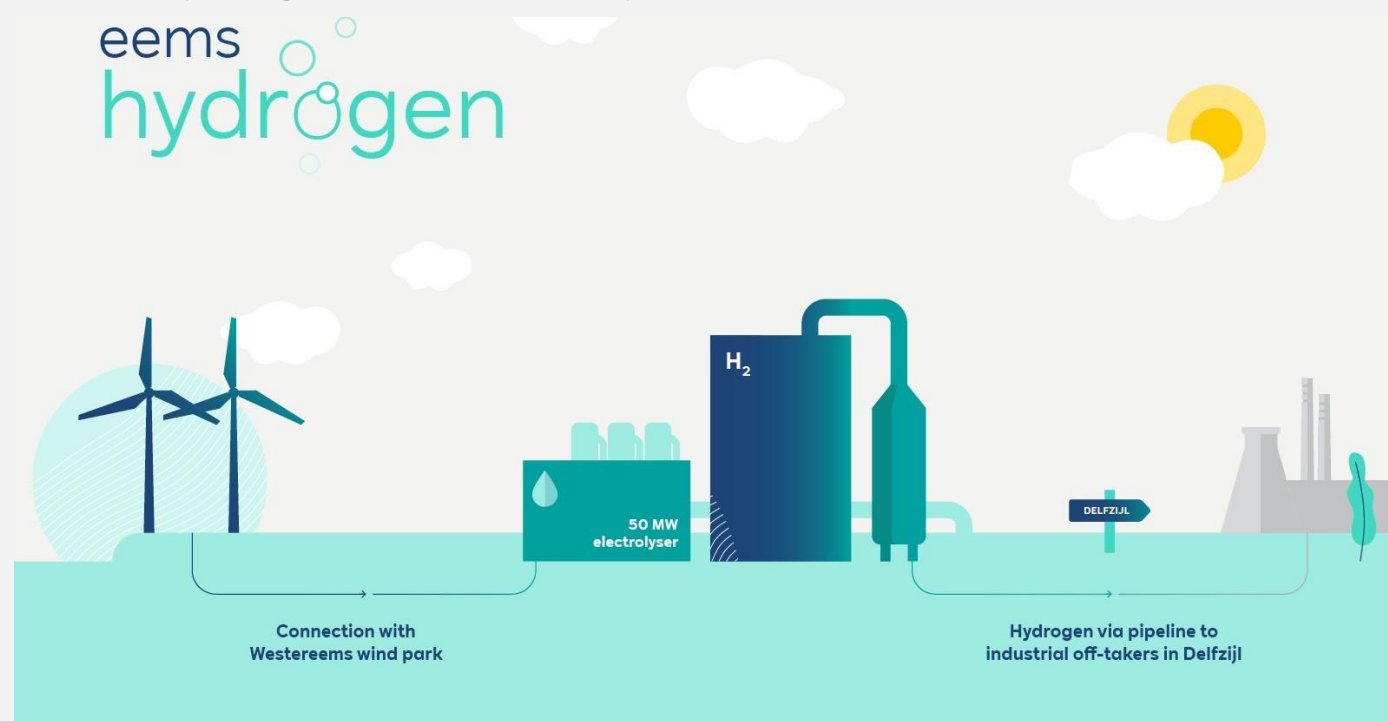
- **High-temperature heat pumps** for steam generation out of waste heat at chemical multi-user sites
- **65% energy saving** by heat recovery
- Substantial **CO<sub>2</sub> reduction** through total avoidance of natural gas boiler
- Central step for **CO<sub>2</sub> neutral production site**
- Project under discussion with Siemens Energy

## 2c “Next Generation Technologies”: Process redesign Example



### Partnering with RWE in order to replace steam methane reforming by electrolysis

#### Green hydrogen production by RWE in Eemshaven, NL



- Evonik currently uses steam methane reforming for (grey) hydrogen production at its site in Delfzijl, Netherlands
- MOU<sup>1</sup> signed with RWE for (green) hydrogen supply from their 50 MW electrolyzer, largest to have been granted a license in the Netherlands
- Powered by RWE’s Westereems, NL, wind farm
- RWE received environmental permit in January 2022
- Electrolyzer planned to be operational in 2024

1. MOU: Memorandum Of Understanding

Picture from <https://benelux.rwe.com/en/press/2020-11-06-rwes-innovative-electrolysis-project-eemshydrogen-enters-next-phase>

## 2c “Next Generation Technologies”: Process redesign Example



### Sustainable processes via electrochemical pH-shift

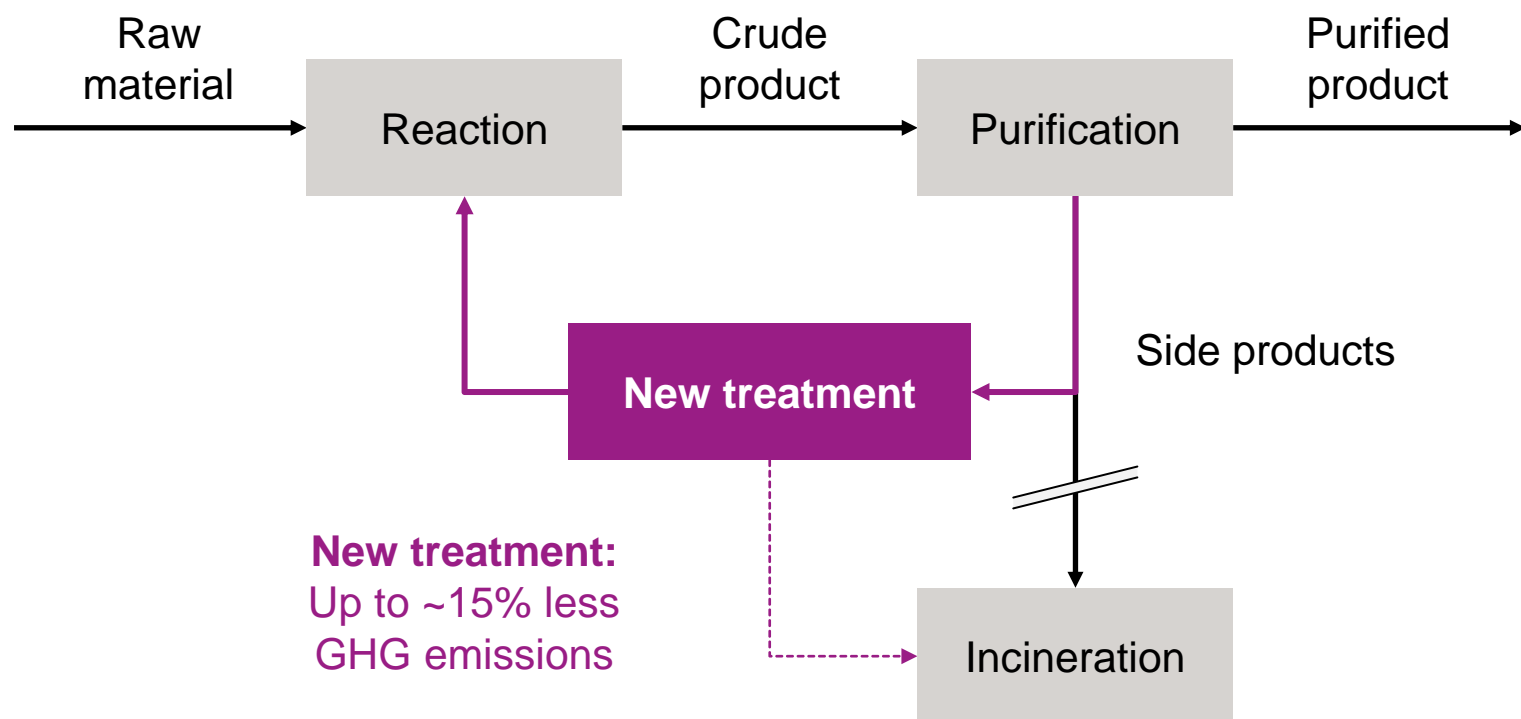


- Development of **sustainable processes** avoiding acids, bases and salt containing waste streams
- pH induced reactions by applying electrochemical process steps – **“electrons replace chemicals”**
- Technology as enabler to minimize carbon footprint

## 2c “Next Generation Technologies”: Process redesign Example



### Increased re-use of side products at our Herne site



- In the current process, all side products are incinerated
- A new side product treatment – as experimentally demonstrated for a single stream – would lead to GHG emission reduction of up to ~15 % in this process step
- Further CO<sub>2</sub> reduction potential by holistic network optimization

# Evonik's Scope 3 approach

## Different levers to deliver outcome that matters to our customers



### Incremental Improvement

- Supplier engagement for raw materials and services investing in energy efficiency and use of renewable energy
- Turn electricity trading green
- Water stewardship and avoiding of production waste in alignment with scope 1&2 emission reduction pathway

Continuous reduction of product carbon footprints based on certified, market-based data

### Green Opportunities

- For existing products access renewable raw materials and energy to deliver green(er) products for high market pull applications
- New products based on renewable carbon and green energy without significant harm to other environmental or social sustainability topics

Evonik able to serve market segments with high demand for credible green solutions

### Back-Integration

- Backwards integration leveraging efficiency, green energy, carbon capture opportunities
- Reduce storage and transport of toxic chemicals
- Sites & technologies without high-carbon lock-in risk
- Access to raw materials with competitive green future

Improve resilience, profitability and competitiveness along the path to climate neutrality

### Asset Transformation

- Identify lock-in risks (portfolio / technology / site / raw material) and ensure that capital allocation and innovation are steered towards climate-neutrality, circularity and “safe & sustainable by design” chemicals
- Collaborate with, or transfer of business to best owner for an asset-heavy business model

Secure financial resources, technology, and raw materials for products, the world will need



# Highlight – Water

## Methodology

- Distinction between water Scarcity Sites and Water Intensive Sites
- Development of Contextual Water Targets
- Introduction of the Sustainable Baseline Water Stress methodology in addition to AWARE<sup>1</sup>
- Assessment according to Physical, Regulatory and Reputational Risks

Understand water as a place dependent and shared resource  
(Basin risks)

Understand Evonik's impact on local basins  
(Operational risks)

Assess and prioritize water-related risks

Optimize water governance, improve water efficiency and reduce pollution and footprint

Reduce water demand in water-stress areas to a sustainable level

## Example

### Multi-User Site Shanghai (MUSC) – Implementation for 2022



- Demineralization of purge water from a cooling unit
- Usage in chemical processes
- Replacement of 250.000m<sup>3</sup> freshwater

### Potential targets depending on the results of the EAGER analysis

#### water-stress sites

- Minimize freshwater intake in water-stress production sites

#### water-intensive sites

- Reduce water intake in water-intensive sites

1. AWARE: available water remaining



# Highlight – Waste

## Methodology

- Alignment with two of our sustainability focus areas

### DRIVE CIRCULARITY



### ENSURE HEALTH & WELL-BEING



#### Goal for waste management:

- Promote the environmentally sound treatment of waste generated by Evonik

#### Goal for waste reduction:

- Reduction of waste generated at Evonik

## Example

### Hanau-Wolfgang



- Recycling of solvent from a chemical process
- Usage in other chemical processes
- Adapted by other Evonik site in China

### Potential targets depending on the results of the EAGER analysis

#### Non-hazardous waste

- Reduce amount of non-hazardous waste sent to landfill

#### Hazardous-waste

- Minimize hazardous production waste



**EVONIK**

**Leading Beyond Chemistry**