

On the Road to Climate Neutrality 2050 – the Role of Social Partners in the Decarbonisation of the Chemical, Pharmaceutical, Rubber and Plastics Industries

Presentation of the external experts wmp consult and Syndex
at the 1st Workshop
25th and 26th January 2022

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DAY TWO

1. Framework conditions for climate neutrality in the sector until 2050
2. Questions for working groups



Workshop agenda

DAY 1: Tuesday 25 January 2022

13:00-13:15	Welcome
13:15-15:00	Round table & Presentations by participants
15:00-15:15	Coffee break
15:15-16:00	Discussion
16:00-16:30	Presentation of research results by wmp/Syndex
16:30-17:15	Framework conditions and company choices

DAY 2: Wednesday 26 January 2022

09:00-09:15	Welcome and short summary of Day 1
09:15-10:30	What can hinder or support company choices?
10:30-10:45	Coffee break
10:45-11:30	Working groups: From theory to practice
11:30-12:30	Presentation of working group results in plenary, discussion
12:30-13:00	Summary, Feedback and Outlook

Questions for round table

Please introduce yourself (name, country, organization, function)

Please name and describe shortly the most important technologies and production methods to reduce GHG emissions and to reach climate neutrality.

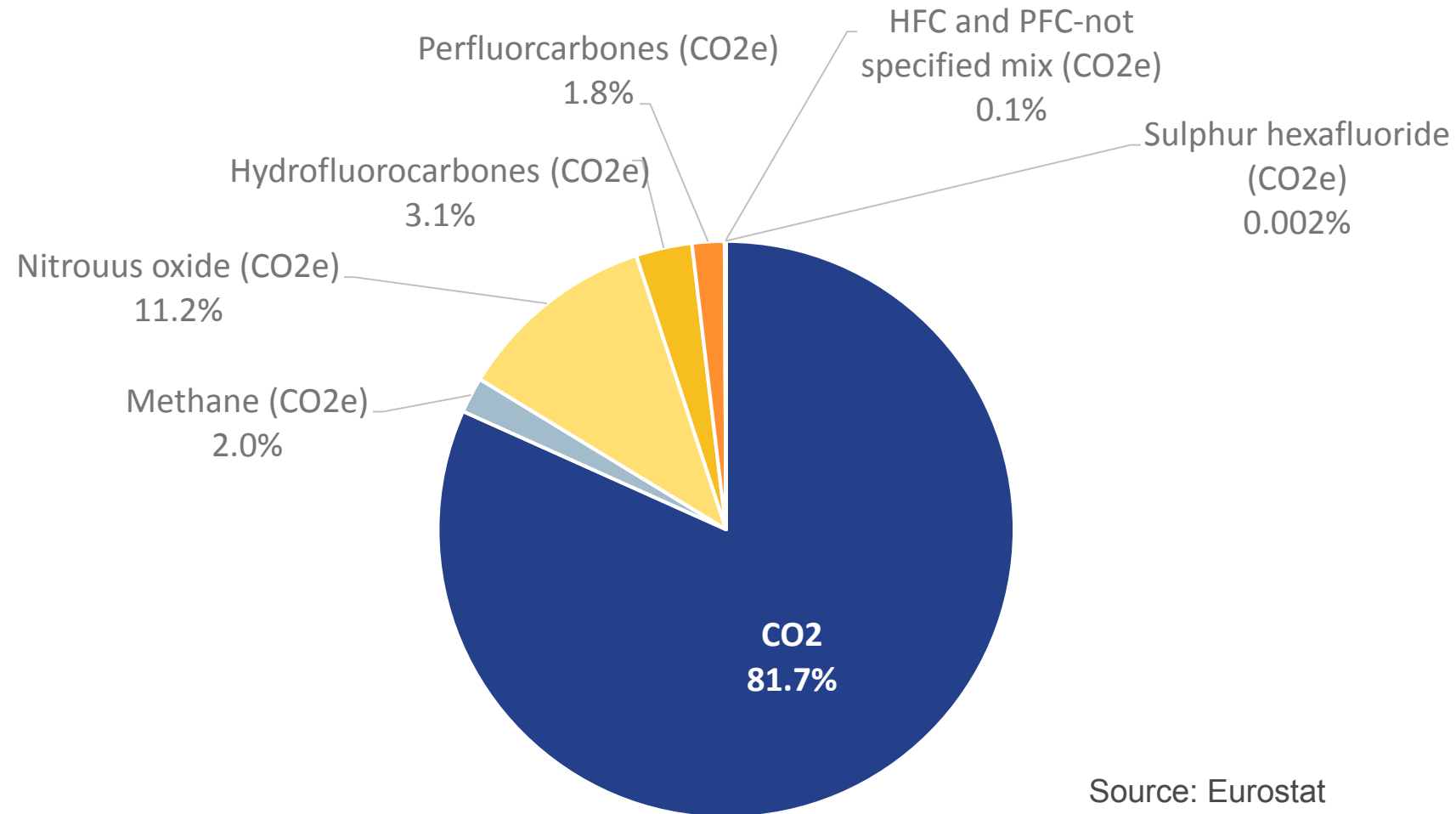
What are additional measures on the way to climate neutrality?

What should be done at company level in addition to these measures?

The European chemical, pharmaceutical, rubber and plastics industries and their relevance for GHG emissions

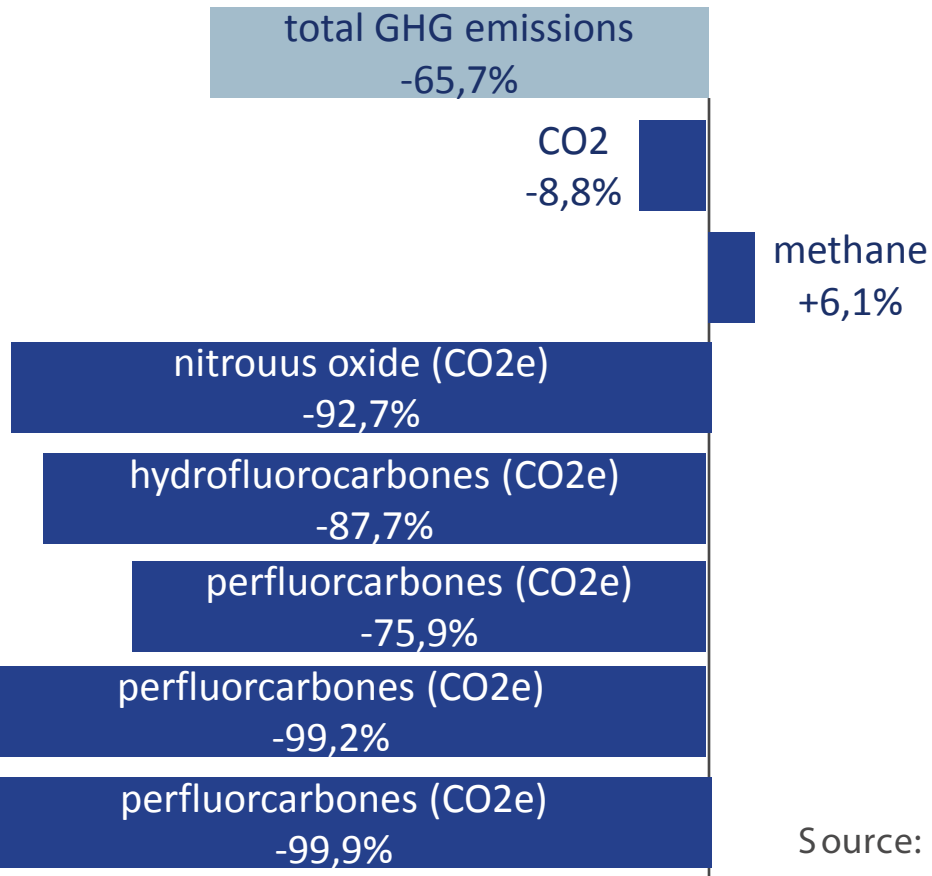


GHG emissions of the chemical sector in 2019



Source: Eurostat

Development of GHG emissions in the chemical sector 1990-2019



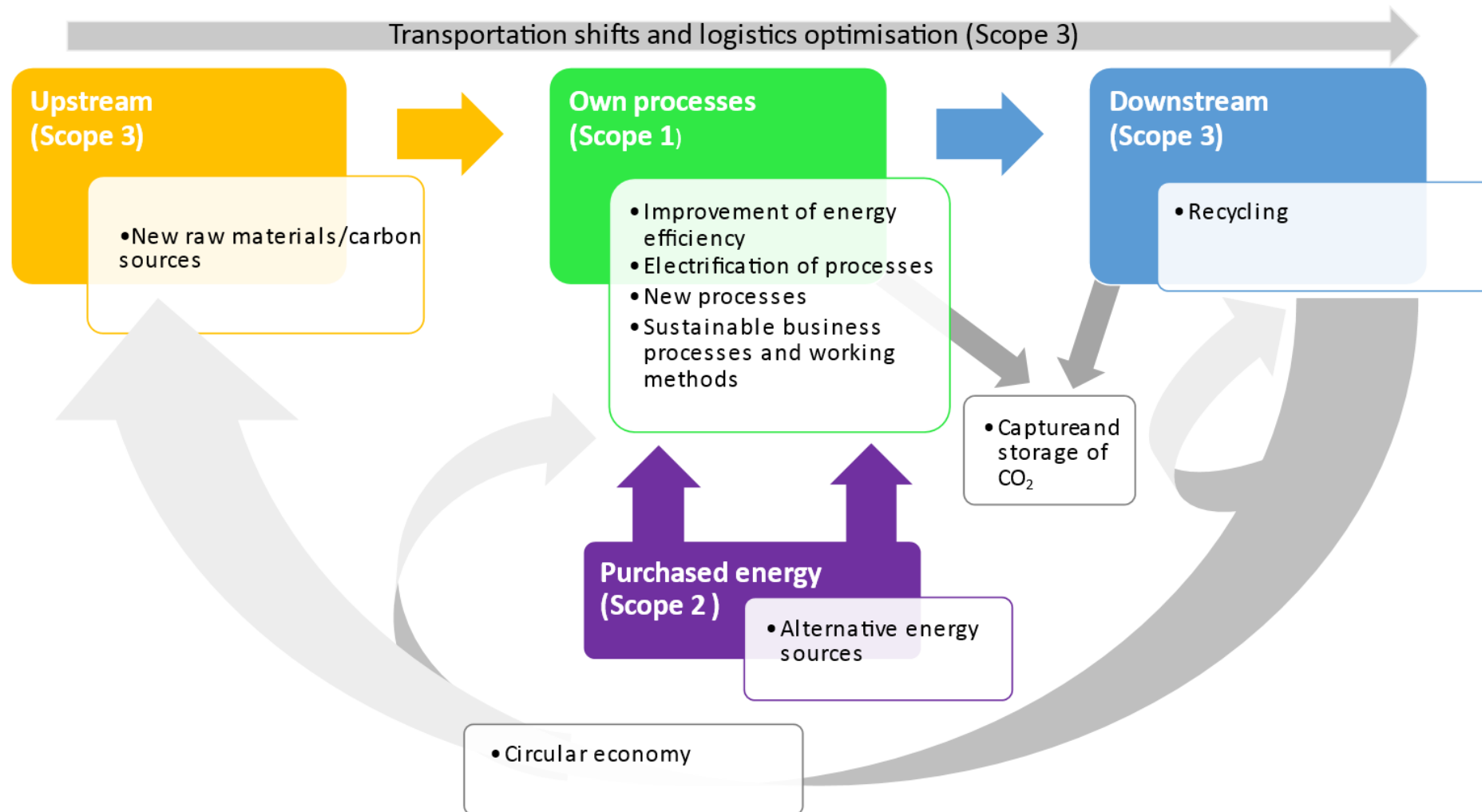
Source: Eurostat

- Major energy user and one of the most difficult sectors to decarbonise.
- At the same time, an enabler of climate neutrality of other sectors, for example
 - lightweight construction, building insulation or electric motors
- Focus of the project on the sector's own emissions

Corporate practices on the way to climate neutrality



Scopes of GHG emissions and possible starting points for their reduction



Upstream measures to reduce GHG emissions: New raw materials and carbon sources



Biomass as a feedstock

- e.g.: biomass to methanol, bio naphtha to olefins, cameline oil to produce paints, sugar surfactants for detergents, ethylene from bio-ethanol , bioplastics, green butadiene from plants

CO₂ as a feedstock

- e.g.:for methanol, polymers, specialty chemicals and in elastomers, thermoplastic polyurethane based on CO₂ technology

Incremental shift in the resource base

- Depending on availability, opportunity costs (price, environmental impact, competition with food production) and cost-competitiveness (access to CO₂ and hydrogen)

Changes in own processes

Enhancing energy efficiency in the production process

- Process intensification
- Process improvements
- Catalyst improvements
- Digitalisation and advanced process control technologies

Electrification of processes

- Power-to- Heat
- Power-to-Hydrogen
- Power-to-Chemicals

New processes

- Low temperature processes
- Catalytic alternatives
- Membrane technologies and ODC
- New ways of ammonia production
- Biological processes

Sustainable business processes and working methods

- green design approach for new products
- implementation of a green fund or internal carbon price for all investments
- changes in supply chains and low carbon transportation
- Employee mobility
- Virtual meetings

Alternative energy sources

Load management measures

Heat source changes

Expansion of renewable energy use

Combined generation of heat and power (CHP)

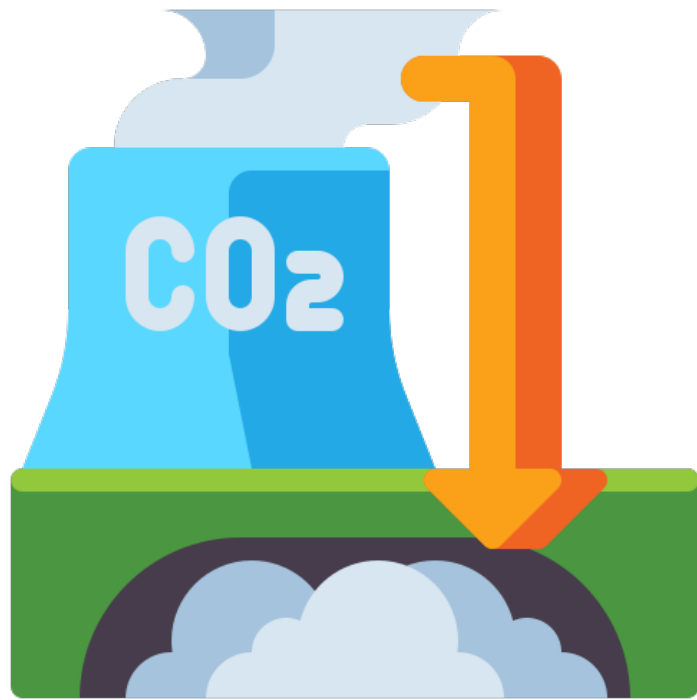
Hydrogen as an energy carrier

Supply and cooperation agreements

Power purchase agreements (PPAs)

Joint ventures with energy companies

Capture and storage of CO₂ (CCS)

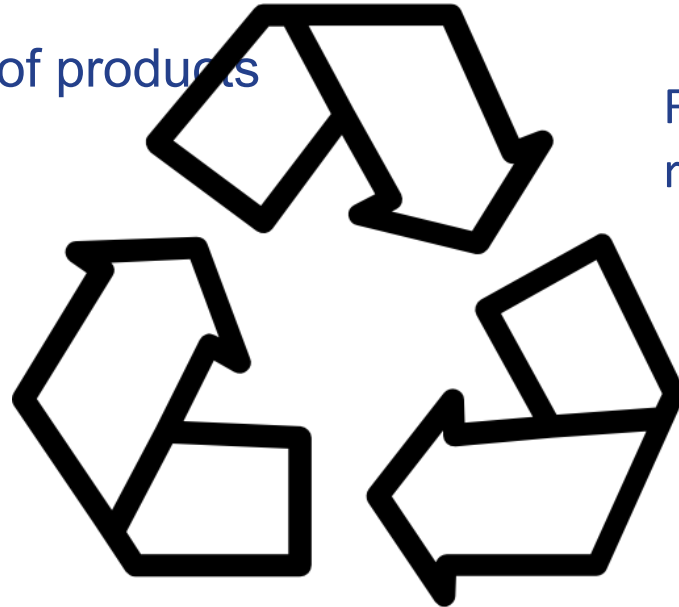


Source: flaticon

- No consensus whether CCS is needed to reach climate neutrality
- Limited potential in the near future.
- Long-term technical feasibility, economic viability and actual storage capacities difficult to determine
- Collaboration both within the sector and externally is necessary

Downstream measures to reduce GHG emissions: Mechanical and chemical recycling

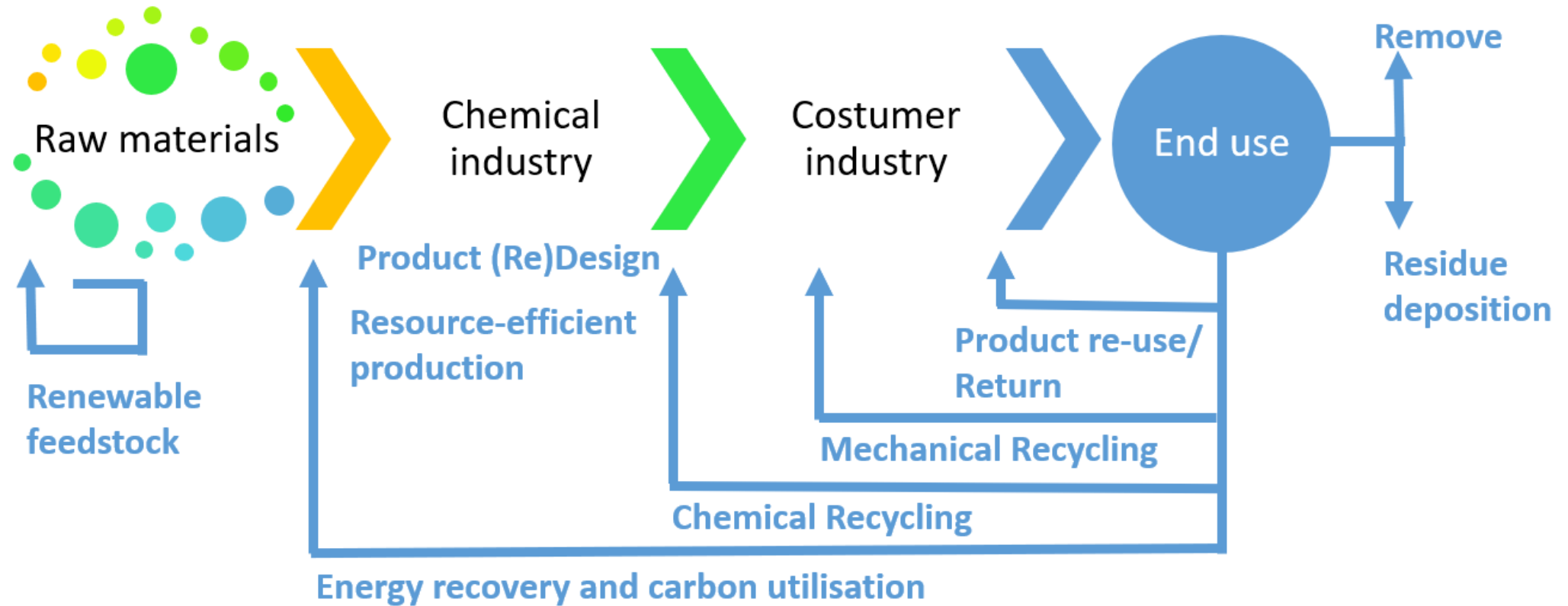
Only small fraction of products
recycled



Further development of mechanical
recycling methodologies

Chemical recycling becoming more important

Overarching topic: Circular economy



own, based on Accenture 2018 and Deloitte/VCI 2017

Possible strategic company choices

Localisation of production sites	<ul style="list-style-type: none"> • Outsourcing/offshoring (to other European countries or outside Europe) • Retention of production in Europe
Company structures	<ul style="list-style-type: none"> • Consolidation and concentration of production at a small number of integrated sites to reduce costs to maintain competitiveness, increasing capacity per plant • Decentralization and a trend towards more adaptable smaller entities using small quantities of locally available resources adapting products and services to local needs
Product portfolio and business model	<ul style="list-style-type: none"> • Opening to new business areas and diversification • Specialisation and adaption to customer needs
R&D	<ul style="list-style-type: none"> • Externalisation of research • Expansion of own capacities
Technologies	<ul style="list-style-type: none"> • Implementing breakthrough and disruptive technologies • Applying Best-Available-Techniques • Incremental improvements of energy efficiency • Focus on electrification and hydrogen, circular economy, biomass and/or others
Investment	<ul style="list-style-type: none"> • Maintenance investments of existing machines • Investment in new plants and machines • Compensation measures (e.g., investing in forestation)
...

Framework conditions for climate neutrality in the sector until 2050



Influence factors for climate neutrality of the chemical industry

Climate neutrality

Circular economy

Policy and legislation
International competitiveness and trade
Demand and market requirements and public opinion
Availability and price of renewable electricity, energy and green hydrogen
R&D and innovation
Investments, funding, and other incentives
Industrial symbiosis and sector coupling

Digitalization

Implementation of the
Chemicals Strategy for Sustainability

Questions for working group 1: Internal strategy changes

How would processes in companies change in these scenarios?

How would business models/productportfolios be adapted?

Please also consider regional differences and differences between sub-sectors if applicable.

Questions for working group 2: Technology changes

Which role does digitalisation play in the scenarios?

What are the most important technological solutions related to the scenarios?

Please also consider regional differences and differences between sub-sectors if applicable.

Questions for working group 3: Technology changes

What do the scenarios mean for SMEs?

How will the market structure be affected (consolidation or specialisation)?


How do the scenarios affect the choice of company location? Could they promote outsourcing or offshoring?

Please also consider regional differences and differences between sub-sectors if applicable.

Thank you very much!




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