

# SBTs for Chemical Companies



SCIENCE  
BASED  
TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

February 6, 2020

SBTi-Chemicals Scoping Project Launch Webinar

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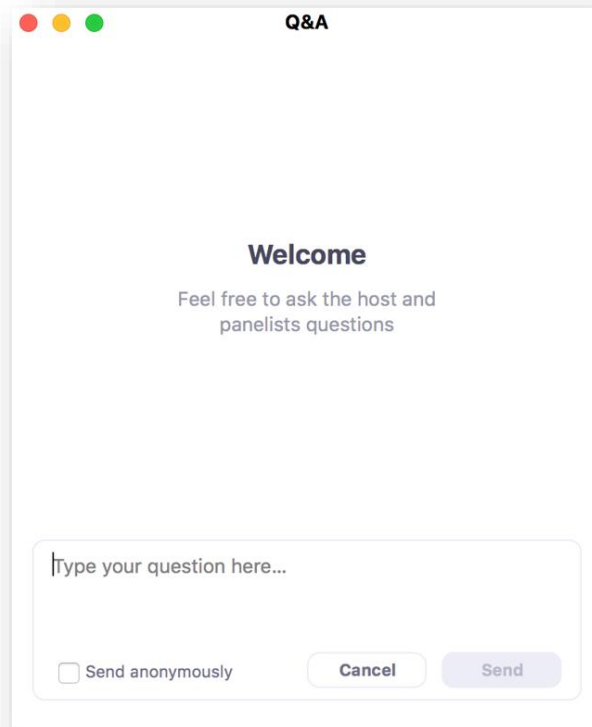
**WE MEAN  
BUSINESS**

# Welcome!

This webinar is being recorded. Slides and recording will be posted to our website. They will also be emailed to you.

There will be time for questions at multiple points throughout the webinar.

**Please type your questions into the Q&A box.**

A screenshot of a Q&A box interface. At the top, there are three colored window control buttons (red, yellow, green) and the title "Q&A". Below this, the word "Welcome" is centered in a bold font. Underneath "Welcome" is the text "Feel free to ask the host and panelists questions" in a smaller, lighter font. At the bottom, there is a text input field with the placeholder text "Type your question here...". Below the input field, there is a checkbox labeled "Send anonymously" and two buttons: "Cancel" and "Send".

Q&A

**Welcome**

Feel free to ask the host and panelists questions

Type your question here...

☐ Send anonymously

Cancel Send

# Today's Speakers



**Nate Aden**  
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**World Resources Institute**



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**Guidehouse**

# Today's Discussion

Topic	Time
SBT-Chemicals introduction and overview	5 min
Chemical company leadership examples	5 min
Royal DSM company perspective	10 min
IEA chemical sector resources	15 min
Dutch & German chemical sector roadmaps	15 min
Next steps and opportunities for participation	10 min

# Science Based Targets initiative



The Science Based Targets initiative mobilizes companies to set science-based targets and boost their competitive advantage in the transition to the low-carbon economy.

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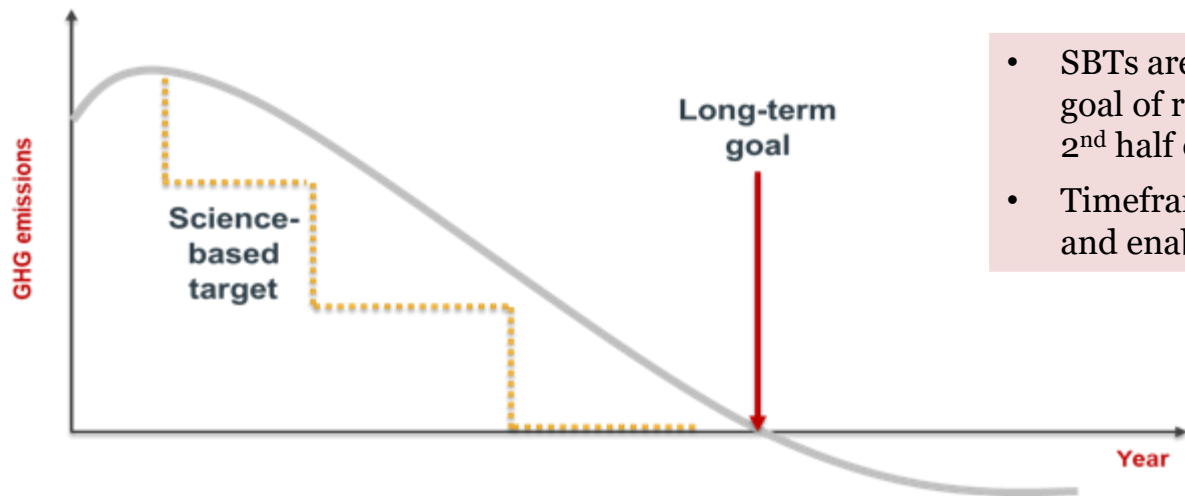


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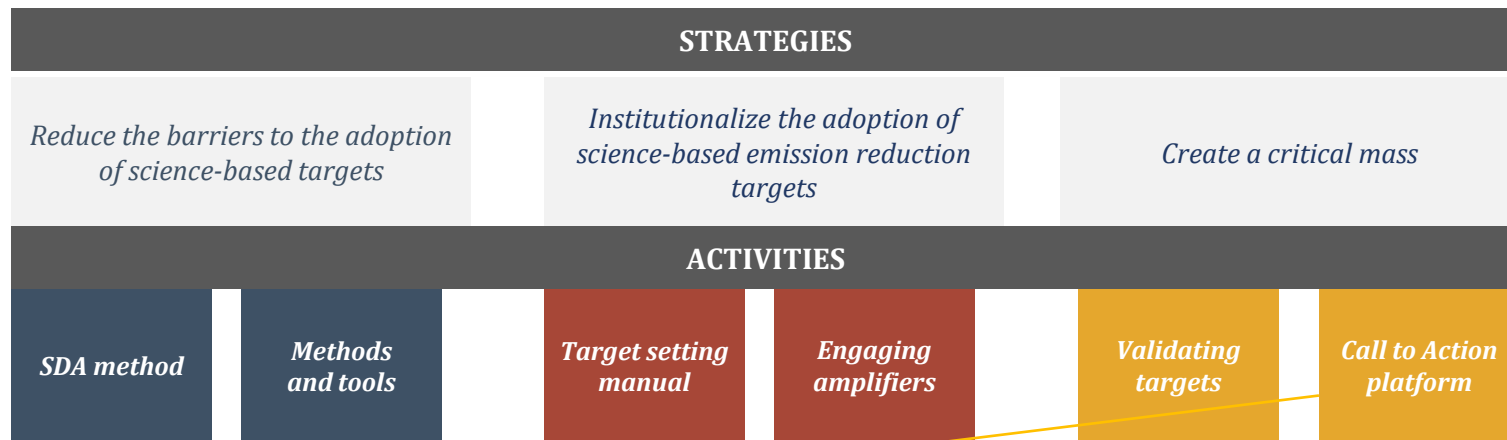
# What are science-based targets?

*“GHG emissions reduction targets that are consistent with the level of decarbonization that, according to climate science, is required to keep global temperature increase within 1.5 to 2°C compared to pre-industrial temperature levels.”*



- SBTs are consistent with the long-term goal of reaching net-zero emissions in 2<sup>nd</sup> half of century
- Timeframe drives short-term action and enables accountability (5-15 years)

# SBTi's 3-pillar strategy



800 330 ~ 3

Companies & FIs  
have formally  
joined the SBTi  
Call to Action

Companies  
have approved  
targets

Companies joining  
the Call to Action  
every week

# SBTi criteria

## *The SBTi uses 5 core criteria to assess company targets*

### **1. Boundary**

Covers company-wide scope 1 and scope 2 emissions and all GHGs as required in the GHG Protocol Corporate Standard.

### **2. Timeframe**

Commitment period must cover a minimum of 5 years and a maximum of 15 years from the date the target is submitted for an official quality check.

### **3. Level of ambition**

At a minimum, the target will be consistent with the level of decarbonization required to keep global temperature increase to well-below 2°C compared to pre-industrial temperatures, though we encourage companies to pursue greater efforts towards a 1.5° trajectory.

Intensity targets are only eligible when they lead to absolute emission reductions in line with climate science or when they are modelled using an approved sector pathway or method (e.g. the Sectoral Decarbonization Approach).



# SBTi criteria

## 4. Scope 3

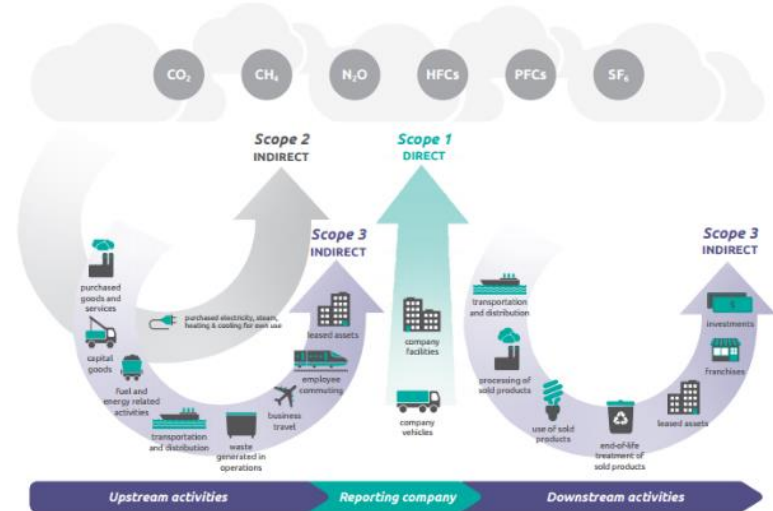
Companies must complete a scope 3 screening for all relevant scope 3 categories in order to determine their significance per the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard.

An ambitious and measurable scope 3 target with a clear time-frame is required when scope 3 emissions cover a significant portion (greater than 40% of total scope 1, 2 and 3 emissions) of a company's overall emissions.

The target boundary must include the majority of value chain emissions as defined by the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard

## 5. Reporting

Disclose GHG emissions inventory on an annual basis.



Source: GHG Protocol Scope 3 Standard  
<http://www.ghgprotocol.org/standards/scope-3-standard>

# Science-based targets for chemicals companies

The SBTi is launching this project to better understand challenges to setting SBTs using existing methods. The project will recommend options for revising these methods and developing guidance in light of current barriers and existing resources.

The project audience includes chemical companies, industry associations, and other stakeholders.

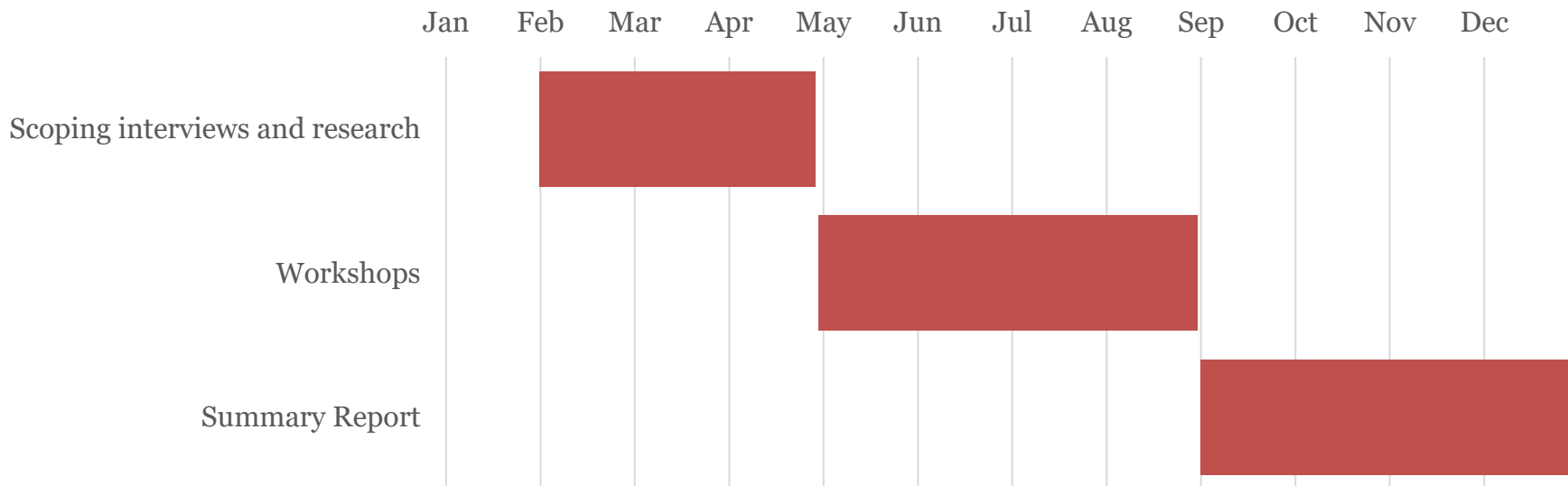
WRI gratefully acknowledges financial support from 3M for this project.



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## SBTi chemicals scoping process



## A global group of 20 chemicals companies have committed to setting SBTs

- *Air Liquide Group*
- *S.A. AkzoNobel*
- ***Borregaard AS***
- *Croda International Pl*
- *Ecolab*
- *Group Fu Plastic Co., Ltd*
- *Gujarat Fluorochemicals Ltd. (GFL)*
- ***International Flavors & Fragrances Inc.***
- *LOTTE Chemical Corporation*
- ***Novozymes AS***
- *Orbia Advance Corporation S.A.B.*
- *Polygenta Technologies Limited*
- *PTT Global Chemical*
- *Reliance Chemical Products Ltd.*
- ***Royal DSM***
- ***Sekisui Chemical Co., LTD***
- ***Sumitomo Chemical Co., Ltd.***
- ***Syngenta***
- *Tata Chemicals Limited*
- *Univar Solutions*

# Seven companies have set Science Based Targets

Company	HQ	Target Classification	Method used	Date Set	Targets	Scope 3 Categories included in target
<b>Novozymes A/S</b>	Denmark	1.5C	Absolute Contraction	Sep 2019	<ul style="list-style-type: none"> <li>Absolute targets: Novozymes commits to reduce absolute Scope 1 &amp; 2 GHG emissions by 50 % by 2030 from a 2018 base year.</li> <li>Absolute targets: Novozymes commits to reduce absolute Scope 3 GHG emissions from purchased goods and services by 15 % by 2030 from a 2018 base year.</li> <li>Renewable energy procurement targets: Novozymes commits to increase annual sourcing of renewable electricity from 37% in 2018 to 100% by 2030</li> </ul>	<ul style="list-style-type: none"> <li>Purchased Goods and Services</li> </ul>
<b>Borregaard A/S</b>	Norway	WB2D	Absolute Contraction	Jul 2019	<ul style="list-style-type: none"> <li>Absolute targets: Borregaard AS commits to reduce absolute Scope 1 and 2 GHG emissions 53% by 2030 and 100% by 2050 from a 2009 base-year*</li> <li>Absolute Scope 3 GHG emissions by 30% by 2030 and 75% by 2050 from a 2017 base-year.</li> </ul> <p>*The target boundary includes biogenic emissions and removals associated with the use of bioenergy.</p>	<ul style="list-style-type: none"> <li>Purchased goods and services, Capital goods, Fuel and energy related activities, Upstream transportation and distribution, Waste generated in operations, Business travel, Employee commuting, Downstream transportation and distribution, Processing of sold products, End-of-life treatment of sold products</li> </ul>
<b>International Flavors &amp; Fragrances Inc.</b>	United States	WB2D	Absolute Contraction	Jun 2018	<ul style="list-style-type: none"> <li>Absolute targets: International Flavors &amp; Fragrances, Inc. commits to reduce absolute scope 1 and 2 GHG emissions 30% by 2025, from a 2015 base-year. International Flavors &amp; Fragrances, Inc., also commits to working with its suppliers (representing 70% of its supply chain emissions) so that they set their own science-based targets and report annual emissions by 2025.</li> </ul>	<ul style="list-style-type: none"> <li>Purchased goods and services, Upstream transportation &amp; distribution, Business Travel</li> </ul>
<b>Syngenta</b>	Switzerland	WB2D	Intensity	Oct 2019	<ul style="list-style-type: none"> <li>Intensity targets: Syngenta AG commits to reduce scopes 1, 2 and 3 GHG emissions 67.6 % per \$ Value Added by 2030 from a 2016 base year.</li> </ul>	<ul style="list-style-type: none"> <li>Purchased goods and services, Capital goods, Fuel and energy related activities, Upstream transportation and distribution, Waste generated in operations, Business travel, Employee commuting, Upstream leased assets, Downstream transportation and distribution, Processing of sold products, End-of-life treatment of sold products, Downstream leased assets</li> </ul>

# Seven companies have set Science Based Targets

Company	HQ	Target Classification	Method used	Date Set	Targets	Scope 3 Categories included in target
Royal DSM	Netherlands	2C	Intensity & Absolute Contraction	Mar 2019	<ul style="list-style-type: none"> <li>Absolute targets: DSM commits to reduce absolute Scope 1 &amp; 2 GHG emissions 30% by 2030 from a 2016 base-year.</li> <li>Intensity targets: DSM commits to reduce Scope 3 GHG emissions from “purchased goods &amp; services”, “waste generated in operations” and “upstream transportation and distribution” with at least 20 % per ton of sold product by 2030 from a 2016 base-year.</li> </ul>	<ul style="list-style-type: none"> <li>Purchased goods are services, Upstream transportation and distribution, Waste generated in operations</li> </ul>
Sumitomo Chemical Co., Ltd.	Japan	2C	Absolute Contraction	Oct 2018	<ul style="list-style-type: none"> <li>Absolute targets: Japanese multinational chemical company Sumitomo Chemical commits to reduce absolute Scope 1+2 GHG emissions 30 % by 2030 and reduce more than 57% by 2050 from a 2013 base-year while actively providing solutions to the value chain for developing a sustainable low carbon society.</li> <li>Sumitomo Chemical also commits that 90 % of its suppliers by weight-base will institute GHG reduction targets with science-base by 2024.</li> </ul>	<ul style="list-style-type: none"> <li>Purchased goods and services, Capital goods, Fuel and energy related activities</li> </ul>
Sekisui Chemical Co., Ltd	Japan	2C	Absolute Contraction	Jun 2018	<ul style="list-style-type: none"> <li>Absolute targets: SEKISUI CHEMICAL CO., LTD. commits to reduce absolute Scope 1and 2 GHG emissions 26 % by 2030 from a 2013 base-year, and reduce absolute Scope 3 GHG emissions 27 % by 2030 from a 2016 base-year.</li> </ul>	<ul style="list-style-type: none"> <li>Purchased goods and services, Use of sold products</li> </ul>

## Aggregated Base Year Emissions (tCO2e) of Seven Approved Companies

Scope 1	Scope 2	Scope 3
10,010,953	3,431,518	25,713,481

# Q&A



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# Purpose led, performance driven.

Creating Brighter  
Lives for all.

Salla Sulasuo, Global Climate Lead

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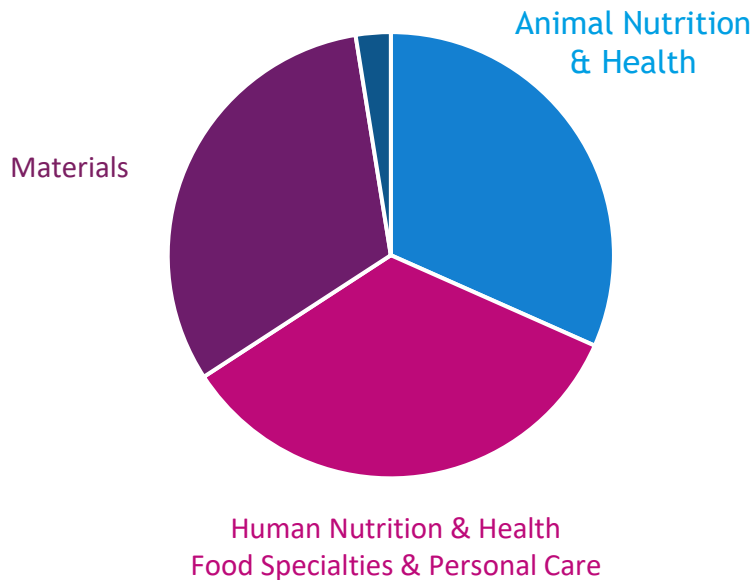
**DSM**

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# DSM at a glance

*Royal DSM: a company with a purpose*



- Sales ~€8.9bn (7% growth in 2018)
- EBITDA €1,532m (6% growth in 2018)
- ROCE 13.3% (up 100bps)
- Global company with 65% of sales outside Europe
- Highly engaged workforce: ~23,000 employees
- Intrinsically innovative company: 19% sales from innovation
- ~ 43% sales from high-growth economies
- Strategy well aligned with the Sustainable Development Goals

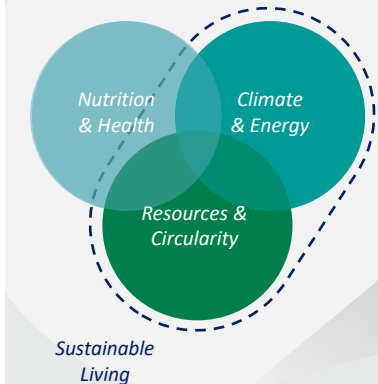
# Purpose drives growth opportunities

*Our competences and purpose...*



*Provide growth opportunities in the **focus domains**...*

*A science-based company in health, nutrition and sustainable living:*



*Creating a growth company...*

**Company growth**



*With targets that underpin our mission.*

*OUR 2019-2021 TARGETS:*

High single-digit percentage annual **Adj. EBITDA** increase

~10% average annual **Adj. Net Operating Free Cash Flow** increase



**Value-creating M&A**

# DSM Climate and Energy Agenda

*Improve. Enable. Advocate.*



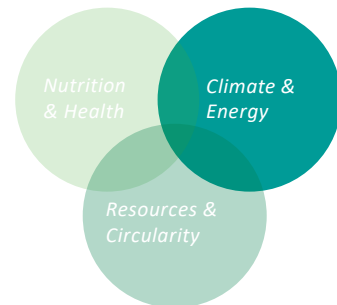
Reach **NetZero emissions by 2050**; realize **-30% GHG reduction for scope 1&2 in absolute terms** and **-28% per ton product for scope 3** (compared to 2016), via **energy efficiency, 75% renewable purchased electricity** and stimulated by an **internal carbon price**



We **enable** low carbon economy. Through our range of solutions, we help our customers to reduce their GHG emissions. With animal nutrition solutions like **Bovaer®** from our **Project Clean Cow**, we help to significantly reduce methane emissions from cows.



**Stanyl®**: high performance polyamide used for example in automotive applications. While cutting down engine friction it contributes to reducing emissions.



**Advocate accelerated climate action and system transformation** creating markets in which low-carbon products can thrive, with a focus on renewable energy and carbon pricing.

# Our target setting journey

- Strong climate focus for several years with vocal advocacy efforts supporting ambitious climate policies in the lead up to COP21 in 2015
- We already had targets we thought were ambitious -clear wake-up call when we realized the difference in ambition from SBT approach
  - All sectors have to play a part in reducing emissions
  - “DSM’s science based targets **represent our fair share**”
- Internal process for SBT’s lasted for about a year, Scope 1&2 targets “approved” much earlier and published along with new strategy in June 2018
  - Extensive upfront mapping: what is possible from feasibility studies, costs and resource perspective
- Final targets (including Scope 3) reviewed and approved by the [Science Based Targets Initiative](#) in February 2019, as first company in our sector in Europe



# DSM's Science Based Targets

- Our approved targets:
  - Reduce absolute scope 1 and 2 GHG emissions 30% by 2030 from a 2016 base year.
  - Reduce scope 3 GHG emissions from purchased **goods and services, upstream transportation and distribution and waste generated in operations** by 28% **per ton of product produced** by 2030 from a 2016 base year.
  - Target update process aligned with our strategic cycle and internal process
- We are effectively **decoupling emissions from economic growth** and simultaneously working with a long-term pathway to **NetZero GHG emissions across value chains by 2050**, aligned with the 1.5°C ambition

Long-term target:  
**NetZero emissions by 2050**



**30%**

Emissions reduction  
from operations

In **absolute** terms  
by 2030 vs. 2016

**28%**

Value chain  
emissions  
reduction

Per ton of product  
by 2030 vs. 2016





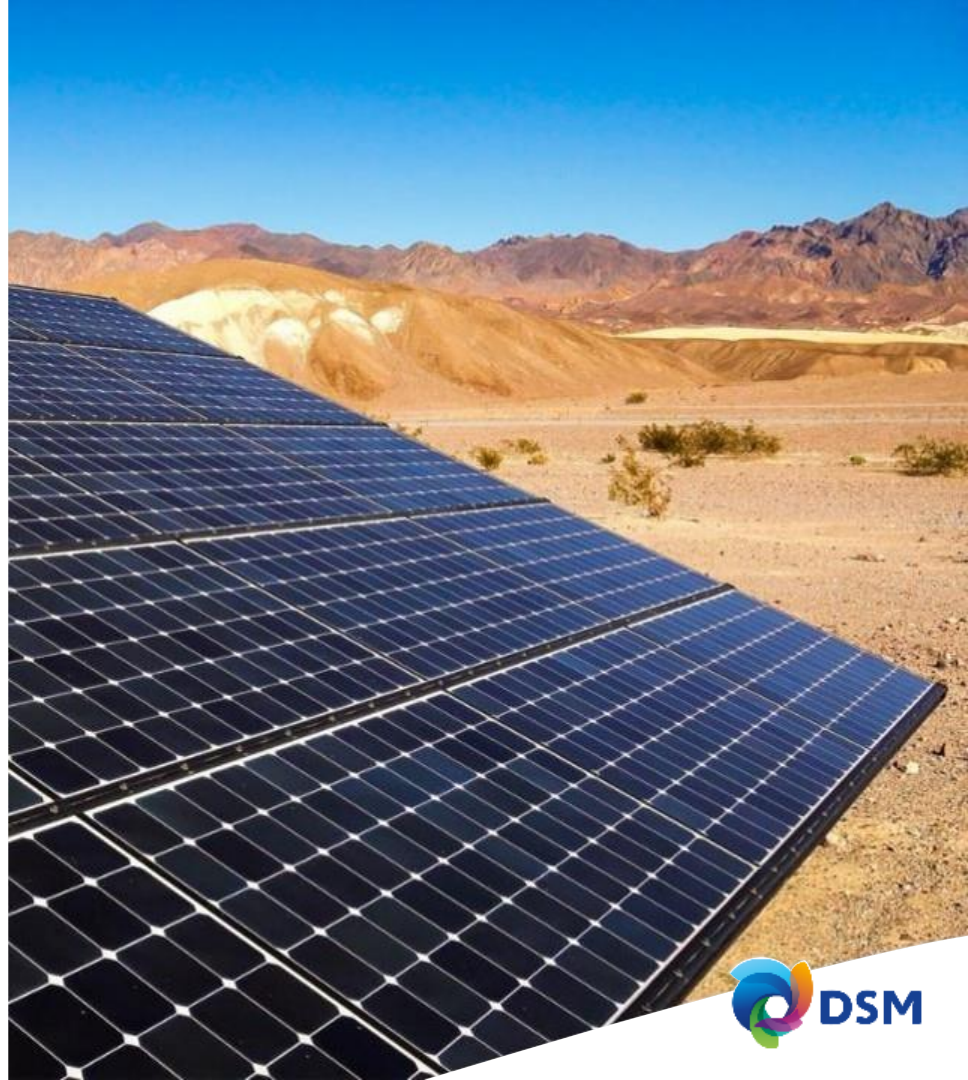
# Progress to date...

- **Strong leadership** from top management from the beginning for robust process and financial resources to deliver
- Deep-dives, short-, mid-, and long-term **roadmaps** for sites conducted throughout 2019:
  - Identify further opportunities and requirement (technologies, costs, resources)
  - Socialize learnings from all sites, internal engagement
- **Supportive processes** and complementary targets
  - On the road to RE100, 75% of purchased electricity renewable by 2030 (already 50% achieved in 2019)
  - Internal Carbon Price (50€/tCo2e) & carbon neutral investment rules within Business Groups
- Scope 1&2 reductions at this point mostly driven by fuel switching and efficiency improvements (with detailed focus on structural improvements)



# ...involves addressing challenges

- Finalizing our **scope 3** target was a long process
  - Scope 3 (especially *category 1*) covers the vast majority of DSM's total emissions
  - CO2REDUCE program focusing on the most CO2 intensive materials, engagement with 200 priority suppliers (70% of Scope 3), shared learnings, product level data collection and identifying new opportunities
  - As an intermediate producer, some downstream categories (use and processing) excluded from inventory as per GHG protocol guidance
  - Some assumptions on external environment accelerating our suppliers efforts to reduce emissions
  - Impact from GHG protocol methodology update tbc
- New due diligence in acquisitions
- Target review process
- Customer engagement on how we can support them to meet their SBT's
- **Predictable and ambitious policies are needed to create systemic change** – no one can succeed alone



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# Q&A



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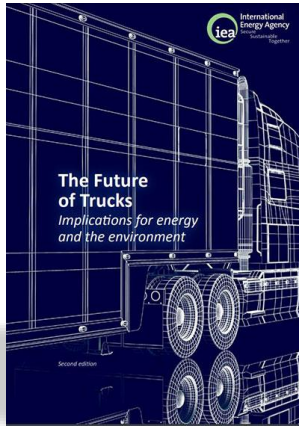
# The Future of Petrochemicals

Peter Levi, Energy Technology Policy Division

SBTi Chemicals Launch Webinar, February 2020

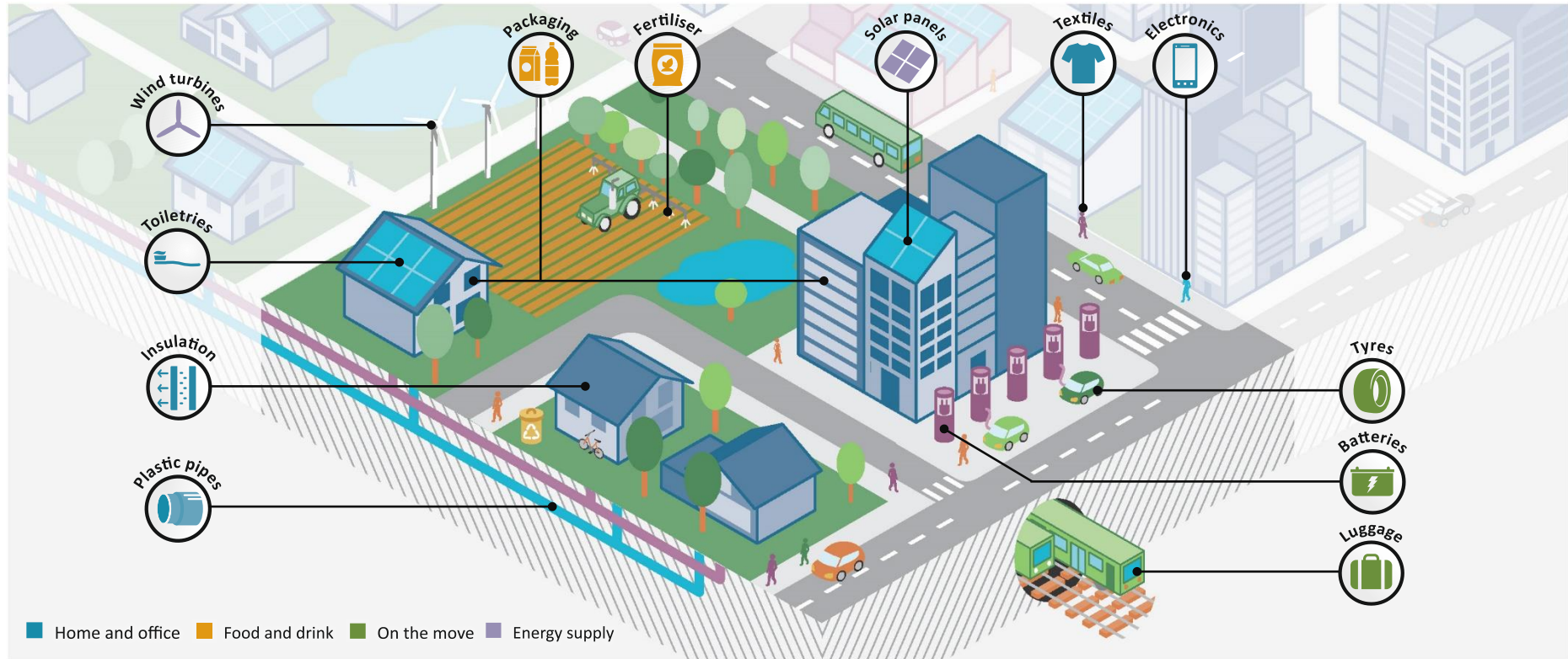
# Exploring key “blind spots” in global energy

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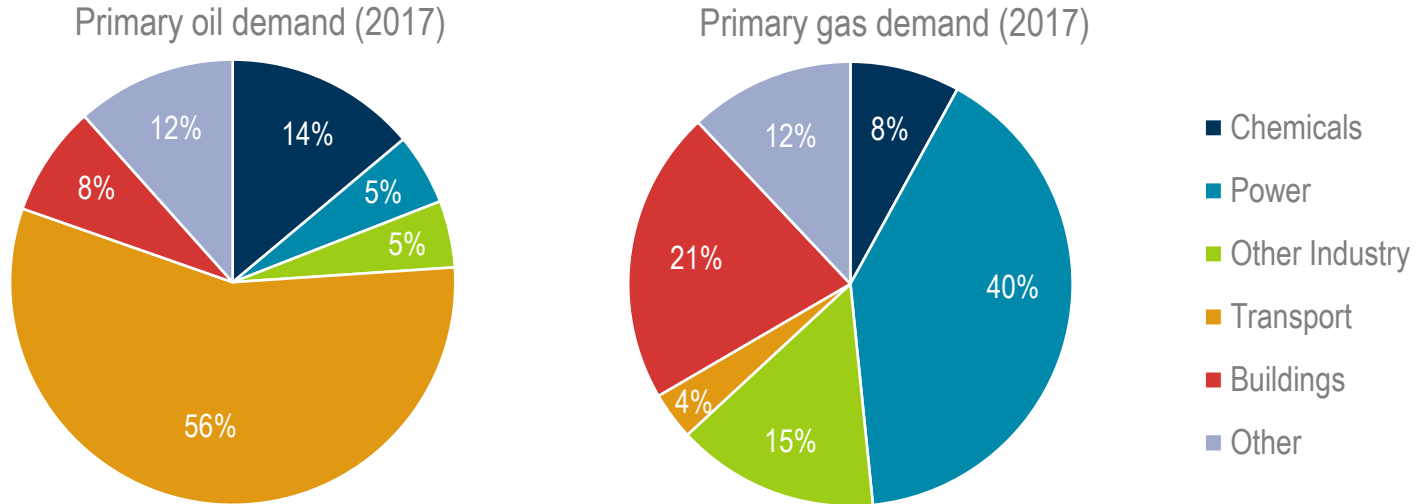


The IEA is shining a light on areas of the energy system that do not garner as much attention as they deserve.

# Petrochemicals are all around us



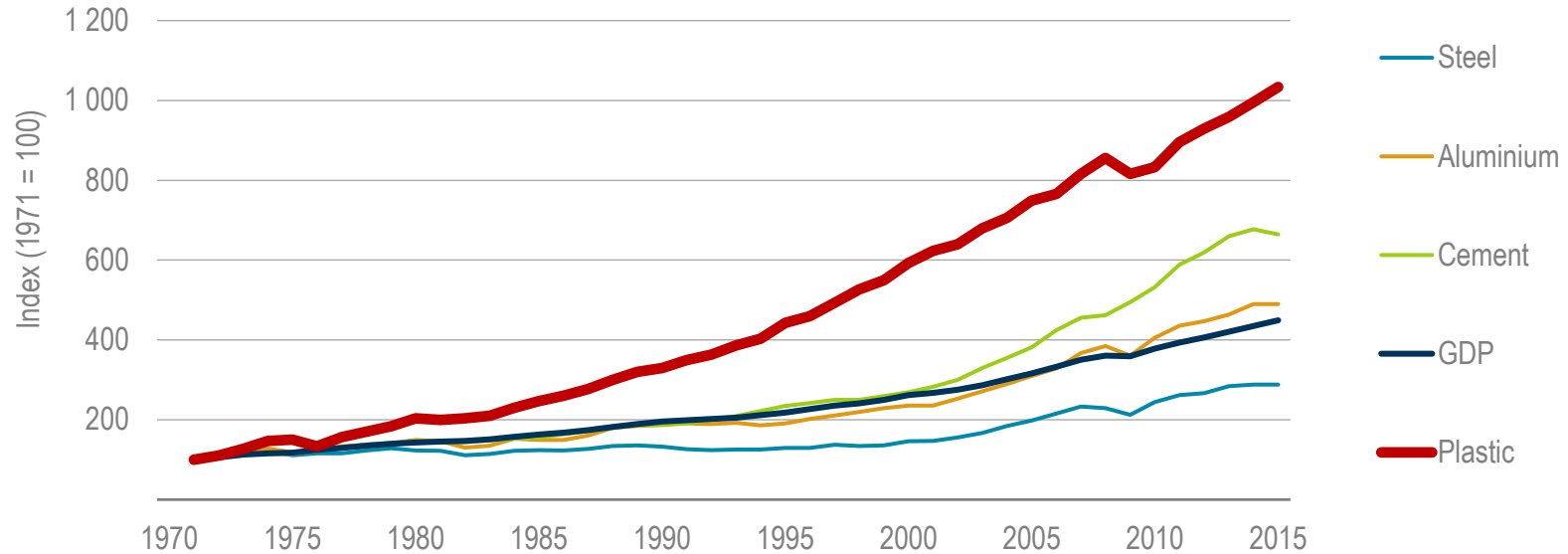
# The importance of petrochemicals in oil and gas demand



Today, petrochemicals account for 14% of global oil, and 8% of global gas demand.

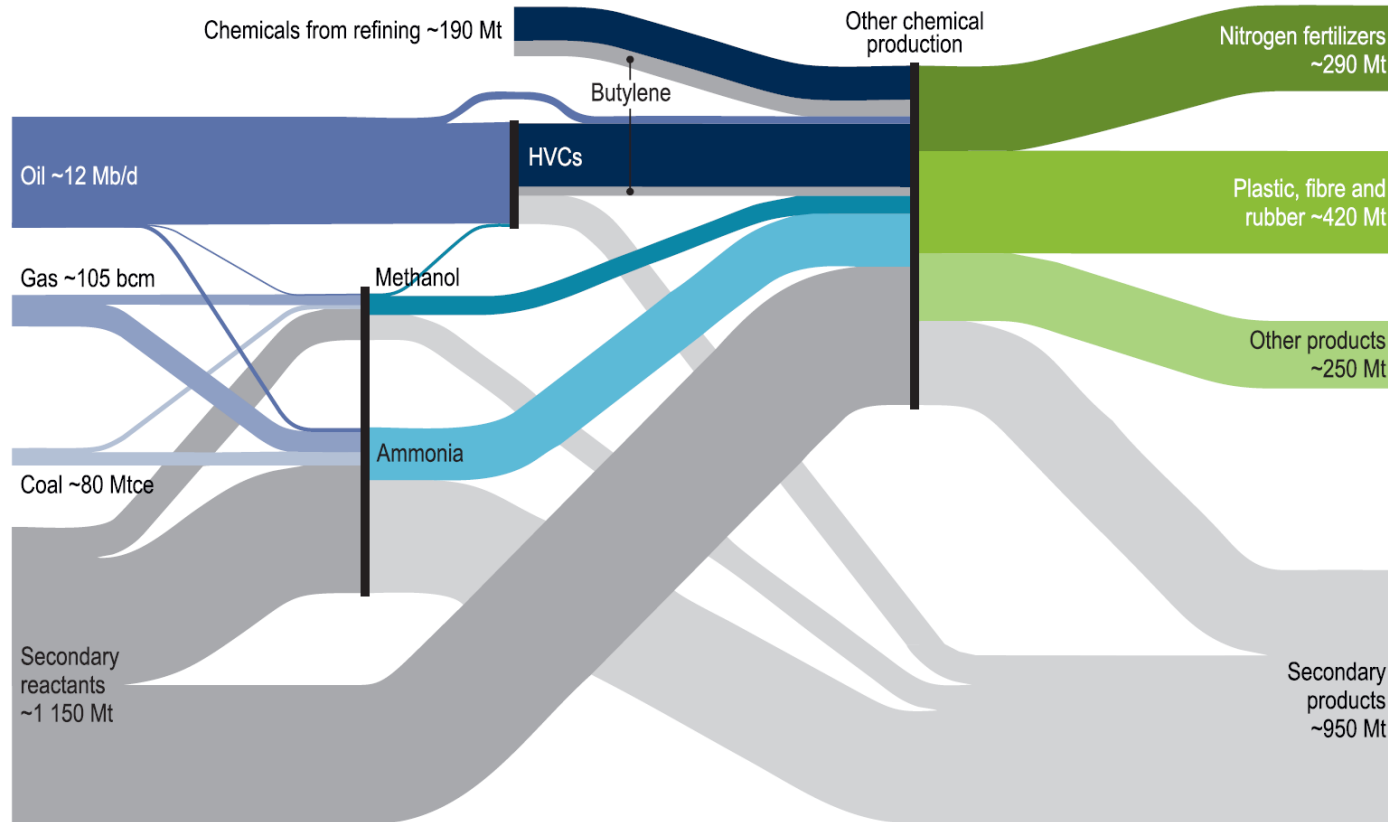
# Petrochemical products have been growing fast

Production growth for selected bulk materials and GDP



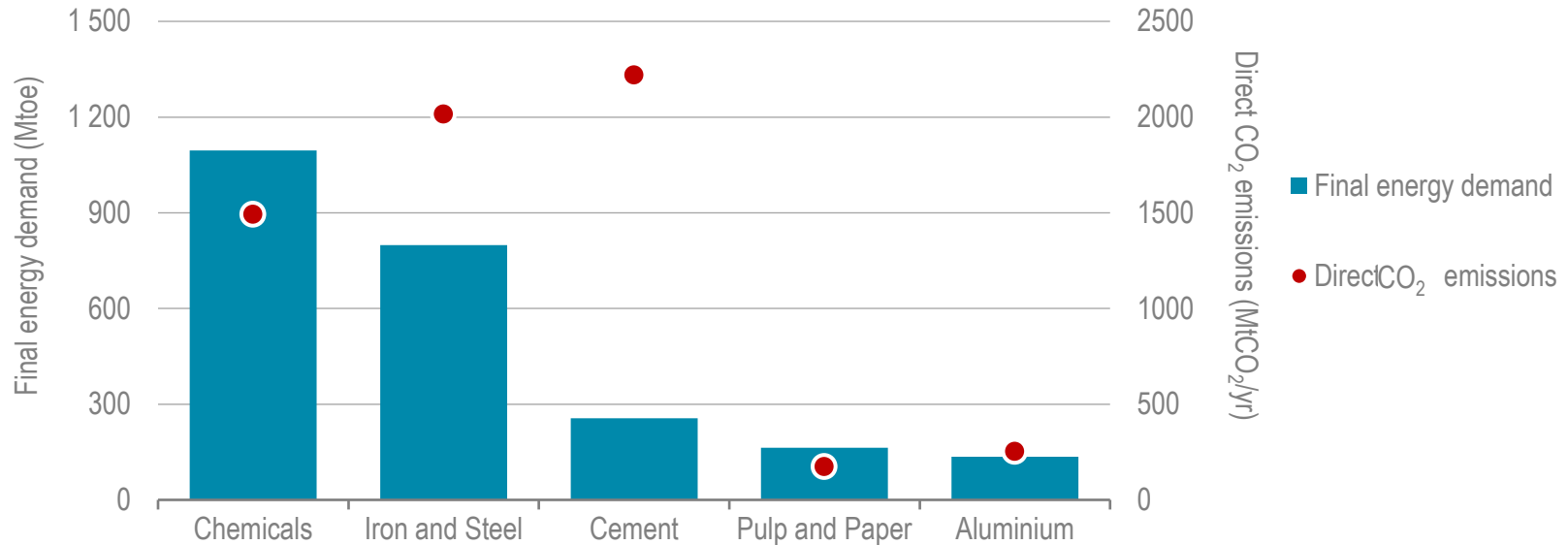
Demand for plastic has grown faster than for any other bulk material, nearly doubling since the millennium.

# “Feedstocks” fly under the radar



# Petrochemicals take an environmental toll

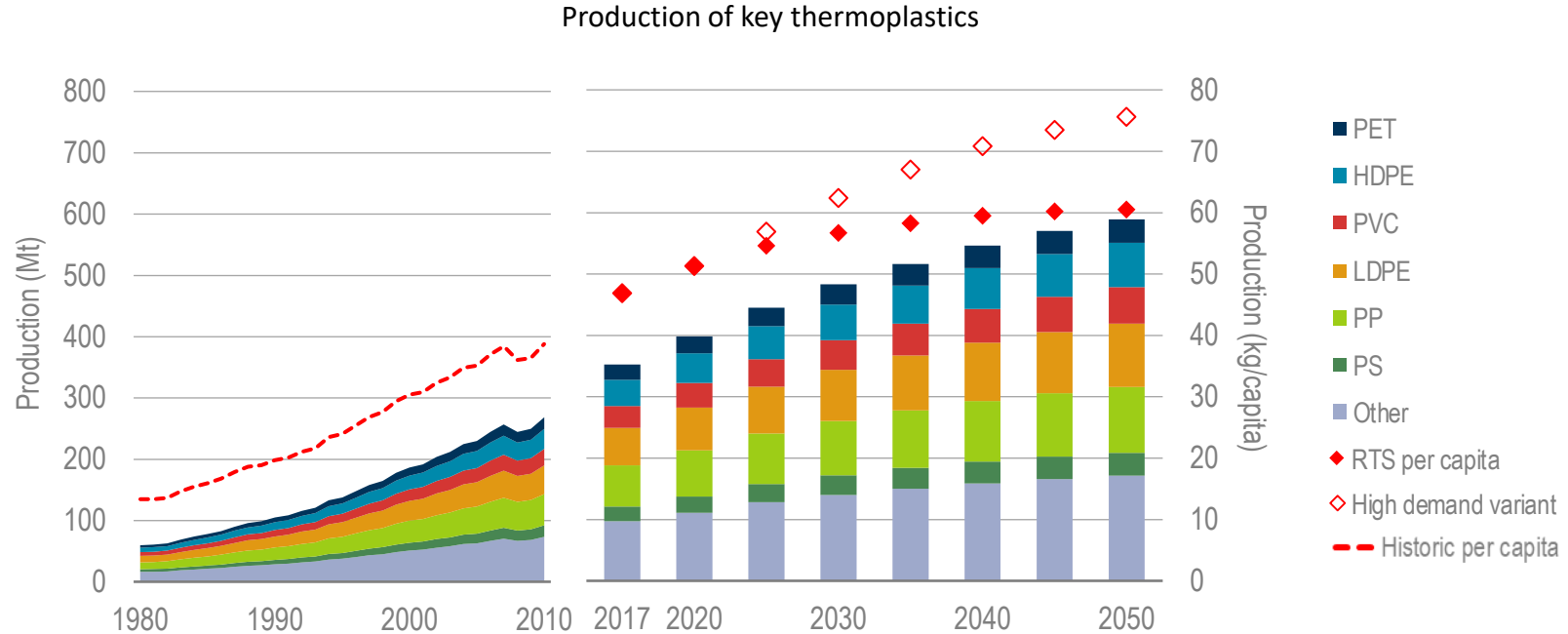
Global final energy demand and direct CO<sub>2</sub> emissions by sector in 2017



Despite being the largest industrial energy consumer, the chemical sector ranks third among industrial CO<sub>2</sub> emitters.

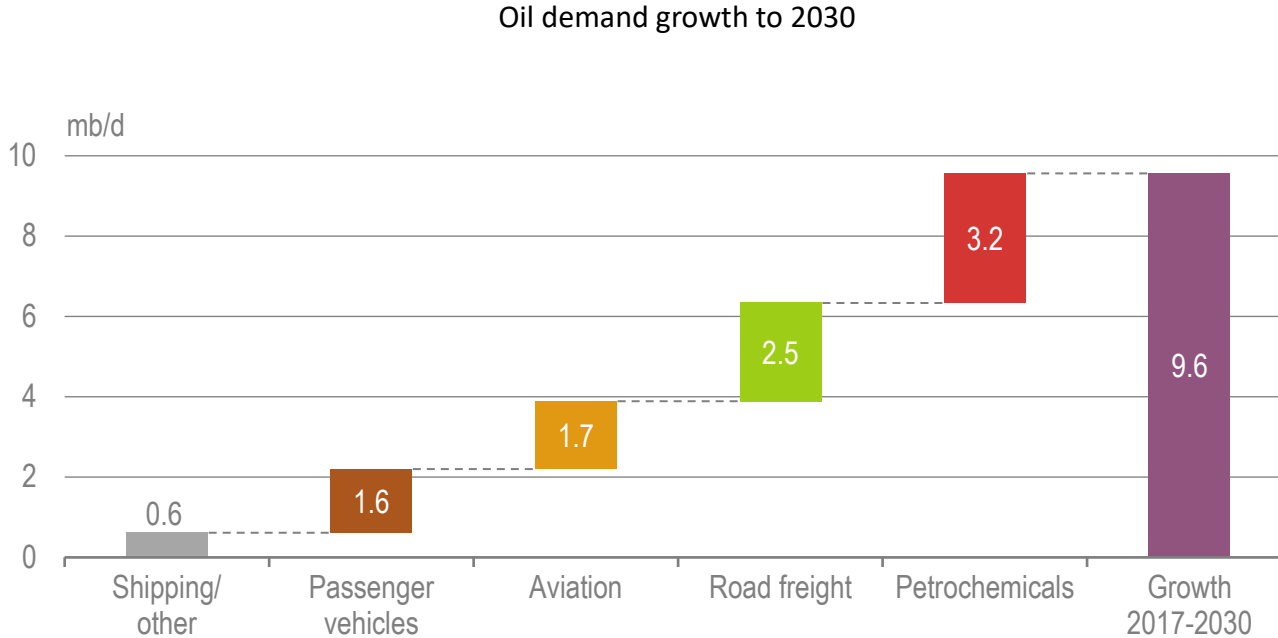


# Plastics continue their strong growth trajectory...



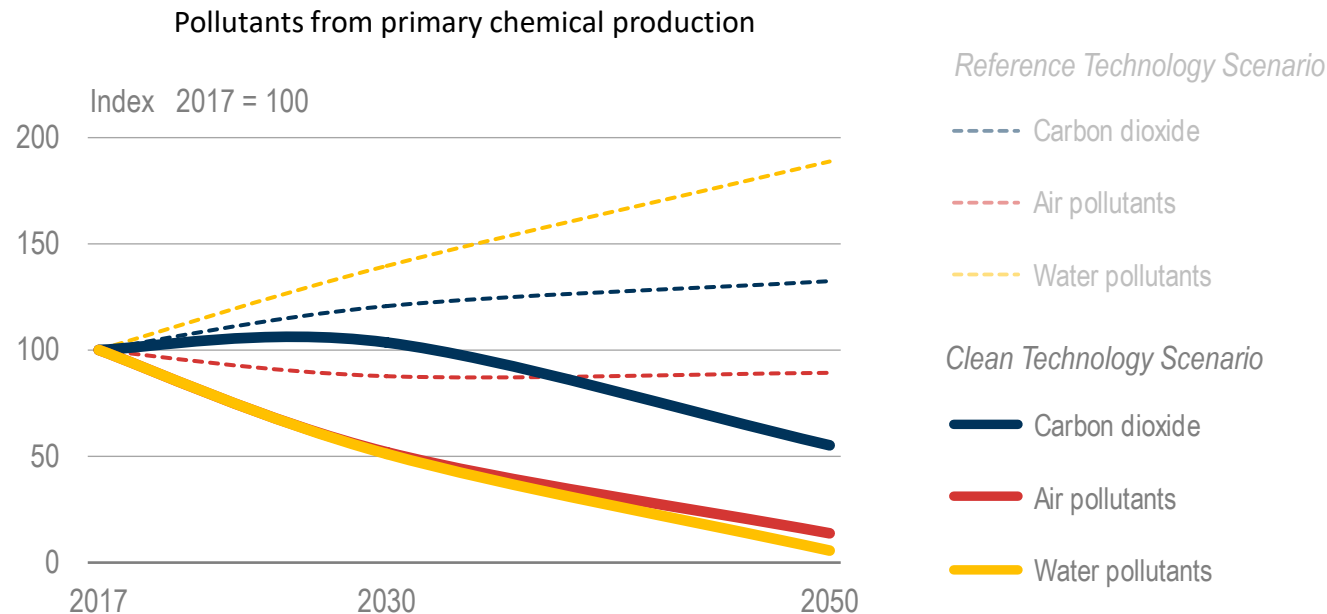
Production of key thermoplastics more than doubles between 2010 and 2050, with global average per capita demand increasing by more than 50%.

# Petrochemicals grow more than any other oil demand driver



Petrochemicals are the fastest growing sector of oil demand, accounting over a third of growth to 2030, and nearly half to 2050.

# Building towards a more sustainable chemical sector

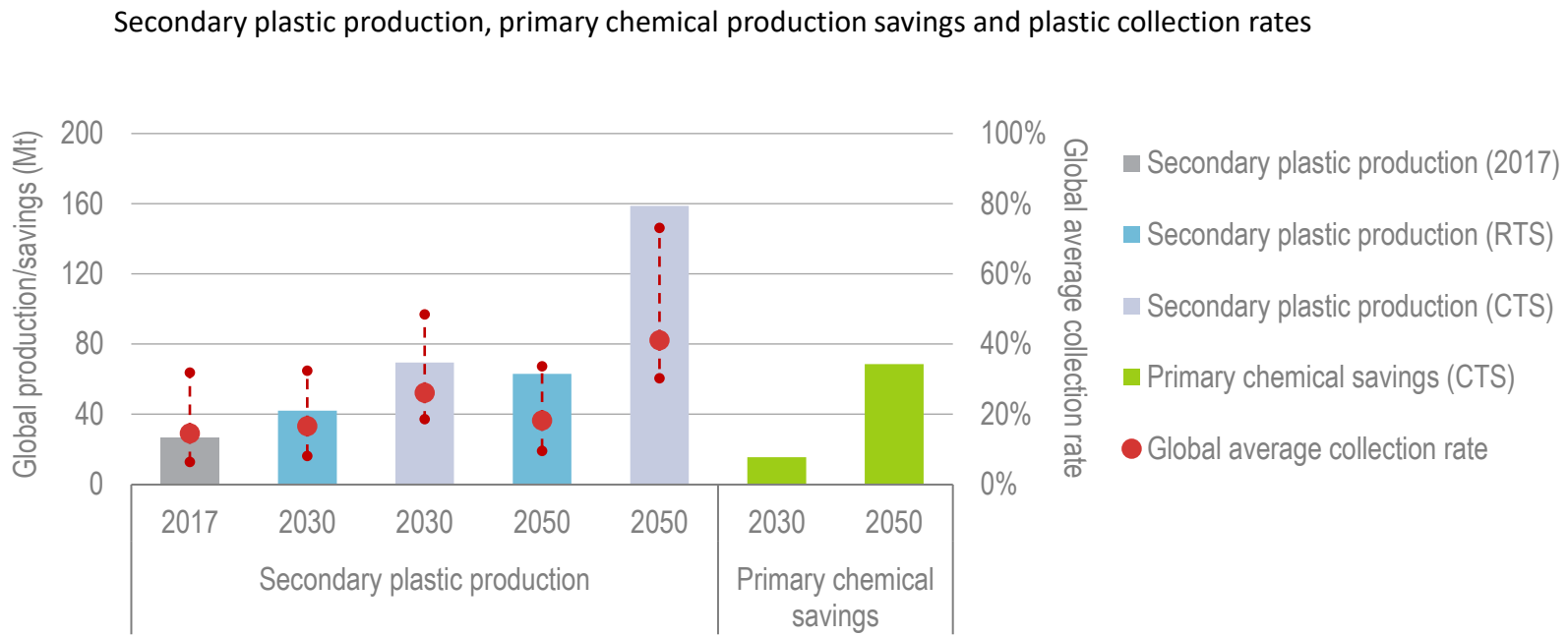


## Relevant UN SDGs



The *Clean Technology Scenario*, helps achieve several UN Sustainable Development Goals. By 2050, environmental impacts decrease across the board, including CO<sub>2</sub>, air and water pollutants.

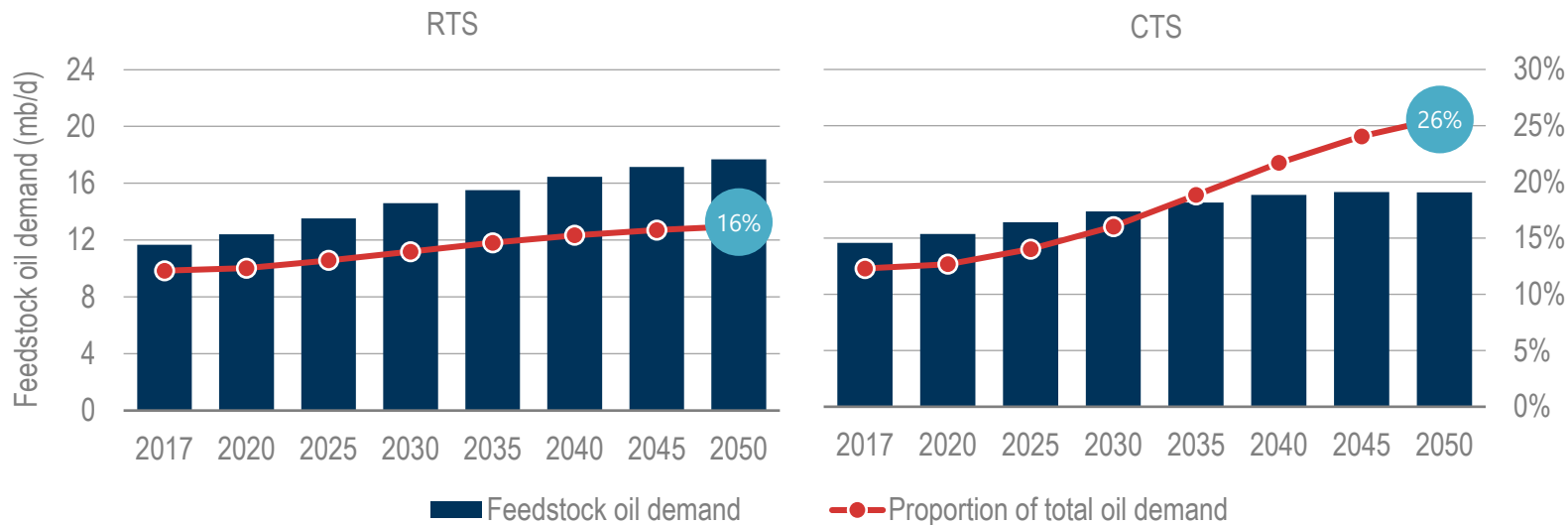
# Plastic recycling increases sharply in the CTS



By 2050, the collection rate for recycling nearly triples in the CTS, resulting in a 7% reduction in primary chemical demand.

# Challenges for refiners as feedstock dominates oil demand...

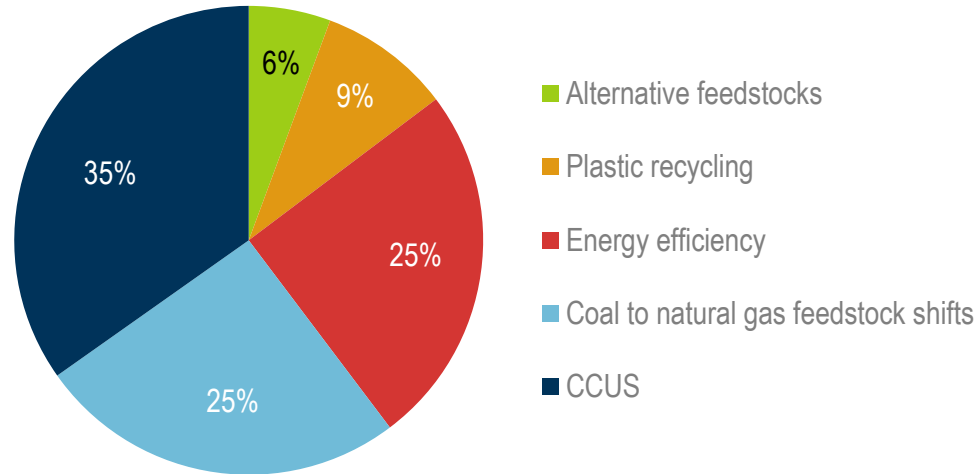
Oil demand for chemical feedstock and share in total oil demand by scenario



The share of chemical feedstock in total oil demand in the CTS is much higher than in the RTS, despite lower absolute volumes, as oil demand for other sectors declines much more sharply.

# A more sustainable chemical sector is achievable

Contribution to cumulative CO2 emissions reductions between the CTS and RTS



A balanced portfolio of options are required to deliver cumulative emissions reductions relative to the RTS of 24% between 2017 and 2050, in the CTS.

# Conclusions: Shining a light on “blind spots” of global energy

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- Petrochemical products are deeply embedded in our economies and everyday lives. They also play a key role in many components of clean energy technologies.
- Petrochemicals are the largest driver of global oil demand, accounting for more than a third of the growth to 2030, and nearly half to 2050.
- China, the United States and the Middle East lead the growth in petrochemicals production.
- The production, use and disposal of chemicals take an environmental toll but achievable and cost-effective steps can be taken to make these more sustainable.
- The IEA will continue to shine a light on energy “blind spots”: trucks, air conditioners, modern bioenergy... now petrochemicals... and more to come.

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# Slide notes

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## General notes

*Primary chemicals* refers to HVCs, ammonia and methanol. HVCs = high-value chemicals (ethylene, propylene, benzene, toluene and mixed xylenes), COG = coke oven gas. Mtoe = million tonnes of oil equivalent.

## Slide 4

Outputs of different industrial sectors are displayed on an indexed basis referred to 1971 levels. *Aluminium* refers to primary aluminium production only. *Steel* refers to crude steel production. *Plastics* includes a subset of the main thermoplastic resins. Sources: Geyer, R., J.R. Jambeck and K.L. Law (2017), "Production, use, and fate of all plastics ever made", <https://doi.org/10.1126/sciadv.1700782>; Worldsteel (2017), *Steel Statistical Yearbook 2017*; IMF (2018), *World Economic Outlook Database*; USGS (2018a), *2018 Minerals Yearbook: Aluminium*; USGS (2018b), *2018 Minerals Yearbook: Cement*; USGS (2018c), *2018 Minerals Yearbook: Nitrogen*.

## Slide 5

*Petrochemicals* includes process energy and feedstock.

## Slide 6

All flows in the diagram are sized on a mass basis. Secondary reactants and products are the compounds specified within chemical reactions that do not form part of the feedstock or main products. Key examples include water, CO<sub>2</sub>, oxygen, nitrogen and chlorine. Some of the secondary products entering the sector on the left of the figure may well coincide with those leaving it on the right – CO<sub>2</sub> emitted from ammonia facilities and utilised in urea production is a key example. Mtce = Million tonnes of coal equivalent. Source: Adapted from Levi, P.G. and J.M. Cullen (2018), "Mapping global flows of chemicals: From fossil fuel feedstocks to chemical products", <https://doi.org/10.1021/acs.est.7b04573>.

## Slide 7

Final energy demand for chemicals includes feedstock, and, for iron and steel, it includes energy use in blast furnaces and coke ovens. Direct CO<sub>2</sub> emissions includes energy and process emissions in the industry sector.

## Slide 8

Other refers to a selection of other thermoplastics: acrylonitrile butadiene styrene, styrene acrylonitrile, polycarbonate and polymethyl methacrylate. Volumes of plastic production shown are independent of the level of recycling. The impact of recycling is registered in the lowering of demand for primary chemicals required to produce the plastic volumes shown above. The RTS high demand sensitivity variant is a separate scenario performed to explore the sensitivity of our results to higher than expected demand. Only the per capita demand figures are shown for the high demand sensitivity variant in Figure 4.2. Details of the high demand sensitivity variant analysis can be found in the online annex accompanying this publication. Sources: Data consulted in making projections from Geyer, R., J.R. Jambeck and K.L. Law (2017), "Production, use, and fate of all plastics ever made", <https://doi.org/10.1126/sciadv.1700782>; Levi, P.G. and J.M. Cullen (2018), "Mapping global flows of chemicals: From fossil fuel feedstocks to chemical products", <https://doi.org/10.1021/acs.est.7b04573>; OECD (2018), *Improving Markets for Recycled Plastics: Trends, Prospects and Policy Responses*.

# Slide notes

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## Slide 9

*Other* includes the net contribution of all other oil demand sectors.

## Slide 10

All environmental impacts relate to primary chemical production (ethylene, propylene, benzene, toluene, mixed xylenes, methanol and ammonia). *Air pollutants* includes nitrous oxides, sulphur dioxide and fine particulate matter. *Water pollutants* refers to ocean-bound plastic leakage. *Carbon dioxide* refers to direct emissions from the chemical and petrochemical sector.

## Slide 11

Error bars show the range of resin-specific global average collection rates. Projected volumes of total plastic production are independent of the level of recycling. The impact of recycling is registered in the lowering of demand for primary chemicals. Sources: Data consulted in making projections from Geyer, R., J.R. Jambeck and K.L. Law (2017), "Production, use, and fate of all plastics ever made", <https://doi.org/10.1126/sciadv.1700782>; Levi, P.G. and J.M. Cullen (2018), "Mapping global flows of chemicals: From fossil fuel feedstocks to chemical products", <https://doi.org/10.1021/acs.est.7b04573>; OECD (2018), *Improving Markets for Recycled Plastics: Trends, Prospects and Policy Responses*.

## Slide 12

Cumulative direct CO<sub>2</sub> emission reductions refer to primary chemical production and not to the total chemical sector, and cover the period 2017-50. Coal to natural gas savings include the reduction of process emissions in the production of methanol and ammonia. CO<sub>2</sub> emission savings resulting from feedstock shifts within the same energy commodity (e.g. naphtha to ethane) are included in energy efficiency.

## Slide 13

In the RTS, quantities of plastic leakage are estimated based on projections of plastic waste and estimates of current rates of leakage, the latter of which are assumed to remain constant. Current rates of leakage from Jambeck, J.R. et al. (2015), "Plastic waste inputs from land into the ocean", <https://doi.org/10.1126/science.1260352>.

# Q&A



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# SCIENCE BASED TARGETS FOR THE CHEMICAL INDUSTRY

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## KEY TAKE-AWAYS OF DUTCH AND GERMAN ROADMAPS

MICHIEL STORK

FEBRUARY 6<sup>TH</sup>, 2020

# DISCLAIMER

## Notice Regarding Presentation

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<sup>1</sup> On October 11, 2019, Guidehouse LLP completed its previously announced acquisition of Navigant Consulting, Inc. In the months ahead, we will be working to integrate the Guidehouse and Navigant businesses. In furtherance of that effort, we recently renamed Navigant Consulting, Inc. as Guidehouse, Inc.

# INTRODUCING



## **Michiel Stork**

Associate Director at Navigant

- 10 years experience in chemical industry (DSM, Sabic);
- 2 years at Dutch government (energy covenant);
- 8 years at Ecofys – Navigant – Guidehouse;
  - European chemical industry roadmap (CEFIC);
  - European fertilizer roadmap (Fertilizer Europe);
  - Innovation Fund (DG CLIMA);
  - Re-use of Gaseous Industrial Effluents (DG GROW);
  - Dutch chemical industry roadmap (VNCI);
  - SPIRE Roadmap;

# THE EMISSIONS IN THE CHEMICAL INDUSTRY

Emissions of German chemical industry (2020) split by scope (in Mton CO<sub>2</sub>e)<sup>1)</sup>

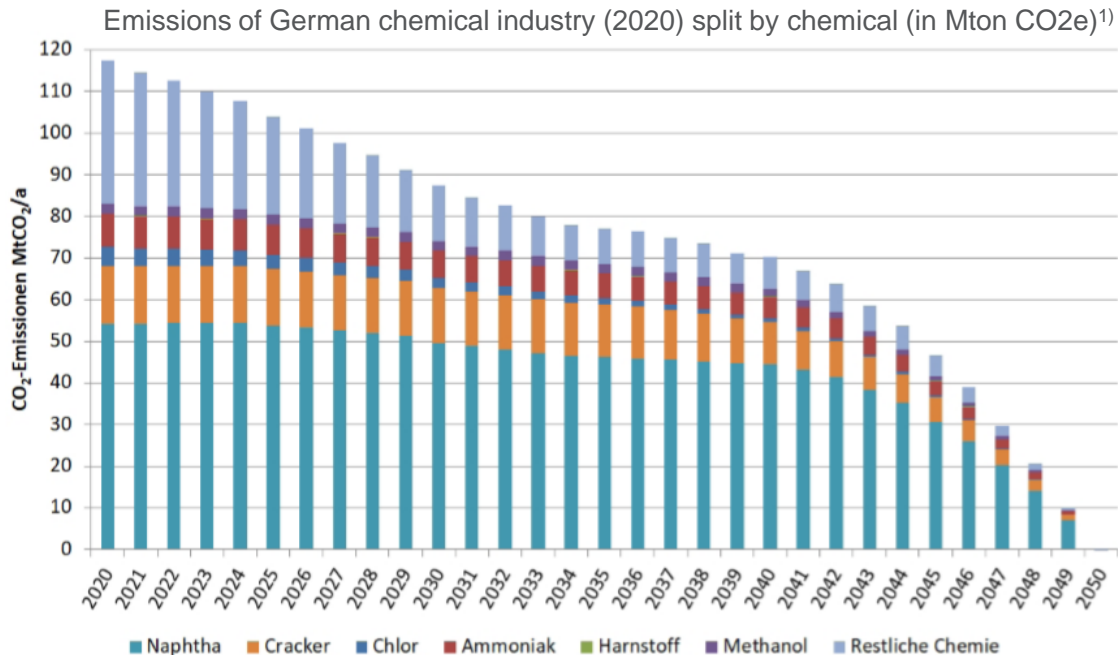
Scope	Currently	Pathway 1 - 2050 (no additional investments, current technologies)	Pathway 2 - 2050 (some additional investment, limited RES, with innovation)	Pathway 3 – 2050 (no limitations, GHG neutrality in 2050)
1	32,9	25	12,6	1,5
2	23,4	0,6	0,6	0,6
3 (partly)	56,5	56,5	31,2	0

Scope 3

1) <https://www.vci.de/vci/downloads-vci/publikation/2019-10-09-studie-roadmap-chemie-2050-treibhausgasneutralitaet.pdf>

# THE EMISSIONS OF THE CHEMICAL INDUSTRY

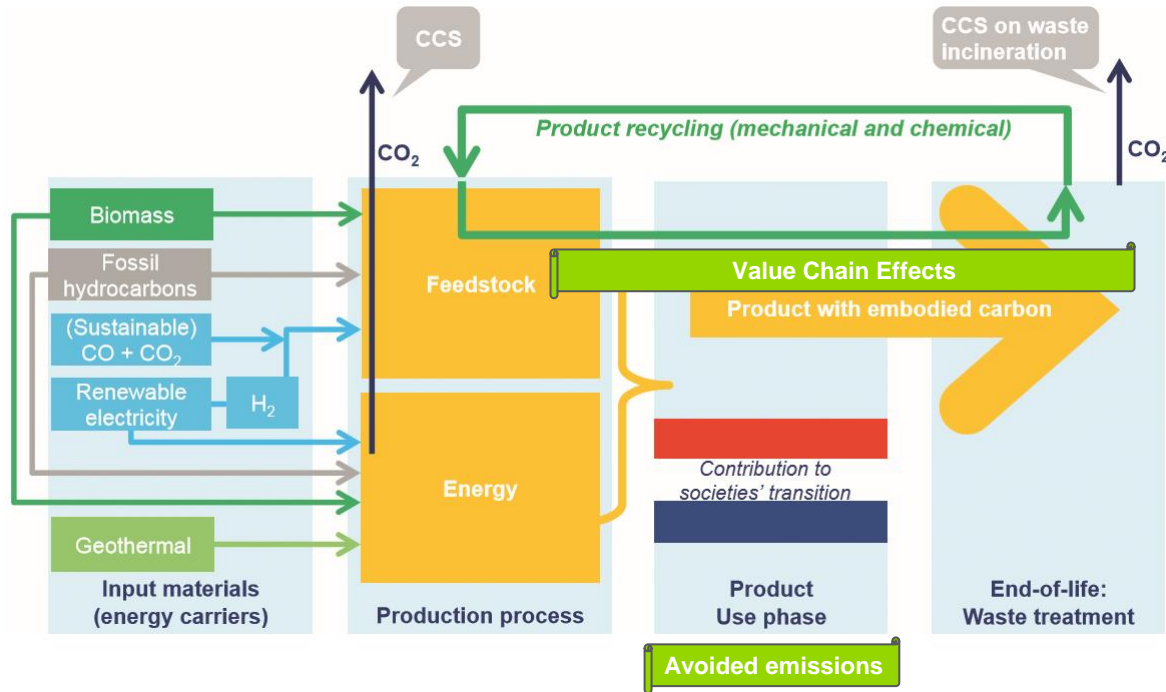
A couple of chemicals emit the majority of the greenhouse gases



1) <https://www.vci.de/vci/downloads-vci/publikation/2019-10-09-studie-roadmap-chemie-2050-treibhausgasneutralitaet.pdf>



# OVERVIEW OF CO<sub>2</sub> EMISSION REDUCTION MEASURES



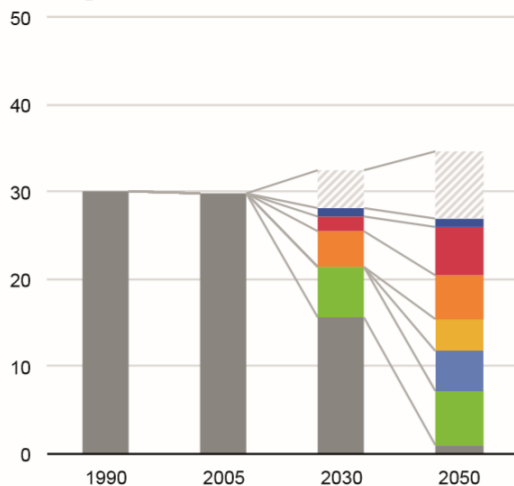
Modified from: [https://www.vnci.nl/Content/Files/file/Downloads/VNCI\\_Routekaart-2050.pdf](https://www.vnci.nl/Content/Files/file/Downloads/VNCI_Routekaart-2050.pdf)

# REDUCING EMISSIONS TO ZERO IN 2050

Emission reduction of the Dutch chemical industry (in Mton CO<sub>2</sub>e)<sup>1)</sup>

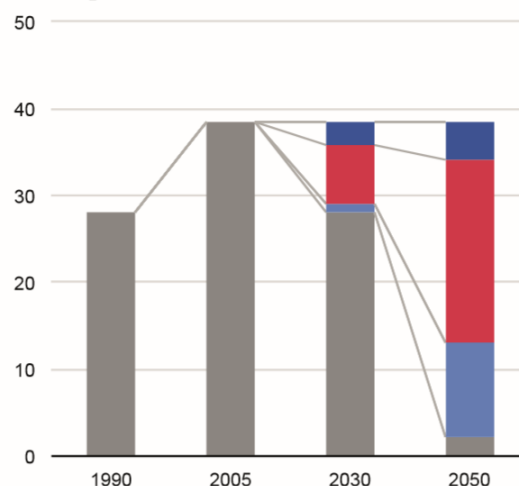
## Energetic and other GHG emissions

MtonCO<sub>2</sub>e/year



## Non-energetic emissions

MtonCO<sub>2</sub>e/year



■ Remaining

■ Renewable energy

■ Closure of the materials chain

■ N2O

■ Energy efficiency

■ Reduced electricity emission factor

■ CCS

■ Replacement of fossil feedstock

1) [https://www.vnci.nl/Content/Files/file/Downloads/VNCI\\_Routekaart-2050.pdf](https://www.vnci.nl/Content/Files/file/Downloads/VNCI_Routekaart-2050.pdf), combination pathway to illustrate a high-value approach in a constrained world.

# ADDING IT ALL UP

- Differences between sub-sectors:
  - Base chemicals: 0% growth / year;
  - Specialty chemicals: 2% growth/year;
- Scope 1:
  - Energy efficiency: Depending on the sub-sectors, for example<sup>1)</sup>:
    - Declining from 0,5%/year → 0,0%/year for base chemicals;
    - Declining from 2,0%/year → 0,5%/year for specialty chemicals;
  - Electrification;
- Scope 2:
  - In Dutch and German roadmap → Electricity emission factor 0 in 2050<sup>1) 2)</sup>
- Scope 3: Bio-based, recycling, CCU (synthetic fuels);
- Consequences:
  - Steep increase of electricity consumption → pathway 3 in German roadmap: \*  $\pm 13$ <sup>1)</sup>
  - Steep increase of biomass consumption → pathway 3 in German roadmap: \*  $\pm 5$ <sup>1)</sup>
  - Additional investments needed for complete emission reduction:  $\pm 68$  billion€<sup>1)</sup>

Changes in product mix

Innovation

1) <https://www.vci.de/vci/downloads-vci/publikation/2019-10-09-studie-roadmap-chemie-2050-treibhausgasneutralitaet.pdf>

2) [https://www.vnci.nl/Content/Files/file/Downloads/VNCI\\_Routekaart-2050.pdf](https://www.vnci.nl/Content/Files/file/Downloads/VNCI_Routekaart-2050.pdf)

# CONTACTS

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# Q&A



SCIENCE  
BASED  
TARGETS

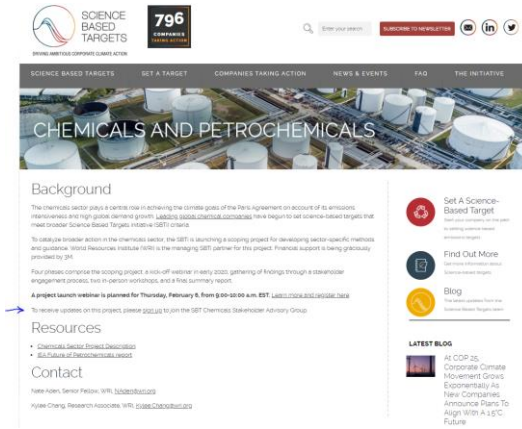
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION



# Next Steps and Discussion



# Opportunities for participation



- Join the SBT-Chemicals Stakeholder Advisory Group
- Attend the SBT-Chemicals Summer 2020 Stakeholder Consultation Workshops or Webinars
- Commit your company to setting an SBT





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Thanks for your time!

If you haven't already, **join SBTi-Chemicals stakeholder list**  
at <https://sciencebasedtargets.org/chemicals-and-petrochemicals/>



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