Science Based Targets for Chemical Companies
Chemicals Sector Scoping Publication Launch

Nate Aden, Kylee Chang, Michiel Stork
December 16, 2020

Online Webinar
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.
Today’s Speakers

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Guidehouse

Kylee Chang  
Research Associate  
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World Resources Institute
### Today’s Agenda

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<th>Time</th>
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<td>15 min</td>
</tr>
<tr>
<td>Summary of Stakeholder Survey &amp; SBTi Response</td>
<td>10 mins</td>
</tr>
<tr>
<td>Proposed Chemicals Sector Boundary</td>
<td>10 mins</td>
</tr>
<tr>
<td>End-of-Life Emissions Options</td>
<td>10 mins</td>
</tr>
<tr>
<td>Next Steps</td>
<td>5 mins</td>
</tr>
<tr>
<td>Q&amp;A</td>
<td>10 mins</td>
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</table>
The SBTi is pursuing this project to better understand challenges to setting SBTs using existing methods. The project scoping document recommends options for revising these methods and developing additional resources.

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

WRI gratefully acknowledges financial support from 3M Foundation for this project.
March-October: Scoping Research, Stakeholder Survey, and Interviews
- Online survey distributed to chemical companies, industry associations, and stakeholders
- EAG webinar with summary of survey responses
- EAG webinar discussing key issues specific to the chemical industry

November-December: Synthesis Document
- Present draft of summary document to EAG and gather feedback
- Publish final document on SBTi website
- Broader chemical sector convening (webinar)
SCOPING DOCUMENT TO BE DISTRIBUTED IN THE NEXT WEEK

Barriers, Challenges, and Opportunities for Chemical Companies to Set Science Based Targets

December 2020

This document presents the results of the Science Based Targets initiative's chemicals sector scoping project with considerations for further target-setting method development. To summarize current knowledge and support further work, the document provides an overview of current chemical company science-based targets, a proposed sector boundary for company activities, results of a stakeholder survey, and considerations for further research.

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SBTi Update
<table>
<thead>
<tr>
<th><strong>1,106</strong></th>
<th>Companies committed to science-based targets</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>542</strong></td>
<td>Companies with approved to science-based targets</td>
</tr>
<tr>
<td><strong>285</strong></td>
<td>2°C or well-below 2°C targets approved (scopes 1 and 2)</td>
</tr>
<tr>
<td><strong>254</strong></td>
<td>1.5°C-aligned targets approved (scopes 1 and 2)</td>
</tr>
</tbody>
</table>

List as of December 16, 2020; for additional information see [https://sciencebasedtargets.org/companies-taking-action/](https://sciencebasedtargets.org/companies-taking-action/)
A GLOBAL GROUP OF 28 CHEMICALS COMPANIES HAVE COMMITTED TO SETTING SBTS

• Air Liquide Group
• AkzoNobel
• **Borregaard AS**
• Croda International
• **Ecolab**
• Group Fu Plastic Co., Ltd
• Gujarat Fluorochemicals Ltd. (GFL)
• **International Flavors & Fragrances Inc.**
• Linde plc
• **Novozymes AS**
• Orbia Advance Corporation
• Polygenta Technologies Limited
• PT Ecogreen Oleochemicals
• Reliance Chemical Products Ltd.
• **Royal DSM**
• Sekisui Chemical Co., LTD

• Sumitomo Chemical Co., Ltd.
• Syngenta
• **Tata Chemicals Limited**
• Univar Solutions

Recently Added
• Arkema
• **Bayer** *
• Clariant AG
• Godrej Industries
• Hempel A/S
• **Sabará Participações**
• Solvay
• United Phosphorus Ltd.
• Yingyang (China) Aroma Chemical Group

*Note that Bayer self-classified as a pharmaceutical company for target-review purposes. Companies in bold have approved SBTS List as of December 2020; for additional information see https://sciencebasedtargets.org/companies-taking-action/
**METHODS AVAILABLE FOR CHEMICAL COMPANIES TO SET SBTs**

A snapshot of adoption of SBTs by chemical companies

<table>
<thead>
<tr>
<th>Company</th>
<th>Target Classification</th>
<th>Scope 1 and 2</th>
<th>Scope 3</th>
<th>Other Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novozymes A/S</td>
<td>1.5C</td>
<td>Absolute</td>
<td>Absolute</td>
<td>Renewable Energy</td>
</tr>
<tr>
<td>Ecolab</td>
<td>1.5C</td>
<td>Absolute</td>
<td>Supplier</td>
<td>Engagement</td>
</tr>
<tr>
<td>Borregaard A/S</td>
<td>WB2D</td>
<td>Absolute</td>
<td>Absolute</td>
<td></td>
</tr>
<tr>
<td>International Flavors &amp; Fragrances Inc.</td>
<td>WB2D</td>
<td>Absolute</td>
<td>Supplier</td>
<td>Engagement</td>
</tr>
<tr>
<td>Syngenta</td>
<td>WB2D</td>
<td>GEVA</td>
<td>GEVA</td>
<td></td>
</tr>
<tr>
<td>Tata Chemicals Limited</td>
<td>WB2D</td>
<td>Absolute</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Royal DSM</td>
<td>2C</td>
<td>Absolute</td>
<td>Intensity</td>
<td></td>
</tr>
<tr>
<td>Sumitomo Chemical Co., Ltd.</td>
<td>2C</td>
<td>Absolute</td>
<td>Supplier</td>
<td>Engagement</td>
</tr>
<tr>
<td>Sekisui Chemical Co., Ltd.</td>
<td>2C</td>
<td>Absolute</td>
<td>Absolute</td>
<td></td>
</tr>
</tbody>
</table>

- **Absolute Emissions Contraction** – An overall reduction in the amount of GHGs emitted to the atmosphere by the target year, relative to the base year (e.g., reduce annual CO2e emissions 35% by 2025, from 2018 levels).

- **Economic Intensity** - Greenhouse Gas Emissions per Value Added (GEVA) - An intensity reduction of tCO2e/$ value added, where companies are required to reduce their GEVA by 7% per year.

- **Physical Intensity** – A reduction in emissions relative to a specific business metric, such as production output of the company (e.g., tonne CO2e per tonne product produced).

- **Supplier Engagement** – A company commits to drive the adoption of SBTs amongst its suppliers or customers. Engagement targets may be set around any relevant upstream or downstream scope 3 category.
Results of Stakeholder Survey
### SBTi Chemicals Survey Basics

<table>
<thead>
<tr>
<th>Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey Respondents</td>
<td>59</td>
</tr>
<tr>
<td>Respondents working for a chemical company</td>
<td>40</td>
</tr>
<tr>
<td>Chemical companies produce products that do no result in end of life emissions</td>
<td>8</td>
</tr>
<tr>
<td>Some companies had multiple respondents</td>
<td></td>
</tr>
</tbody>
</table>
Overview of Survey Results
Barriers and challenges identified by respondents to setting SBTs

1. **Low Scope 3 Data Availability**
   - SBTi will consider how to provide more resources to improve limited and low data quality

2. **Wait for Sector Specific Methods**
   - SBTi intends to develop further resources, but does not view lack of sector-specific methods as an excuse for company inaction

3. **Decarbonization is Complex & Challenging**
   - Including technological readiness, business model uncertainty, and policy links
   - SBTi is exploring how to best address these issues, including net-zero standard development

4. **Cooperation Over the Value Chain**
   - SBTi recognizes that increased engagement with investors, advocacy groups, and other stakeholders will be important for catalyzing broader cooperation across the value chain

5. **Other Issues Not Specified in Survey**
   - High demand growth, timeframe of SBTs and company size

6. **Scope 1 and 2 Emissions Data Are Available**
   - On CHP, self-generated electricity, process emissions, and fugitive emissions (partially), but these cannot be easily bundled together when considering emissions reductions
   - SBTi provides suggestions for addressing each of these emissions sources separately in the Scoping Document
Proposed Sector Boundary
CHEMICALS SECTOR: DEMARCATION AND DISAGGREGATION

Clear demarcation of the sector is relevant

1. No clear preference for specific taxonomy in survey
   - Preference to include biofuels and pharmaceuticals in the chemical sector

2. The Expert Advisory Group considered lack of one overarching taxonomy to be a barrier for setting targets

3. SBTi currently uses the International Energy Agencies’ Energy Technology Perspectives modelling in its SDA method
   - ETP Uses International Standard Industrial Classification (ISIC) (United Nations Department of Economic and Social Affairs 2008) with the chemicals sector covering Divisions 20 and 21
   - Chemical sector includes pharmaceuticals but does not include biofuels

4. Sub-sector indicated preference to be covered as separate (sub) sector
CHEMICALS SECTOR BOUNDARY

SCOPE 3 UPSTREAM
INPUTS

OIL AND GAS SECTOR

SCOPE 1 & 2

CHEMICALS SECTOR

SCOPE 3 DOWNSTREAM
APPLICATIONS

Product
Process

CRUDE OIL
NATURAL GAS
BIOMASS
COAL

CATALYTIC REFORMING
REFINERY
FCC
NATURAL GAS FRACTIONATION

BENZENE, TOluene, Xylene
FUELS AND OTHER PRODUCTS
NAPHTHA
NGL/LPG
PROPANE
PROPYLENE
ETHANE
METHANE

CHEMICAL RECYCLING: PYROLYSIS
NAPHTHA CRACKER
PDH
ETHANE CRACKER
STEAM REFORMING
GASIFICATION
CHEMICAL RECYCLING

POWER

ETHANOL
SYNGAS
CO2

METHANOL
H2
CCU

INORGANICS

BENZENE, TOLUENE, XYLENES
PROPYLENE
ETHYLENE
AMMONIA

POLYMERS, SPECIALITY CHEMICALS, CONSUMER CHEMICALS, SOLVENTS, PHARMACEUTICALS

PACKAGING, CARS, RENEWABLES AND STORAGE, COOLING, FERTILIZERS, TEXTILES, DETERGENTS, PAINTS

MECHANICAL RECYCLING
Disaggregation

1. Split into sub-sectors / product groups
2. Carve out specific products:
   - Ethylene
   - Propylene
   - Benzene, Toluene, Xylene (BTX)
   - Ammonia
   - Methanol
   - H2

Upstream boundary

<table>
<thead>
<tr>
<th>Refineries</th>
<th>Chemicals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Naphtha production</td>
<td>Steam crackers</td>
</tr>
<tr>
<td>Propylene in FCC</td>
<td>Steam methane reforming</td>
</tr>
<tr>
<td>BTX in catalytic reforming</td>
<td></td>
</tr>
</tbody>
</table>

“Options to maintain consistency could include moving all production routes for given products to a particular sector.”
End of Life Emissions
End of life vs Circular feedstock

Durable plastic status

- Approach based on typical data currently assumes for landfilling:
  - For durable plastics: No methane / CO₂ production
  - For non-durable plastics: 50% methane / 50% CO₂ production
- Consequence: Difference in emissions based on typical factors > 50x

Accounting methods

1. End-of-life (Company A)
2. Recycled Content (Company B)
3. Combination

Company A

Company B
End of life vs Circular feedstock

**End of life target**
- Engage with waste processors to set SBTs
- Extended Producer Responsibility schemes

**Advantages**
- Relatively straightforward (in line with current approach)
- Stimulates:
  - Design-for-recycling
  - Mechanical recycling
  - New behavior

**Circular feedstock target**
- Expressed based on energy / GHG mitigation basis
- Includes renewables

**Advantages**
- Within control of chemical companies
- Diversity of applications
- Data availability
- Preference of chemicals sector
FOCUS AREAS FOR NEXT PHASE WORK

**Develop a chemicals sector SDA.** Unlike the SDA for steel or cement, the proposed chemicals sector SDA would include specific emissions intensity pathways for the largest product categories (ammonia, ethylene, methanol, propylene, BTX, hydrogen) as well as one or more residual physical intensity approach(es) for the thousands of other chemicals products, perhaps using a non-specified physical intensity contraction approach similar to SBTi’s treatment of vehicle manufacturing.

**Improve chemicals sector scope 3 data resources.** To address the chemicals sector’s high degree of fossil feedstock use, heterogeneity, and prevalence of intermediate products trade, additional accounting and target-setting resources should be developed for key upstream and downstream emissions sources (scope 3, categories 1, 10, 11, and 12).

**Develop end-of-life accounting and target-setting approaches for chemicals.** While a growing number of companies across sectors are focusing on their category 1 (purchased goods and services) emissions, chemicals companies are uniquely positioned to increase the share of recycled materials. Consistent boundary and accounting approaches across categories 12 and 1 could facilitate inclusion of these targets into chemicals companies’ SBTs. Facilitate inclusion of these emissions categories into companies’ SBTs.
PHASE TWO DEPENDENCIES

- Funding
- External Collaboration
- SBTi Strategy
Chemicals

With 95% of manufactured products relying on chemicals, the sector has an important role in reducing global warming. We're developing resources for companies in this sector to set science-based targets.

https://sciencebasedtargets.org/sectors/chemicals
THANK YOU!

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