



SCIENCE
BASED
TARGETS

Initiative Overview and Proposal for New Chemicals Sector Target-Setting Methods

March 20, 2017
ICCA Meeting
Brussels, Belgium
Nate Aden (WRI) and Pedro Faria (CDP)

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IN COLLABORATION WITH

**WE MEAN
BUSINESS**

Science-based targets I Discussion Outline

- SBT introduction
 - Partners
 - Goals
 - Chemical company participation
 - Refined criteria and process
 - Emerging best practices
- Chemicals data and questions
- Ecofys proposal
- Next steps

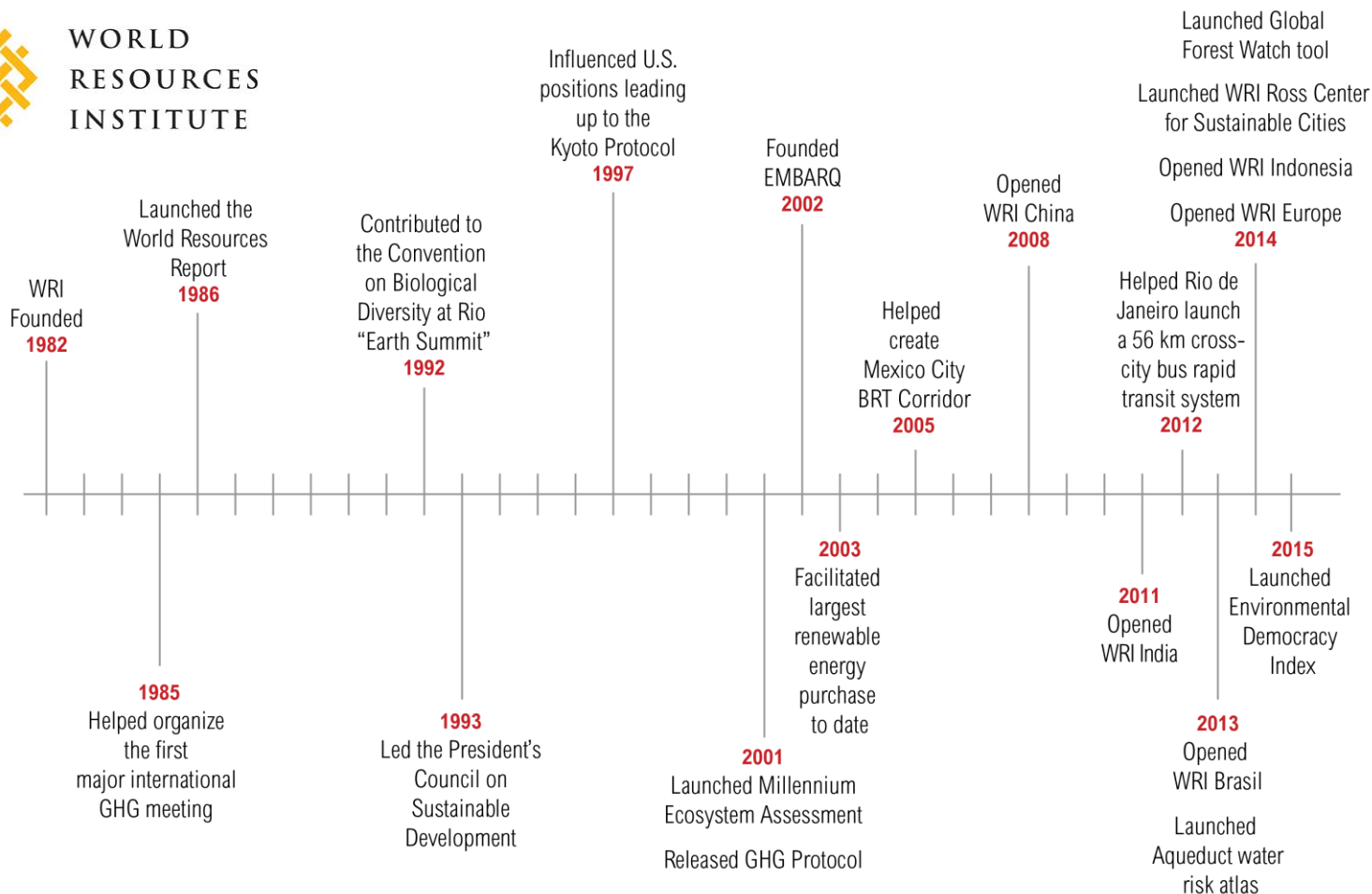
Science-based targets | Who are we?



WRI HAS MORE THAN 30 YEARS OF EXCELLENCE



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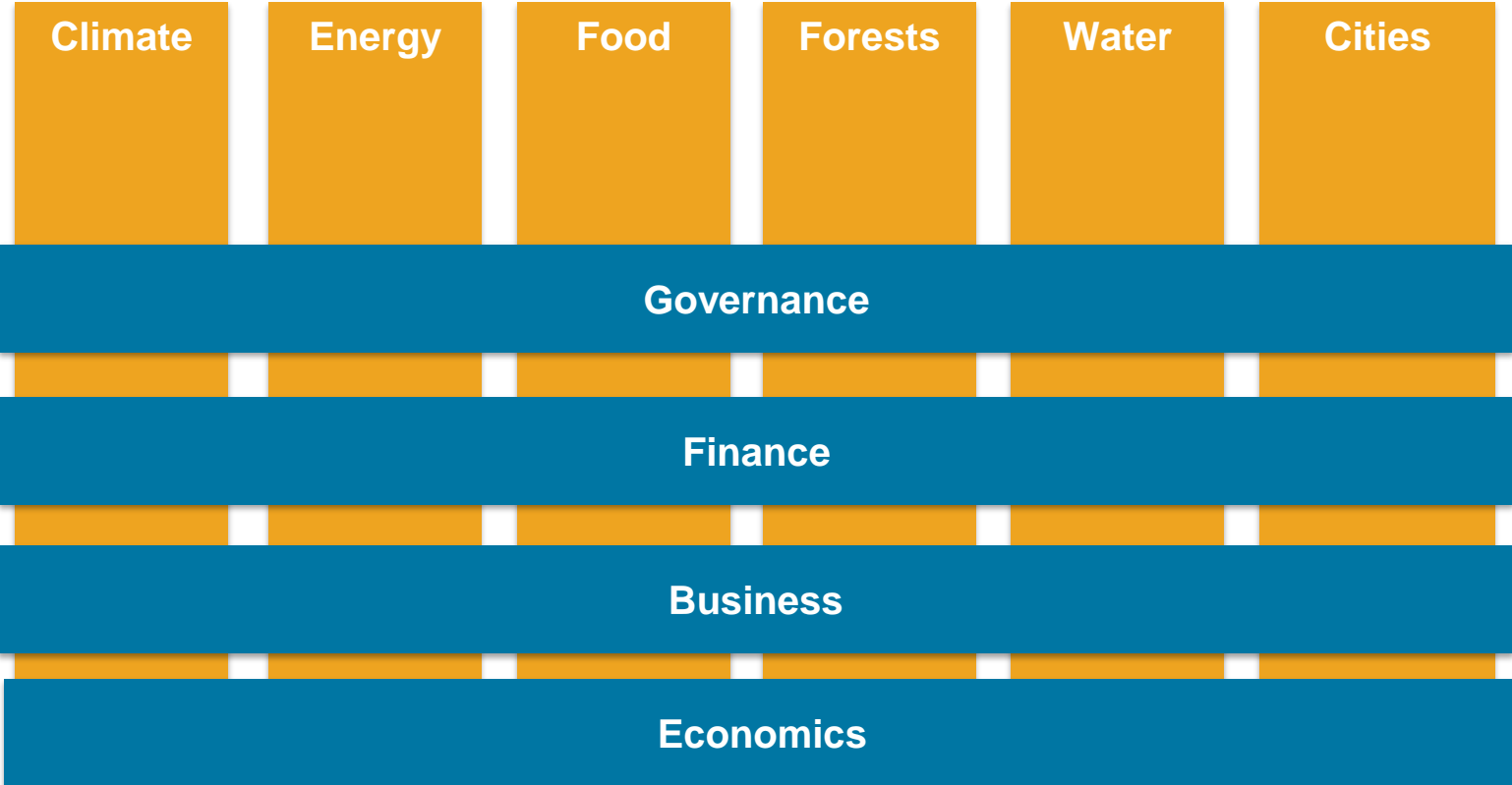
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WRI's MISSION | To move human society to live in ways that protect Earth's environment and its capacity to provide for the needs and aspirations of current and future generations

SIX GOALS, FOUR CENTERS OF EXCELLENCE



Our global offices

2008



世界资源研究所
WORLD RESOURCES INSTITUTE

2011



WRI INDIA

2013



WRI BRASIL

2014



WRI INDONESIA

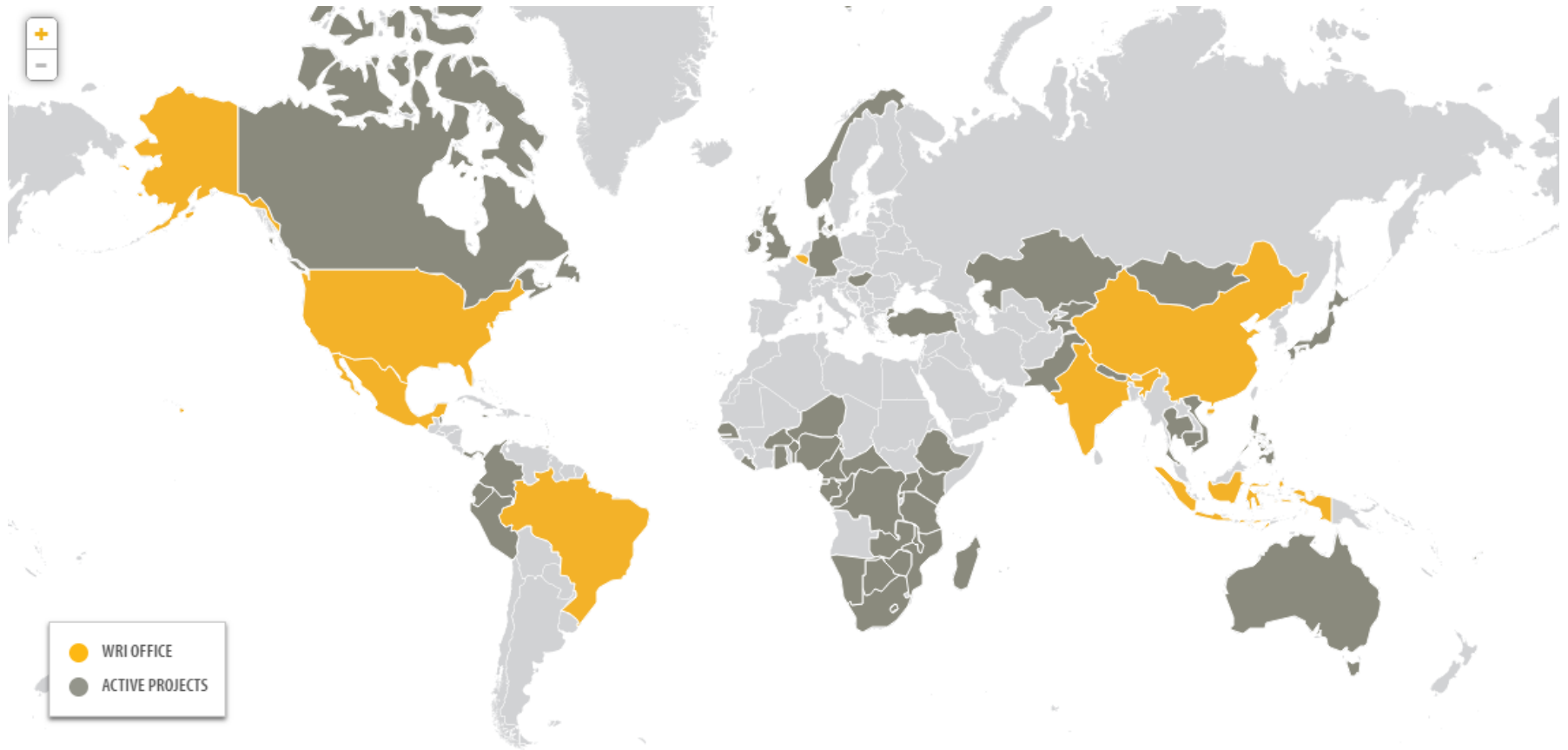
2014



WRI EUROPE



WRI's Global Network



Mission and what we do

CDP's mission

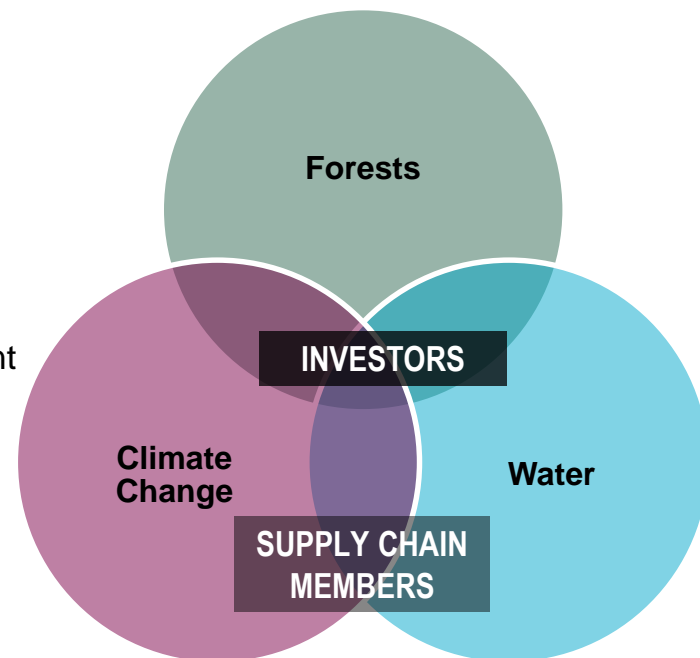
- To transform the global economic system to prevent dangerous climate change and value our natural resources by putting relevant information at the heart of business, investment and policy decisions

CDP collects information on:

- Climate Change
- Water
- Forests

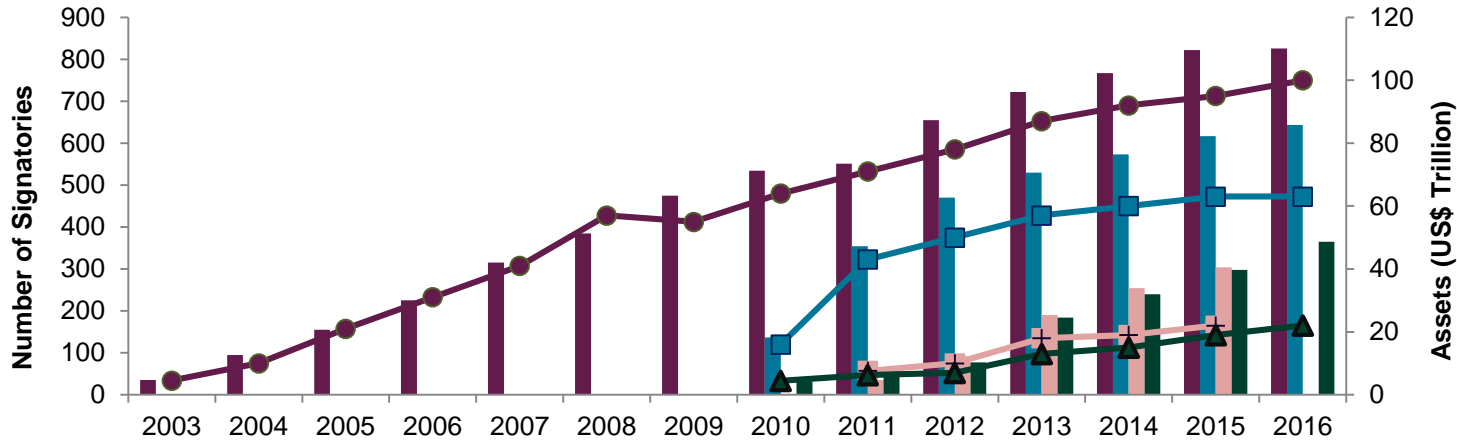
From:

- Publicly listed companies
- Their suppliers
- World's largest cities



Signatories & Assets under management

CDP Signatories & Signatory Assets: 2003 - 2016



■ Climate Change Signatories
■ Forests Signatories
■ Carbon Action Signatory Assets

■ Water Signatories
● Climate Change Signatory Assets
▲ Forests Signatory Assets

■ Carbon Action Signatories
■ Water Signatory Assets

Climate change

5533

Reported in 2015

Water

1237

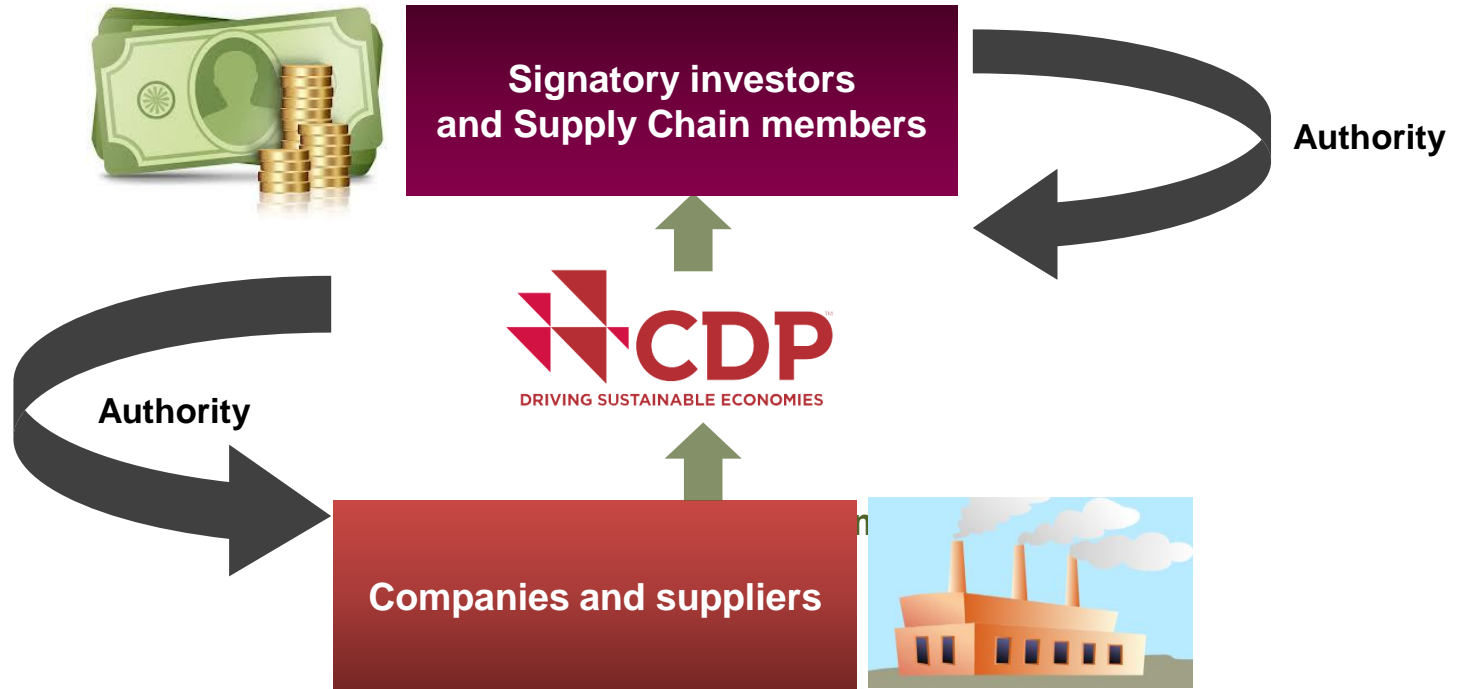
Reported in 2015

Forests

171

Reported in 2015

How We Work



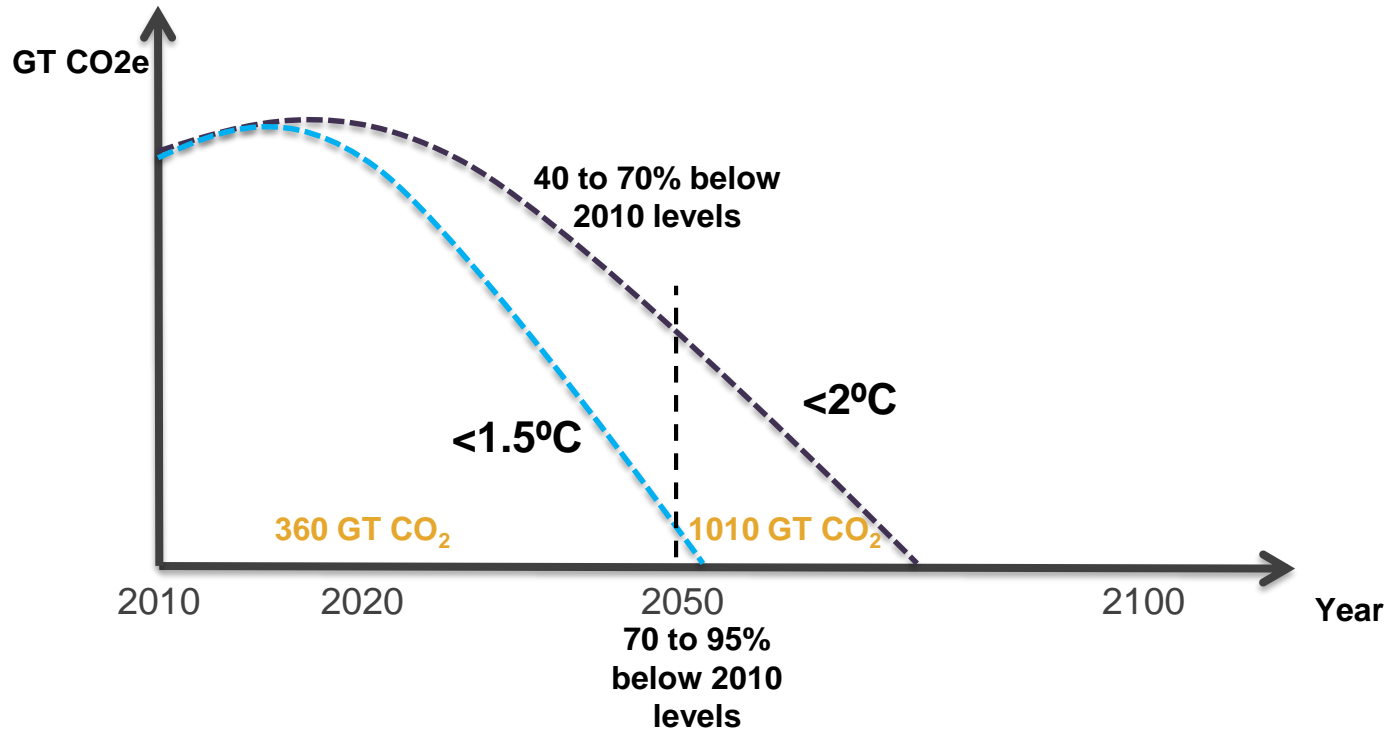


CDP worldwide

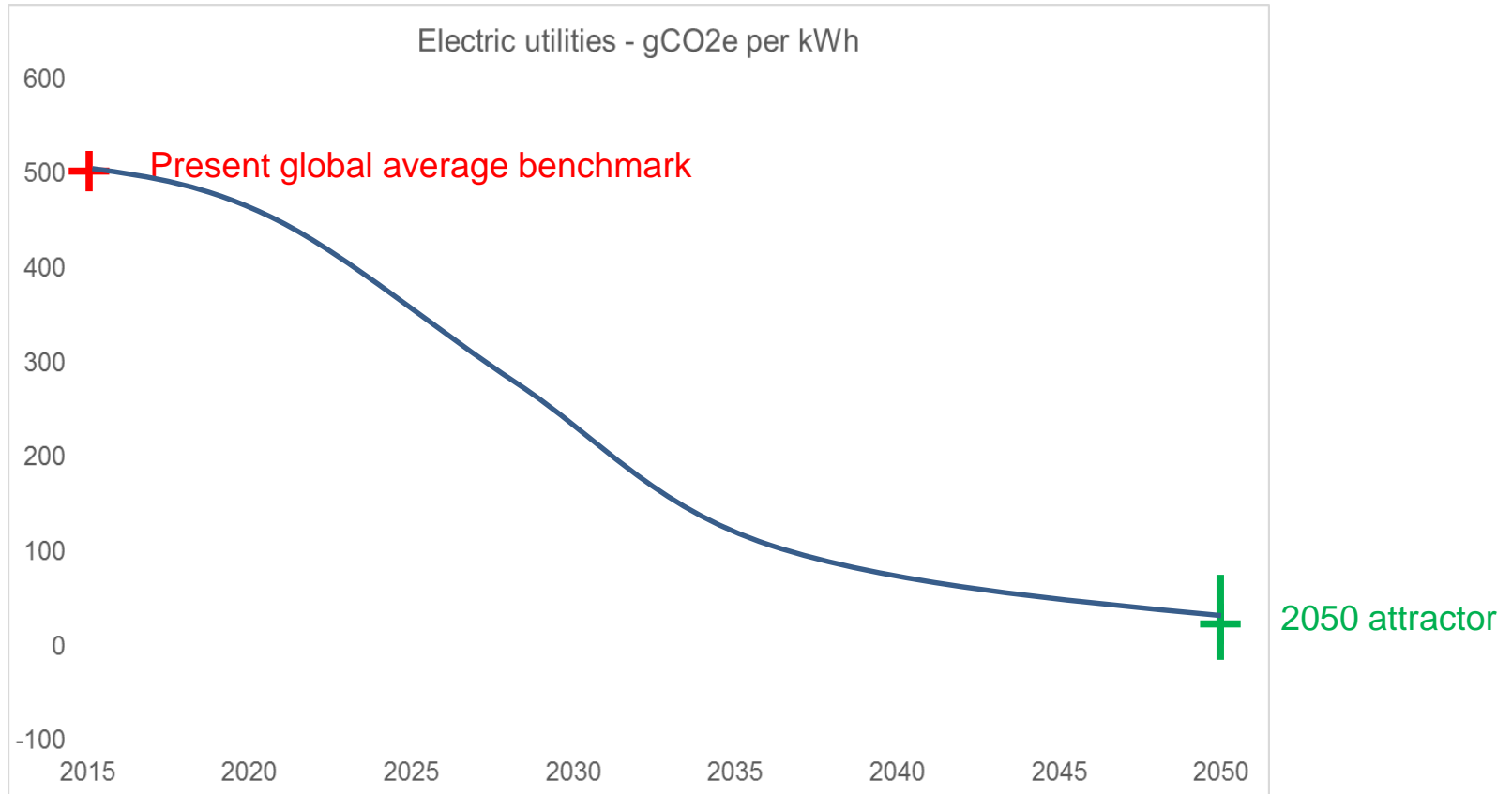


Science-based targets | What are science based targets?

Understanding emission reduction targets based on climate science for keeping warming below 1.5°C and 2°C



Science-based targets | Convergence method



Science-based targets | The Science Based Targets Initiative

SBTi Objectives

1. By **2020**, at least **300** high-impact companies, **representing at least 2 GT of emissions**, will have science-based emission reduction targets in place.

2. By **2018**, at least **300** high-impact companies, **representing at least 2 GT of emissions**, will have committed to adopt science-based GHG emission reduction targets and more than 100 of these companies will have approved science-based targets.

3. Science-based target setting will be embedded in key mechanisms and platforms that lead to the widespread and sustained adoption of GHG emission reduction targets in line with science as a standard business practice in priority regions and sectors.

4. In support of the Paris Agreement, science based targets from leading companies demonstrate to policy-makers the scale of emission reductions that are achievable to positively influence international climate negotiations and domestic climate policy.

Science-based targets I 2017 Update

This year the SBT initiative is transitioning to new models to scale up impact:

- Continued SBTi company growth
- Sector developments
- Refined target criteria

Since officially launching in June, 2015, through March 2017:

220

Companies
have formally
joined the
SBTi

39

Companies
have
approved
targets

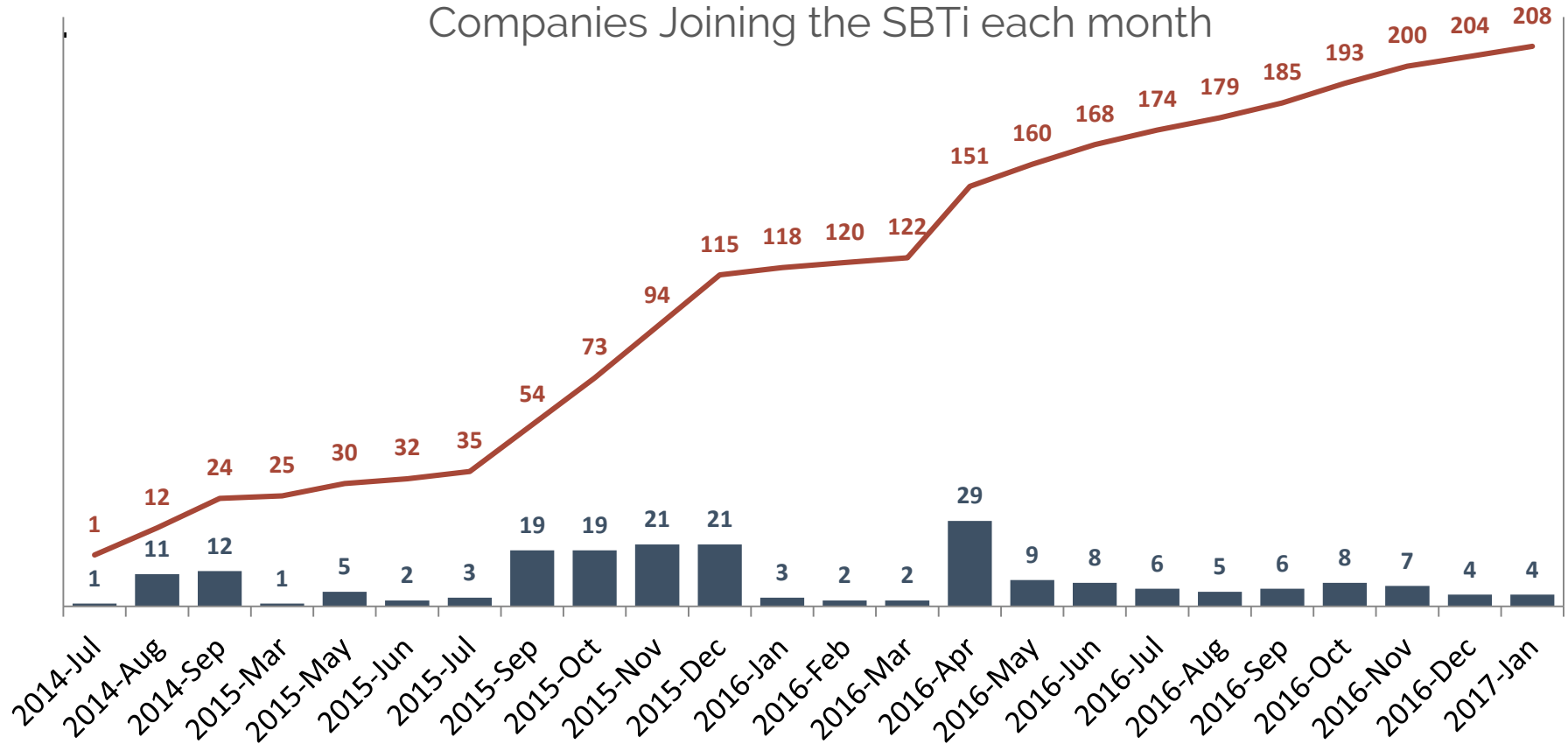
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Companies
joining the
initiative on
average each
week

Science-based targets | 2017 Update

As of Jan 2017

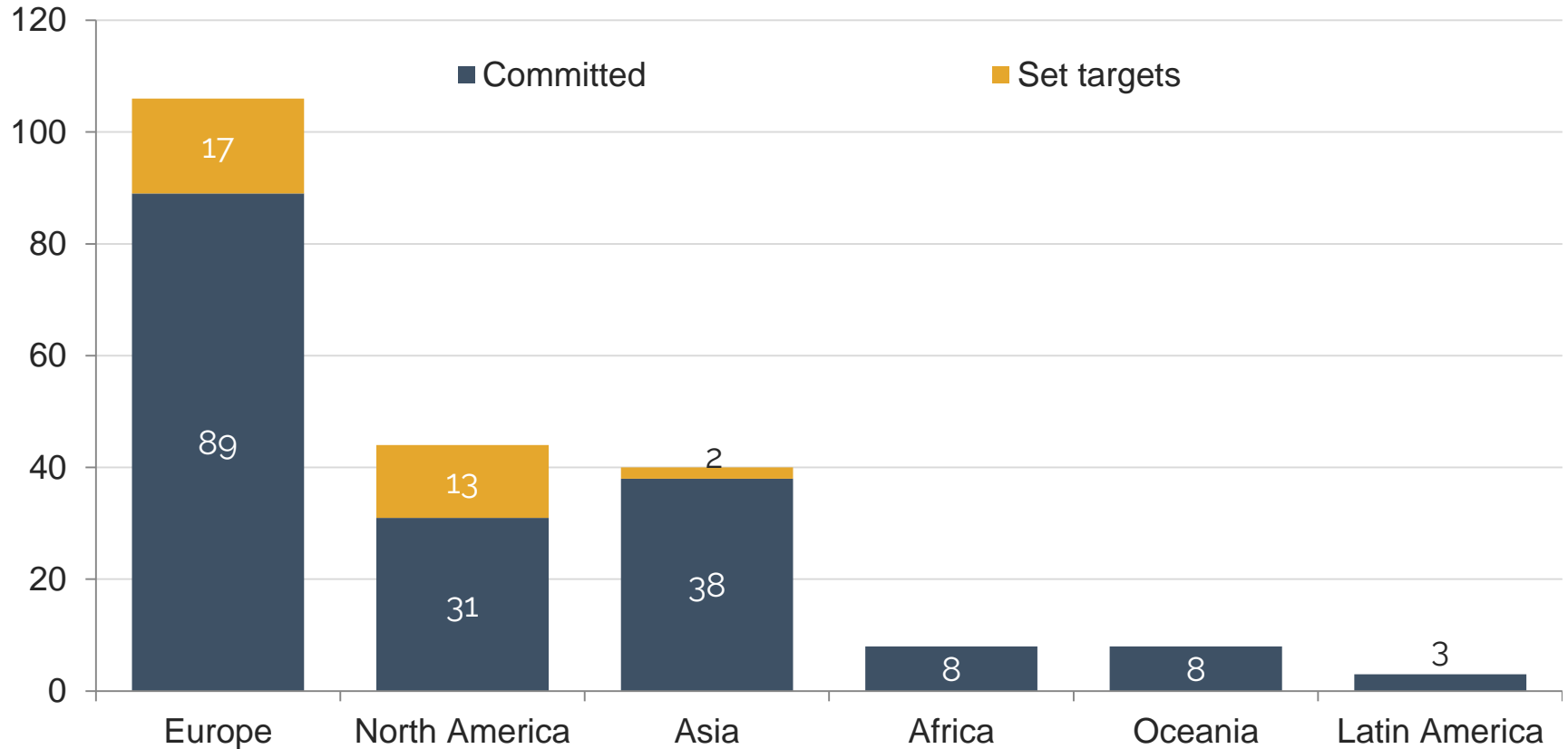
Companies Joining the SBTi each month



Science-based targets | 2017 Update

As of Jan 2017

Companies in the SBTi by Region



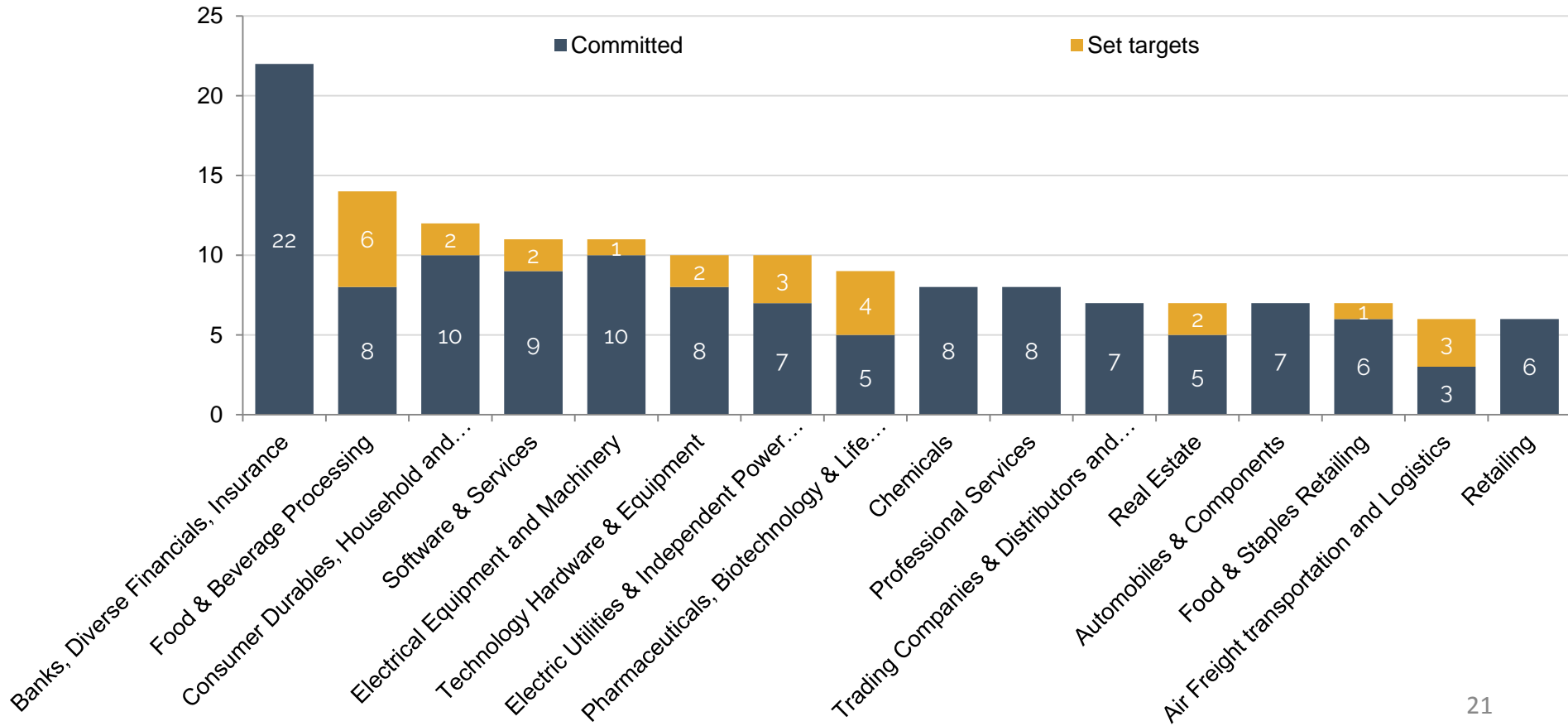
Science-based targets | 2017 Update – Companies with SBT



Science-based targets | 2017 Update

As of Jan 2017

Companies in the SBTi by Sector



Science-based targets | Chemicals Companies

As of March 2017

Chemicals

With SBT's: [none yet]

Committed: Aditya Birla

Chemicals India Ltd - FIRMENICH SA - PTT Global Chemical – AkzoNobel - Diab International AB - Givaudan SA - Symrise AG - Zeon Corporation

Other: Arkema - Baker Hughes Incorporated - BASF SE - Bayer AG - BG Group - Covestro AG - DuPont - E.I. du Pont de Nemours and Company - Ecolab Inc. - Evonik Industries AG - Johnson & Johnson - International Flavors & Fragrances Inc. - Johnson Matthey - LG Chem Ltd - Monsanto Company – PTT Public Co., Ltd. - Sasol Limited - Solvay S.A. - The Mosaic Company – UCB - Wacker Chemie AG

Pharmaceuticals

With SBT's: Daiichi Sankyo Co., Ltd. – AstraZeneca - Lundbeck A/S - Pfizer Inc.

Committed: NovoNordisk - Biogen Inc. - GlaxoSmithKline - LG Life Science - Novartis

Other: Aspen Pharmacare Holdings - Novozymes A/S - Roche Holding AG

Science-based targets | New Criteria

As of March 2017



Boundary

All company-wide Scope 1 and Scope 2 GHG emissions must be covered



Timeframe

5-15 years into the future



Level of ambition *

At a minimum - consistent with the level of decarbonization required to keep temperature increase to 2°C while we encourage efforts towards 1.5°C.



Absolute vs. intensity

Intensity targets are only eligible when they lead to absolute emission reductions or when they are based on an approved sector pathway or method (e.g. the SDA)



Scope 3 *

A scope 3 screening is required.
An ambitious and measurable Scope 3 target is required when Scope 3 emissions cover more than 40% of total emissions.



Reporting

Disclose GHG emissions inventory on an annual basis

Science-based targets I New Criteria

As of March 2017

Ambition

Level of ambition: At a minimum, scope 1 and 2 targets must be consistent with the level of decarbonization required to keep global temperatures below 2°C compared to pre-industrial temperatures, though the SBTi encourages companies to pursue greater efforts toward a 1.5°C trajectory.

Absolute vs. intensity: Intensity targets are only eligible when they lead to absolute emission reduction targets in line with climate scenarios for keeping global warming below 2°C or when they are modelled using an approved sector pathway or method approved by the Science Based Targets initiative (e.g. the Sectoral Decarbonization Approach).

Method validity: Targets must be modelled using the latest version of methods and tools. Targets modelled using previous versions of the tools or methods can only be submitted to the SBTi for an official validation within six months of the revision.

Combined scope targets: Targets that combine scopes (e.g. 1+2 or 1+2+3) are permitted; however, when a company has a combined scope 1, 2, and 3 target the scope 1 and 2 portion of the target must be in line with climate science.

Science-based targets | New Criteria

As of March 2017

Scope 2

Approaches: Companies shall disclose whether they are using a location or market-based approach as per the GHG Protocol Scope 2 Guidance to calculate base year emissions and to track performance against a science-based target.

Scope 3

Boundary: Companies must complete a scope 3 screening for all relevant scope 3 categories in order to determine their significance as per the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard. If a company's scope 3 emissions are at least 40% of total scope 1, 2, and 3 emissions, a scope 3 target is required. The scope 3 target boundary must include the majority of value chain emissions; these are the top 3 categories or 2/3 of total scope 3 emissions.

Power generators that distribute fossil fuels: All electricity-generating companies that distribute natural gas or other fossil fuel products shall set scope 3 targets for the use of sold products.

Science-based targets | Emerging best practices

- **Overarching absolute emissions reduction targets supported by sector-specific intensity targets**

Capgemini UK PLC commits to reduce total scope 1, 2, and 3 greenhouse gas emissions by 40% by 2030 from 2014 levels. This commitment is driven by a target to reduce emissions intensity per employee by 40% over the same time period.
- **Combined medium and long-term targets**

Verbund commits to reduce GHG emissions 90% by 2021 from a 2011 base-year (Scope 1, Scope 2, and scope 3 emissions from fuel-and-energy related activities and business air travel). This is a milestone in the long term goal to achieve carbon neutrality by 2050.
- **Scope 3 category-specific targets**

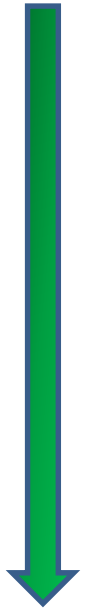
Panalpina commits to reduce its scope 1 and 2 emissions 20% by 2025 from 2013 levels. Panalpina also commits to reduce its scope 3 emissions from outsourced transportation and business travel by 15% over the same time period.

Science-based targets I Emerging best practices

Scope 3 target preference hierarchy

1. % absolute emissions targets (in line with 2 degree pathway when possible) or intensity target based on the SDA
2. Emissions based intensity target
3. Non- emissions target in absolute or intensity terms such as reducing kWh or reducing energy use per product
4. Targets that influence behavior of suppliers or customers (e.g., request suppliers to set SBT, educate customers on cold water washing)

Most preferred



Least preferred

Science-based targets | Approaches

SBT approach

A) Sector-based approach

Based on sector-specific carbon budgets determined by mitigation/technology options and activity projections.

B) Absolute-based approach

Based on absolute emissions reductions determined in climate reports (e.g. 49-72% reduction in IPCC 5th AR).

C) Economic-based approach

Juxtaposition of absolute emissions reductions from AR5 with GDP growth assumptions for intra-sector company allocation

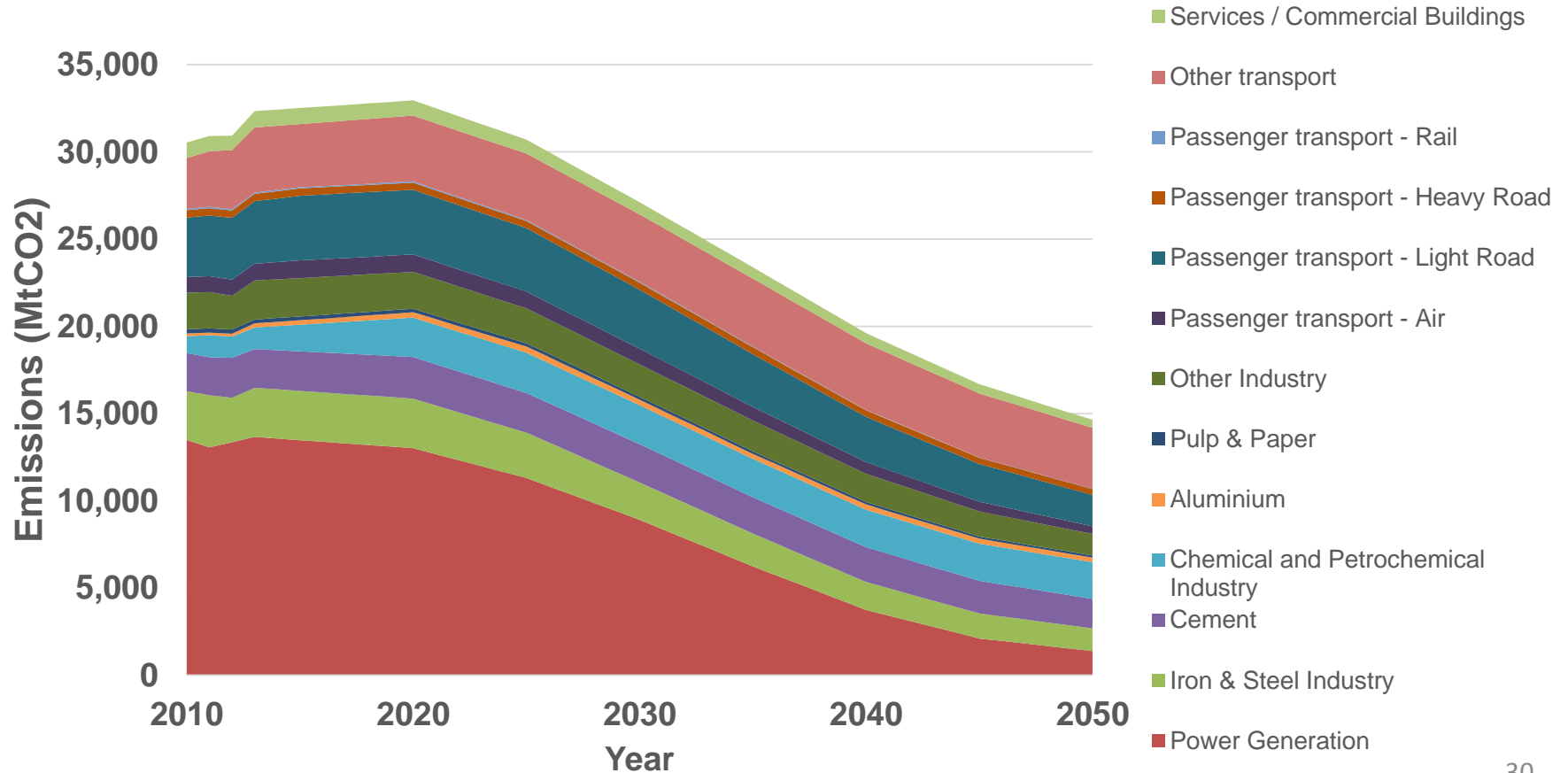
Science-based targets | Methods

Seven SBT methods have been approved and can be tailored by need

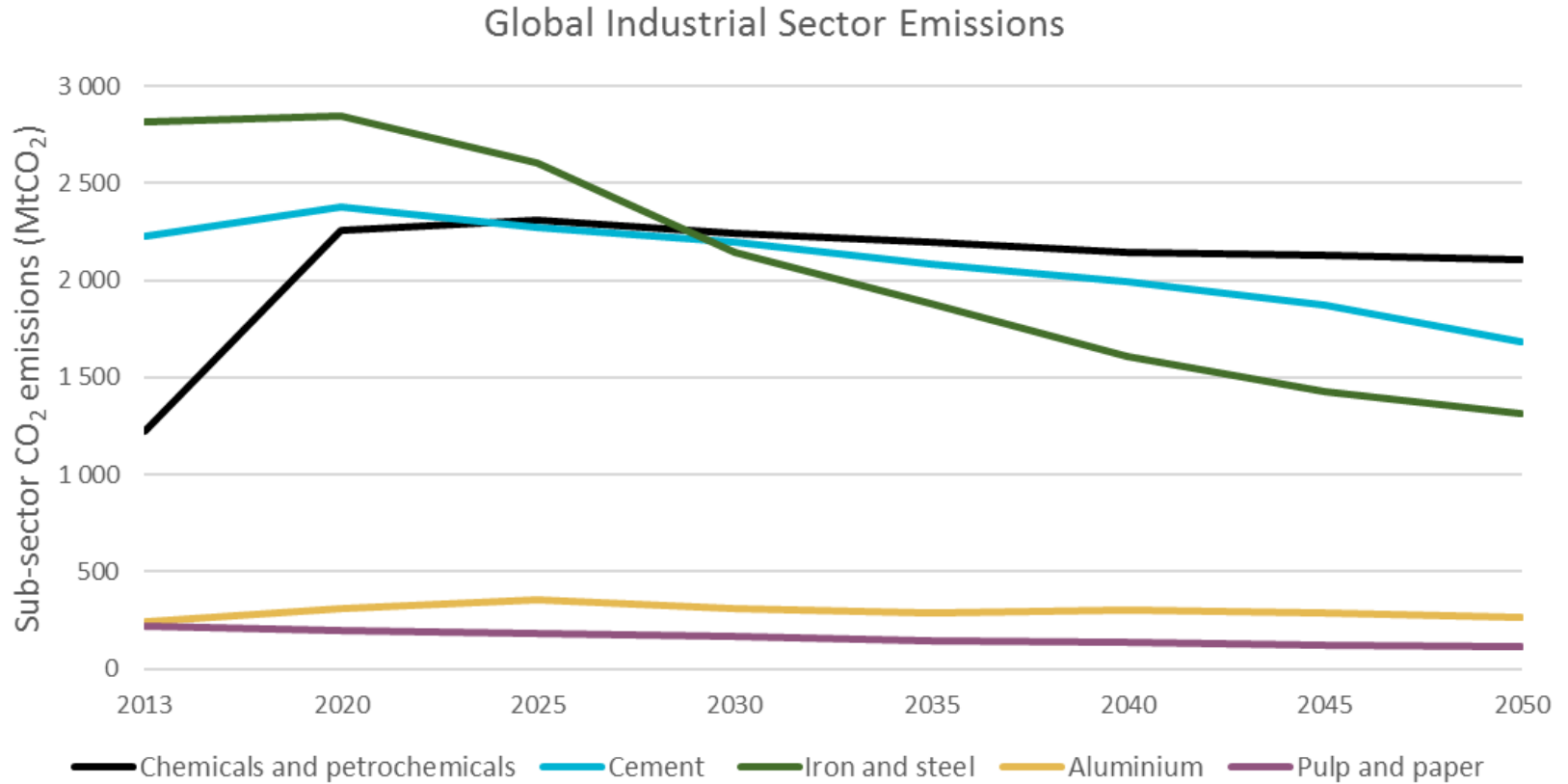
Method	Description	Scenario	Approach	Allocation
<i>Sectoral Decarbonization Approach (SDA)</i>	Allocates mitigation across sectors global through 2050, but focuses mostly on energy	IEA ETP 2014 2-Degrees Scenario (2DS)	Sector specific	Convergence
<i>3% Solution</i>	Cuts US corporate emissions 3.2% p.a. through 2020, and then 4.3% p.a. through 2050	IPCC 2007 AR4	Sector specific	Contraction
<i>Absolute Contraction</i>	Aligns with general IPCC finding: GHGs need to be 41-72% lower in 2050 than in 2010	IPCC 2014 AR5 RCPs	Absolute reduction	Contraction
<i>Corporate Finance Approach to Climate-Stabilizing Targets (C-FACT)</i>	Autodesk tool that scales mitigation by gross profit	IPCC 2007 AR4	Economic contribution	Contraction
<i>GHG Emissions per Unit of Value Added (GEVA)</i>	Suggests corporates cut carbon 5% p.a. (assuming 3.5% p.a. GDP growth) through 2050	IPCC 2007 AR4	Economic contribution	Contraction
<i>Climate Stabilization Intensity (CSI) Target</i>	Developed by applying value added approach to BT	IPCC 2007 AR4	Economic contribution	Contraction
<i>Center for Sustainable Organization (CSO) Context-Based Carbon Metric</i>	Calculates reduction goals for OECD companies	IPCC 2014 AR5 RCP 2.6	Economic contribution	Contraction

Science-based targets | SDA Method example

The Sectoral Decarbonization Approach

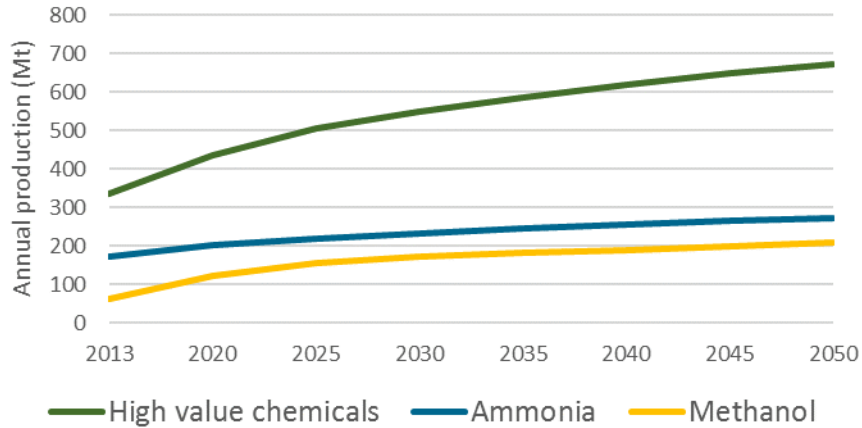


Science-based targets | ETP Chemicals data

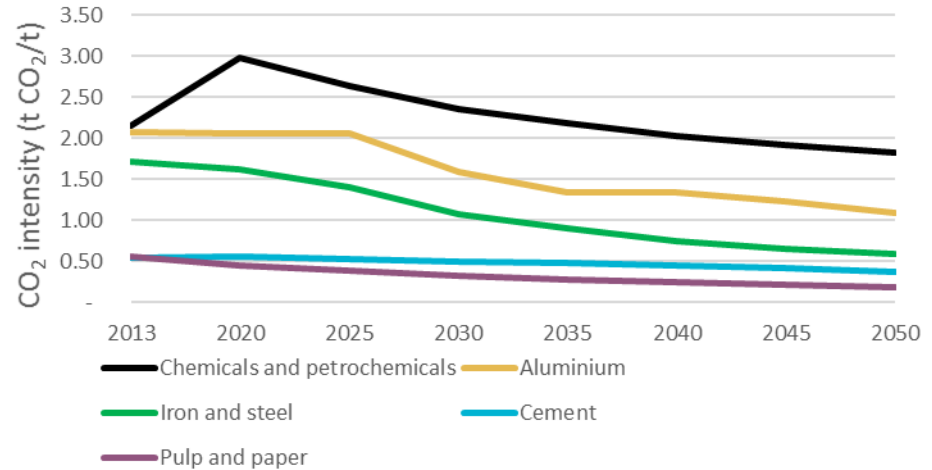


Science-based targets | ETP Chemicals data

Global Chemicals Production

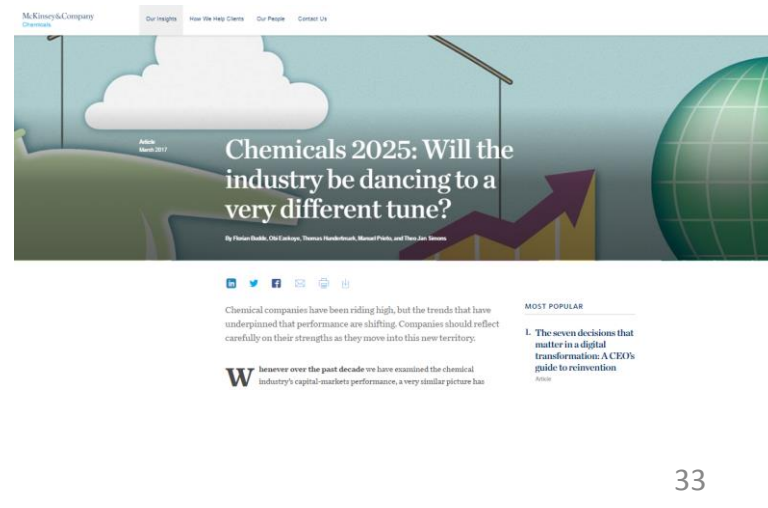
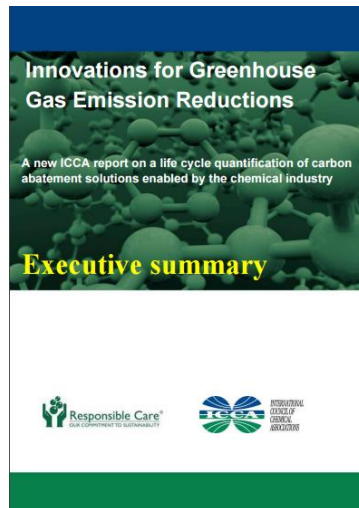
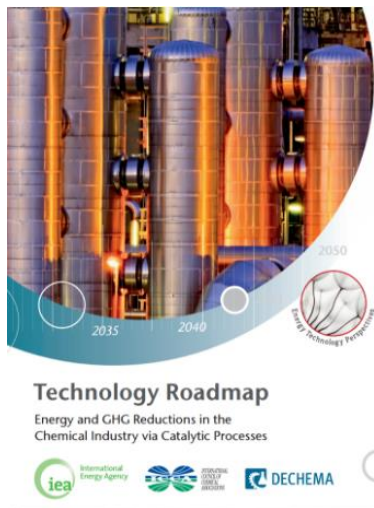
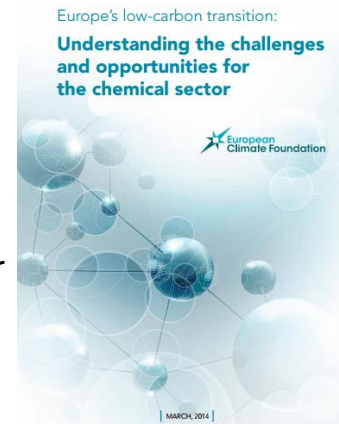


Global Carbon Intensities of Industrial Production



Science-based targets | Current data & approaches

- Numerous chemicals-specific resources have been published
- IEA Chemical Roadmap
- EC (JRC) BRef on BAT for key Chemical processes: Large Volume Inorganic Chemicals (Ammonia, Acids, Fertilisers, Solids and Other chemicals), Large Volume Organic Chemicals, Organic fine chemicals, Chlor-Alkali, Polymers, Specialty Inorganic Chemicals



Science-based targets I Indirect emission issues

- **Boundary issues:** supply chains and outsourcing of production;
- Carbon footprint of feedstocks;
- Co-generation, own electricity, steam and heat vs. energy procurement

- **Scope 3**
 - Pharmaceutical Supply Chain Initiative (PSCI) precedent
 - CDP supply chain information requests:
 - BASF (26), Dow (17), Exxon (10), Solvay (15)
 - CDP company supplier engagement rankings

- **Product mix** and avoided emissions

Science-based targets | Questions for ICCA feedback

1. What's the best method to inform and assess whether chemicals company targets are in line with keeping global warming well below 2°C?
2. Is the convergence method (to a physical carbon intensity in 2050) appropriate and robust for top carbon intensive chemical commodities?
3. Given the heterogeneity among chemicals sector companies, what are the most appropriate activity metrics?
4. Which GHGs are most important to include in chemicals sector SBTs?
5. Is absolute emission contraction based on a sector-specific carbon budget is a suitable method for non-homogeneous chemical products? What about an intensity approach?

ECOFYS

A Navigant Company



Sectoral Decarbonization Approach for the chemical sector

Example Proposal for Feedback

Science-based targets | Ecofys proposal: SDA focus

The Science Based Targets initiative provides guidance for companies to align their GHG reductions targets with the Paris Agreement. In 2015, the initiative launched a new methodology, the Sectoral Decarbonization Approach (SDA), developed by CDP, WRI and WWF with technical support from Ecofys.









Shortcomings in the current SDA for the chemical & petrochemical sector

1. Works on an aggregated level, with a heterogenous sector approach.
2. An absolute reduction approach is used for heterogenous sectors, meaning that all chemical companies despite their differences in growth and in mitigation potential should reduce their absolute emissions by the same percentage.
3. A not-yet understood increase of the carbon intensity of the global chemical industries for the 2010-2020 time-slot (projected by the EEA ETP used in the SDA) giving the impression companies can increase their emissions in this timeslot.

Clear need to overcome these shortcomings

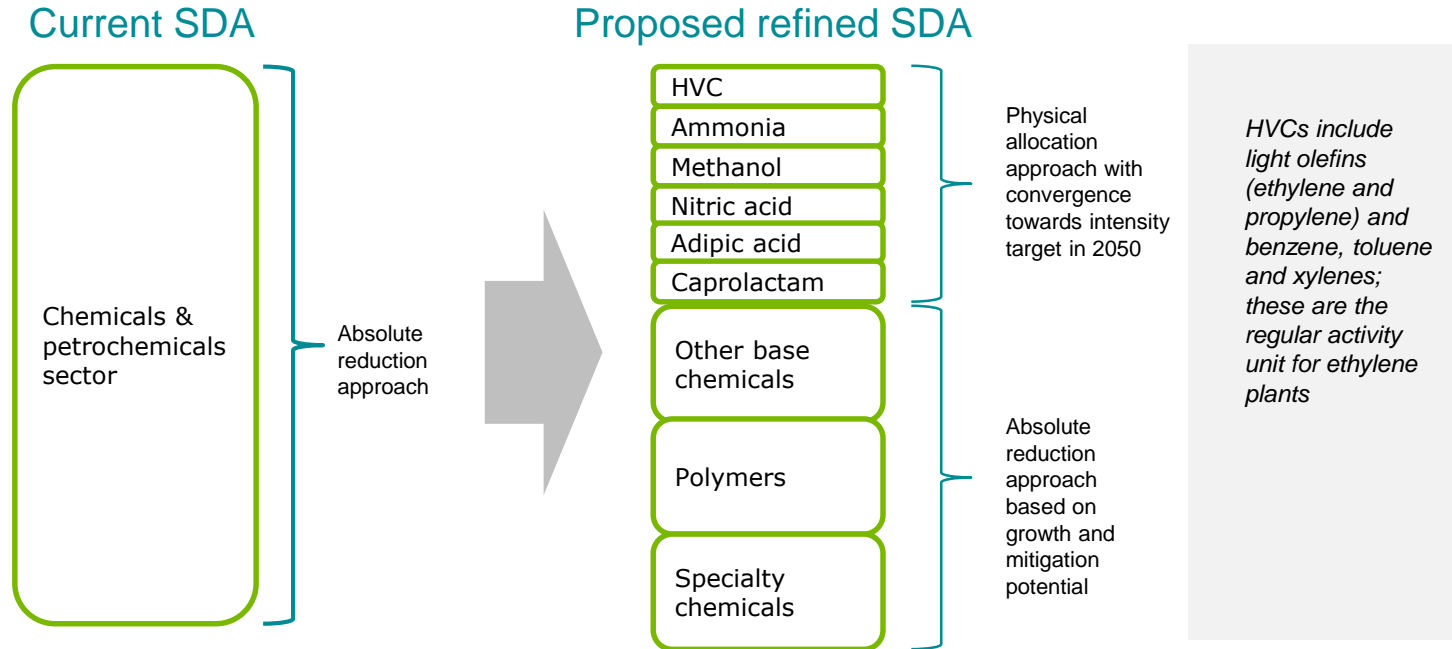
1. **From the climate perspective:** the chemical and petrochemical sector represents a large share of global GHG emissions. In order to design ambitious climate actions in line with the Paris Agreement and to limit global warming well below 2 °C, more specific guidance is needed.
2. **From the sector and company perspective:** the chemical and petrochemical sector is perceived as a frontrunner in delivering innovative solutions to avoid GHG emissions and want to show this leadership as well by reducing their own GHG footprint. Various chemical companies have expressed the interest to align their targets with the Paris Agreement and to contribute to the refinement of the SDA methodology.

Science-based targets | Ecofys proposal: boundaries

Sub-sectors	Inclusion in scope
	<i>Petrochemicals</i> 
	<i>Chemicals</i> 
	<i>Pharmaceuticals</i> 
	<i>Refineries</i> 

Note: Refineries produce naphtha and gas oil, which can be converted in crackers to ethylene and other chemicals. These crackers are part of the petrochemical industry.

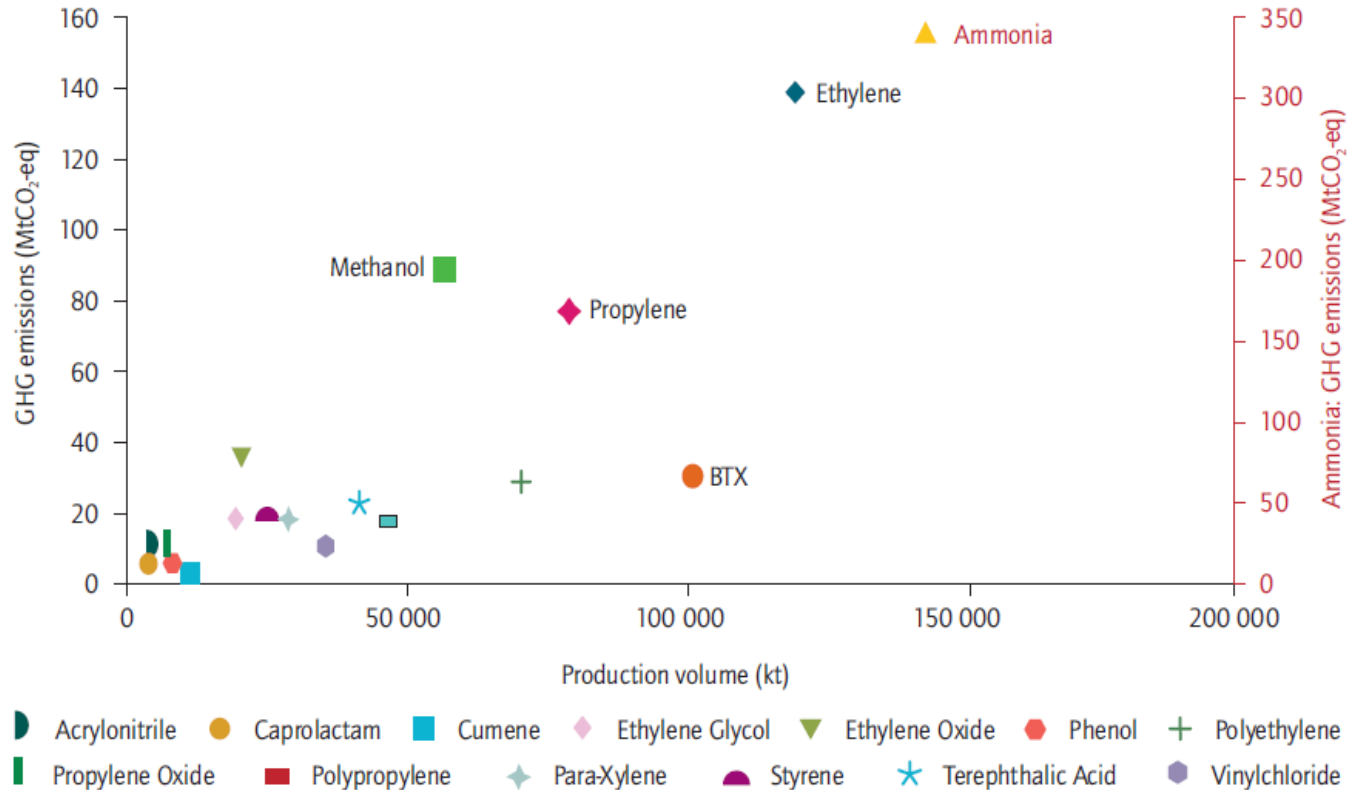
Science-based targets | Ecofys proposal: product mix



With this selection we:

1. Cover 50% - 70% of total sector direct & indirect emissions by physical allocation
2. Acknowledge the still substantial N₂O emissions in the chemical industry and take into account the fact that they can be abated at low costs
3. Consider the chemicals of the future
4. Stay close to the IEA ETS approach towards modelling the sector

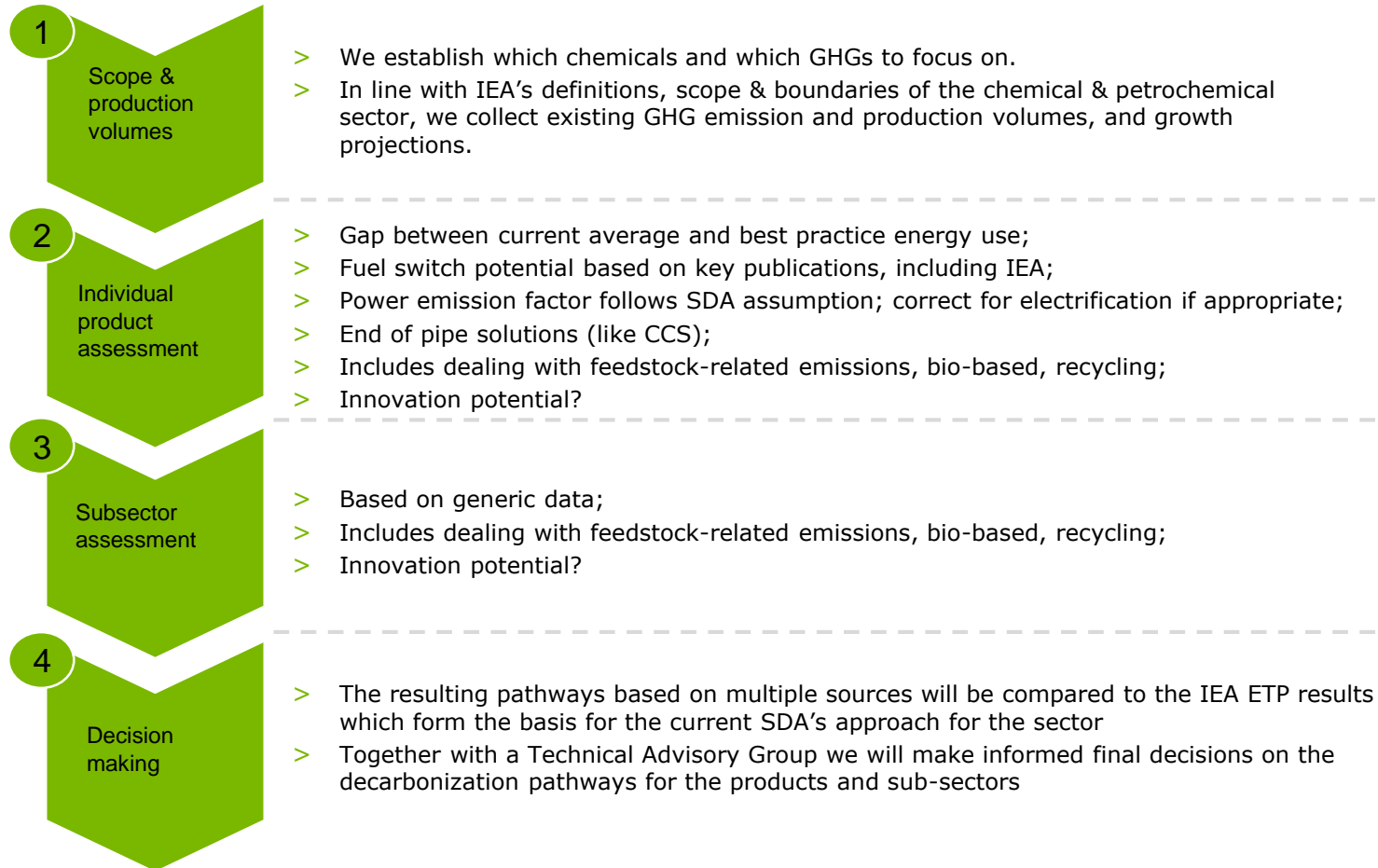
Science-based targets | Ecofys proposal: tracked products



Source: IEA, ICCA, Dechema, Technology Roadmap Energy and GHG Reductions in the Chemical Industry via Catalytic Processes, 2013.

Science-based targets I

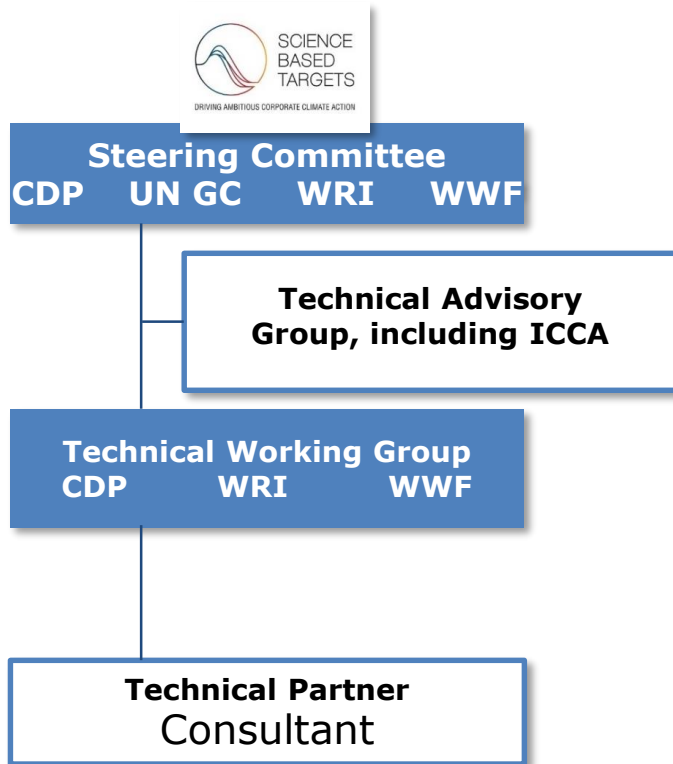
Ecofys proposal: process



Science-based targets | Ecofys proposal: governance structure

We propose the same organizational & governance structure as for SDA development...

...with the following roles



- *Initiate refinement project*
- *Commission technical partner*
- *Steer the project & methodology refinement*
- *Manage process & organize the stakeholder workshops and public consultation*

- *Provide input, data and feedback for refinement of SDA for chemical sector*

- *Coordinate refinement process*
- *Provide input on design principles for the methodology and draft methodology*
- *Check and validate data & decarbonization pathways*

- *Provide technical support for refinement*
- *Present the refined methodology on the stakeholder workshops*
- *Perform pilot test of the draft, refined methodology*
- *Finalize the methodology*

Science-based targets | Ecofys proposal: inputs & issues

Input Requested

We expect **active involvement via the Technical Advisory Group** to support in collection / interpretation of data, and to actively engage in methodological discussions

Cooperation with the IEA ETP team to be further explored in more detail

Remaining Issues

Open question **how to deal with emission from HFC-22 production**

Approach is traditional / not tailored to innovative new products / production routes that will gain market share. How to deal with this in target setting remains an open question?

The best approach for scope 3 target setting also needs further elaboration, given that the scope 1 / 2 emissions of the upstream companies are the scope 3 emissions of the more downstream companies

Also end-of life emissions related to feedstock needs further elaboration

Science-based targets | Ecofys proposal: deliverables

1

Refined pathways in the SDA tool so that a broader range of companies can model their emission reduction targets consistent with the long-term temperature goals adopted in the Paris Agreement

2

A technical paper which explains the main projections and assumptions embedded in the decarbonization models to be used by companies in the development of their carbon strategies

3

A guidance document for chemicals-related companies compiling best practices for setting science-based targets.

Science-based targets I Next steps

ICCA feedback on method development

Open request for proposals (RFP)

Selected Upcoming Events:

- UNGC SDG event April 26-27 New Delhi, India
- Business & Climate Summit August 31- September 1 New Delhi, India
- Climate Week NYC September 18-25 New York, USA
- UNFCCC COP 23 November 6-17 Bonn, Germany



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