Cefic recommendations for a Chemicals sector Guidance that reflects the specificities and complexity of the industry

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1. Introduction

SBTi are preparing to publish their guidance for climate target-setting in the chemical sector. Cefic has been given the opportunity to provide input into SBTi's work. This document brings together Cefic's input on the development of a sectoral guidance for the chemical sector by SBTi and is structured along five key priorities. As mentioned in the above disclaimer, any individual company's potential engagement with the SBTi framework remains strictly voluntary.

Cefic does not take a position as to whether its members should engage with any particular framework: specific approaches may not work for all chemical companies and there are a wide range of potential pathways to GHG emissions reductions that a company may pursue in light of available technology and supportive policies.

During its preparation, Cefic has been outreaching to the wider industry community, striving to provide input to SBTi's target-setting methodology that better reflects the specificities and complexity of the Chemical Industry.

As a result, five methodological aspects appear critical:

1. A cradle-to-gate approach for reduction pathways for base chemicals (ammonia, methanol, HVCs and hydrogen) maximizes target comparability and consistency across the industry, and guarantees the necessary flexibility for companies to deliver on their targets;
2. A sector specific approach for "Other chemicals" is needed to correctly reflect their abatement potential;
3. The use of a circular content cut-off method is the most suitable alternative to a sub-target for 3.12 emissions;
4. The sectoral guidance should acknowledge the specificities of the power generation and use in the chemical industry;
5. Reduction of emissions associated with the use of carbon from biogenic sources should be recognised;

These methodological aspects are guided by **four key principles**, which Cefic considers important:

Principle 1: Any target setting framework should enable companies to credibly align targets to the latest climate science

Ensuring that targets are science-based is a fundamental requirement of the methodology. The underpinning "science" for this methodology is based on the concept of carbon budgets and transition pathways. The latest IPCC AR6 report describes a <400GTCO_2e global carbon budget remaining as of January 2020, to limit warming to 1.5°C and <1,150 GTCO_2e to limit warming to 2°C, both with a chance of 67%.

Principle 2: Any target setting framework should maximize target comparability and consistency across the industry

The Chemical sector is complex and diverse. The industry relies on a small number of base chemicals (ammonia, methanol, olefins, aromatics and hydrogen) as starting materials but these are then used to produce thousands of different intermediate, specialty and end products, many of which require varied

processing steps and raw materials. Not only does the industry produce thousands of products, but the business model of actors often varies: some are backward integrated (e.g. by including upstream activities, such as refining) whilst others specialize on downstream transformation of base chemicals.

For those who wish to set targets, comparability is essential to align value chain incentives and allow for recognition and assessment of true company ambition by peers, suppliers, customers, investors and civil society. In some ways, the complexity of the industry may make target comparability challenging to achieve. However, design decisions which exacerbate differences should be avoided.

Principle 3: Any target setting framework should be practical for as many industry actors as possible
The chemical sector is considered as a hard to abate industry: high temperature and pressure processes require costly or new technologies to reduce emissions. Process emissions are hard to avoid and companies have large fleets of in-service industrial assets with long remaining economic lifespans. As a result, GHG emission reductions targets must be both credible and science-based, but also practical for companies to deliver in light of available technology and supportive government policy.

Strict adherence to underlying climate science is critical to the credibility of the methodology. However, some criteria are based on normative decisions, which do not have a strict foundation in climate science. For these decisions, a degree of real-world practicality should be considered; for example, by maximizing flexibility in how companies can deliver targets. A pragmatic lens in methodology design, and an awareness of industry complexity is necessary to enable widespread adoption of target setting by actors across the chemicals value chain.

Principle 4: Any target setting framework should build on and align with existing external approaches, where possible
Corporate climate target setting has increased significantly in recent years, driven largely by the work of standard setters and initiatives such as GHG Protocol, ISO, CDP and TPI[1].

Some independent target setting entities have developed widely accepted, comprehensive and effective target setting criteria, through a multi-stakeholder consultative process. The criteria are increasingly applied by the industry and endorsed by NGOs working on climate[2]. To increase the likelihood of acceptance of a methodology for the chemical industry sector with its unique needs, it is recommended that any sector specific methodology aligns where possible to similar principles, approaches and criteria.

2. Critical success factors

When describing the critical factors for a sector guidance that meet the specificities of the chemical sector, reference is made to the "SBTi default approach". The description of this approach is based on the SBTi Chemicals Scoping Document, the SBTi Chemical Sector Status Report and to the materials or views that have been presented by SBTi during the Expert Advisory Group meetings.

2.1 A Cradle-to-Gate approach for reduction pathways

The Cradle-to-Gate logic for base chemicals is proposed to:

- address key limitations perceived with a SBTi default sector approach, which only applies for a

[1] GHGP = Greenhouse Gas Protocol, ISO = International Organization for Standardization, CDP = Carbon Disclosure project, TPI = Transition Pathways Initiative
[2] e.g. the Science Based Targets Initiative (SBTi) is a collaboration of the World Resources Institute (WRI), the World Wide Fund for Nature (WWF) and the Carbon Disclosure Project (CDP)

sectorial Gate-to-Gate (scope 1 and 2);

- meet the specificities of a diverse and fragmented industry with differing levels of vertical integration;

Such Cradle-to-Gate method focuses on the carbon intensity of products, rather than the intensity of specific processes or value chain steps. Targets set on a Cradle-to-Gate product carbon intensity are likely to be more comparable across organizations and simple to communicate to stakeholders. The Cradle-to-Gate logic ensures more comprehensive management of emissions across the value chain, increases delivery efficiency (across scopes and emissions sources), aligns economic incentives in the value chain and avoids the need for delineation of industry "gates". A precedent exists for the C-t-G approach without a specific S1 sub-target in the transport and steel sector.

There should be also an option for chemical companies to combine C-t-G SDA targets for ammonia, methanol, HVC and the ACA target for other chemicals into a single absolute reduction target (scope 1-2 sub-target could be also included), thus giving the chemical sector the possibility to most efficiently reduce its GHG emissions. This way, each company does not have a multitude of separate targets to deliver but instead, can invest in its operation with a single absolute reduction goal in mind and at the same time work together within its value chain to lower emissions as a sector.

A C-t-G approach will not exempt chemical companies from acting on their scope 1 emissions. On the contrary, a C-t-G approach ensures abatement decisions across the value chain are fully captured and incentivized, ensuring an efficient spending of resources across S1, S2 and S3.1, as abatement levers affect each company differently. To date, a majority of companies have set targets on scope 1 and scope 2 GHG emissions, while the number of companies having scope 3 emission reduction targets is lower. The CDP database shows also that GHG emission reductions in the chemical sector were mostly performed on scope 1 and scope 2 emissions, which is due to limited direct abatement levers in S3.

A C-t-G target is especially useful for downstream companies, who could use the C-t-G SDA to set their S3 targets. Without a C-t-G, downstream companies that are willing to set quantitative emission reduction targets will need to ask their suppliers to provide disaggregated data for emissions related to the feedstock (For emissions outside of the chemical sector boundaries, emissions have to follow the SBTi cross sectoral scope 3 ACA pathway, while for the production of base chemicals they would have to follow the SBTi chemical sector scope 1 related pathway). Competition compliance regulation might prohibit the sharing of this data in a disaggregated manner.

2.2 A sector specific approach for "Other chemicals"

"Other chemicals" represent ~30% of emissions but also >50% of companies operating in the sector. According to the IEA scenarios, emissions of "Other chemicals" is 431 Mt, which is larger than ammonia, methanol and HVCs. This mean that the GHG emissions of the "Other chemicals" are material enough, both in volume as well as the number of companies involved, to develop a sector specific method to set reduction targets. However, the heterogeneity and lack of disaggregated modelling data do not allow the development of an SDA.
Direct process emissions are a significant share of "Other chemicals" total emissions, and are largely due to chemical process emissions, which are hard to abate without innovation. Cefic is of the opinion that the cross- sector ACA approach with a 4.2% abatement for S1 and S2 and 2.5% for S3 does not reflects the abatement potential of the sector.

As an alternative, Cefic proposes a sector specific approach for "Other chemicals" in the form of an absolute contraction approach (sACA), which should be a combination of the IEA pathway for "Other" chemicals for scope 1, a power pathway adjusted from the IEA for scope 2. For scope 3 upstream, such target could be combined with the Base chemicals SDA target.

2.3 The use of a circular content cut-off method as an alternative to a sub-target for 3.12 emissions

End-of-Life (EoL) emissions of the chemical sector, which are reported under the category 3.12, come dominantly from incineration or landfilling of products sold by the chemical industry (>50% of product fates). The chemical sector has limited control on waste treatment, but abating EoL emissions by the sector can still be achieved, primarily through two levers:

1. The use of zero carbon feedstocks in the form of biomass, captured CO_2, or recycled waste;
2. Increased re-use or durability of products to maintain the carbon content within the economy

Clear accounting guidelines for Scope 3.12 emissions will be necessary to incentivize the use of non-fossil based feedstock and recycling but is currently hampered by a lack of consistency in the application and not all abatement levers are currently incentivized.

Cefic favours the circular content cut-off method, which incentivises the use of non-fossil based feedstocks and thus recycling. This method is aligned with the existing Corporate Value Chain Standard (Scope 3) that recommends applying a cut-off rule for recycled content, which allows exclusion of GHG burden of the recycling process since it is included in the next lifecycle. The circular content cut-off method recommends using companies' own circular offering (primary data) as the cut-off criteria instead of mixture of secondary/proxy data coupled with assumptions regarding end-of-life scenario of products. Such method could harmonize company practices and provide a level playing field.

2.4 How should energy-related emissions be considered within Cradle-to- Gate pathways?

Power-related emissions are a key contributor to the Cradle-to-Gate footprint of a chemical product, representing 30% of industry emissions. Power is also a critical input to most chemical processes and reliable sourcing is essential. Continued electrification of processes is a key GHG abatement-lever for the Chemicals sector and is expected to result in up to a 6X increase in power demand by 2050. Ensuring nuanced treatment of power-related emissions targets in the Chemical sector is therefore of high materiality to chemical Companies.

Chemical companies typically source power in four different ways:

1. **Self-generation for use in chemical production:** power produced in an on-site facility
2. **Co or tri-generation:** power produced as a by-product of another heat or steam process
3. **On site purchased:** power is purchased directly from an on-site, but third party owned facility, which is not connected to the public grid
4. **Grid purchased:** power is purchased directly from the grid

These power related emissions can either be accounted for in a corporate scope 1 inventory (if self-generated or co-generated i.e. ~50% of power used) or as scope 2 (if purchased either on site, or via the grid, see Figure 3).

As the Chemical sector requires reliable dispatchable baseload power, the potential and cost for on-site renewables is limited, due to the need for back-up generation capacity, as well as power storage. Hence decarbonization of self-generated power is more complex than decarbonization of national grids.

For situations where electricity is self-generated to produce Base chemicals, we therefore recommend to use the same abatement rate as for scope 1 emissions under the Base chemical SDA. This approach recognizes that the rate of emission abatement is dependent on the primary process, rather than the electricity generating process, especially where it is made from waste heat and steam. For the power purchased from the grid, the IEA based power pathway should be followed.

2.5 Recognising reduction of emissions associated with the use of carbon from biogenic sources

One of the GHG reduction strategies is the use of biobased feedstock. Aligned with the ISO 14067 (Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification), companies apply similar reasoning in their corporate accounting, including both biogenic emissions and removals in their (scope 3) target inventory. Any target setting methodology should therefore, in the opinion of Cefic, recognize both biogenic emissions and removals.

However:

- Accounting methodologies of full scope GHG emissions related to biogenic materials are unclear in GHG Protocol guidance documents, which are an important point of reference for SBTi;
- The GHG Protocol is currently finalising the draft "Land Sector and Removals" guidance document that had been published for public comment;
- Further guidance on accounting for bioenergy is planned to be included. The accounting concepts supporting bioenergy accounting would apply, in theory, to the use of biogenic materials as well.

Cefic looks forward to SBTi's evaluation of the final GHG Protocol guidance.

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About Cefic
Cefic, the European Chemical Industry Council, is the forum of large, medium and small chemical companies across Europe, accounting for 1.2 million jobs and 14% of world chemicals production. On behalf of its members, Cefic's experts share industry insights and trends, and offer views and input to the EU agenda. Cefic also provides members with services, like guidance and trainings on regulatory and technical matters, while also contributing to the advancement of scientific knowledge.