SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

SBTi CHEMICAL SECTOR PATHWAYS AND IMPLEMENTATION CRITERIA IN BRIEF

December 2025

The value of decarbonizing the chemicals sector

Our lives depend on manufactured chemicals. From the medicine we take to the food we eat, and even emerging renewable energy technologies, chemicals underpin so much of modern life. In fact, 95% of manufactured products use chemicals in one way or another. As one of the world's most influential industries, the chemicals sector stands at the frontier of climate action. Businesses in this sector play a significant role in global decarbonization, and many are already experiencing the impacts of climate change first-hand.

The Chemical Sector Pathways and Implementation Criteria provides a clear and actionable path for the sector to reach net-zero. By setting science-based targets using the pathways criteria document, companies can demonstrate climate leadership, drive innovation, and strengthen investor and consumer confidence—all while enhancing long-term business resilience and competitiveness in a carbon-constrained world.

Who can use the Chemical Sector Pathways and Implementation Criteria

The pathways criteria document is designed to help chemical manufacturers reduce their emissions by providing activity-specific pathways and calculation criteria. The majority of these pathways are optional to use. They provide alternatives to the SBTi's existing cross-sector methods for setting targets on emissions from specific activities. The Criteria supports companies in addressing some of the most significant sources of emissions in the chemicals sector, both direct and across the value chain. It is intended for companies engaged in:

- The production of primary chemicals.
- The production of other base chemicals.
- The production of intermediate chemicals.
- The production of specialty chemicals.
- The production of consumer chemicals.
- The production of pharmaceuticals.
- Chemical recycling activities.

Companies outside the chemicals sector may also find these pathways useful when setting targets for relevant parts of their value chains. For example, a business that purchases significant volumes of primary chemicals may choose to use the Chemical Sector Pathways and Implementation Criteria to address scope 3 emissions associated with their upstream chemical production.

Designed for use in parallel with the Corporate Net-Zero Standard and Corporate Near-Term Criteria, the pathways criteria document outlines how companies should apply SBTi's general requirements, complimented by these sector-specific criteria, to set targets covering all relevant emissions.

Overview of the Chemical Sector Pathways and Implementation Criteria

Unlike other industries with more uniform products, such as steel or cement, the chemicals sector encompasses a vast range of products and processes. For this reason, the SBTi's Sectoral Decarbonization Approach, which relies on a single physical activity metric to establish a representative emissions intensity pathway for a given sector, is not sufficient to capture the chemicals sector's complexity. The SBTi has therefore developed a more tailored approach to the nature of the sector.

The Chemical Sector Pathways and Implementation Criteria contains several activity-specific pathways applicable to different segments of the sector, including:

- Nitric acid
- Ammonia
- Methanol
- Non-primary chemicals
- Use-phase emissions from nitrogen fertilizer
- Alternative sources of feedstocks
- High value chemicals, including:
  - Ethylene
  - Propylene
  - Benzene
  - Toluene
  - Mixed Xylenes

These pathways include science-based decarbonization trajectories for the most emission-intensive activities in the chemicals sector, including:

- Pathways for the most emissions-intensive primary chemicals, including ammonia, methanol and high-value chemicals.
- A pathway for nitrous oxide emissions generated in the production of nitric acid.
- A pathway for non-primary chemicals production.
- A pathway for reducing use-phase nitrous oxide emissions from the application of nitrogen fertilizers.
- A pathway to increase the use of alternative feedstocks used in the production of chemicals.

Figure 1 summarizes each of the pathways, including the section of the Chemical Sector Pathways and Implementation Criteria where they can be found, relevant metrics, and the type of requirement they represent.

Figure 1. Summary of the chemicals pathways

Criteria	Activity type	Relevant metrics	Requirement type
CHEM-C1	Nitric acid production in company operations	Scope 1 N_2O emissions from nitric acid production Expressed as kg of N_2O / tonne of nitric acid	Mandatory pathway if scope 1 N_2O emissions (on a CO_2e basis) from nitric acid production represent at least 5% of the sum of total scope 1 GHG emissions.
CHEM-C2	Primary chemical production (Ammonia, methanol, high value chemicals [HVC])	GHG emissions from production Expressed as ton of GHG / tonne of chemical product	Optional pathway. Other pathways may be used to ensure that all applicable SBTi criteria are met.
CHEM-C3	Non-primary chemical production in company operations	GHG emissions from non-primary chemical production Expressed as percent reduction of absolute emissions	Optional pathway if scope 1 emissions from combined non-primary chemical production represent at least 5% of the sum of total scope 1 GHG emissions.
CHEM-C4	Nitrogen fertilizer production in company operations	Scope 3 category 11 N_2O emissions from the use-phase of sold nitrogen fertilizers Expressed as percent reduction of absolute emissions	Optional pathway if scope 3 category 11 emissions of N_2O (on a CO_2e basis) represent at least 5% of the sum of total scope 3 GHG emissions. Other pathways may be used to ensure that all applicable SBTi criteria are met.
CHEM-C5	Purchase and use of carbon-based materials as feedstocks for the manufacture of products in scope	Proportion of alternative feedstocks from all sources Expressed as a weight percent of carbon from purchased alternative feedstocks	Recommended alignment pathway if combined scope 1, 2, and 3 emissions from production of carbon-based chemicals products represent at least 5% of the sum of total scope 1, 2 and 3 GHG emissions.

In total, the pathways criteria document introduces eight pathways to guide the decarbonization of the chemicals industry. Five of the activity-specific chemicals pathways use intensity-based or alignment metrics, meaning that they detail the necessary emissions reduction in terms of the unit of chemical produced or purchased.

The mandatory nitric acid pathway requires companies to meet the intensity threshold benchmark within the first target cycle given advanced state of technologies to reduce N_2O emissions from nitric acid production (Table 1a). In other words, to reach this benchmark, companies must generate no more than 0.5 kg of N_2O for each tonne of nitric acid they produce.

The other four optional pathways show how much companies need to reduce the amount of greenhouse gases (GHGs) emitted per tonne of chemical produced over time (Table 1b).

Table 1a. Summary of the nitric acid emissions intensity benchmark

Production of	Section	Metric	Benchmark
Nitric acid	**2.1**	*Kg N_2O / tonne nitric acid*	0.5

Table 1b. Summary of primary chemicals pathways that use intensity metrics

Production of	Section	Metric	2020	2030	2040	2050
Ammonia (non-energy purposes)	**2.2**	*Tonne of CO_2 per tonne of chemical product*	2.61	1.76	0.72	0.09
Ammonia (all purposes)	**2.3**		2.61	1.27	0.37	0.04
Methanol (non-energy purposes)	**2.4**		2.58	1.91	1.03	0.09
High Value Chemicals (HVC)	**2.5**		1.06	0.83	0.46	0.04

Three additional pathways provide requirements for absolute emissions reductions from non-primary chemical production and for downstream use-phase emissions from sold nitrogen fertilizers, as well as alignment requirements—that is, indicators that measure the extent to which a company's sourcing of alternative feedstocks is in line with global climate goals.

The optional non-primary chemical production pathway is based on underlying emissions scenarios detailed in Table 12 of the pathways criteria document, with additional information available in the SBTi Chemicals Sector Pathways Synthesis Report. Table 2 summarizes the absolute emissions reduction requirements associated with this pathway.

Table 2. Summary of non-primary chemical production pathway

Activity	Section	Metric	2020	2030	2040	2050
Non-primary chemical production	**2.6**	*Percent reduction of absolute emissions from 2020 reference year*	-	4.8	39.9	94.6

The optional nitrogen fertilizers pathway is designed to address scope 3 category 11 emissions from the use-phase of sold nitrogen fertilizers. Targets set using this pathway contribute to a company's minimum scope 3 target coverage criteria under the SBTi Corporate Net-Zero Standard and the SBTi Corporate Near-Term Criteria. Details of this pathway are summarized in Table 3.

Table 3. Summary of pathway for scope 3 category 11 emissions of N_2O from sold nitrogen fertilizers

Activity	Section	Metric	Base year	Target calculation
Sale of nitrogen fertilizer	**2.7**	*Percent reduction of absolute emissions*	Before 2020	Near-term target: 1.3% x (Target year – Base year) Long-term: 17% + 0.57% x (2020 - Base year)
			2020 or later	Near-term target: 1.3% x (Target year - 2020) Long-term: 17% regardless of base or target year

The recommended pathway for sourcing of alternative feedstocks addresses the use of non-virgin fossil sources of feedstock carbon—a key building block of the chemicals sector. Companies are recommended to use this pathway if total scope 1, 2, and upstream and downstream scope 3 emissions associated with carbon-based chemical products constitute at least 5% of the sum of the company's total GHG emissions. Alternative feedstock targets are designed to complement emissions reduction targets for chemicals that fall within the scope of the criteria. These targets set minimum requirements to align sourcing of alternative feedstocks to the reference pathway.

Table 4. Summary of pathway for the sourcing of alternative feedstocks

Activity	Section	Metric	Mechanical recycling	2020	2030	2040	2050
Sourcing of alternative feedstocks	**2.8**	*Percent of purchased alternative feedstock*	Excluded	0	14	26	42
			Included	4	19	34	55