Planet Tracker

Decarbonising Chemicals

A comparative assessment

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Executive summary

The chemical industry produces the building blocks of modern life, from plastics and fertilisers to key materials and semiconductors. Its transition matters not just for its own emissions, but because it sits upstream of virtually every other sector's decarbonisation effort.

The transition to a Net Zero future is one of the major challenges the chemical industry is currently facing. This research note compares the climate transition plans of eight leading chemical companies covered by the Climate Action 100+ list: Air Liquide, BASF, Bayer, Dow, Dyno Nobel, LyondellBasell, SABIC, and Toray. The comparison spans target ambition and performance, governance, policy engagement, risk management, and capital alignment, aiming to provide investors and stakeholders with a cross-company view of who is leading, who is lagging, and where the critical gaps are. Having analysed the climate transition plans of these companies over the last three years, their journey shows a mixed picture, with companies showing some areas of improvement but also areas where they went backwards.

Overall, the sector is not aligned to the Paris goal of “well-below 2°C”, but there is a wide range of alignment within the sector, showing that transition ambition is feasible. In 2025, leading the pack is Dyno Nobel, the only company that we assess as being aligned with 1.5°C. At the other end, Dow and SABIC remain on 3°C trajectories, characterised by modest operational targets, absent Scope 3 commitments, and, in SABIC's case, a troubling regression in disclosure transparency. The remaining four companies, namely, Air Liquide, BASF, Bayer, and Toray, cluster around a 2°C alignment, with LyondellBasell occupying the more ambitious "below 2°C" category, contingent on delivering its sector-leading targets.

Across all eight, three common challenges emerge: the lack of credible Scope 3 strategies covering the majority of emissions (where the majority have either no or only partial Scope 3 targets); a gap between stated capital commitments and verifiable abatement outcomes; and governance and remuneration structures where climate metrics remain subordinate to financial performance.

1.5°C ALIGNED

Dyno Nobel

Only company credibly on a 1.5°C trajectory. Operational emissions fell 39% vs. restated 2020 baseline, exceeding original 2030 targets early.

BELOW 2°C / 2°C

LyondellBasell · Air Liquide · BASF · Bayer · Toray

Meaningful operational progress but shared structural limitations around Scope 3 strategy and capital-to-carbon traceability.

3°C TRAJECTORY

Dow · SABIC

Weak targets, absent Scope 3 strategies. SABIC's Scope 3 reporting has completely ceased since 2022.

Climate alignment

The eight companies assessed fall into three distinct tiers of climate alignment by 2030, based on their target ambition, performance, and delivery credibility. A summary ranking is presented in Table 1.

Table 1: Overall Climate Alignment Ranking

Company	Pathway Alignment by 2030*	Scope 1 & 2 Target	Scope 3 Target**
Dyno Nobel	1.5°C	−50% by 2036 (from 2020)	−25% to −40%
LyondellBasell	Below 2°C	−42% by 2030 (from 2020)	−30%
Air Liquide	2°C	−33% by 2035 (from 2020)	No quantified target
BASF	2°C	−25% by 2030 (from 2018)	−15% intensity (Scope 3.1 only)
Bayer	2°C	−42% by 2029 (from 2019)	−25% selected upstream (68% coverage)
Toray	2°C	−50% intensity by 2030 (vs FY2013)	No target
Dow	3°C	−15% by 2030 (already achieved)	No target
SABIC	3°C	−20% by 2030 (from 2018)	No target; Scope 3 reporting ceased

Source: Planet Tracker Individual CTAs
*Planet Tracker Assessment**
***The target is set in absolute terms if not indicated otherwise.*

The leaders: Dyno Nobel and LyondellBasell

Dyno Nobel stands apart as the only company credibly on a 1.5°C trajectory. Its operational emissions fell 39% versus a restated 2020 baseline[1], exceeding its original 2030 targets several years early. The completion of the Moranbah and LOMO N_2O abatement projects delivered ~750 $KTCO_2e$ of annual reductions, demonstrating that targeted, high-impact interventions can deliver on decarbonisation. Governance is robust, with climate-linked incentives in both short-term (10% STI weighting) and long-term (10% LTI weighting) executive compensation.

LyondellBasell holds the most ambitious combined target set in the sector with a 42% absolute reduction in Scope 1 and 2 and 30% in Scope 3 by 2030. However, its credibility is tested by the fact that total emissions rose nearly 8% between 2020 and 2024, driven by Scope 3 growth linked to higher production volumes. Delivery of its 2030 ambitions will require a 46% cut from 2024 levels. The company's USD 1 billion invested since 2023 in transition projects, its 1,820 MW of renewable capacity under PPAs, and the MoReTec-1 chemical recycling plant signal serious commitment, though the link between sustainability investments and quantifiable GHG abatement remains weak.

The middle ground: Air Liquide, BASF, Bayer, and Toray

These four companies demonstrate meaningful progress on operational decarbonisation but share common structural limitations, primarily around Scope 3 strategy and capital-to-carbon traceability.

Air Liquide has reduced Scope 1 and 2 emissions by 11% since 2020 and committed over 40% of its EUR 16 billion industrial investments for 2022–2025 to energy transition. It has earmarked EUR 8 billion for low-carbon hydrogen by 2035 and issued three successive green bonds (EUR 500 million each), which position it as a credible transition investor. However, total emissions fell only 3%, as a 67% surge in upstream Scope 3 emissions offset operational gains. Further, it does not have a quantified reduction target for its Scope 3 emissions, which account for 40% of its total footprint.

BASF has achieved 72% of its 2030 Scope 1 and 2 target, reducing operating emissions by 17% since 2020. Yet this progress partly reflects a 11% decline in sales volumes rather than active decarbonisation. We assess the company's annual transition capex of approximately EUR 225 million to be substantially less than will be required to deliver an aligned transition. Its Scope 3 target is limited in two regards: first, a 15% intensity reduction, which the company acknowledges may be fully offset by volume growth, is materially short of the reductions required for Paris alignment; second, the target only applies to upstream raw materials, which are just above half (or 52%) of its total Scope 3 footprint.

Bayer has reduced total emissions by 9% since 2020 despite 3% annual revenue growth. It has now set more ambitious targets of a 42% reduction in Scope 1 and 2 by 2029, which are among the most ambitious among peers. However, the exclusion of Category 11 (use of sold products) from Scope 3 disclosures materially understates its footprint, given the emissions intensity of its agricultural inputs. The EUR 500 million pledged for decarbonisation through 2029 represents just 1.5% of annual capex, and zero percent of capex is EU Taxonomy-aligned.

[1] In 2025, Dyno Nobel divested its fertiliser operations, which reduced its total emission footprint by 66%. Our analysis assesses the underlying decarbonisation activities of the company for its remaining operations.

Toray reports a 43% reduction in emissions intensity per unit of revenue since FY2013 but this headline metric masks a structural weakness. Approximately three-quarters of the intensity improvement is attributable to revenue growth (including yen depreciation effects), with only about one-quarter reflecting genuine emissions abatement. The company's absolute Scope 1 and 2 emissions fell just ~10% over FY2013–FY2024. Under continued growth assumptions, its FY2030 intensity target could be met while absolute emissions actually increase. No absolute Scope 3 targets exist, and sustainability metrics are not yet embedded in executive pay.

The laggards: Dow and SABIC

Dow has already achieved its 2030 target, a 15% reduction in Scope 1 and 2 emissions, but this merely highlights the target's inadequacy. In context, peers BASF, Bayer, and LyondellBasell have committed to reductions of 25% to 42%. Dow's explicit rejection of SBTi validation, stating published guidance "does not accurately and scientifically reflect the realities of the chemical sector".[2] The April 2025 delay of the flagship Path2Zero project (which would have decarbonised 20% of ethylene capacity) introduces significant execution risk. Lastly, Scope 3 emissions (73% of total) have no formal reduction target.

SABIC represents the most concerning trajectory. The company's Scope 1 and 2 emissions have been essentially flat since 2021 (only 3% reduction over three years), and its 20% reduction target by 2030 is at the lower end among peers. Most troubling, Scope 3 reporting has completely ceased (from comprehensive disclosure of 122.5 $MTCO_2e$ in 2022 to zero data in 2024) eliminating potential accountability for 70% of the company's total footprint. Capital expenditure transparency has also deteriorated, with no update on the previously announced USD 3 to 4 billion decarbonisation commitment. Planet Tracker has downgraded SABIC from a previous 2°C assessment to 3°C.

[2] For more details see: Dow's 2024 TCFD (Task Force on Climate-related Financial Disclosures) Report, page 6.

Scope 3 challenge

For seven out of the eight companies, Scope 3 emissions represent the majority of their total footprint with a range between 70% and 84% of the total. The exception is Air Liquide with only 40% of its total emissions coming from Scope 3 activities. Still, when it comes to value chain emissions, critical gaps in strategy and accountability persist. The comparison reveals a wide spectrum of ambition, as presented in Table 2.

Table 2: Scope 3 Ambition & Transition Credibility

Company	Scope 3 as % of Total	Scope 3 Target	Key Limitation
LyondellBasell	84%	−30% absolute by 2030	Emissions rose 13% (upstream) since 2020
Dyno Nobel	72%	−25% to −40%	Limited aggregate impact disclosure
Bayer	75%	−25% selected upstream (68% coverage)	Category 11 excluded; footprint understated
BASF	84%	−15% intensity (Scope 3.1 only)	May be offset by volume growth
Air Liquide	40%	None (quantified)	Upstream Scope 3 rose 67% since 2020
SABIC	~70% (est.)	None; reporting ceased	Zero Scope 3 data published for 2024
Dow	73%	None	73% of footprint outside any target
Toray	78%	None (absolute)	Engagement only; no binding targets

Source: Planet Tracker Individual CTAs

Notably, LyondellBasell leads with the most ambitious absolute Scope 3 target (-30%), although its actual emissions have moved in the wrong direction (+8%). Dyno Nobel broke new ground by introducing business-unit-level Scope 3 targets following its restructuring. Meanwhile, BASF's intensity-only approach creates a structural loophole: absolute upstream emissions could remain flat or even rise as production volumes grow, even as intensity reductions are reported. At the other extreme, Dow, SABIC, and Toray do not have quantified Scope 3 reduction commitments.

A universal weakness across all companies is the absence of quantified emissions reductions attributable to supplier and customer engagement programmes. While companies report expanding supplier assessments (Dow: 3,727 suppliers; BASF: 1,900 suppliers; LyondellBasell: 840), none systematically disclose the tonnes of CO_2e aimed to be reduced through these efforts.

Governance and incentives

As presented in Table 3, climate governance structures vary significantly across the eight companies, but a common theme emerges: executive compensation linked to climate targets does not seem to be material, which limits influence on strategic decision-making. At Planet Tracker we find it important that transition is properly incentivised within pay structures, particularly as climate risk translates to business and financial risk over the long term.

Table 3: Oversight and Remuneration

Company	Climate/Sustainability Dedicated Committee	Climate Weighting: Short-Term Incentives (STI)	Climate Weighting: Long-Term Incentives (LTI)
Dyno Nobel	✓	10%	10%
LyondellBasell	✓	10% (*sustainability)	Undisclosed
Bayer	✓	Undisclosed	20% (*sustainability)
BASF	—	Undisclosed	~33% of strategic LTI component (1 of 3 equal targets)
Dow	✓	Undisclosed	20%
Air Liquide	✓	Undisclosed	~7%
SABIC	✓	Undisclosed	Undisclosed
Toray	—	Undisclosed	Undisclosed

Source: Planet Tracker Individual CTAs

Dyno Nobel stands out with the most balanced incentive structure, embedding climate KPIs into both short- and long-term pay, weighted at 10%. Meanwhile, while 20% of Dow's LTI is tied to carbon metrics, its low decarbonisation ambition dilute this. Moreover, incentive structures that have a total cap, rather than caps for each individual KPI, can create a situation where a single KPI can 'over-contribute' (e.g., Dow 200% cap and Bayer 250% cap). Toray is furthest behind, with no confirmed sustainability linkage in executive compensation and a non-committal statement about "considering" metrics from FY2026.

Capital allocation

As shown in Table 4, the scale and transparency of climate-related capital expenditure varies widely.

Table 4: Total Capex and Transition Capex Overview

Company	Cumulative Climate Commitment (USD equiv.)	Target / End Year	Annual Climate Investment (USD equiv.)	Total Capex 2024 (USD equiv.)	Climate as % of Capex
Dow	USD 1.0–1.4 bn/year (no fixed cumulative)	Ongoing / 2030	USD 1.0–1.4 bn	USD 2.94 bn	34–48%
Air Liquide	USD ~8.3 bn (H_2 specific)	2035 (H_2)	~USD 639 m (H_2)	USD 3.95 bn	~16%
LyondellBasell	USD 1.5 bn	2030	USD 200 m	USD 1.8 bn	~11%
Dyno Nobel (IPL)	USD ~62–74 m	2030	USD 9–11 m	USD 179 m	~5–6%
SABIC	USD 3–4 bn announced	2030	USD 375–500 m	USD 3.3–3.5 bn	~11–15%
Toray	USD ~3.1 bn total capex (FY23–25)	FY2025	~USD 185 m (est.)	USD 924 m	~20%
BASF	USD ~234 m/year (taxonomy-aligned only)	Ongoing / 2030	USD 234 m	USD 6.75 bn	~3.5%
Bayer	USD ~519 m total	2029	USD 74 m	USD 3.43 bn	~2.2%

Source: Planet Tracker Individual CTAs | Air Liquide also had a EUR 16 billion industrial investment pipeline from 2022 to 2025 (~USD 4.2 billion/year) but this does not represent a like-for-like capex figure. SABIC: announced target only; no verified actuals. Toray: ~20% of capex is climate-adjacent (SI products + efficiency); not directly comparable.

Air Liquide and Dow lead on absolute capital mobilisation, with climate-linked spending representing significant shares of total capex. However, in both cases the link between capital deployed and tonnes of CO_2e avoided remains undisclosed. SABIC's capital transparency has actively deteriorated: in 2021, the company announced a plan to invest USD 3–4 billion in decarbonisation but provided no subsequent updates on deployment since 2023. It is unclear whether those commitments remain intact and whether the capital is being deployed. Lastly, Bayer's EUR 500 million commitment through 2029, while specific, represents a fraction of what sector benchmarks would imply for a company of its scale.

A notable cross-cutting weakness: no company in the sample consistently provides project-level abatement data ($MTCO_2e$ avoided per unit of capital invested), making it impossible for investors to assess the carbon efficiency of transition spending.

Risk exposure

All eight companies face material climate-related risks from carbon pricing, physical hazards, and market disruption. However, the granularity of disclosure of these risks varies, but in general the quantification of these risks is limited.

Regulatory risk, such as exposure to Europe's Emissions Trading Scheme (EU ETS), is a material factor for the sector. Two companies quantify their exposure to EU ETS: Dow sizes its exposure at USD 112–168 million annually by 2030, with actual costs potentially exceeding USD 200 million, and; LyondellBasell sizes its exposure at up to USD 162 million by 2030. Air Liquide takes a different approach, arguing its contractual pass-through mechanisms render direct carbon pricing exposure "low", an assumption that depends on stable contract renewal terms. SABIC previously estimated its exposure to EU ETS at USD 306 million per annum, but it has not updated this estimate, despite the implementation of the Carbon Border Adjustment Mechanism (CBAM) at the start of 2026.

Physical risk disclosure is most advanced at Air Liquide (670 assets screened across 10 peril types under two IPCC scenarios) and Dow (detailed site-level analysis identifying USD 315 million to USD 1.3 billion potential impacts from drought at Freeport, Texas alone). Critically, Bayer, SABIC, and Toray provide no financial quantification of physical risk exposure.

Policy and trade associations

A persistent credibility issue across the sample is the disconnect between companies' stated support for the Paris Agreement and their continued membership in trade associations with climate-misaligned lobbying positions. Dow maintains seven major trade association memberships rated "Misaligned" or worse by InfluenceMap (including the American Fuel & Petrochemical Manufacturers (AFPM), the US Chamber of Commerce, and the American Petroleum Institute). LyondellBasell retains memberships in the AFPM, NAM, and ACC, with senior executives sitting on boards of organisations that have actively lobbied against EU and US climate initiatives.

Bayer publishes one of the most comprehensive association alignment reviews but simultaneously endorsed the Antwerp Declaration, which criticised prescriptive environmental regulation, creating tension with its 1.5°C messaging. Dyno Nobel and SABIC provide limited transparency on policy positions, while Toray's engagement through Japanese industry groups reflects general support for the energy transition without evidence of advocacy for stricter regulation.

Stakeholders engagement priorities

This comparison reveals five cross-cutting themes that should shape investor engagement with the chemical sector:

1. **Scope 3 is the litmus test.**
Value-chain emissions represent the majority of every company's footprint (except for Air Liquide), yet only Dyno Nobel and LyondellBasell have set an overall ambitious absolute reduction target. Companies can underpin supplier engagement with binding, quantified reduction commitments and effective delivery mechanisms.

2. **Intensity targets can conceal stagnation.**
BASF's Scope 3.1 intensity target and Toray's revenue-denominated metric both create structural pathways where absolute emissions could remain flat or rise while intensity targets are met. Investors should press for absolute reduction commitments alongside any intensity measures.

3. **Capital-to-carbon traceability is absent.**
No company in the sample consistently links its transition investments to quantified abatement outcomes. This gap prevents independent verification of whether spending is sufficient to close the emissions gap and whether capital is being deployed at the carbon efficiency required.

4. **Executive incentive design matters.**
Compensation structures where climate metrics can be "crowded out" by financial outperformance (Dow's 200% combined cap, Bayer's 250% cap) fail to create genuine accountability. Best practice (exemplified partially by Dyno Nobel) separates climate performance pools from financial metrics with independent caps.

5. **Disclosure regression is a big red flag.**
SABIC's trajectory — from comprehensive Scope 3 reporting in 2022 to zero disclosure in 2024 — illustrates how transparency can deteriorate without external pressure. Investors should treat declining disclosure quality as a negative signal equivalent to poor emissions performance.

Conclusion

The chemical industry's climate transition is underway but proceeding at insufficient pace and ambition for the vast majority of companies assessed. Only Dyno Nobel demonstrates a credible 1.5°C-aligned trajectory. LyondellBasell has set the sector's most ambitious targets but must translate aspiration into delivery against rising emissions. The 2°C cluster, Air Liquide, BASF, Bayer, and Toray, exhibits meaningful operational progress but remains structurally constrained by Scope 3 blind spots, insufficient capital commitment, and governance frameworks that subordinate climate to financial performance. Dow and SABIC occupy the bottom tier, characterised by weak targets, absent Scope 3 strategies, and, in SABIC's case, an active erosion of disclosure transparency.

Investors and stakeholders should prioritise engaging chemical companies on setting absolute Scope 3 targets, providing project-level capital-to-carbon disclosure, combined with governance reforms that make climate performance materially consequential for executive pay, and treat declining transparency as a material risk factor equivalent to deteriorating emissions performance.

ABOUT PLANET TRACKER

Planet Tracker is a non-profit financial think tank producing analytics and reports to align capital markets with planetary boundaries. Our mission is to create significant and irreversible transformation of global financial activities by 2030. By informing, enabling and mobilising the transformative power of capital markets we aim to deliver a financial system that is fully aligned with a net-zero, nature-positive economy. Planet Tracker proactively engages with financial institutions to drive change in their investment strategies. We ensure they know exactly what risk is built into their investments and identify opportunities from funding the systems transformations we advocate.

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