

Tomorrow's CHEMISTRY

ANALYSING CLIMATE TRANSITION STRATEGIES
OF THE WORLD'S CHEMICAL GIANTS

KEY TAKEAWAYS

- 1. Ambition vs. Implementation Gap:** While all the analysed companies have expressed ambitions toward a Net Zero transition, there is a substantial gap between their stated goals and the presence of actionable, robust strategies to achieve these targets.
- 2. Critical Role of Scope 3 Emissions:** Addressing Scope 3 emissions is crucial due to its substantial share in the total emissions footprint of these companies. Scope 3 accounts on average for 68% of the total emissions of this chemicals group. Effective strategies targeting Scope 3 emissions, particularly through supplier and customer engagement, are essential for a genuine transition.
- 3. Transparency and Accountability:** Enhanced transparency in how climate strategies contribute to emission reductions and the alignment of these strategies with science-based targets is critical. This demands clear disclosure of progress towards targets, the impacts of specific initiatives, and the capital expenditure assigned to these initiatives.
- 4. Executive Compensation Alignment:** An alignment of executive compensation with sustainability key performance indicators (KPIs) is an excellent way to incentivise the companies' leadership to prioritise and achieve climate goals.
- 5. Trade Association Alignments:** Companies should critically assess and address their involvement with trade associations to ensure consistency between their advocacy positions and their climate commitments. Misalignments pose risks to the credibility of their climate strategies and the overall integrity of their corporate messaging on sustainability.
- 6. Planet Tracker's Ranking:** This analysis shows a clear leader, Air Liquide. Compared to its chemical peers it demonstrates a robust strategy and execution across various aspects of its climate transition, from ambitious climate alignment goals to substantial investments in GHG mitigation initiatives. At the bottom end of the ranking is BASF which displayed significant gaps in its climate transition such as aligning capital investments with climate goals, enhancing risk management frameworks, and strengthening stakeholder engagement to better support its climate transition pathways.

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Executive Summary

The transition to a Net Zero emissions future is a major challenge facing the chemical industry. This paper presents a comparative analysis of the Climate Transition Assessments (CTAs) of seven leading chemical companies, scrutinising their commitments, strategies, and readiness to align with the Paris Agreement and the broader goal of achieving Net Zero emissions by 2050. All seven companies are members of the Climate Action 100+.

Planet Tracker's analysis allows the reader to identify where companies are leaders and also laggards in the climate transition implementation. We provide an overall ranking but also an analysis and comparison by individual factors. The methodology could be reviewed in [Section II](#).

Our analysis reveals a significant range of ambitions and preparedness among these companies, with varying degrees of clarity, credibility and specificity in their climate transition plans. Despite notable pledges towards reducing their emissions, major challenges persist across the industry, including the reliance on unproven technologies, insufficient strategies to mitigate Scope 3 emissions and a lack of coherence between corporate climate commitments and mitigation capital expenditure. Also, most executives are not compensated for delivering on Net Zero.

As presented in Table 1, our overall ranking indicates a clear leader, Air Liquide (AI), the specialist industrial gases and services company. The second best is Incitec Pivot, the industrial chemicals manufacturer supplying the agriculture and mining sectors.

At the bottom end of the ranking is BASF, the German headquartered chemical giant providing products to six major sectors. Bayer, the life science company focused on health care and agriculture and Dow, a top three chemical company providing a vast range of products, are both second to bottom. This leaves Toray, the Japanese based company which specialises in industrial products centred on a range of technologies, and LyondellBasell, one of the largest producers of plastic resins globally, in the middle of the pack.

Table 1: Company Transition Overall Ranking
Source: Planet Tracker Calculations

| Company | Total Transition Points (Max: 40) |
|----------------|-----------------------------------|
| Air Liquide | 33.0 |
| Incitec Pivot | 26.0 |
| Toray | 20.0 |
| LyondellBasell | 18.0 |
| Bayer | 17.0 |
| Dow | 17.0 |
| BASF | 15.0 |



I Introduction

BACKGROUND AND PURPOSE

The chemical industry is a key player in the world's economy, generating USD 5.7 trillion in annual revenues (2022)¹ - about 6% of global GDP² - and directly employing over 15 million people³. Its products are vital to our daily lives, as they are present in nearly every sector, from healthcare and agriculture to construction and textiles, making chemical components essential for 96% of all manufactured goods. As highlighted in a recent paper by Systemiq⁴, the journey towards sustainability in the chemical sector, especially in producing key chemicals like ammonia, methanol and ethylene, is not just critical for the industry itself but for the broader transition to a global Net Zero economy.

Supported by the Climate Works Foundation, Planet Tracker has examined the climate transition strategies of several significant players in the chemical industry, all of whom are part of the Climate Action 100+ (CA100+) benchmark. This includes [Air Liquide \(AI\)](#), [BASF \(BAS\)](#), [Bayer \(BAY\)](#), [Dow \(DOW\)](#), [Incitec Pivot \(IPL\)](#), [LyondellBasell \(LYB\)](#), and [Toray Industries \(3402\)](#). Our analysis focuses on assessing the credibility of their climate transition plans and alignment with the Paris Agreement's targets, which are crucial in countering the pressing issue of climate change.

This comparative analysis aims to drive positive change by providing key stakeholders with valuable insights enabling them to motivate chemical companies to adopt more sustainable practices. By examining and contrasting the climate pledges and strategies of major chemical firms, we deliver clear and actionable guidance. Essentially, this report is designed to inform financial institutions, the companies themselves and the public, by enhancing the understanding of these companies' roles and their capabilities in advancing an industry-wide transformation.

1 Source: Statista; for more details see - <https://www.statista.com/topics/6213/chemical-industry-worldwide/#topicOverview>

2 Source: Statista; for more details see - <https://www.statista.com/statistics/268173/countries-with-the-largest-grossdomestic-product-gdp/#:~:text=Global%20gross%20domestic%20product%20amounts,fifth%20of%20this%20figure%20alone.>

3 See "[Planet Positive Chemicals - Pathways for the chemical industry to enable a sustainable global economy](#)"

4 See "[Planet Positive Chemicals - Pathways for the chemical industry to enable a sustainable global economy](#)"





II Methodology overview

Planet Tracker's Climate Transition Assessment (CTA) of individual corporates examined four main areas: Climate Alignment, Policy & Governance, Risk Analysis and Strategy Assessment. A rating was provided for each of these which revealed whether the company was aligned with a 1.5°C, +2°C or BAU +3°C pathway. In turn, these four key sections roll up into an overall corporate alignment.

In this report, we have compared seven chemical companies using a similar methodology. Initially we examined each companies' climate pledges and then scrutinised their 'Climate Alignment', their 'Engagement Policy & Governance' and their 'Risk Management' and 'Capital Alignment'. Nevertheless, while in our CTAs we assigned an equal weight to the four main areas analysed, we went a step further in this paper in order to create a more comprehensive ranking. More specifically, we used a scoring system for the underlying factors of the four sections. It is these underlying factors which resulted in a slightly different weighting. For example, the Engagement score is worth 15 points as it represents a tri-dimensional evaluation. We assess a company's engagement and qualified actions with suppliers, as well as customers (tackling essential Scope 3 emissions), and their interaction with policymakers/influencers. In the instance of Sustainability-linked Compensation we are measuring a single factor, so it is worth 5 points. Ranking points were awarded as follows: ten points for 'Climate Alignment', fifteen points for 'Engagement', five points for 'Sustainability-linked Compensation', five points for 'Risk Management', and another five points for 'Capital Alignment'.

Furthermore, for 'Climate Alignment', the ranking model considered both mid-term and long-term emission reduction goals, alongside the assessed likelihood of achieving these ambitions. In the 'Policy & Governance' section, we focus on supplier and customer engagements, sustainability-linked trade association memberships and the integration of sustainability metrics within management's compensation. Meanwhile, the assessment criteria for 'Risk Management' included whether a company has both quantitatively assessed and disclosed risks associated with Transition and Climate Change (i.e., Transition Risks and Physical Risks), as well as whether it has disclosed quantified risk management initiatives. Lastly, when it came to 'Capital Alignment', Planet Tracker's ranking compared each company's investment in climate transition relative to its size, calculated as an average between transition investment as a percentage of market capitalisation and transition investment as a percentage of total assets.

Once each company had been scored for each factor, we were able to provide an overall ranking that comprised 'Climate Alignment', 'Engagement Policy and Governance' (i.e. engagement and compensation), 'Risk Management' and 'Capital Alignment'. Additional scoring details and explanations have been provided for each company in the Company Transition Ranking section.



III Climate Transition: Comparative Analysis

COMPANY PROFILES AND PLEDGES

Our analysis delves into the climate commitments of seven key players in the chemical industry, showcasing a range of targets in line with their diverse business models. Notably, out of the seven companies, those with a predominant business activity in the 'Advanced Materials and Derivates'⁵ segment, tend to have a **moderate climate transition ambition** – i.e., only aiming for **Carbon Neutrality by 2050** and lacking or lagging in Scope 3 commitments – as presented in Tables 2 and 3. On the other hand, those with a predominant business activity in the 'Pharmaceuticals and Specialty Chemicals'⁶ tend to have a **higher ambition** with a **Net Zero goal by 2050**.

Table 2: Seven Key Chemical Companies - Profile and Medium-Term Climate Transition Targets
Source: Companies' Sustainability Reports, CDP Questionnaires, and Planet Tracker Calculations

| Company Profile | | Medium-Term Climate Transition Targets | | | |
|---|----------------|--|-------------------------|-------------------------------|---------------------------|
| Key Activity | Company | Target Base Year | Target Achievement Year | Scope 1 & 2 Mitigation Target | Scope 3 Mitigation Target |
| Group 1: Advanced Materials and Derivates | Dow | 2020 | 2030 | 15.0% | - |
| | LyondellBasell | 2020 | 2030 | 42.0% | 30.0% |
| | Toray | 2014 | 2031 | 40.0%* | - |
| Group 2: Pharmaceuticals and Specialty Chemicals | Air Liquide | 2021 | 2035 | 35.0% | 60.0%** |
| | BASF | 2018/2022 | 2030 | 25.0%*** | 15.0%*** |
| | Bayer | 2019 | 2030 | 42.0% | 12.3%**** |
| | Incitec Pivot | 2020 | 2030 | 25% to >42.0% | 25% to >42% |

* Toray's commitment to reduce its emissions is limited to its Japanese operations (Scope 1 and 2).

** Air Liquide's Scope 3 mitigation target only covers specific Scope 3 emissions from the use of fossil fuels.

*** BASF has two baseline years, one (2018) for its operating emissions and another one (2022) for its Scope 3 ambition. Also, as stated by the company, BASF's 2030 target is 'excluding the effects of the planned growth', and its Scope 3 ambition only covers upstream Scope 3 'Purchased Goods and Services' emissions.

**** Bayer's Scope 3 mitigation target only covers upstream Scope 3 emissions.

5 'Advanced Materials and Derivates' comprise packaging, specialty plastics, olefins, polyolefins, fibres, and textiles.

6 'Pharmaceuticals and Specialty Chemicals' comprise medicine, healthcare and industrial gases, agricultural and industrial solutions and chemicals.





Table 3: Seven Key Chemical Companies - Profile and Long-Term Climate Transition Targets
 Source: Companies' Sustainability Reports, CDP Questionnaires, and Planet Tracker Calculations

| Company Profile | | Long-Term Climate Transition Targets | | | |
|--|----------------|--------------------------------------|-------------------------|-------------------------------|---------------------------|
| Key Activity | Company | Target Base Year | Target Achievement Year | Scope 1 & 2 Mitigation Target | Scope 3 Mitigation Target |
| Group 1: Advanced Materials and Derivatives | Dow | 2020 | 2050 | Carbon Neutral | - |
| | LyondellBasell | 2020 | 2050 | Carbon Neutral | - |
| | Toray | 2014 | 2050 | Carbon Neutral | - |
| Group 2: Pharmaceuticals and Specialty Chemicals | Air Liquide | 2021 | 2050 | | Net Zero |
| | BASF | 2018/2022 | 2050 | | Net Zero |
| | Bayer | 2019 | 2050 | | Net Zero |
| | Incitec Pivot | 2020 | 2050 | | Net Zero |

Group 1: Advanced Materials and Derivatives

Dow (DOW)

- **Key Activity:** Primarily engaged in Packaging & Specialty Plastics, in the last five years (2018-2022) Dow generated 49% of its revenue from this segment.
- **Climate Transition Ambition:** Dow's climate ambition is **moderate** at best, targeting a 15% reduction in Scope 1 and 2 emissions by 2030 from a 2020 baseline, and aiming for carbon neutrality by 2050. In absolute terms, this mitigation target is the lowest of the seven companies we assessed. Moreover, its commitment lacks specific targets for its Scope 3 GHG emissions.

LyondellBasell (LYB)

- **Key Activity:** A global leader in plastics and chemicals, LYB is the second-largest producer of polypropylene and the third largest of polyethylene, with its major revenue stream being 'Olefins & Polyolefins - Europe,' (26% of group revenue over the 2018 - 2022 period).
- **Climate Transition Ambition:** LYB's ambition for a 42% reduction in Scope 1 and 2 emissions by 2030, alongside a 30% cut in Scope 3 emissions, from a 2020 baseline, is noteworthy. However, its goal by 2050 is Carbon Neutrality, which lacks a comprehensive Scope 3 target and indicates a **moderate** long-term ambition.

Toray Industries (3402)

- **Key Activity:** Specialising in advanced materials, Toray's largest revenue segments in the last five years (2019-2023) are Fibers & Textiles (39%) and Performance Chemicals (37%).
- **Climate Transition Ambition:** Toray's commitment to reduce its absolute CO₂ emissions by more than 40% by 2031 from a 2014 baseline in its Japanese operations (Scope 1 and 2) points to a **moderate** ambition. Despite the company's plans to extend absolute reduction targets to plants outside Japan and achieve carbon neutrality by 2050, Scope 3 disclosures and targets are lagging as instead of mitigation the company focuses on avoided emissions.





Group 2: Pharmaceuticals and Specialty Chemicals

Air Liquide (AI)

- **Key Activity:** A major supplier of industrial gases, Air Liquide's Gas & Services for Industry segments contribute 71% of annual revenue, with the Healthcare sector accounting for 16% during the 2018-2022 period.
- **Climate Transition Ambition:** The company has set a **high** ambition with a commitment to reduce Scope 1 and 2 emissions by 35% by 2035 and specific Scope 3 emissions from the use of fossil fuels by 60%, aiming for Net Zero by 2050.

BASF (BAS)

- **Key Activity:** Known as one of the world's largest chemical companies, BASF's 'Performance Chemicals' segment has been the most profitable, with an average operating profit margin of 13.4% over the last five years (2018-2022).
- **Climate Transition Ambition:** BASF's updated target to reduce Scope 1 and 2 emissions by 25% by 2030 from a 2018 baseline and specific Upstream Scope 3 emissions by 15% by 2030 from a 2022 baseline demonstrates a **high** ambition, with a goal of achieving Net Zero emissions for Scope 1, 2, and specific Scope 3 categories by 2050.

Bayer (BAY)

- **Key Activity:** Recognised for its leadership in health and nutrition, Bayer's largest segment, Crop Science, generates 45% of group revenues, with the Pharmaceuticals segment being the most profitable (with 65% of operating profit) during the 2018-2022 period.
- **Climate Transition Ambition:** Bayer has set a target to reduce Scope 1 and 2 emissions by 42% by 2030 from a 2019 base year and aims for a **modest** 12.3% reduction in Scope 3 emissions, focusing on upstream activities, with a Net Zero goal by 2050.

Incitec Pivot Ltd (IPL)

- **Key Activity:** Between 2018 and 2022 the company generated the majority of its revenue from Agricultural Fertilisers and Industrial Chemicals (with a total of 52%).
- **Climate Transition Ambition:** IPL has set a target for an absolute reduction of 25% in Scope 1, 2, and 3 emissions by 2030 from a 2020 baseline, with a potential pathway to a >42% GHG absolute reduction by 2030. This indicates a **high** ambition, supporting its Net Zero goal by 2050.





CLIMATE ALIGNMENT

Industry-Level Highlights

- Having science-based targets does not guarantee alignment with a set temperature pathway; effective strategy and implementation are essential.
- Dow and Toray Industries face notable challenges due to dependence on unproven technologies, casting doubt on their ability to meet long-term carbon neutrality goals.
- Companies like Bayer and BASF show ambition with their Scope 1 and 2 targets but grapple with credibility issues for their 2050 Net Zero targets, underscoring the need for more concrete strategies and higher focus on Scope 3 emissions.

While these seven companies have different ambitions, for an industry-wide transformation they all should strive for a Net Zero outcome. Accordingly, companies should set science-based Scope 1, 2 and 3 targets, aligned with the Paris Agreement⁷ and have a sensible strategy focused on the highest footprint Scope – see Table 4.

Table 4: Seven Key Chemical Companies - Climate Alignment
Source: Companies' Sustainability Reports, CDP Questionaries, and Planet Tracker Calculations

| Key Activity | Company | 2021 GHG Emissions Footprint (%) ⁸ | | | Climate Transition Targets | | | PT's Confidence in Target(s) Achievement |
|--------------|-----------------|---|------------------|--------------------|----------------------------|------------------|--------------------|--|
| | | Scope 1 & 2 | Scope 3 Upstream | Scope 3 Downstream | Scope 1 & 2 | Scope 3 Upstream | Scope 3 Downstream | |
| Group 1 | Dow | 32% | 47% | 21% | ✓ | - | - | Low (3°C) |
| | Lyondell Basell | 22% | 38% | 40% | ✓ | ✓ | ✓ | Average (2°C) |
| | Toray | 33% | 67% | 0% | ✓ | - | - | Low (3°C) |
| Group 2 | Air Liquide | 64% | 20% | 16% | ✓ | ✓ | - | High to Average (<2°C) |
| | BASF | 18% | 54% | 28% | ✓ | ✓ | - | Low (3°C) |
| | Bayer | 26% | 70% | 4% | ✓ | ✓ | - | Low (3°C) |
| | Incitec Pivot | 30% | 29% | 41% | ✓ | ✓ | ✓ | High to Average (<2°C) |

7 At the time of this publication, the SBTi is developing a Chemical Sector Decarbonization Approach (SDA), and thus, absolute targets that would lead to a 1.5°C outcome might slightly vary upwards or downwards in the near future to align with the Paris Agreement.

8 For comparison reasons, these breakdowns are based on the companies' footprint at the end of 2021. This approach was followed to use data available at the time of the CTA analysis for all companies; despite some of them having disclosed more current data.

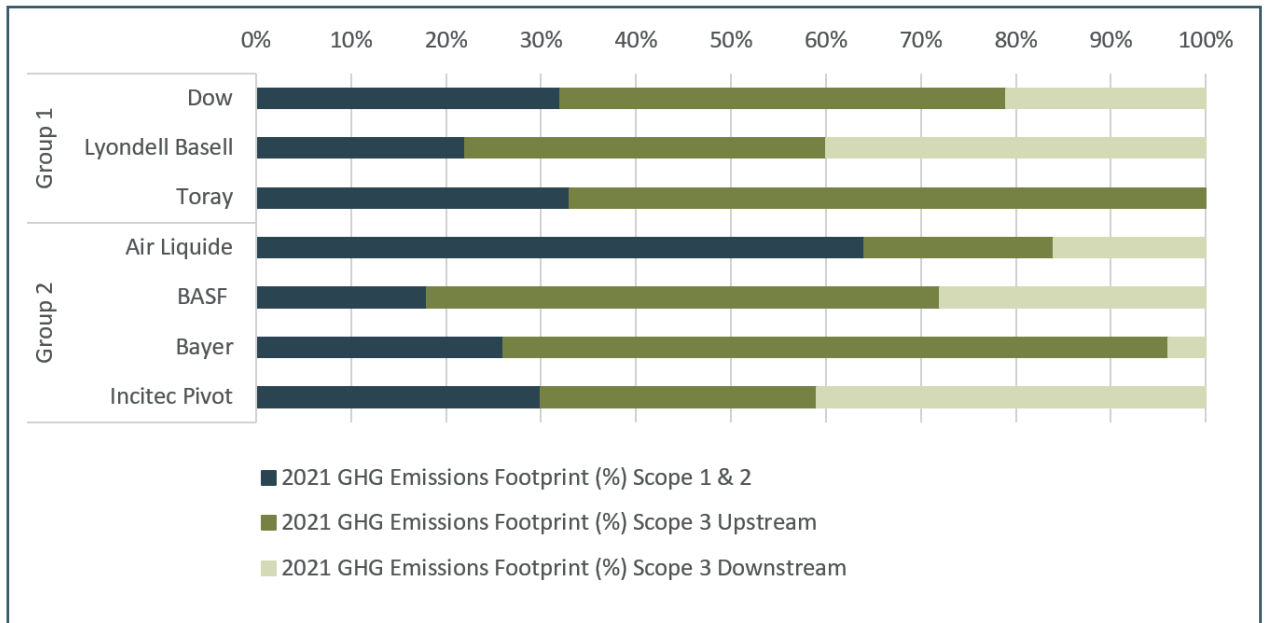


Figure 1: Seven Key Chemical Companies - GHG emissions breakdown.
Source: Companies' Sustainability Reports, CDP Questionnaires, and Planet Tracker Calculations

Group 1: Advanced Materials and Derivatives

Dow (DOW): With a breakdown of operating emissions at 32%, Scope 3 upstream at 47%, and downstream at 21% (Figure 1), Dow's strategy is marked by a relatively low absolute reduction in operating emissions and the absence of specific Scope 3 targets, a critical omission given its substantial upstream emissions. This dynamic brings doubt on the likelihood of achieving its 2050 carbon neutrality goal.

LyondellBasell (LYB): Exhibiting a more balanced emissions spread with operating emissions at 22%, Scope 3 upstream at 38%, and downstream at 40% (Figure 1), LYB is strategically positioned to meet its 2030 targets for Scope 1 & 2 and Scope 3 emissions. The impending closure of the Houston refinery boosts its trajectory towards these goals. However, the absence of post-2030 Scope 3 targets introduces uncertainty into its pathway to strive for a more ambitious target that carbon neutrality by 2050.

Toray Industries (3402): With 33% of emissions from operations and a significant 67% from upstream activities, as the company does not disclose its downstream emissions (Figure 1), Toray's focus remains narrowly on Scope 1 and 2 reductions within Japan. This leaves a notable gap in addressing total emissions without a comprehensive Scope 3 strategy. This approach risks the company's ability to meet its 2050 carbon neutrality aspirations.



Group 2: Pharmaceuticals and Specialty Chemicals

Air Liquide (AI): Dominated by operating emissions (64%) as highlighted in Figure 1, Air Liquide's strategy includes ambitious targets for Scopes 1, 2, and specific Scope 3 emissions. Despite this, the company is projected to significantly overshoot its science-based targets (SBTs) without additional interventions, threatening its alignment with the 1.5°C pathway by 2030. Still, the company's investment in its transition goals is the highest among the analysed companies which would indicate a likely alignment with the Paris Agreement.

BASF (BAS): As presented in Figure 1, BASF's emissions are heavily weighted towards upstream activities (54%), highlighting the importance of its Scope 3 emissions reduction target. While on track to meet its Scope 2 reduction goals, the reliance on unproven technologies such as CCS and process electrification puts its Net Zero by 2050 target at risk, raising questions about the credibility of its long-term commitments.

Bayer (BAY): With a staggering 70% of emissions originating upstream (Figure 1), Bayer's modest Scope 3 reduction target and the lack of progress since 2019 suggest a significant misalignment with its ambitious Net Zero by 2050 goal. The reliance on yet-to-be-proven technologies without a clear roadmap further diminishes the credibility of its long-term climate strategy.

Incitec Pivot (IPL): With 70% of its GHG emissions coming from its value chain (Figure 1), the company's emissions evolution leads to a projected overshoot of its SBTs by 23%, indicating a potential slight misalignment with the 1.5°C pathway by 2030. This underscores the need for enhanced mitigation efforts to realign its trajectory toward its stated climate goals, something the company is striving to do.

BEST PRACTICE – CLIMATE ALIGNMENT

- Ensure thorough climate-related reporting and progress, based on a clear emissions source breakdown (e.g., Air Liquide)
- Set comprehensive science-based reduction targets for full Scope 1, 2, and 3 emissions (e.g., Incitec Pivot)
- Focus on scalable technologies for emission reduction and invest in the strategy implementation (e.g., Air Liquide)

The comparison analysis in this section highlights that despite the more ambitious targets set by the companies in Group 2 (Pharmaceuticals and Specialty Chemicals), without a clear strategy that leads to transformative actions, the credibility of their Climate Alignment could also be low and at par with the companies in Group 1.





ENGAGEMENT POLICY AND GOVERNANCE

Industry-Level Highlights

- Engagement with suppliers and customers reflects a broad range of strategies, from collecting emissions data to driving significant behavioural changes, showcasing the highest impact comes from a diverse approach.
- Companies' involvement in trade associations misaligned with the Paris Agreement reveals inconsistencies between their climate pledges and advocacy, highlighting the challenge of ensuring that corporate lobbying supports global climate goals.
- The incorporation of sustainability targets into executive compensation varies significantly, from Air Liquide's comprehensive short-term and long-term sustainability-linked compensation to Toray's lack of any related disclosure, indicating different levels of commitment to integrating climate goals into corporate governance.

Supplier Engagement:

In our assessments, engaging with suppliers emerges as a critical element in a company's climate transition, especially when a significant portion of its emissions originates from upstream Scope 3 activities – see Table 5.

Table 5: Seven Key Chemical Companies - Supplier Engagement
Source: Companies' Sustainability Reports and CDP Questionaries

| Company | Scope 3 Upstream Footprint | Engagement type | Key Initiative | % of Suppliers covered by Number | % of Suppliers covered by Procurement Expenditure |
|----------------|----------------------------|------------------------------|--|----------------------------------|---|
| Air Liquide | 20% | Changing Suppliers Behaviour | Education campaign and suppliers' awards scheme. | 100% | 100% |
| | | Information Collection | Collect suppliers' carbon information annually | 100% | 100% |
| BASF | 54% | Information Collection | Collect suppliers' carbon information annually | 10% | 55% |
| Bayer | 70% | Information Collection | Collect suppliers' carbon information annually | 4% | 41% |
| DOW | 47% | Changing Suppliers Behaviour | Education campaign for suppliers. | 100% | 100% |
| Incitec Pivot | 29% | Changing Suppliers Behaviour | Financial incentives for suppliers emissions reduction | 4% | 5% |
| | | Information Collection | Collect suppliers' carbon information annually | 4% | 5% |
| LyondellBasell | 38% | Information Collection | Collect suppliers' carbon information annually | 70% | 93% |
| Toray | 67% | Changing Suppliers Behaviour | Education campaign for suppliers. | 20% | 90% |



In this case, **Bayer** leads with the highest percentage of its total emissions stemming from these upstream activities at 70%, followed by **Toray** at 67%, and **BASF** at 54%. Interestingly, Bayer and BASF interact with a smaller segment of their suppliers - 4% and 10% respectively - accounting for close to half of their procurement spending, at 41% and 55% respectively. Their efforts are mainly focused on gathering data on climate change and emissions yearly. On the other hand, Toray aims to shift supplier behaviours by educating 20% of its suppliers, which represent 90% of its spending, presenting a higher ambition.

Conversely, companies like **Air Liquide** and **Incitec Pivot**, which have the lowest percentages of upstream Scope 3 emissions at 20% and 29% respectively, employ both data collection and behavioural change strategies. They work to modify supplier behaviours through educational campaigns, awards, and financial incentives. Notably, Air Liquide aims to reach 100% of its suppliers with these initiatives, both in terms of number and spending, while Incitec Pivot targets a more modest 4% of its suppliers, which corresponds to about 5% of its spending.

Customer Engagement:

Similarly, engaging with customers is fundamental for a company's effort towards its climate transition, particularly when a significant portion of its emissions comes from downstream Scope 3 activities – see Table 6.

Table 6: Seven Key Chemical Companies - Customer Engagement
Source: Companies' Sustainability Reports and CDP Questionnaires

| Company | Scope 3 Downstream Footprint | Engagement type | Key Initiative | Customers by Number | Customer - related Scope 3 |
|----------------|------------------------------|---------------------------------|--|---------------------|----------------------------|
| Air Liquide | 16% | Education & information sharing | Relevant certification schemes (i.e. Energy STAR) | 100% | 100% |
| | | Collaboration & innovation | Solution 1: Energy and industrial efficiency of assets (i.e., co-create products with lower carbon footprint); Solution 2: Customers' carbon footprint reduction solutions (i.e., co-development of processes solutions). | 100% | 100% |
| BASF | 28% | Education & information sharing | Relevant certification schemes (i.e. Energy STAR) | 100% | 0% |
| Bayer | 4% | Education & information sharing | Education campaign for customers. | 100% | 0% |
| DOW | 21% | Collaboration & innovation | Innovation campaign for customers. | 15% | 0% |
| Incitec Pivot | 41% | Collaboration & innovation | Customer trials - enhanced efficiency fertiliser (aimed at reducing nitrogen losses to the atmosphere as N2O and to waterways through leaching). | 2% | 91% |
| LyondellBasell | 40% | Education & information sharing | Education campaign for customers. | 100% | 0% |
| Toray* | 0% | Collaboration & innovation | Innovation campaign for customers in 'strategic partnership' with Siemens Energy AG (aimed at creating green hydrogen production technology using innovative PEM water electrolysis). | 1% | 0% |

* Toray does not disclose its Scope 3 Downstream Footprint.



Our analysis shows that **Incitec Pivot** leads with the highest share of its emissions originating from downstream activities at 41%, followed by **LyondellBasell** at 40%, and **BASF** at 28%.

Incitec Pivot has engaged 2% of its customer base through initiatives that encourage innovation and collaboration, offering trials of high-efficiency fertilisers. This strategy addresses a significant 91% of its customer-related Scope 3 emissions. In contrast, LyondellBasell and BASF have reached out to all of their customers through educational campaigns, although, similar to the rest of the companies, these efforts have not directly addressed any customer-related Scope 3 emissions. Only **Air Liquide** stands out by engaging all its customers through educational and collaborative campaigns, successfully addressing as stated by the company 100% of its customer-related Scope 3 emissions.

Trade Association Engagement:

In a recent study, Planet Tracker highlights the critical role of companies' affiliations with trade associations and their link with climate transition efforts – see [Climate Transition Mismatch](#). This relationship is especially important when companies aim to reduce their carbon footprint but are part of groups that conflict with the objectives of the Paris Agreement. This discrepancy raises questions about the consistency of the company's climate-related messaging and its credibility in achieving its climate transition goals.

As displayed in Table 7, among the companies we examined in our CTAs, **BASF** stands out with membership in 14 trade associations that do not align with the Paris Agreement's ambitions. Following closely are **Air Liquide, often a leader in other sustainable factors**, and **Dow**, each with memberships in 9 such associations. In contrast, **Toray, LyondellBasell, and Bayer** show a more sensible affiliation policy, with memberships in 3, 4, and 5 associations, respectively.

In our [Climate Transition Mismatch](#) paper, we shared examples of better practices and the steps companies should take to address these misalignments. LyondellBasell and Bayer, notably, have been mentioned for their disclosure systems, illustrating a better practice that is also supported by having fewer memberships in misaligned trade associations.

BEST PRACTICE - ENGAGEMENT

- Prioritise the engagement initiatives targeting a significant portion of the company's emissions footprint (e.g., Toray)
- Implement both data collection and educational initiatives to shift supplier behaviours towards sustainability (e.g., Air Liquide)
- Engage customers through collaborative initiatives that lead to innovative solutions (e.g., Incitec Pivot)
- Reconcile trade association memberships with corporate climate goals in alignment with the Paris Agreement (e.g., LyondellBasell)





Table 7: Seven Key Chemical Companies - Trade Associations Membership
 Source: Companies' Sustainability Reports, CDP Questionaries, and Planet Tracker Assessment

| ASSOCIATIONS - MISALIGNED WITH THE PARIS AGREEMENT | MEMBER COMPANIES | | | | | | |
|--|------------------|-------------|------|---------------|----------------|---------|------------------|
| | Bayer | Air Liquide | BASF | Incitec Pivot | Lyondell Basel | Dow Inc | Toray Industries |
| Federation of German Industries (BDI) | ✓ | - | ✓ | - | - | - | - |
| German Chemical Industry Association (VCI) | ✓ | ✓ | ✓ | - | - | ✓ | - |
| Business Europe | ✓ | - | ✓ | - | ✓ | - | - |
| US Chamber of Commerce | ✓ | ✓ | - | - | - | ✓ | - |
| National Mining Association (NMA) | ✓ | - | - | ✓ | - | - | - |
| Spanish Confederation of Business Organizations (CEOE) | - | ✓ | ✓ | - | - | - | - |
| Japan Chemical Industry Association (JCIA) | - | ✓ | ✓ | - | - | ✓ | ✓ |
| Mouvement des Entreprises de France (MEDEF) | - | ✓ | - | - | - | - | - |
| Energy Intensive Users Group of South Africa | - | ✓ | - | - | - | - | - |
| Energy Users Association of Australia | - | ✓ | - | ✓ | - | - | - |
| National Association of Manufacturers (NAM) | - | ✓ | ✓ | - | ✓ | ✓ | - |
| American Fuel & Petrochemical Manufacturers (AFPM) | - | ✓ | ✓ | - | ✓ | ✓ | - |
| Korea Chamber of Commerce and Industry (KCCI) | - | - | ✓ | - | - | ✓ | - |
| Gas Naturally | - | - | ✓ | - | - | - | - |
| International Association of Oil and Gas Producers (IOGP) | - | - | ✓ | - | - | - | - |
| German Association of the Automotive Industry (VDA) | - | - | ✓ | - | - | - | - |
| International Federation of Industrial Energy Consumers (IFIIEC) | - | - | ✓ | - | - | - | - |
| Asociación Mexicana de Empresas de Hidrocarburos (AMEXHI) | - | - | ✓ | - | - | - | - |
| Tennessee Chamber of Commerce & Industry | - | - | ✓ | - | ✓ | ✓ | - |
| World Coal Association (WCA) | - | - | - | ✓ | - | - | - |
| Minerals Council of Australia (MCA) | - | - | - | ✓ | - | - | - |
| Chamber of Minerals and Energy of Western Australia (CME) | - | - | - | ✓ | - | - | - |
| Queensland Resources Council (QRC) | - | - | - | ✓ | - | - | - |
| Petrochemical Industry Association of Taiwan | - | - | - | - | - | ✓ | - |
| American Petroleum Institute (API) | - | - | - | - | - | ✓ | - |
| Japan Society of Industrial Machinery Manufacturers (JSIM) | - | - | - | - | - | - | ✓ |
| Kansai Economic Federation | - | - | - | - | - | - | ✓ |
| All of the above | 5 | 9 | 14 | 6 | 4 | 9 | 3 |





Management Compensation Alignment:

The degree to which sustainability goals are integrated into corporate strategies, including executive remuneration, significantly influences the credibility of a company's climate transition plans. For instance, **Air Liquide's** and **Dow's** remuneration strategies suggest a robust commitment to their climate targets. However, **Dow's long-term incentives** mostly relate to establishing plans and exposures, not to reducing emissions.

Also, when capping long-term incentive payout at 200% of target, the environmental element becomes irrelevant when financial targets are maxed out. So, in reality, Dow's management has mainly a short term incentive to reduce its GHG footprint. Furthermore, the minimal or absent linkage in companies like **Toray** calls into question their commitment level and the achievable outcomes of their climate initiatives – see Table 8.

Table 8: Seven Key Chemical Companies - Sustainability Linked Compensation
 Source: Companies' Remuneration Reports and Planet Tracker Assessment

| Company | Upper Management: Short-term Linked Compensation | Upper Management: Long-term Linked Compensation | % of Short-term Linked Compensation | % of Long-term Linked Compensation |
|----------------|--|---|-------------------------------------|------------------------------------|
| Air Liquide | ✓ | ✓ | 3.5% | 4.0% |
| BASF * | ✓ | ✓ | - | - |
| Bayer | - | ✓ | - | 20.0% |
| DOW ** | ✓ | ✓ | 5.0% | - |
| Incitec Pivot | ✓ | - | 10.0% | - |
| LyondellBasell | ✓ | - | 10.0% | - |
| Toray | - | - | - | - |

* BASF disclosed in its remuneration report to have both short-term and long-term sustainability-linked compensation. However, it is not made clear what percentage of the total these represent; also, the upper management can reach the maximum payout while missing the sustainability target, making the link irrelevant.

** Dow disclosed having long-term sustainability-linked remuneration, still at a closer look this is potentially irrelevant – more details: "[Plastic Executive Compensation – A report card for plastic-related companies](#)"

For more detail, **Air Liquide** leads with both short-term and long-term incentives linked to sustainability goals, offering a model for integrating climate objectives into executive compensation. **Dow** has also taken steps in the right direction, but more robust measures are necessary. **LyondellBasell** and **Incitec Pivot** follow suit with short-term incentives, while **BASF** states to have both but does not clarify what percentage of the total compensation they represent. Meanwhile, **Bayer** suggests a significant long-term component, though specifics remain under-disclosed, and **Toray's** absence of sustainability-linked compensation highlights their gap in embedding climate objectives into governance structures.



BEST PRACTICE – REMUNERATION

- Integrate sustainability goals into executive remuneration, ensuring a clear linkage between climate achievements and compensation (e.g., Air Liquide).
- Establish both short-term and long-term incentives (e.g., Air Liquide).
- Avoid capping incentive payouts in a way that nullifies the sustainability-linked achievements (negative e.g., Dow).

In closing, our comparison across supplier and customer engagement, trade association affiliations, and management compensation reveals varying levels of commitment. While some companies lead with forward-thinking strategies and transparent practices, others show a gap in aligning their actions with global climate goals.

This inconsistency highlights the critical need for a unified approach that integrates sustainability deeply into corporate governance, strategy and stakeholder interactions. Ensuring alignment across these areas is essential for driving meaningful progress toward a credible transition to Net Zero.

RISK MANAGEMENT AND CAPITAL ALIGNMENT

Industry-Level Highlights

- The analysed companies acknowledge the technical challenges and financial implications of transitioning to sustainable operations, with concerns over adopting renewable resources and managing regulatory costs from carbon taxes and emissions schemes; however, most of these disclosures only appear on sustainability reports and not in annual accounts⁹.
- There is a clear split in how firms allocate capital for their climate initiatives (see Table 9); while some like Air Liquide and Toray are dedicating significant funds towards reducing emissions and promoting innovation, others follow a relatively low investment approach, underscoring a misalignment with climate targets.
- All of them employ diverse strategies to mitigate financial risks linked to climate policies, some argue passing on the potential costs to customers to maintain financial stability, while others rely heavily on future technologies, which raises uncertainty regarding the achievement likelihood of their targets.
- The anticipation of regulatory changes and market shifts towards sustainability poses both risks and opportunities, prompting companies to adapt through strategic investments and contractual adjustments to navigate the evolving landscape effectively.

⁹ For more information on the subject, 'Flying Blind: In a Holding Pattern' by Carbon Tracker finds that 140 of the world's highest-emitting companies and their auditors are failing to account for the impact of climate change on their business. Only 37% of companies' financial statements provide investors with some information on how they incorporate financial risks related to climate change and the energy transition.



Table 9: Seven Key Chemical Companies - Climate Transition Investment(s)
 Source: Companies' Annual Reports and Planet Tracker Assessment

| Key Activity | Company | Transition Disclosed Investment (USD million) | Market Cap (USD Million) Year End 2021 | Transition Investment as % of Market Cap | Tot. Assets (USD Million) Year End 2021 | Transition Investment as % of Tot. Assets |
|--------------|-----------------|---|--|--|---|---|
| Group 1 | DOW | 1,000 | 42,572 | 2.3% | 61,470 | 1.6% |
| | Lyondell Basell | Not disclosed | 31,311 | NA | 35,403 | NA |
| | Toray | 1,911 | 10,287 | 18.6% | 25,735 | 7.4% |
| Group 2 | Air Liquide | 18,150 | 82,596 | 22.0% | 51,267 | 35.4% |
| | BASF | 4,538 | 69,654 | 6.5% | 98,061 | 4.6% |
| | Bayer | 567 | 53,388 | 1.1% | 142,653 | 0.4% |
| | Incitec Pivot | 87 | 4,119 | 2.1% | 6,786 | 1.3% |

Group 1: Advanced Materials and Derivatives

Dow (DOW)

- Financial Impact:** Dow's current risk from single-use plastic bans is low, impacting less than 2% of its revenue. However, achieving Carbon Neutrality by 2050 faces high technical risks due to the need for major technical changes, including the adoption of renewable or recycled feedstocks to replace the oil and gas one.
- Capital Alignment:** Dow plans to invest approximately USD 1 billion annually for growth and decarbonisation. Still, the proportion of this investment specifically for decarbonisation versus growth remains unclear, raising questions about a potential mismatch in capital allocation toward achieving its long-term climate goals.

LyondellBasell (LYB)

- Financial Impact:** LYB acknowledges medium-term risks, including increased costs from the European Emissions Trading Scheme (ETS), projected at USD 150 to USD 200 million over the next five years. However, it anticipates lower risks due to ambitious emissions reduction targets and improved resource efficiency, potentially offsetting these costs.
- Capital Alignment:** LYB's capital expenditure on emissions reduction is not expected to represent a significant portion of total capital expenditures in the near term. LYB emphasises low-capital intensity growth in its Circular and Low-carbon solutions business, suggesting a conservative approach toward direct investments in emissions reduction technologies. Moreover, the company does not disclose any direct investment in its Climate Transition strategy.



Toray Industries (3402)

- **Financial Impact:** Toray identifies substantial risks from carbon taxes (at around 4% of its revenue) and from acute floods, highlighting the financial significance of both, transition and physical risks. The company also acknowledges the high technical risk associated with achieving carbon neutrality by 2050 due to reliance on unproven technologies.
- **Capital Alignment:** Toray's planned investment focuses on growth fields with indirect benefits to emissions reduction. Direct investments in emissions reduction technologies and the total recycling system are not clearly defined, raising questions about the alignment of capital allocation with its climate targets. The company disclosed a broad investment of JPY 220 billion¹⁰ or USD 1.91 billion in R&D up until 2026.

Group 2: Pharmaceuticals and Specialty Chemicals

Air Liquide (AI)

- **Financial Impact:** Air Liquide's strategy is to pass on the costs of potential carbon taxes reducing its financial risk to around EUR 15 million or USD 17 million per year¹¹. The company's proactive approach to increasing renewable energy use and promoting responsible supply chains suggests a strategic alignment with minimising its transition risks.
- **Capital Alignment:** The company plans to allocate EUR 16 billion¹² or USD 18 billion from 2022 to 2025, doubling its previous investment target. Half of this substantial investment will be directed towards projects aimed at advancing the energy transition, marking a significant pivot from its earlier plan to invest EUR 8 billion or USD 9 billion¹³ in low-carbon and renewable hydrogen solutions by 2035. However, while these investments signal a strategic move towards sustainability, the direct linkage between financial commitments and specific emission reduction outcomes remains to be clearly outlined, indicating an area for improvement in connecting investment actions to concrete climate targets.

BASF (BAS)

- **Financial Impact:** BASF faces risks from water access, with a potential impact on costs of EUR 250 million or USD 284 million¹⁴, and EU ETS costs, with potential financial impacts of up to EUR 300 million or USD 340 million annually¹⁵. The company plans substantial investments to mitigate these risks, including EUR 4 billion or USD 4.5 billion¹⁶ by 2030 for climate protection.
- **Capital Alignment:** The majority of BASF's planned investments are directed towards capacity expansion rather than direct emissions reduction, suggesting a need for greater focus on aligning capital expenditure with sustainability goals.

10 At an exchange rate of EUR 1 = USD 1.1344 at the end of 2021.

11 At an exchange rate on JPY 1 = USD 0.008687 at the end of 2021.

12 At an exchange rate on JPY 1 = USD 0.008687 at the end of 2021.

13 At an exchange rate on JPY 1 = USD 0.008687 at the end of 2021.

14 At an exchange rate on JPY 1 = USD 0.008687 at the end of 2021.

15 At an exchange rate on JPY 1 = USD 0.008687 at the end of 2021.

16 At an exchange rate on JPY 1 = USD 0.008687 at the end of 2021.



Bayer (BAY)

- **Financial Impact:** Bayer acknowledges significant risks from transitioning to a Net Zero economy, including regulatory costs and physical impacts on agriculture. However, the company's long-term climate targets rely on unproven technologies¹⁷, presenting high technical risks.
- **Capital Alignment:** Bayer's planned investment of EUR 500 million or USD 567 million¹⁸ by 2030 for renewable energies and efficiency improvements represents a small fraction of its overall capital expenditure.
- This allocation underscores the need for a more aggressive investment strategy to align with the company's Net Zero emissions goal by 2050. However, we acknowledge that high debt levels and ongoing litigation severely constrains the company's cash flow¹⁹.

Incitec Pivot (ILP)

- **Financial Impact:** Incitec Pivot identifies substantial financial risks from carbon pricing mechanisms, with potential impacts significantly affecting its EBIT. The company also faces risks from market transitions away from fossil fuels, underscoring the need for proactive mitigation strategies.
- **Capital Alignment:** Incitec Pivot has committed between AUD 100 and 140 million or between USD 73 and 102 million²⁰ to decarbonisation projects by 2030, with a significant portion allocated for the immediate future. This investment demonstrates a proactive approach to emissions reduction, although the connection between these projects and their specific emissions mitigation potential could be further clarified.

BEST PRACTICE – RISK MANAGEMENT AND CAPITAL ALIGNMENT

- Report climate financial risks transparently in all financial disclosures.
- Allocate capital towards emissions reduction and innovation (e.g., Toray).
- Strategically manage risks from climate policies and market transition (e.g., Air Liquide).
- Ensure capital investments explicitly support sustainability targets, disclosing expectations and progress.

In short, this section analysis underscores the varying degrees of risk management and capital alignment across the chemical sector, highlighting the need for increased transparency, strategic investments in proven and emerging technologies, and a stronger alignment of capital allocation with long-term climate objectives.

17 At Planet Tracker we acknowledge the importance of Carbon Capture Utilisation and Storage (CCUS) technologies for achieving Net Zero; still, the limited current availability of CCUS and the long timelines for new CCUS development present significant constraints.

18 At an exchange rate of EUR 1 = USD 1.1344 at the end of 2021.

19 For more details see '[Is Bayer a litigation leading indicator?](#)'

20 At an exchange rate of AUD 1 = USD 0.7257 at the end of 2021.



IV Key Findings and Ranking

OVERALL CHALLENGES AND CREDIBILITY

Industry-Level Highlights

- The chemical industry faces significant challenges in aligning with a 1.5°C pathway, highlighting a substantial gap between stated ambitions and credible pathways to achieving Net Zero emissions.
- Scope 3 emissions, constituting a significant portion of total emissions for companies like Dow or Toray, lack ambitious targets or strategies, underscoring a critical gap in comprehensive climate action across the value chain.
- Reliance on unproven or economically unfeasible technologies for emission reductions is a common theme, with companies like Bayer and LyondellBasell depending on future advancements without clear current pathways to decarbonisation and no significant capital expenditure linked to it.
- Executive compensation and financial incentives linked directly to climate and sustainability KPIs vary significantly across companies, also suggesting a misalignment between corporate climate commitments and mechanisms to drive executive action towards these goals.

Group 1: Advanced Materials and Derivatives

Dow (DOW): Dow's current trajectory, as analysed by Planet Tracker, aligns with a warming scenario of over 3°C, diverging significantly from its claim of alignment with a 1.5°C pathway. A notable 68% of its emissions in 2021 were Scope 3, for which Dow lacks a target. The company's strategy heavily depends on yet uneconomic new technologies. There's minimal direct financial incentive for the executive team to address these issues promptly. Given the substantial reliance on fossil fuels for feedstock and energy, Dow faces significant transition risks. The lack of comprehensive information hampers investors' understanding of Dow's pathway to achieving carbon neutrality by 2050.

LyondellBasell (LYB): LyondellBasell is on course to meet its 2030 emission targets but faces uncertainties regarding Net Zero ambitions by 2050, primarily due to the absence of a post-2030 Scope 3 target. Scope 3 emissions constituted nearly 80% of its total emissions in 2021. The company has pledged to sell at least 2 million tonnes of recycled or renewable polymers by 2030 and to source at least 50% of its electricity from low-carbon or renewable sources. However, the company's efforts to influence its suppliers to reduce their carbon footprint appear to be minimal.

Toray (3402): Our analysis indicates that Toray Industries is on a pathway aligned with a warming scenario of over 3°C. A significant portion of its total emissions, 67%, stems from Scope 3 activities, for which the company lacks a target. Toray's 2050 carbon neutrality goal exclusively addresses Scopes 1 and 2 from its Japanese operations. While the company evaluates suppliers' environmental performance, it primarily adopts a 'retain and engage' strategy for underperformers, suggesting a passive approach to supply chain decarbonisation.



Group 2: Pharmaceuticals and Speciality Chemicals

Air Liquide (AI): Between 2019 and 2021, Air Liquide observed a weighted absolute increase of 16% in total Scope 1, 2, and 3 emissions, potentially overshooting SBTs by 243% by 2030. Despite this trend, the company has committed EUR 16 billion towards its climate transition efforts for 2022-2025, half of which is dedicated to energy transition. While these investments are substantial, the link between these investments and expected emission reductions remains unclear. Further details in how these investments contribute to emission reductions are advised.

BASF (BAS): BASF's trajectory is currently aligned with a 3°C scenario by 2030, with 82% of its CO₂ emissions stemming from Scope 3. The company's Net Zero ambition by 2050 heavily relies on emerging or unproven technologies. There is a notable lack of pressure applied to suppliers to reduce their emissions, and the incentive structure for management does suggest a strong motivation to achieve its Net Zero goals.

Bayer (BAY): Bayer is projected to align with a warming scenario of over 3°C by 2030. Despite its ambitious targets, including impacting 25% of the global agriculture value chain and striving to achieve Net Zero by 2050, there is a significant reliance on novel technologies yet to be proven at scale. The allocation of only 2% of capex towards energy efficiency and the lack of detailed financial risk disclosure from failing to reduce greenhouse gas emissions highlight key gaps in Bayer's strategy.

Incitec Pivot (IPL): By 2030, Incitec Pivot's GHG emissions are expected to be predominantly from downstream Scope 3 activities. Without further mitigation efforts, the company is on track to exceed its science-based targets (SBTs) by 23%, veering toward a warming scenario of well below 2°C by 2030. The company's engagement focuses sensibly on customers, especially since emissions from fertiliser use account for a significant portion of its total Scope 3 emissions. Enhancing transparency on mitigation projects and investments would improve alignment with its 1.5°C target by 2030 and Net Zero by 2050 ambitions.

These analyses underscore the varied degrees of challenges and uncertainties these companies face in achieving their climate targets. Enhanced disclosure, stronger engagement with the supply chain, and clearer alignment between investments and emission reduction outcomes are critical steps needed to bolster their trajectories towards the 1.5°C goal.

OVERALL BEST PRACTICE - CLIMATE TRANSITION

- Set science-based targets that ensure a comprehensive climate transition across the full value chain (e.g., Incitec Pivot)
- Reduce reliance on unproven technologies and invest in currently scalable decarbonisation methods (e.g., Incitec Pivot)
- Integrate sustainability KPIs into short and long-term executive compensation to drive accountability and action towards climate goals (e.g., Air Liquide)
- Engage key stakeholders to drive emissions reductions, moving beyond passive strategies (e.g., Incitec Pivot)
- Enhance clarity on financial risks associated with failure to meet climate targets and how these are being managed (e.g., BASF)
- Report on how capital investments directly contribute to emission reductions and sustainability outcomes.



COMPANY TRANSITION RANKING

In analysing the CTAs of these seven chemical entities, our examination covered their commitments, strategies, and readiness to be aligned with the Paris Agreement. While we recognise that each company exhibits certain deficiencies, it is also evident that individually they also demonstrate some commendable practices. Hence, for a more transparent comparison, we devised a ranking system for each category and subcategory of our CTA, leading to an overall aggregated ranking.

Climate Alignment

Under Climate Alignment, the ranking model considered both mid-term and long-term emission reduction goals, alongside the assessed likelihood of achieving these ambitions. The mid-term goals were scored by comparing the reduction targets against the total greenhouse gas (GHG) emissions footprint from the baseline year, categorising the ambitions into three: reductions up to 15% scored 1 point, those between 15% and 30% scored 2 points, and ambitious targets above 30% scored 3 points. For long-term aspirations, achieving Carbon Neutrality earned companies 1 point, while commitments to Net Zero gave them 2 points. Planet Tracker's confidence levels in each company's ability to meet these targets were also rated, with low confidence receiving 0 points, average confidence 2 point, average-to-high confidence 3 points, and high to very high confidence 5 points, summing to a maximum of 10 points achievable in this section.

This ranking revealed that Group 2 companies, particularly Air Liquide and Incitec Pivot, demonstrate superior performance in Climate Alignment, in contrast to Dow and Toray from Group 1, which exhibited lower rankings, as detailed in Table 10.

Table 10: Seven Key Chemical Companies - Climate Alignment Ranking
Source: Companies' Sustainability Reports, CDP Questionaries, and Planet Tracker Calculations

| Key Activity | Company | Companies' Climate Ambition | | | | PT's Confidence in Company's Targets Achievement | | Total Climate Alignment Points (Max: 10) |
|--------------|------------------|---|----------------|----------------------|----------------|--|----------------|--|
| | | Mid-term Mitigation | Ranking Points | Long-term Mitigation | Ranking Points | Confidence & Temperature Alignment | Ranking Points | |
| Group 1 | Dow | 5.2 MtCO ₂ e out of 104 MtCO ₂ e = 5% | 1.0 | Carbon Neutral | 1.0 | Low (3°C) | 0.0 | 2.0 |
| | Lyondell Basell | 29.9 MtCO ₂ e out of 89.9 MtCO ₂ e = 33% | 3.0 | Carbon Neutral | 1.0 | Average (2°C) | 2.0 | 6.0 |
| | Toray* | 2 MtCO ₂ e out of 82.1 MtCO ₂ e = 2% | 1.0 | Carbon Neutral | 1.0 | Low (3°C) | 0.0 | 2.0 |
| Group 2 | Air Liquide | 17.3 MtCO ₂ e out of 57.2 MtCO ₂ e = 30% | 3.0 | Net Zero | 2.0 | High to Average (<2°C) | 3.0 | 8.0 |
| | BASF | 13.1 MtCO ₂ e out of 114.3 MtCO ₂ e = 12% | 2.0 | Net Zero | 2.0 | Low (3°C) | 0.0 | 4.0 |
| | Bayer** | 2.7 MtCO ₂ e out of 13.7 MtCO ₂ e = 19% | 2.0 | Net Zero | 2.0 | Low (3°C) | 0.0 | 4.0 |
| | Incitec Pivot*** | 3.2 MtCO ₂ e out of 9.6 MtCO ₂ e = 34% | 3.0 | Net Zero | 2.0 | High to Average (<2°C) | 3.0 | 8.0 |



* In Toray's case there is a significant difference in the company's total footprint when downstream emissions are taken into consideration – i.e., in 2014 downstream Scope 3 emissions represented 93% of the total emissions mainly due to the “Use of Sold Products” externalities.

** Bayer does not disclose in its total emissions those coming from “Use of Sold Products” as it deems them irrelevant; as a result, its total footprint could be much higher than reported.

*** Incitec Pivot has a general target of reducing Scope 1,2 and 3 emissions in absolute terms from 25% to over 42.0% in the mid-term; consequently, for this exercise, we used an average target of 33.5%.

Policy and Governance

In ‘Policy and Governance’, the focus was on the depth of supplier and customer engagements, sustainability-linked trade association memberships and the integration of sustainability metrics within management’s compensation.

The scoring for supplier and customer engagement awarded 1 point for basic interactions like ‘information gathering’ from suppliers and ‘education’ campaigns for customers, 2 points for efforts aimed at ‘behavioural change’ amongst suppliers and ‘collaboration’ with customers and 3 points to entities aiming for both initiatives.

Additional points were awarded based on the proportion of emissions covered by these engagements, with four different ranges: 0 points for less than 10% coverage, 1 point for 10% to 30% coverage, 2 points for 31% to 50% coverage and 3 points for over 50% coverage. The compilation of these scores is presented in Tables 11 and 12 for supplier and customer engagements, respectively.

Table 11: Seven Key Chemical Companies - Supplier Engagement Ranking
Source: Companies’ Sustainability Reports, CDP Questionaries, and Planet Tracker Calculations

| Company | Supplier Engagement | | | | Total Points (Max: 6) |
|-----------------|--|----------------|----------------------------|----------------|-----------------------|
| | Type of programme(s) | Ranking Points | Emissions Coverage (2021)* | Ranking Points | |
| Dow | Changing Suppliers Behaviour | 2.0 | 47% | 2.0 | 4.0 |
| Lyondell Basell | Information Collection | 1.0 | 35% | 2.0 | 3.0 |
| Toray | Changing Suppliers Behaviour | 2.0 | 60% | 3.0 | 5.0 |
| Air Liquide | Changing Suppliers’ Behaviour & Information Collection | 3.0 | 20% | 1.0 | 4.0 |
| BASF | Information Collection | 1.0 | 30% | 1.0 | 2.0 |
| Bayer | Information Collection | 1.0 | 29% | 1.0 | 2.0 |
| Incitec Pivot | Changing Suppliers’ Behaviour & Information Collection | 3.0 | 1% | 0.0 | 3.0 |



Table 12: Seven Key Chemical Companies - Customer Engagement Ranking
Source: Companies' Sustainability Reports, CDP Questionnaires, and Planet Tracker Calculations

| Company | Customer Engagement | | | Total Points (Max: 6) |
|-----------------|---------------------------|----------------|----------------------------|-----------------------|
| | Type of programme(s) | Ranking Points | Emissions Coverage (2021)* | |
| Dow | Collaboration | 2.0 | 0% | 2.0 |
| Lyondell Basell | Education | 1.0 | 0% | 1.0 |
| Toray** | Collaboration | 2.0 | 0% | 2.0 |
| Air Liquide | Education & Collaboration | 3.0 | 16% | 4.0 |
| BASF | Education | 1.0 | 0% | 1.0 |
| Bayer | Education | 1.0 | 0% | 1.0 |
| Incitec Pivot | Collaboration | 2.0 | 37% | 4.0 |

* For the Emissions Coverage in Supplier Engagement we used the suppliers' percentage by procurement expenditure (as a proxy) and multiplied that by the companies' Scope 3 Upstream footprint; meanwhile, in Customer Engagement we used the percentage of customer-related Scope 3 emissions and multiplied that by the companies' Scope 3 downstream footprint.

** As a reminder, Toray does not disclose its Scope 3 downstream footprint.

Furthermore, Policy Engagement scores were derived from the count of memberships in trade associations that are misaligned with the Paris Agreement goals. Companies with fewer than 5 misaligned associations received 3 points, those with 5 to 9 received 2 points, entities with 10 to 14 memberships received 1 point, and any with 15 or more received 0 points.

Overall, the engagement scoring system showcases Air Liquide and Toray as leaders with 10 points out of fifteen, closely followed by Incitec Pivot, while BASF and Bayer are noted for poorer performance in this area, as summarised in Table 13.

Table 13: Seven Key Chemical Companies - Policy and Value Chain Engagement Ranking
Source: Companies' Sustainability Reports, CDP Questionnaires, and Planet Tracker Calculations

| Company | Policy Engagement | | Value Chain Engagement | | Total Engagement Points (Max: 15) |
|-----------------|--|----------------|----------------------------------|----------------------------------|-----------------------------------|
| | Memberships in Misaligned Trade Associations | Ranking Points | Total Supplier Engagement Points | Total Customer Engagement Points | |
| Dow | 9 | 2.0 | 4.0 | 2.0 | 8.0 |
| Lyondell Basell | 4 | 3.0 | 3.0 | 1.0 | 7.0 |
| Toray | 3 | 3.0 | 5.0 | 2.0 | 10.0 |
| Air Liquide | 9 | 2.0 | 4.0 | 4.0 | 10.0 |
| BASF | 14 | 1.0 | 2.0 | 1.0 | 4.0 |
| Bayer | 5 | 2.0 | 2.0 | 1.0 | 5.0 |
| Incitec Pivot | 6 | 2.0 | 3.0 | 4.0 | 9.0 |



Regarding management remuneration tied to sustainability, companies were evaluated on the presence of quantified, sustainability-linked compensation packages for senior management, covering both short-term and long-term packages. Companies integrating both were awarded 5 points, those with long-term packages received 3 points, whereas those with only short-term related compensation were given 2 points, and entities without any clearly quantified compensation schemes scored 0 points. Notably, as illustrated in Table 14, only Air Liquide featured credible both short-term and long-term quantified sustainability-linked compensation, highlighting their commitment to integrating sustainability at the highest levels of governance.

Table 14: Seven Key Chemical Companies - Compensation Ranking
Source: Companies' Sustainability Reports, CDP Questionaries, and Planet Tracker Calculations

| Company | Upper Management Remuneration | | Total Points (Max: 5) |
|-----------------|---|----------------|-----------------------|
| | Quantified Sustainability-Linked Compensation | Ranking Points | |
| Dow* | Short-term | 2.0 | 2.0 |
| Lyondell Basell | Short-term | 2.0 | 2.0 |
| Toray | None | 0.0 | 0.0 |
| Air Liquide | Short and Long Term | 5.0 | 5.0 |
| BASF** | None | 0.0 | 0.0 |
| Bayer | Long-term | 3.0 | 3.0 |
| Incitec Pivot | Short-term | 2.0 | 2.0 |

* While Dow disclosed both short-term and long-term sustainability-linked compensation, on closer scrutiny its long-term sustainability-linked compensation is potentially irrelevant – see [“Plastic Executive Compensation – A report card for plastic-related companies”](#)

** While BASF states having both short-term and long-term sustainability-linked compensation, the exact % is unclear, and the management can reach the maximum payout while missing the sustainability target, making the link irrelevant.

Risk Management & Capital Alignment

In this section, we delved into two key areas: Risk Management and Capital Alignment. The assessment criteria for Risk Management included whether a company has both quantitatively assessed and disclosed risks associated with Transition and Climate Change (i.e., Transition Risks and Physical Risks), as well as whether it has disclosed quantified risk management initiatives. For each risk category (Transition Risks and Physical Risks), companies received 1 point for conducting an assessment or disclosing quantified risk management initiatives, 2 points if they did both for Physical Risks, and 3 points if they did so for Transition risks. The maximum attainable score in this segment was 5 points.

As presented in Table 15, our findings indicate that most companies, with the exceptions of Dow and LyondellBasell, have reported both quantified Transition Risks and Physical Risks alongside their risk management strategies. It’s important to note, however, that the depth or accuracy of these quantifications was not within the scope of our evaluation at this time.



Table 15: Seven Key Chemical Companies - Climate-Related Risk Management Ranking
Source: Companies' Sustainability Reports, CDP Questionaries, and Planet Tracker Calculations

| Company | Transition Risk(s) | | Physical Risk(s) | | Total Points (Max: 5) |
|-----------------|-------------------------------|----------------|-------------------------------|----------------|-----------------------|
| | Quantified Risk Disclosure(s) | Ranking Points | Quantified Risk Disclosure(s) | Ranking Points | |
| Dow | Assessment | 1.0 | Assessment and Management | 2.0 | 3.0 |
| Lyondell Basell | Assessment and Management | 3.0 | - | 0.0 | 3.0 |
| Toray | Assessment and Management | 3.0 | Assessment and Management | 2.0 | 5.0 |
| Air Liquide | Assessment and Management | 3.0 | Assessment and Management | 2.0 | 5.0 |
| BASF | Assessment and Management | 3.0 | Assessment and Management | 2.0 | 5.0 |
| Bayer | Assessment and Management | 3.0 | Assessment and Management | 2.0 | 5.0 |
| Incitec Pivot | Assessment and Management | 3.0 | Assessment and Management | 2.0 | 5.0 |

Moving on to Capital Alignment, our ranking method compared each company's investment in climate transition relative to its size, calculated as an average between Transition Investment as a percentage of Market Capitalisation and Transition Investment as a percentage of Total Assets. Companies were assigned 0 points for undisclosed investments or those below 1% of their size, 2 points for investments ranging between 1% and 10%, 3 points for investments between 10% and 20% and 5 points for investments exceeding 20%.

Using this approach, Air Liquide and Toray²¹ emerged as leaders in this category, demonstrating a strong commitment to aligning their capital with climate transition goals.

Conversely, LyondellBasell and Bayer were identified as lower performers, as highlighted in Table 16.

Table 16: Seven Key Chemical Companies - Capital Alignment Ranking
Source: Companies' Sustainability Reports, CDP Questionaries, and Planet Tracker Calculations

| Company | Transition Investment as % of Market Cap | Transition Investment as % of Tot. Assets | Transition Investment as % of Size (Average) | Total Points (Max: 5) |
|-----------------|--|---|--|-----------------------|
| Dow | 2.3% | 1.6% | 2.0% | 2.0 |
| Lyondell Basell | N/A | N/A | N/A | 0.0 |
| Toray | 18.6% | 7.4% | 13.0% | 3.0 |
| Air Liquide | 22.0% | 35.4% | 28.7% | 5.0 |
| BASF | 6.5% | 4.6% | 5.6% | 2.0 |
| Bayer | 1.1% | 0.4% | 0.7% | 0.0 |
| Incitec Pivot | 2.1% | 1.3% | 1.7% | 2.0 |

²¹ Be aware that in Toray's case, the investment they link to Climate Transition is mainly R&D research with the goal to impact the company's climate transition.



Overall Ranking

To close our Company Transition Ranking, we synthesised the performance of these key chemical companies across five distinct categories: Climate Alignment, Engagement, Compensation, Risk Management, and Capital Alignment. The cumulative potential score, aggregating these dimensions, totalled 38 points.

As highlighted in Table 16, Air Liquide emerged as the frontrunner in this ranking, with an impressive total of 33 points. This score emphasises the company's robust strategy and execution across various aspects of its climate transition, from ambitious climate alignment goals to substantial investments in GHG mitigation initiatives. Incitec Pivot followed as the second-highest scorer with 26 points, also indicating a solid performance in climate transition initiatives. Their efforts reflect a tailored engagement with stakeholders and sensible risk management practices.

Conversely, BASF is at the bottom of the list, and Bayer and Dow were also identified at the lower end of the ranking spectrum. This leaves LyondellBasell and Toray in the middle of the list.

These companies, despite having areas of commendable practice, displayed gaps in their climate transition strategies that affected their overall scores. The results point to opportunities for improvement, especially in aligning capital investments with climate goals, enhancing risk management frameworks, and strengthening stakeholder engagement to better support their climate transition pathways.

For instance, Bayer and LyondellBasell are brought down the rank by their lack of disclosed investment in GHG mitigation initiatives, while BASF and Toray are mostly hurt by the absence of clear of sustainability-linked compensation.

As presented in Tables 17 and 18, this overall ranking, underscores the importance of an integrated approach encompassing policy engagement, risk management, and financial commitment toward achieving the global climate objectives outlined in the Paris Agreement.

Table 17: Seven Key Chemical Companies - Company Transition Overall Ranking
Source: Companies' Sustainability Reports, CDP Questionnaires, and Planet Tracker Calculations

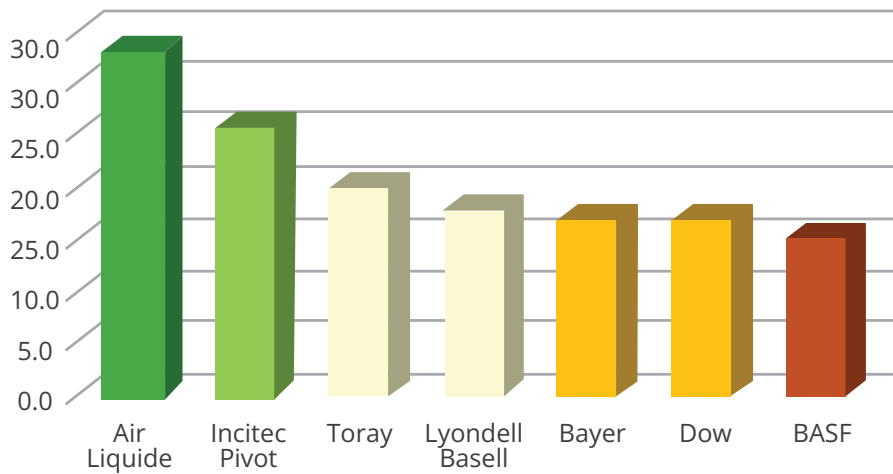
| Key Activity | Company | Climate Alignment Ranking Points (max 10) | Engagement Ranking Points (max 15) | Sustainability linked Compensation Ranking Points (max 5) | Risk Management Ranking Points (max 5) | Capital Alignment Ranking Points (max 5) | Total Points (Max: 40) |
|--------------|-----------------|---|------------------------------------|---|--|--|------------------------|
| Group 1 | Dow | 2.0 | 8.0 | 2.0 | 3.0 | 2.0 | 17.0 |
| | Lyondell Basell | 6.0 | 7.0 | 2.0 | 3.0 | 0.0 | 18.0 |
| | Toray | 2.0 | 10.0 | 0.0 | 5.0 | 3.0 | 20.0 |
| Group 2 | Air Liquide | 8.0 | 10.0 | 5.0 | 5.0 | 5.0 | 33.0 |
| | BASF | 4.0 | 4.0 | 0.0 | 5.0 | 2.0 | 15.0 |
| | Bayer | 4.0 | 5.0 | 3.0 | 5.0 | 0.0 | 17.0 |
| | Incitec Pivot | 8.0 | 9.0 | 2.0 | 5.0 | 2.0 | 26.0 |





Table 18: Company Transition Overall Ranking
Source: Planet Tracker Calculations

Total Transition Points (Max:40)





V Conclusion And Call To Action

The comparative analysis of the Climate Transition Assessments (CTAs) of the seven chemical companies underlines a sector at a critical juncture. Despite varying degrees of progress and ambition, each company confronts substantial challenges in aligning their strategies with the stringent demands of the Paris Agreement and achieving a Net Zero emissions future.

Key takeaways from this analysis emphasise that while commitments to climate targets are a step in the right direction, they must be backed by actionable strategies, transparent disclosures, and a clear roadmap toward implementation with supporting capital expenditure. The industry faces a common set of hurdles, including the reliance on unproven technologies, significant Scope 3 emissions without comprehensive mitigation strategies and a lack of alignment between executive compensation and climate goals.

Industry-Wide Calls to Action:

1. **Enhance Transparency and Accountability:** Companies must provide clear, quantifiable evidence of how their strategies and investments contribute to their climate targets. This includes disclosing the expected emission reductions from specific initiatives and how these align with their overall climate goals.
2. **Strengthen Scope 3 Emission Strategies:** Given that Scope 3 emissions constitute a significant portion of the companies' carbon footprints, there is an urgent need for robust strategies to address these emissions. This involves not only setting ambitious Scope 3 targets but also working collaboratively with suppliers and customers to achieve these goals.
3. **Realign Executive Compensation:** Executive compensation structures should be tied to the achievement of climate targets, ensuring that there is a meaningful financial incentive for leadership to prioritize and achieve these goals, and avoid potential liabilities in the future.
4. **Address Misalignments with Trade Associations:** Companies must rigorously assess their memberships in trade associations to ensure alignment with their climate commitments. Where misalignments exist, they should actively seek to influence change or reconsider their memberships to avoid undermining their climate pledges.

A Call to Collective Action:

The chemical industry, with its significant impact on global emissions and innovation potential, is uniquely positioned to drive meaningful change in the transition to a Net Zero economy. However, this requires not only individual company efforts but also collective action within the industry to share best practices, develop new technologies and influence policy in favour of sustainable development.

Investors, regulators, and stakeholders play a critical role in this process, requiring them to hold companies accountable, demand greater transparency and support initiatives that align with a 1.5°C pathway. As we move forward, the focus should not only be on setting targets but on delivering tangible, measurable progress towards these goals. The time for aspirational pledges has passed; the era of actionable, impactful climate strategies is upon us.

LINKS OF INTEREST

[Tomorrow's Chemistry – Engagement Sheet](#)

[Tomorrow's Chemistry – Best Practice Guideline](#)

[Climate Transition Mismatch](#)

[Plastic Executive Compensation – A report card for plastic-related companies](#)

[Air Liquide \(AI\) Climate Transition Assessment](#)

[BASF \(BAS\) Climate Transition Assessment](#)

[Bayer \(BAY\) Climate Transition Assessment](#)

[Dow \(DOW\) Climate Transition Assessment](#)

[Incitec Pivot \(IPL\) Climate Transition Assessment](#)

[LyondellBasell \(LYB\) Climate Transition Assessment](#)

[Toray Industries \(3402\) Climate Transition Assessment](#)

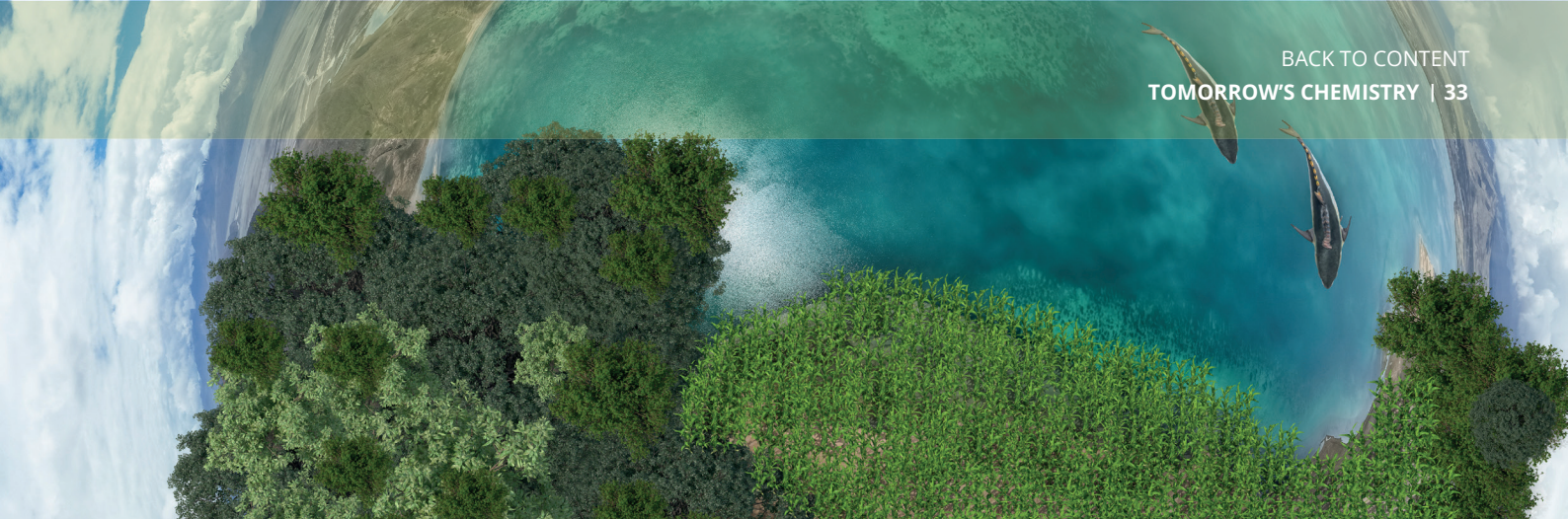




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ABOUT PLANET TRACKER

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.

PLANET TRACKER'S CLIMATE TRANSITION ANALYSIS – CHEMICAL COMPANIES

As part of its material system transition programme, Planet Tracker is examining the transition plans of the chemical companies covered by the Climate Action 100+ list. Our goal is to provide investors with the key information and analysis they need to be able to hold chemical companies to account for the quality of their climate transition plans and their execution against those plans, and to encourage them to use this information to engage effectively with these companies with the ultimate aim of driving the sustainable transformation of the chemical sector.

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