Dow (DOW)
Climate Transition Analysis

Climate Action 100+ Focus Company

Overall Assessment

Dow is expected to align with a 3°Cwarming scenario by 2030.

Analysis by Planet Tracker indicates that Dow remains aligned with a 3°C warming scenario by 2030, placing its climate strategy short of the Paris Agreement ambition. Dow's 2030 emission reduction target of 14% from 2020 levels – already reached – is well below science-based benchmarks and behind leading peers. Moreover, this target only covers Dow's operational Scope 1 and 2 emissions, representing just 28% of its total emission footprint. Dow's Scope 3 emissions are not bound by a quantified 2030 reduction target. Climate-related capital expenditure has increased, with 48% of 2024 spending allocated to decarbonisation. However, execution risk is rising, highlighted by delays to the flagship Alberta Path2Zero project and limited clarity on the near-term impact of other investments. Dow also faces growing exposure to regulatory tightening, with potential carbon pricing liabilities reaching close to USD 200 million annually by 2030. Governance signals remain mixed: executive incentives are linked to climate goals, but alignment on policy engagement is limited, and Dow continues to maintain affiliations with trade associations at odds with Paris-aligned policies. Overall, while progress has been made, Dow's transition plan remains insufficient for alignment with a well-below-2°C pathway, requiring stronger targets, deeper value chain decarbonisation, and demonstrably deliverable investment plans.

This report is one of a series examining the climate transition plans of companies in the Climate Action 100+ list. This project is separate to and not affiliated with Climate Action 100+.

Download the Shareholder Engagement Sheet.

Climate Alignment

- Dow cut Scope 1 and 2 emissions achieving its 2030 target ahead of time; but its 15% reduction target remains misaligned with science-based pathways, and behind peers.
- Scope 3 emissions (73% of total) still have no formal reduction target, leaving the majority of Dow's footprint outside any structured decarbonisation plan. The 6% decline since 2020 is largely driven by macroeconomic conditions.

Policy and Governance

- Supplier engagement has expanded (3,727 suppliers assessed in 2024) yet Dow discloses no quantified emissions reductions from value chain initiatives, limiting investor visibility into their effectiveness.
- Climate governance exists at board level and 20% of long-term incentives (LTIs) are tied to carbon metrics; still, the standard 200% cap on variable corporate remuneration risks allowing financial goals to dilute climate accountability.

Risk Analysis

- Dow faces annual carbon pricing exposure estimated at USD 112–168 million by 2030 under EU Emissions Trading Systems (ETS) scenarios, with actual costs potentially exceeding disclosed ranges given regulatory tightening.
- Physical climate risks (particularly water stress valued at up to USD 1.3 billion) lack comprehensive quantification and mitigation planning.

Strategy Assessment

- Climate-related capex rose to USD 1.4 billion (48% of total 2024 capex); yet, the Path2Zero delay, which would decarbonise 20% of ethylene capacity and cut 1 $MtCO_2e$/year, signals major delivery risks.
- To achieve alignment with the well-below 2°C pathway and its 2050 carbon neutrality goal, Dow must set Scope 3 reduction targets, enhance its 2030 operating emissions ambition beyond the current reduction target of ~15%, strengthen governance mechanisms to prevent financial metrics from overshadowing climate objectives, and address ongoing policy misalignments through its trade association memberships.

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Company Overview

Dow Inc. (DOW), originally founded in 1897, is headquartered in Michigan, USA. The company was re-established in 2019, following the DowDuPont merger and subsequent separation. Today is the world's third largest chemical manufacturer, after BASF and Sinopec[1], generating **net sales of USD 43 billion in 2024**. Dow business portfolio comprises three operating segments as shown in Figure 1.

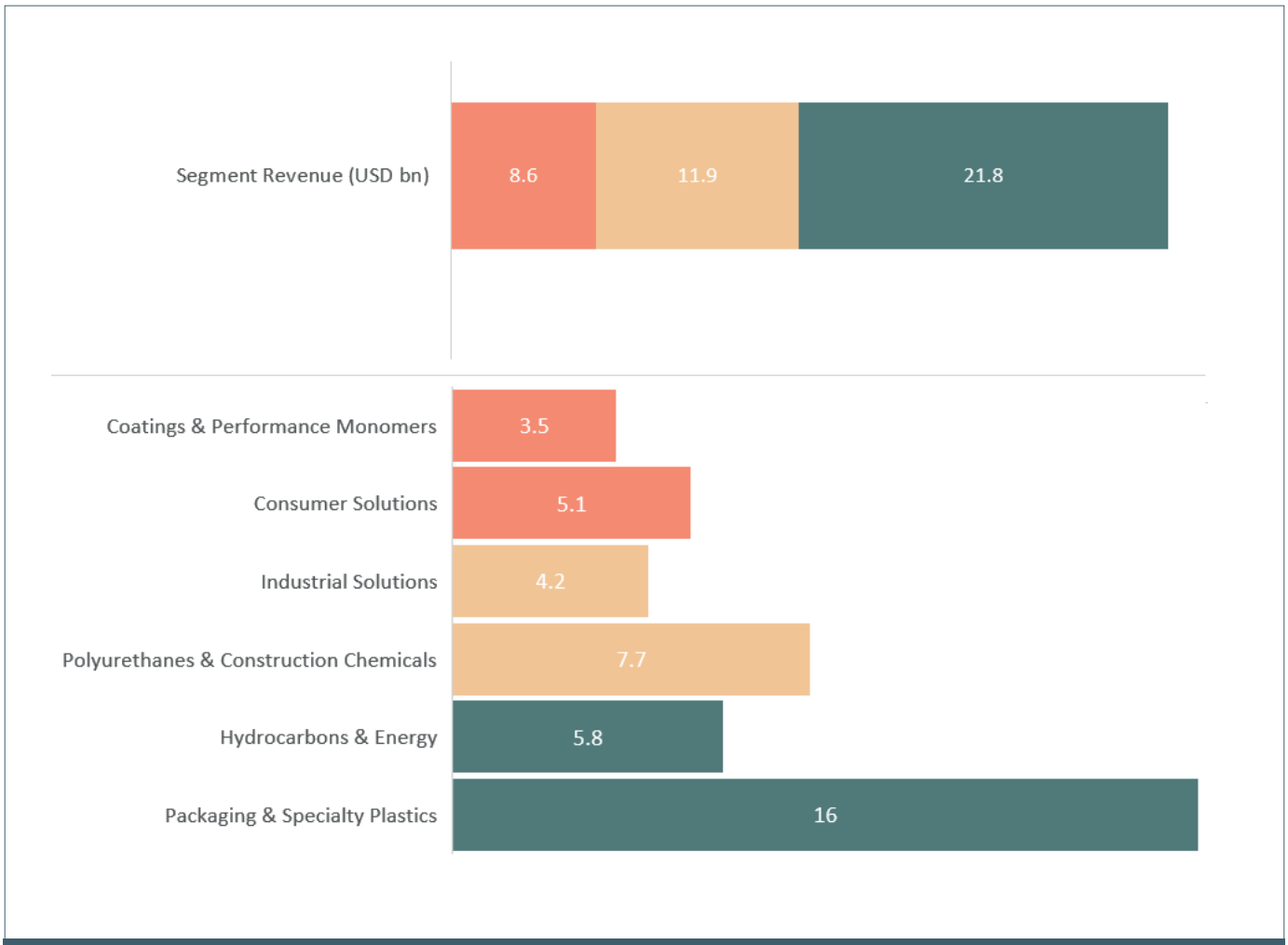

Figure 1: *Revenue Breakdown by Business Segments (2024). Source: DOW Annual Report 2024.*

Packaging & Specialty Plastics is Dow's largest operating segment, accounting for **50.7% of total net sales** in 2024 with revenues of **USD 21.8 billion.** This segment consists of two highly integrated global businesses: Hydrocarbons & Energy (USD 5.8 billion, representing 26.4% of segment sales) and Packaging and Specialty Plastics (USD 16.0 billion, representing 73.6% of segment sales).

1 As shown in "Global Top 50" by Chemical & Engineering News – July 22, 2025.

Industrial Intermediates & Infrastructure generated **USD 11.9 billion** in net sales in 2024, representing **27.6% of total revenues.** The segment consists of Industrial Solutions (USD 4.2 billion, or 35.2% of segment sales) and Polyurethanes & Construction Chemicals (USD 7.7 billion, or 64.7% of segment sales).

Performance Materials & Coatings accounted for **20.0% of total net sales** with revenues of **USD 8.6 billion** in 2024**.** The segment includes Coatings & Performance Monomers (USD 3.5 billion, or 40.7% of segment sales) and Consumer Solutions (USD 5.1 billion, or 59.3% of segment sales).

Dow reported adjusted **operating earnings (EBIT)** of **USD 2.6 billion** in 2024. Figure 2 highlights that **Packaging & Specialty Plastics** alone accounts for **91.7% of total operating EBIT.**

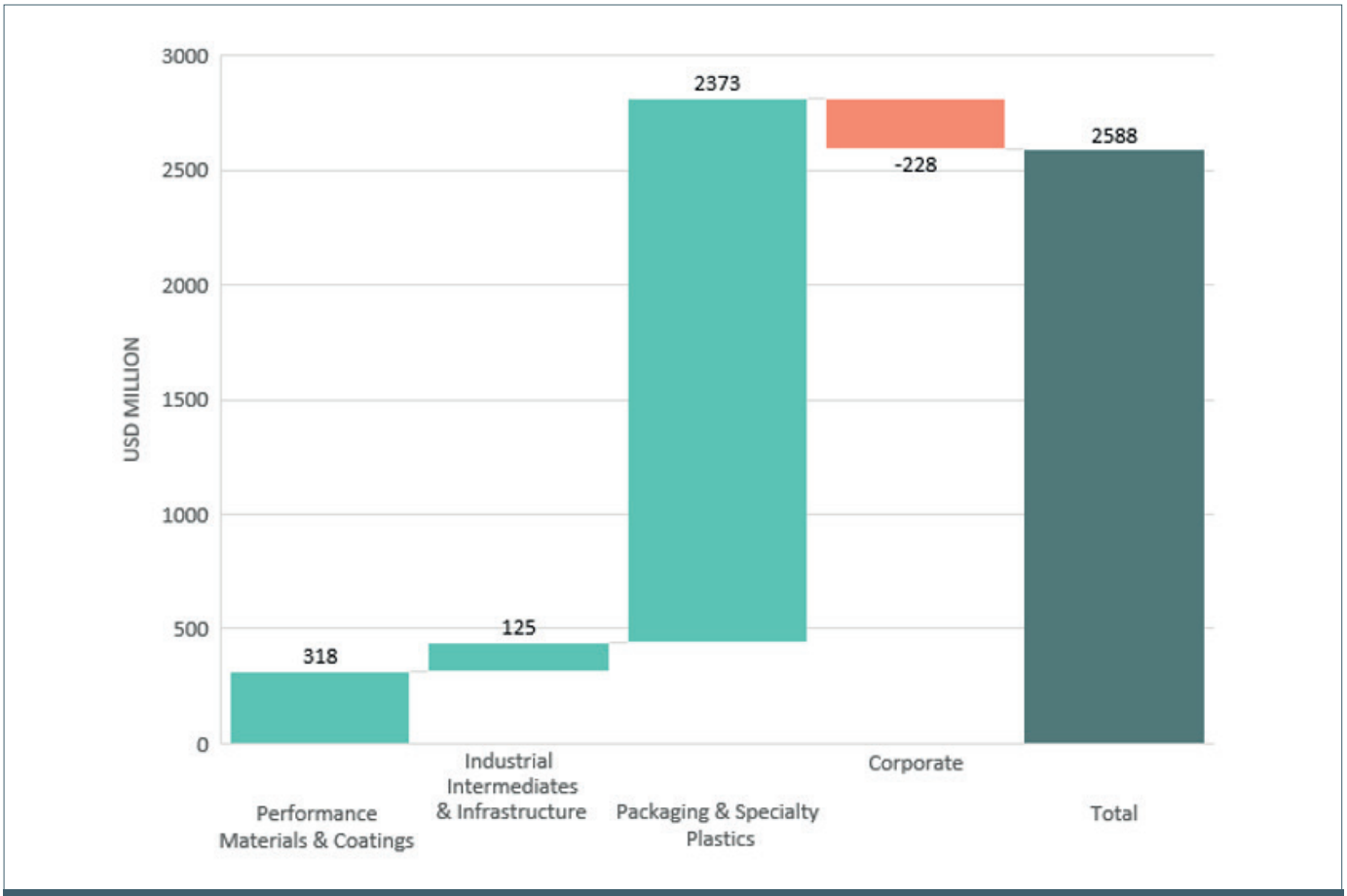

Figure 2: *REBIT Breakdown by Business Segments (2024). Source: DOW Annual Report 2024.*

Geographically, Dow's sales are distributed across four principal regions. The **United States (U.S.) & Canada** represented the largest market with **USD 16.4 billion in net sales** (38.2% of total revenue) in 2024. **Europe, Middle East, Africa** and **India (EMEAI)** generated **USD 14.0 billion** (32.5% of total revenue), and **Asia Pacific** contributed **USD 7.7 billion** (17.9% of total revenue), while **Latin America** accounted for **USD 4.9 billion** (11.4% of total revenue).

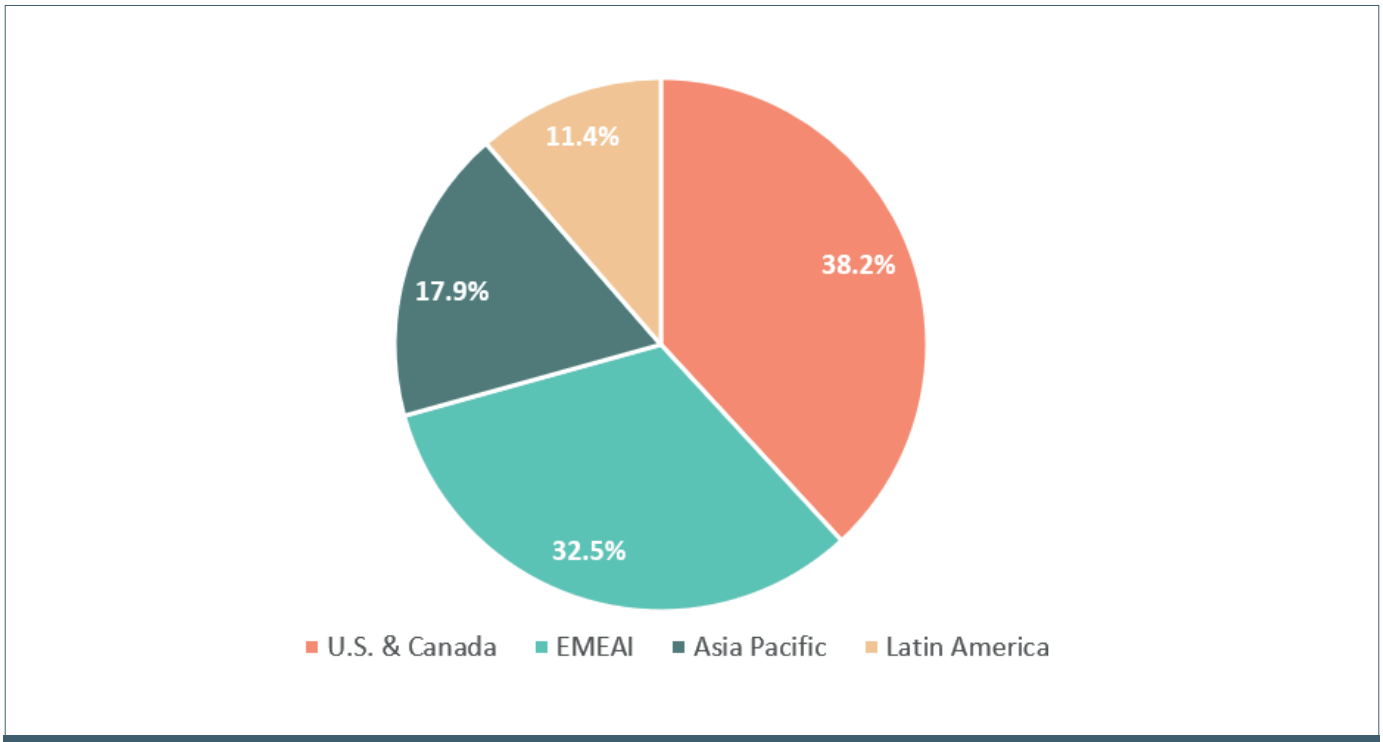

Figure 3: *Revenue (%) Breakdown by Geography (2024). EMEAI stands for Europe, the Middle East, Africa and India. Source: DOW Annual Report 2024.*

Given Dow's significant presence in plastics production and petrochemical manufacturing, the company's climate-transition progress will largely depend on developments within these segments and on regulatory changes in its key markets (North America and EMEAI). This is especially relevant in Europe, where around 23% of Dow's total Scope 1 emissions originate from facilities covered by the EU Emissions Trading System.

Climate Alignment

EMISSIONS INVENTORY

In Dow's most recent greenhouse gas (GHG) emissions disclosures, its total footprint for 2024 stood at 106,970 kilotons CO2e ($KTCO_2e$). Examining the breakdown of these emissions, operational (i.e. Scope 1 and 2) emissions represented 27.8% of its footprint, with 26,630 $KTCO_2e$ coming from Scope 1 (24.9% of the total), and 3,110 $KTCO_2e$ from Scope 2 (2.9% of the total). The majority of emissions, amounting to 77,230 $KTCO_2e$ or 72.8%, originated from Scope 3 activities. Within this scope, upstream activities[2] accounted for 44.5% of total emissions, with Category 1 (Purchased Goods and Services) representing the largest component at 40,040 $KTCO_2e$. Meanwhile, downstream Scope 3 emissions[3] represented 27.8% of the total footprint with Category 12 (End-of-Life Treatment of Sold Products) contributing with 20,830 $KTCO_2e$ or 19.5% of the total.

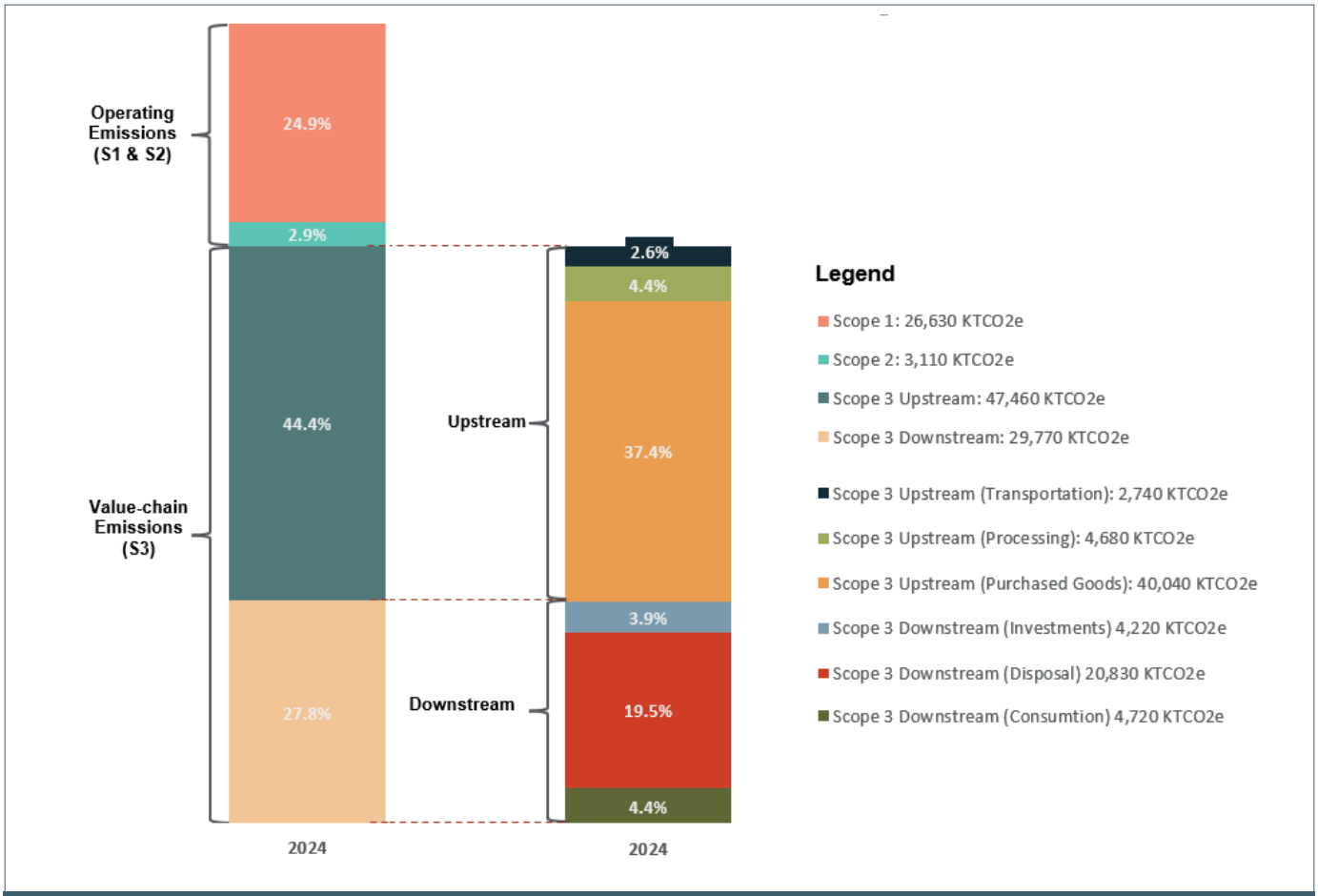

Figure 4: *Value Chain GHG Emissions (2024) - Percentage Breakdown by Scope. Source: 2024 INtersections Disclosures.*

2 **Scope 3 upstream** emissions include: (1) Purchased Goods - accounting for the emissions associated with chemicals considered as feedstock; (2) Processing - including the "Capital Goods" emissions – i.e., emissions from any material or chemical not included in the list of feedstocks, the emissions from "Fuel and Energy Activities" not covered in Scope 1 and 2, and emissions from hazardous and non-hazardous "Waste from Operations"; and upstream emissions from "Leased Assets"; (3) Transportation - covering emissions from "Transport & Distribution" associated with inbound (suppliers) and outbound transport operations, as well as emissions from "Employee commuting" and "Business Travel".

3 **Scope 3 downstream** emissions include: (1) Consumption – covering emissions associated with the "Use of sold products"; (2) Disposal - emissions from "End of life treatment of sold products" – i.e., emissions related to the typical end-of-life treatments arising during recycling, incineration, and landfilling of articles made of plastic products at the end of their service life; (3) Investments – referring to the emissions for investments in associated and joint arrangement manufacturing companies.

It is important to note that Dow updated its Scope 3 accounting methodologies in 2024, incorporating primary supplier data, and emissions factors from Ecoinvent v3.11, for better alignment with sector-specific guidelines such as the Together for Sustainability framework. This led to restatements of prior year data for Categories 1, 2, 11, and 12. These methodological upgrades, while aiming to enhance data quality, also highlight the challenges in establishing consistent baselines. For context, the initial 2020 GHG baseline changed from 103,979 $KTCO_2e$ to a current 2020 baseline of 117,200 $KTCO_2e$, or a 13% increase[4].

EXTERNALITIES TRENDS AND TARGETS

Company Trends

Between 2020 and 2024, Dow achieved a 15% reduction in combined Scope 1 and 2 emissions, declining from a restated baseline of 34,980 $KTCO_2e$ to 29,740 $KTCO_2e$. This 5,240 $KTCO_2e$ reduction exceeded the company's 2030 target of a 5,000 $KTCO_2e$ reduction ahead of schedule[5]. Scope 1 emissions decreased from 28,760 $KTCO_2e$ in 2020 to 26,630 $KTCO_2e$ in 2024, representing a 7.4% reduction. Scope 2 market-based emissions declined from 6,220 $KTCO_2e$ in 2020 to 3,110 $KTCO_2e$ in 2024, a 50% reduction driven by increased renewable energy procurement and cleaner grid electricity (according to the company).

In 2024, Scope 1 emissions fell 0.5% from 2023 and Scope 2 fell 2.8%. This slowing trend from the progress made between 2020-2023 may raise questions about the trajectory of emissions reductions going forward. The delay of the Path2Zero Alberta project that was expected to deliver 1,000 KTCO2e of annual reductions adds to this uncertainty.

Dow's Scope 3 emissions showed a 6.1% decrease from the 2020 baseline of 82,220 $KTCO_2e$ to 77,230 $KTCO_2e$ 2024. However, Scope 3 emissions increased 4.9% year-over-year from 73,600 $KTCO_2e$ in 2023 to 77,230 $KTCO_2e$ in 2024, primarily driven by increased volumes of purchased materials. This increase occurred despite improvements in Scope 3 accounting methodologies and supplier engagement efforts, highlighting the challenges in decoupling value chain emissions from business activity growth.

A summary of these changes is presented in Table 1[6].

Table 1: *Restated Scope 1, 2, and 3 CO_2e evolution (2020-2024). Source: and Planet Tracker Calculations*

Scope	Restated 2020 ($KTCO_2e$)	Restated 2023 ($KTCO_2e$)	2024 ($KTCO_2e$)	Absolute Change % (2020-2024)
Scope 1 GHG Emissions	28,760	26,770	26,630	**-7.4%**
Scope 2 GHG Emissions (market-based)	6,220	3,200	3,110	**-50.0%**
Scope 3 Upstream GHG Emissions	48,830	43,400	47,460	**-2.8%**
Scope 3 Downstream GHG Emissions	33,850	30,920	29,770	**-10.8%**
Scope 1, 2 and 3 GHG emissions	117,200	103,570	106,970	**-8.7%**

4 In a like for like comparison, using Scope 2 market-based values.

5 Note that the previous operating emissions baseline stood at 34,722 $KTCO_2e$ (vs the restated 34,980 $KTCO_2e$) which would imply a decrease of 4,982 $KTCO_2e$ (instead of 5,240 $KTCO_2e$).

6 Notably, while Dow's footprint declined by ~9% between 2020 to 2024, so did its volumes. The company disclosed that volumes year on year were 2021: +1%; 2022: -3%; 2023: -6%; 2024: 0% (although it does not disclose its production or sales volume in metric tons).

Company Targets

Dow's climate targets remain disconnected from science-based pathways. The company has explicitly chosen not to pursue Science Based Targets initiative (SBTi) validation, stating that "the published guidance does not accurately and scientifically reflect the realities of the chemical sector". Instead, Dow follows an International Energy Agency (IEA) approach that anticipates slower decarbonisation in line with its Stated Policies Scenario (or STEPS, which corresponds to a 2.5˚C outcome). The SBTi approach typically requires more aggressive near-term reductions aligned with limiting warming to 1.5°C, whereas Dow's current ambition appears more consistent with a 2.5°C scenario, and therefore, any deviation could lead to a 3°C pathway

Dow established three climate targets:

- Short-term goal: reduce annual operational emissions by 2,000 $KTCO_2e$ by 2025 from a 2020 baseline;
- Mid-term goal: 5,000 $KTCO_2e$ reduction by 2030 (or 14.3%), from the same 2020 baseline;
- Long-term objective: carbon neutrality by 2050.

The short and medium-term targets focused exclusively on Scope 1 and 2 emissions, while the 2050 carbon neutrality goal aims to extend to Scope 3, plus product benefits.

Nevertheless, Dow's 2030 target of a 14.3% decrease in operational emissions, which it has already met, is modest compared to peer companies in the Climate Action 100+ chemical sector: BASF targets a 25% reduction by 2030; Bayer aims for 42%; LyondellBasell has committed to 42%; Air Liquide's target is 35%.

Dow does not currently have quantified medium-term targets for Scope 3 emissions reduction, despite these emissions representing close to 73% of its footprint. While several peer companies have established Scope 3 targets – including LyondellBasell's 30% reduction goal and BASF's 15% target for upstream purchased goods – Dow's lack of a comprehensive Scope 3 target limits the scope of its climate ambitions. The company has stated its intention to achieve carbon neutrality by 2050 across all scopes, but without interim Scope 3 milestones, tracking progress and assessing feasibility could be challenging.

In conclusion, the early achievement of the 2030 target, highlights the relatively lower level of ambition compared to peers. More ambitious intermediate targets should now be set for the 2025-2030 period to maintain decarbonisation momentum. The absence of announced plans for enhanced targets beyond 2030 creates a potential gap in the company's climate roadmap.

Policy and Governance

ENGAGEMENT AND INFLUENCE

Suppliers' Engagement

With close to 73% of Dow's emissions originating from Scope 3 activities (of which upstream activities represent 61%), supplier engagement constitutes a critical component of the company's climate strategy. In 2024, Dow invited 502 suppliers, representing 80% of its upstream Scope 3 emissions, to participate in the CDP Supply Chain Program. Of the 502 invited suppliers, 67% reported having climate-related goals.

However, the tangible emissions reductions resulting from these supplier engagements remain largely undisclosed. Dow states that suppliers "have pledged to reduce millions of tons of CO_2e across Scopes 1, 2 and 3 by 2030", but provides no specific quantification of these commitments, no timeline for achievement, and no assessment of the credibility or feasibility of supplier pledges. This makes it impossible for investors and stakeholders to evaluate the actual emissions reduction potential from supplier engagement or to track progress against meaningful metrics. The absence of specific figures contrasts with the precision applied to Dow's own operational emissions tracking and undermines confidence in the effectiveness of upstream decarbonisation efforts.

Dow's sustainable procurement initiatives include integration of sustainability criteria into procurement decisions, supported by a 70-point EcoVadis rating that places the company in the top 25% of businesses in sustainable procurement. The company introduced mandatory ESG training for procurement teams in 2024 and utilises a new internal dashboard providing detailed insights into Scope 3 emissions by supplier and material. While these initiatives demonstrate organisational commitment, the link between these processes and measurable emissions outcomes remains unclear.

Dow improved its Scope 3 accounting approach to incorporate primary supplier data in 2024, though the percentage of emissions now based on primary versus modelled data is not disclosed. In logistics, Dow implemented decarbonisation initiatives such as biomethane and compressed natural gas use in Brazil and electric trucks in India. However, these logistics initiatives address only 2.6% of Dow's total emissions footprint (Category 4 Upstream Transportation at 2,740 $KTCO_2e$ in 2024).

Customers' Engagement

Dow positions its product innovations as enabling customer decarbonisation, introducing several lower-carbon products in 2024. The company launched caustic soda products with up to 90% lower CO_2 emissions, achieved through electrolysis powered by renewable energy and certified under the ISCC PLUS mass balance framework. Propylene glycol solutions using bio-based or circular feedstocks were introduced, offering third-party validated GHG reductions. The DECARBIATM portfolio was expanded to include multiple product grades with decarbonisation potential ranging from 40% to over 90%, depending on the specific product.

Additional product launches included bio-based ethylene derived from corn stover through a partnership with New Energy Blue, representing the first North American agreement to produce plastics from agricultural residues. Dow also introduced the ENDURANCETM compound for high-voltage transmission cables, which reduces degassing time during manufacturing, and the EcoSenseTM surfactant developed with LanzaTech using carbon capture technology.

While these product innovations demonstrate technical capability and market responsiveness to customer sustainability demands, Dow does not systematically disclose the aggregate GHG reduction impact of these products on its Scope 3 emissions. The examples provided appear anecdotal rather than representing a comprehensive accounting of product-enabled emissions reductions. Without quantification of the emissions reduction benefits delivered through the product portfolio, it remains difficult to assess whether these innovations are driving material decarbonisation in Dow's value-chain.

Furthermore, Dow does not disclose the revenue contribution or volume share of these lower-carbon products within its overall product portfolio. This information would be valuable for understanding the pace at which the company is transitioning its product mix toward more sustainable offerings and the potential trade-offs between margins on conventional versus lower-carbon products.

Influence on Policymakers and Trade Associations

Dow's climate policy engagement presents notable contradictions between the company's public support for climate action and its direct policy positions and trade association memberships. While Dow states support for the Paris Agreement and market-based carbon pricing mechanisms, the company's advocacy on specific policy issues and its affiliations raise concerns about the alignment between stated commitments and actual influence.

Dow maintains membership in multiple trade associations with climate-misaligned positions according to InfluenceMap analysis (see Table 2). These include the American Fuel & Petrochemical Manufacturers (AFPM), the US Chamber of Commerce, the National Association of Manufacturers, the American Petroleum Institute, and the California Chamber of Commerce. All of these organisations (with scores of E and F) are classified as highly "Misaligned" with Paris Agreement goals. The Business Roundtable, German Chemical Industry Association, and several regional chambers of commerce also receive poor climate alignment scores (i.e., misaligned of partially aligned) from InfluenceMap.

Table 2: *Dow's Misaligned Trade Associations. Source: InfluenceMap*

Dow's Trade Associations	InfluenceMap Score	Climate Policy Status
Business Roundtable	D	Misaligned
German Chemical Industry Association (VCI)	D	Misaligned
US Chamber of Commerce	E	Misaligned
National Association of Manufacturers (NAM)	E	Misaligned
American Petroleum Institute (API)	E-	Misaligned
American Fuel & Petrochemical Manufacturers (AFPM)	E-	Misaligned
California Chamber of Commerce (CalChamber)	F	Misaligned

Company representatives defend this approach by arguing for "change from within," stating that Dow continues dialogue with climate-misaligned associations. However, the company does not have a defined timeline for withdrawal if engagement fails, and therefore no credible plan to achieve policy realignment.

Dow's direct policy advocacy reveals additional tensions with its climate commitments. In 2024, the company partnered with the Wyoming State government on the Wyoming Gas Injection Initiative to extend oil field productivity, signalling preference for incremental rather than rapid energy transition. Dow voiced opposition to aspects of the Inflation Reduction Act's hydrogen tax credits, particularly provisions aimed at transitioning away from fossil fuel-based hydrogen. In comments on EPA power plant regulations, Dow raised concerns over the feasibility of certain emissions standards. The company advocates for natural gas connected to carbon capture as a necessary component of the energy transition and has suggested delays in compliance mandates for natural gas utilities.

This pattern of policy positions suggests that while Dow supports climate action in principle, the company's practical advocacy consistently prioritises maintaining access to fossil fuel infrastructure and resisting accelerated timelines for emissions reductions. These stances align more closely with a prolonged energy transition scenario rather than the urgent action trajectory required to limit warming to 1.5°C or as close to 1.5°C as possible.

MANAGEMENT ALIGNMENT

Sustainability Targets Oversight

A. The Board

Dow has established board-level oversight of climate strategy through the Environment, Health, Safety & Technology Committee, chaired by Jacqueline C. Hinman with six independent directors. This committee guides the company's efforts on carbon emissions reduction, circular economy solutions, and climate protection, ensuring integration of sustainability considerations into business strategy and risk management.

The committee's 2024 actions included:

- Prioritising near-term investments in lower-risk, high-return projects while maintaining focus on long-term decarbonisation strategy.
- Strengthening alignment between performance and accountability by incorporating GHG emissions reduction metrics into executive compensation.
- Establishing detailed emissions reduction plans for the top 25 manufacturing sites.
- Committing to defining Scope 3 emissions for purchased goods, energy-related activities, and transportation.

B. The Management

At the management level, the CEO holds ultimate responsibility for sustainability strategy and engages regularly with the Board to ensure climate priorities are addressed in corporate decision-making. The Climate Steering Team, which reports to the CEO, oversees target-setting, progress monitoring, and cross-functional alignment on climate initiatives. The Program Management Office supports implementation of specific decarbonisation projects and coordinates sub-teams focused on areas such as technology development, low-carbon energy sourcing, and water resilience.

This governance framework provides appropriate structural oversight and clear accountability lines for climate strategy. However, the effectiveness of governance structures ultimately depends on the ambition of the targets being governed and the rigour applied to tracking progress against meaningful decarbonisation pathways.

7 This is an internal framework used by Dow, not and external index

Management Compensation

Dow incorporates sustainability metrics into both short-term and long-term executive incentive programs (see Figure 5), though the weight and effectiveness of climate-specific components warrant examination.

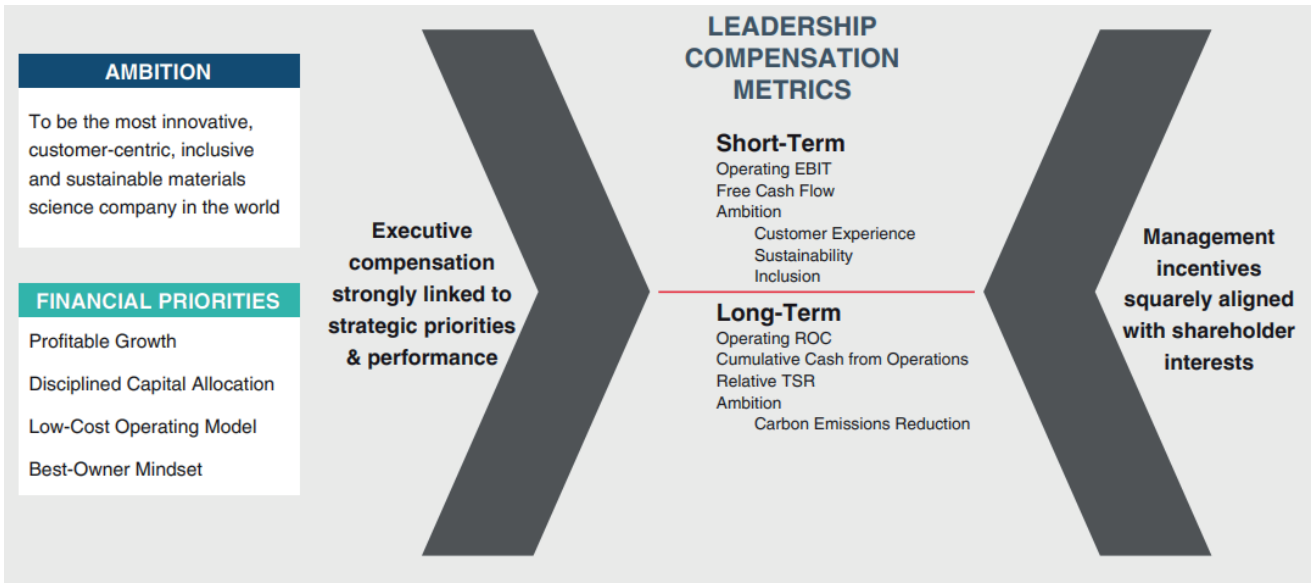

Figure 5: *Management Compensation. Source: Dow's 2025 Proxy Statement.*

A. Short Term Incentives (STI)

For short-term incentives, the Performance Award calculation includes Operating EBIT, Free Cash Flow, and "Ambition" metrics. The Ambition component encompasses three elements: customer metrics, sustainability metrics, and inclusion and diversity metrics. Within the sustainability portion, performance is measured by the World Leading Operations (WLO) Index , which itself comprises four sub-components: safety, worker health, environmental stewardship, and transportation stewardship.

Dow does not disclose the weighting of each component into the STI Performance Award calculation. However, on an equally-weighted basis, the environmental component would constitute approximately 2% of the STI Performance Award calculation. This minimal weighting suggests that climate performance has limited influence on annual bonus outcomes. The lack of disclosure regarding the specific weighting of each component and the threshold performance levels required for different payout levels obscures the incentive effect.

B. Long Term Incentives (LTI)

The LTI program demonstrates stronger integration of climate metrics. Under the 2022-2024 Performance Share Program, carbon emissions reduction represents 20% of the total LTI design. The remaining 80% comprises Operating Return on Capital (50%) and Cumulative Cash from Operations (30%). The carbon emissions reduction component targets the 5,000 $KTCO_2e$ reduction in Scope 1 and 2 emissions by 2030 from the 2020 baseline.

However, the LTI program structure includes a critical limitation: the combined payout from all components is capped at 200% of target. This cap creates a scenario where, if financial metrics achieve maximum performance (200% payout), the carbon emissions reduction component could become mathematically irrelevant to total compensation.

A more effective compensation structure would employ separate buckets for financial and non-financial (including climate) metrics, each with independent caps, or would assign higher weight to climate metrics. The current structure, while nominally incorporating climate performance, may provide insufficient incentive to prioritise Paris aligned emissions reductions.

Dow's compensation disclosure also lacks clarity on specific performance thresholds, the methodology for measuring carbon emissions reductions within the LTI timeframe, and how the achievement of the 2030 target in 2024 will be reflected in the current and future incentive programs.

In conclusion, Dow presents a solid governance framework that aims to ensure Dow's sustainability targets, supported by the inclusion of emissions reductions in executive compensation. However, greater clarity is needed to understand the level of incentives offered in the short and long term.

Risk Analysis

FINANCIAL IMPACT

External Policy Drivers

Dow faces increasing financial exposure to carbon pricing mechanisms across multiple jurisdictions, with the European Union Emissions Trading System (EU ETS) representing the most significant current cost. In 2024, 22% of Dow's Scope 1 emissions (approximately 5,830 $KTCO_2e$) were subject to the EU ETS. The company received 3.66 million free allowances and purchased an additional 2.17 million allowances to cover its verified emissions.

Based on IEA World Energy Outlook 2023 projections, Dow estimates that EU ETS annual compliance costs could increase by USD 112-168 million by 2030 compared to 2021-2023 average prices. This calculation assumes Dow generates 6,800 $KTCO_2e$ of Scope 1 emissions in the EU, minus anticipated free allowances of approximately 4,000 $KTCO_2e$ by the end of the decade.

However, this disclosed range may understate actual exposure. The calculation is based on 2021 emissions levels and does not appear to account for potential reductions in free allowance allocations under Phase V of the EU ETS (2026-2030), which includes more aggressive benchmarking and the Carbon Border Adjustment Mechanism (CBAM). The actual financial impact could exceed USD 200 million annually[8] if allowance prices trend toward the upper end of IEA projections or if regulatory changes accelerate beyond current expectations.

Beyond the EU ETS, Dow's operations are subject to additional carbon pricing schemes. In 2024 the Canadian Alberta Technology Innovation and Emissions Reduction system covered 4% of Scope 1 emissions (1,120 $KTCO_2e$ verified), with the company receiving 1.00 million allowances and purchasing 5,661 additional ones. The UK ETS covered 0.5% of Scope 1 emissions (130 $KTCO_2e$), with 112,936 allowances allocated and no additional purchases required. Federal and regional carbon taxes in Canada, Netherlands, and Queretaro, Mexico, added approximately USD 0.5 million in direct costs in 2024.

Physical Risk Drivers[9]

Dow's operations face substantial physical climate risks, particularly related to water stress and extreme weather events affecting key manufacturing sites. The company's 2024 CDP disclosure identifies acute water stress at three sites as presenting the highest financial risk: Freeport and Seadrift in Texas, and Bahia Blanca in Argentina.

For the Freeport site, Dow conducted detailed scenario analysis of drought impacts in the Brazos River basin, modelling variables including the Palmer Drought Severity Index, average annual demand shortages, overall volume reliability, and monthly period reliability. The analysis projects minimum financial impacts of USD 315 million and maximum impacts of USD 1.3 billion in the medium term (by 2030), with a "more likely than not" likelihood and medium-high magnitude. These figures reflect potential production losses from water scarcity, increased costs for alternative water sourcing (Dow purchases storage reserves from the Brazos River Authority at approximately USD 5 million for 65,000 acre-feet as short-term drought response), and operational constraints.

8 This represents approximately 8% of Dow's operating EBIT in 2024 as it stood at USD 2,6 million.
9 Source: Dow 2025 CDP Climate Change Response.

The Seadrift site faces water quality challenges during drought periods due to salt intrusion in the Guadalupe River, requiring leasing of additional water treatment capabilities estimated at USD 6 million annually. Elevated cooling water temperatures associated with drought conditions cause production curtailment estimated at approximately USD 8.8 million in lost revenue. Dow is investigating conversion from evaporative cooling ponds to cooling towers to reduce water withdrawal and improve operational resilience, though the capital cost and timeline for this conversion are not disclosed.

Acute physical risks from severe weather events, particularly hurricanes, pose significant threats to Dow's Gulf Coast operations. The company identifies seven sites with elevated hurricane exposure: St. Charles Operations and Plaquemine in Louisiana; and Freeport, Seadrift, Deer Park, Orange (Sabine River), and Texas City in Texas. Dow estimates that severe weather events could cause USD 50-400 million in annual EBIT impact from production losses, with likelihood assessed as "more likely than not" and medium magnitude.

Historical events validate these risk projections. Winter Storm Uri in 2021 resulted in approximately USD 400 million in financial impact in the first quarter of that year alone. Hurricane Ida in 2021 caused operational downtime leading to approximately USD 100 million in impacts.

The company's scenario analysis identifies low exposure risks from wildfires, cold waves, heat waves, flooding, and sea level rise under calculations based on current data, but acknowledges that these risks could increase over longer time horizons, as the data changes. The lack of quantified financial impacts for these lower-probability but potentially high-consequence events creates further uncertainty about Dow's comprehensive climate risk exposure.

Market Impact Drivers[10]

Dow identifies significant market opportunities in the transition to a low-carbon economy, particularly in the mobility, infrastructure, and packaging sectors. The company's scenario analysis using IEA STEPS and NZE projections for electric vehicle adoption suggests substantial revenue growth potential from products that enable vehicle electrification. Dow established its MobilityScience organisation specifically to capture opportunities in electric and hybrid vehicles, which require silicone, polyurethane, acrylic, and polyolefin materials for battery components, thermal management, lightweighting, and sound damping.

The company's "Decarbonize and Grow" strategy positions growth investments in lower-carbon products as generating both emissions reductions and revenue expansion. The Fort Saskatchewan Path2Zero project, despite its recent delay, exemplifies this approach (focusing on electrification), with expected annual revenue of USD 700 million to USD 1.2 billion by 2030 according to the company. This facility aims to demonstrate that net-zero Scope 1 and 2 emissions integration can be achieved while maintaining competitiveness, potentially providing a blueprint for future facility investments. However, it does not cover decarbonising feedstocks, i.e., replacing petrochemicals with emission-neutral inputs to decrease its downstream footprint.

10 Source: Dow 2025 CDP Climate Change Response.

At the same time, the financial returns from these market opportunities depend on multiple factors. Customer willingness to pay premium prices for lower-carbon products, the pace of regulatory mandates for low-carbon materials, competitor responses including potential faster commercialisation of alternative technologies, and macroeconomic factors affecting end-market demand all influence the realisation of projected revenues. The delay of the Path2Zero project itself demonstrates that market conditions can alter the timeline and economics of even strategically important investments.

Dow's product innovation pipeline includes solutions positioned to address customer sustainability goals, but the revenue contribution and margin profile of these products compared to conventional offerings are not disclosed. Several questions remain unanswered: What percentage of Dow's current revenue comes from products with demonstrable lower carbon intensity compared to alternatives? What is the growth rate of this lower-carbon product portfolio relative to the company's overall revenue growth? How do margins on sustainable products compare to conventional products, and how is this differential expected to evolve as volumes scale and technologies mature?

The company also faces market risks from potential demand destruction for certain product categories. Increasing regulatory restrictions on single-use plastics, extended producer responsibility schemes imposing costs on plastic packaging, and consumer preference shifts toward plastic alternatives could reduce demand for portions of Dow's polyethylene and packaging materials portfolio. While Dow's Transform the Waste initiative, targeting 3 million metric tons of circular and renewable solutions by 2030, aims to position the company for a circular economy, the financial investment required, expected margins on circular products, and competitive positioning relative to other companies pursuing mechanical and advanced recycling are not comprehensively disclosed.

RISK MANAGEMENT

External Policy Risk Management

Dow's strategy for managing carbon pricing risk centres on operational decarbonisation investments that reduce the need to purchase allowances. The company states it will invest approximately USD 1 billion annually across economic cycles to decarbonise assets. This investment level roughly corresponds to the potential carbon pricing costs, suggesting an economic logic where capital deployed for emissions reductions avoids future compliance costs. However, the effectiveness of this strategy depends on successful execution of decarbonisation projects, many of which rely on technologies that are not yet commercially proven at scale in the chemical industry, including clean hydrogen production, carbon capture and storage, and electrical cracking.

The delay of the Path2Zero Alberta project, announced in April 2025, illustrates the execution risk inherent in Dow's decarbonisation strategy. This project, intended to be the world's first net-zero Scope 1 and 2 emissions integrated ethylene cracker, was expected to eliminate 1,000 $KTCO_2e$ annually, representing approximately 20% of the 2030 reduction target. The delay, attributed to market conditions and the need to maintain financial flexibility, creates uncertainty about the timeline for achieving planned emission reductions and could increase interim carbon costs if emissions remain higher than planned while policy tightens.

Additionally, Dow's carbon pricing risk assessment does not appear to incorporate potential expansion of carbon pricing to Scope 3 emissions or indirect carbon costs embedded in feedstock prices as suppliers face their own carbon pricing obligations. The lack of analysis of these indirect effects represents another potential gap in the company's transition risk quantification.

Physical Impact Management

In 2024, Dow spent USD 19.8 million on drought response and mitigation measures across these water-stressed sites, including alternative water sourcing, treatment equipment leasing, and operational adjustments. While this spending demonstrates active risk management, the order-of-magnitude difference between annual mitigation costs (USD 19.8 million) and potential impact costs (USD 315 million to USD 1.3 billion) suggests that current measures may provide only partial protection against severe drought scenarios.

Dow's long-term water resilience strategy includes the Harris Reservoir expansion project in Freeport, which recently gained funding and approval. The company has established ambitious targets under its Water & Nature strategy:

- By 2030, the top 20 water-dependent sites will have water stewardship plans, with 10 sites achieving water resilience.
- By 2035, all sites will have water stewardship plans.
- By 2050, the top 20 sites will be water-resilient, and Dow will partner to conserve 50,000 acres of habitat.

However, the financial investment required to achieve these targets and the specific engineering solutions planned for each site are not comprehensively disclosed.

Also, in 2024, Dow implemented severe weather preparedness plans in anticipation of Hurricane Beryl, successfully maintaining operations and minimising shutdowns. These preparedness efforts, supported by approximately USD 30 million in annual spending on emergency services personnel (estimated 200 FTEs at USD 150,000 per year), helped mitigate potential impacts.

Dow's engineering response to physical climate risks includes designing facilities to better withstand severe weather and maintaining detailed emergency preparedness plans for all Gulf Coast facilities. The company conducts frequent drills and maintains rapidly deployable Emergency Operations Centers at each site. Following Winter Storm Uri, Dow demonstrated recovery capability by mobilising 2,000 maintenance personnel across Gulf Coast sites and restarting its LHC-9 cracker within 11 days, marking the first cracker in Texas to resume operations.

However, Dow's physical risk disclosure reveals notable gaps. The company uses scenario analysis based on RCP 2.6, 4.5, and 8.5 pathways with timeframes extending to 2050, but the financial impact quantifications provided focus primarily on near-term risks at specific sites. Comprehensive financial projections for the full portfolio of physical risks, including chronic risks such as rising temperatures affecting cooling operations, sea level rise impacts on coastal facilities, and changing precipitation patterns affecting water availability, are not systematically disclosed. The capital expenditures required to adapt Dow's global asset base to various climate scenarios, and the trade-offs between investing in adaptation versus relocating production to less climate-vulnerable regions, also receive limited discussion.

Strategic Assessment

CAPITAL ALIGNMENT

Dow has committed to investing an average of USD 1 billion annually across the economic cycle to decarbonise assets through 2050. In 2024, actual capital expenditures totalled USD 2.94 billion, with USD 1.42 billion (48%) classified as climate-aligned capital spending.

Climate-aligned investments in 2024 included:

- **Alberta Path2Zero Project:** Construction of the world's first net-zero Scope 1 and 2 emissions integrated ethylene cracker and derivatives facility, designed to eliminate 1,000 $KTCO_2e$ annually through hydrogen conversion and carbon capture and storage. However, this project has been delayed "until market conditions improve," creating uncertainty about timeline and ultimate completion.

- **Louisiana Steam and Power Replacement:** Completed replacement of obsolete assets at Plaquemine, reducing CO_2 emissions by 350 KT annually and NOx by 1.1 KT, while achieving a 30% reduction in water usage.
- **Flare Gas Recovery:** Projects at multiple U.S. Gulf Coast facilities allowing recovered gas to be recycled or used as alternative fuel, reducing Scope 1 and 2 emissions.

- **Renewable Energy Procurement:** Maintained 50% of purchased electricity from renewables, supported by 1,000 megawatts of installed capacity, primarily wind and solar.

Technology Strategy

Dow's technology development focuses on four primary pathways:

1. **Clean Hydrogen:** Development of integrated facilities to convert production byproducts into hydrogen and CO_2, with plans for a clean hydrogen plant at Terneuzen expected after 2030, projected to reduce emissions by 1,400 $KTCO_2e$ annually.

2. **Electrification:** Construction and energisation of an electric furnace test unit to validate conversion of steam-cracking furnaces from gas-fired to electric, representing a critical step toward decarbonising ethylene production.

3. **Advanced Nuclear:** Progression of small modular reactor (SMR) project at Seadrift, Texas in partnership with X-energy, including submission of construction permit application to the Nuclear Regulatory Commission in March 2025. The project will be 50% funded by the U.S. Department of Energy.

4. **Circular Feedstocks:** Acquisition of Circulus Holdings (USD 130 million) for mechanical recycling capacity of 50,000 metric tons per year, and partnerships with Mura Technology for advanced recycling.

Notably, while these initiatives demonstrate technological ambition, several concerns arise:

- **Timeline Uncertainty:** Many breakthrough technologies (e-cracking, SMRs, large-scale circular feedstocks) have implementation timelines beyond 2030, limiting contribution to near-term emissions reductions
- **Commercialisation Risk:** Electric cracker technology remains in pilot phase, with multi-megawatt demonstration "subject to investment support". Pathway from pilot to commercial deployment is unclear.
- **Cost Competitiveness:** Disclosure does not address the economic viability of low-carbon technologies relative to conventional processes, or how carbon price evolution will affect investment decisions.

TRANSITION APPRAISAL

Dow's climate transition performance in 2024 presents a mixed picture. On one hand, the company has achieved a 15% reduction in operating emissions since 2020 and delivered its 2030 reduction target ahead of time. The company has also increased climate-related capital expenditure to 48% of total capex and maintained strong renewable energy procurement.

On the other hand however, several factors constrain Dow's overall transition progress:

1. **Modest Ambition:** Meeting the company's ~15% Scope 1 and 2 emissions reduction would only amount to 4% reduction in total emissions if Scope 3 remained unchanged. As a result, the target aligns more closely with a 3°C warming scenario rather than the well-below 2°C pathway.

2. **Scope 3 Strategy Gaps:** Despite Scope 3 emissions comprising 73% of Dow's total footprint, the company has not established formal Scope 3 reduction targets. While Scope 3 emissions have declined by approximately 6% since 2020, this reduction is due to production volume declines rather than deliberate decarbonisation efforts. The lack of quantified emissions reductions from supplier and customer engagement initiatives makes it difficult to assess the effectiveness of Dow's value chain strategy.

3. **Execution Risks:** The April 2025 delay of the Path2Zero project (the cornerstone of Dow's decarbonisation strategy) raises significant concerns about execution capability and timeline feasibility. While the company cites market conditions as the reason for delay, this suggests that the decarbonisation strategy may be vulnerable to economic headwinds rather than being treated as a strategic imperative.

4. **Governance Effectiveness:** While Dow maintains executive compensation linkages to carbon reduction goals, the effectiveness of these incentives remains unclear due to the 200% cap on combined performance metrics. The potential for financial targets to overshadow climate objectives under this structure continues to warrant scrutiny.

5. **Policy Influence Concerns:** Dow's continued membership in trade associations with climate policy positions misaligned with the Paris Agreement raises questions about the company's commitment to climate action. The 2024 disclosures do not demonstrate meaningful progress in addressing this misalignment.

In conclusion, Dow's 2024 climate transition performance reveals a company making incremental progress on established pathways while failing to demonstrate the pace and ambition necessary for Paris Agreement alignment. The 15% Scope 1 and 2 reduction by 2030 target, rejection of science-based target validation, and the absence of a strategy for transitioning away from fossil fuel feedstocks over the long term, position Dow on a 3°C warming trajectory. This is insufficient for climate stability and potentially exposing the company to accelerating transition risks.

According to Planet Tracker, Dow will align with a 3°C pathway by 2030[11].

11 Based on the data accessed by Planet Tracker until November 2025.

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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. We aim to create a 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

As part of its Petchems programme, Planet Tracker is examining the transition plans of chemical companies covered by the Climate Action 100+ list (https://www.climateaction100.org/whos-involved/companies). Our goal is to provide investors with the key information and analysis they need to be able to hold leading chemical companies to account for the quality of their climate transition plans and their execution against those plans. We also encourage investors to use this information to engage effectively with these companies with the ultimate aim of driving the sustainable transformation of the chemical industry.

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