



September 2025

Index Carbon Analysis: DAX 40



C. Thompson, Dr. B. McNeil

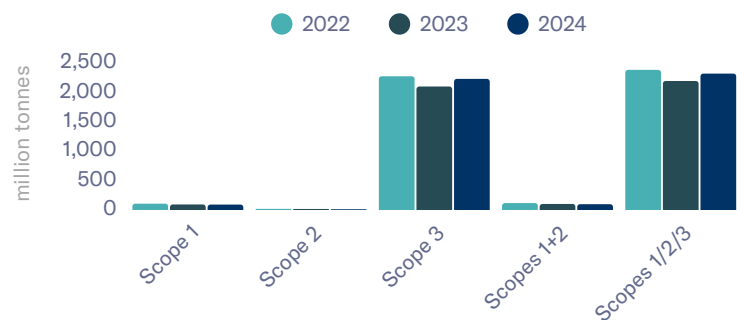
KEY FINDINGS

- Scope 1&2 emissions have continuously fallen from 2022 through to 2024
- In 2024, Scope 3 emissions increased from 2023 levels
- Just three companies account for ~83% of the index's Scope 1, 2 and 3 emissions.

① This series examines the carbon footprint of major indices, revealing key sector patterns, company-level drivers, and potential carbon liabilities under different climate scenarios.

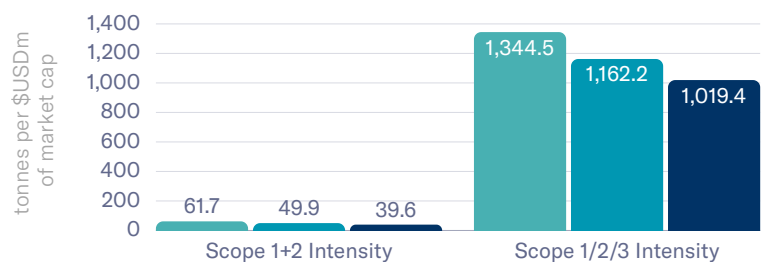
Emissions

DAX 40 companies' operational carbon output in 2024 (Scope 1 and 2) continued its reduction from 2022 levels. Meanwhile, Scope 3 emissions, driven by supply chain activity, ticked slightly higher, reversing the reductions achieved in 2023.



Emissions intensity

As markets have continued ticking up and emissions have remained moderate, the index's carbon intensity continued on its downward trend.



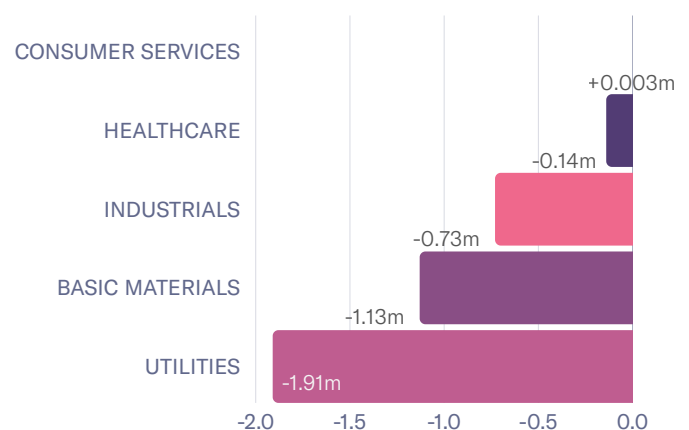
Sectors: Biggest movers in total emissions

from 2023 to 2024

Most sectors recorded Scope 1 and 2 reductions, with Utilities, Industrials, and Basic Materials showing strong signs of decarbonisation.

This progress was driven by companies such as RWE AG, Heidelberg Materials, E.ON SE, and BASF SE.

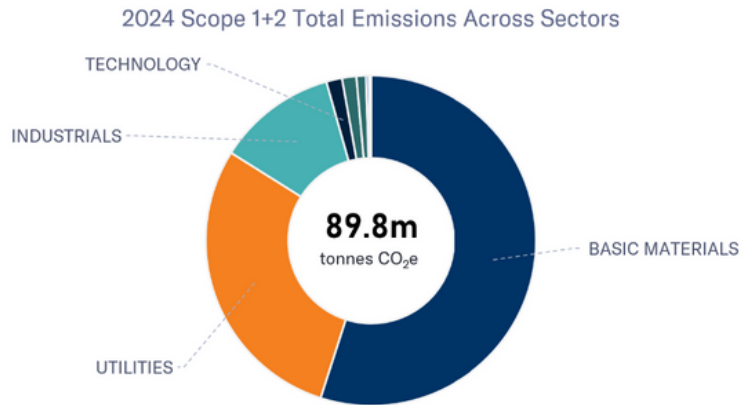
However, among these, RWE AG was the only company to also reduce Scope 3 emissions.





Total emissions across sectors

Basic Materials, Utilities, and Industrials remain the largest emitters, collectively accounting for ~96% of Scope 1 and 2 emissions across the index.

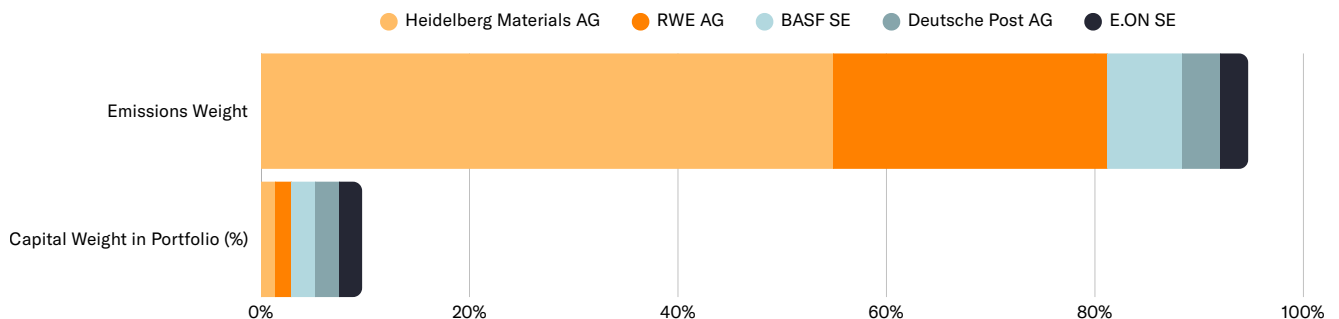


Capital vs emissions weight of top 5 emitters

Scopes 1 and 2 (2024)

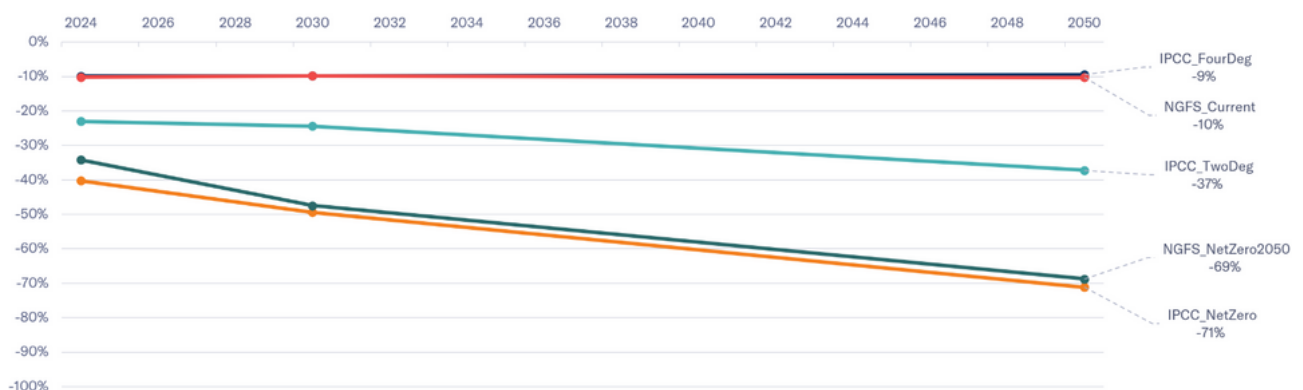
Just five companies account for approximately 95% of Scope 1 and 2 index emissions, yet represent only ~10% of the index by market capitalization, underscoring a major emissions concentration risk.

However, when Scope 3 emissions are included, Siemens Energy (58%), Siemens AG (14%), and Airbus (11%) together account for the majority of index emissions.



Potential carbon liability (PCL)

Across the index, we observe a potential carbon liability (PCL) of up to 71% under the IPCC Net Zero 2050 scenario, with limited potential loss of ~9–10% under the IPCC Four Degree and NGFS Current Policies scenarios. The IPCC Two Degree scenario shows moderate exposure, with a 24% PCL in 2030 and 37% in 2050.



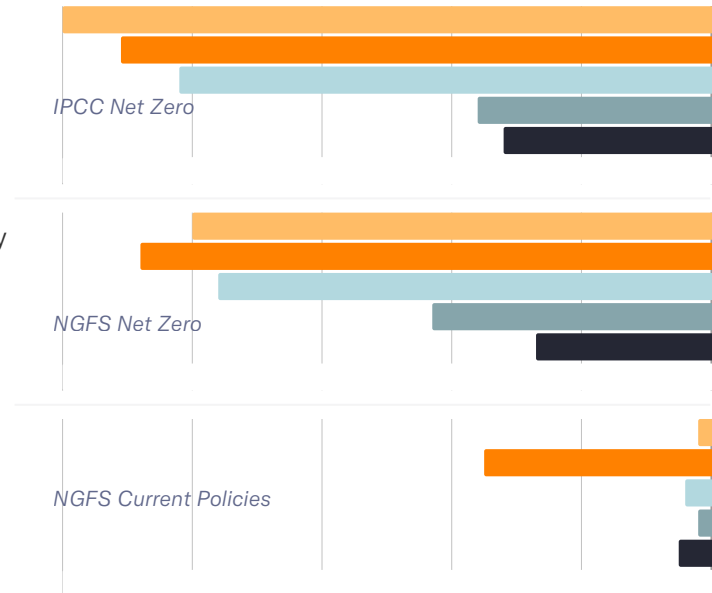


Potential carbon liability (PCL) across sectors

2024

As expected, emissions concentration translates into carbon risk. The Utilities and Industrials sectors dominate potential liability across all climate scenarios, particularly under Net Zero-aligned pathways, with Industrials also showing sizable exposure under the Current Policies scenario.

Utilities
Industrials
Consumer Durables
Finance
Technology



Targets, timelines, and trade-offs: Reading Germany's decarbonisation arc

For the first time, renewables supplied more than 60% of Germany's public electricity in 2024, a symbolic tipping point in Europe's energy transition.

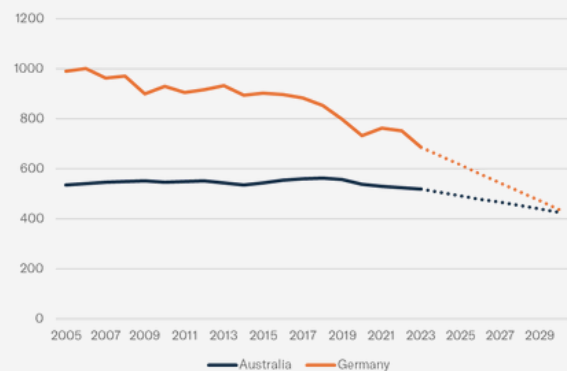
Structural policy is reinforcing this trajectory. Roughly 40% of the EU's emissions are now captured under the Emissions Trading System (ETS), anchoring Germany's path toward its 2045 greenhouse gas neutrality goal.

Compared with Australia, Germany's climate targets are both tougher and earlier: a minimum 65% cut from 1990 levels by 2030 and net zero by 2045, versus Australia's 43% cut from 2005 levels by 2030 and net zero by 2050.

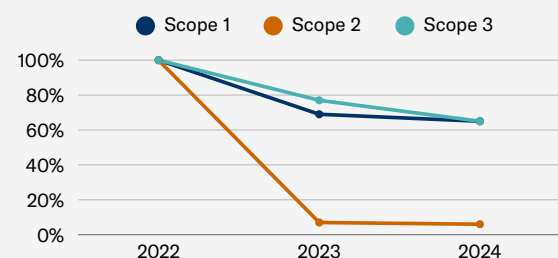
Germany has also moved faster. ASCOR's sovereign emissions forecasts suggest Germany and Australia will be on par by 2030, despite their different starting points and policy frameworks.

This decarbonisation story is exemplified by RWE AG. The company has delivered significant emissions reductions in recent years, particularly under Scopes 1 and 2. But material progress on Scope 3 remains ahead, with the ETS providing a strong regulatory guidepost.

Sovereign Decarbonisation: Germany v Australia



RWE AG: Emissions rebased to 2022



**EMMI**

| Research

MARKET SNAPSHOT

Methodology notes: Our machine learning models achieve strong accuracy across all scopes, with WMAPE (Weighted Average Median Absolute Percentage Error) ranging from 15.3% to 18.1%.

For detailed methodology and validation metrics, read our white paper: emmi.io/newsroom/white-paper-nov-2024

This analysis applies to the current SSE 50 constituents, using market values as of each year-end to determine index weightings.

Authors

Callum Thompson**CARBON FINANCIAL ANALYST**

callum.thompson@emmi.io

Dr. Ben McNeil**HEAD OF CLIMATE & DATA SCIENCE**

ben.mcneil@emmi.io

About Emmi Solutions

Emmi creates climate risk solutions for investors. We provide emissions, transition, and physical risk data for every company and investment - supporting 100% portfolio coverage across both private and public markets for all asset classes.

With our comprehensive climate risk data set, we deliver the transparency and customisation needed to power investment decisions, meet climate reporting obligations, and align with investor mandates.

Emmi is backed by a team of climate and finance experts.

Emmi believes that a low carbon economy is possible, and that properly incentivising and mobilising capital is the fastest and most cost-effective way to reach Net Zero and beyond.

Incorporating the cost of carbon into every decision will enable the finance sector, and its customers, to efficiently allocate resources towards this goal, which will accelerate decarbonisation.

To achieve this, and to meet regulatory requirements, there is a need for a broad spectrum of quality carbon emissions data and climate risk analysis. We have built Emmi to solve that problem.