



The Carbon Impact of Biotech & Pharma

PROGRESS TO THE
UN RACE TO ZERO

Produced by My Green Lab in collaboration with ICE (which acquired Urgentem), revised and updated with new data and analysis, November 2022.

Executive Summary

The following study is published by My Green Lab, the leading non-profit organization promoting sustainability in science, with support from Intercontinental Exchange Inc. (ICE) which acquired Urgentem in July 2022, an award-winning independent provider of emissions data, climate risk analytics and advisory services. This study is an update to the 2021 study, the first to quantify scope 1 and 2 as well as scope 3, across the industry's entire value chain. The study leverages data from 231 publicly-listed companies and 151 privately-held companies to produce a comprehensive profile of the carbon emissions of the biotechnology and pharmaceutical industry, including a comparison of that profile to other industry sectors. The report tracks the industry's progress since 2015 and evaluates alignment with achieving the Paris Climate Agreement.

The Biotech and Pharma industry is a significant contributor to global climate change and therefore must be part of the global climate solution. While there has been progress in establishing targets and tracking progress to those targets, overall, the industry's targets are simply not ambitious enough to keep warming below the 1.5 degrees celsius threshold that the UN's Intergovernmental Panel on Climate Change (IPCC) warns earth cannot cross.

Summary of Key Findings

01

While the largest companies by revenue have established goals and continue to reduce scope 1, 2 and 3 emissions, 91% of 75 public companies analyzed in the sector still do not have climate commitments aligned with a 1.5 degrees celsius world.

02

The total carbon impact of public companies in the industry sector increased 15% to 227 million tCO₂e; adding in private companies increases that by another 15% for a total carbon impact of 260 million tCO₂e.

03

Scope 3 emissions are 4.3 times higher for public companies and 3.3 times higher for private companies versus scope 1 and 2 combined with most of that impact coming from purchased goods and services and use of sold goods.

04

The largest companies by revenue are making rapid progress in adopting the UN Race to Zero. 46% of the sector by revenue has committed to the campaign, an increase from 31% at this time last year. Progress towards the Breakthrough Outcome has also been swift, with over 53% of pharma and med tech companies in the campaign starting a My Green Lab Certification, 23% at a global scale.



The GHG Protocol Corporate Accounting and Reporting Standard¹ classifies carbon emissions into three different scopes, divided by direct and indirect emissions:

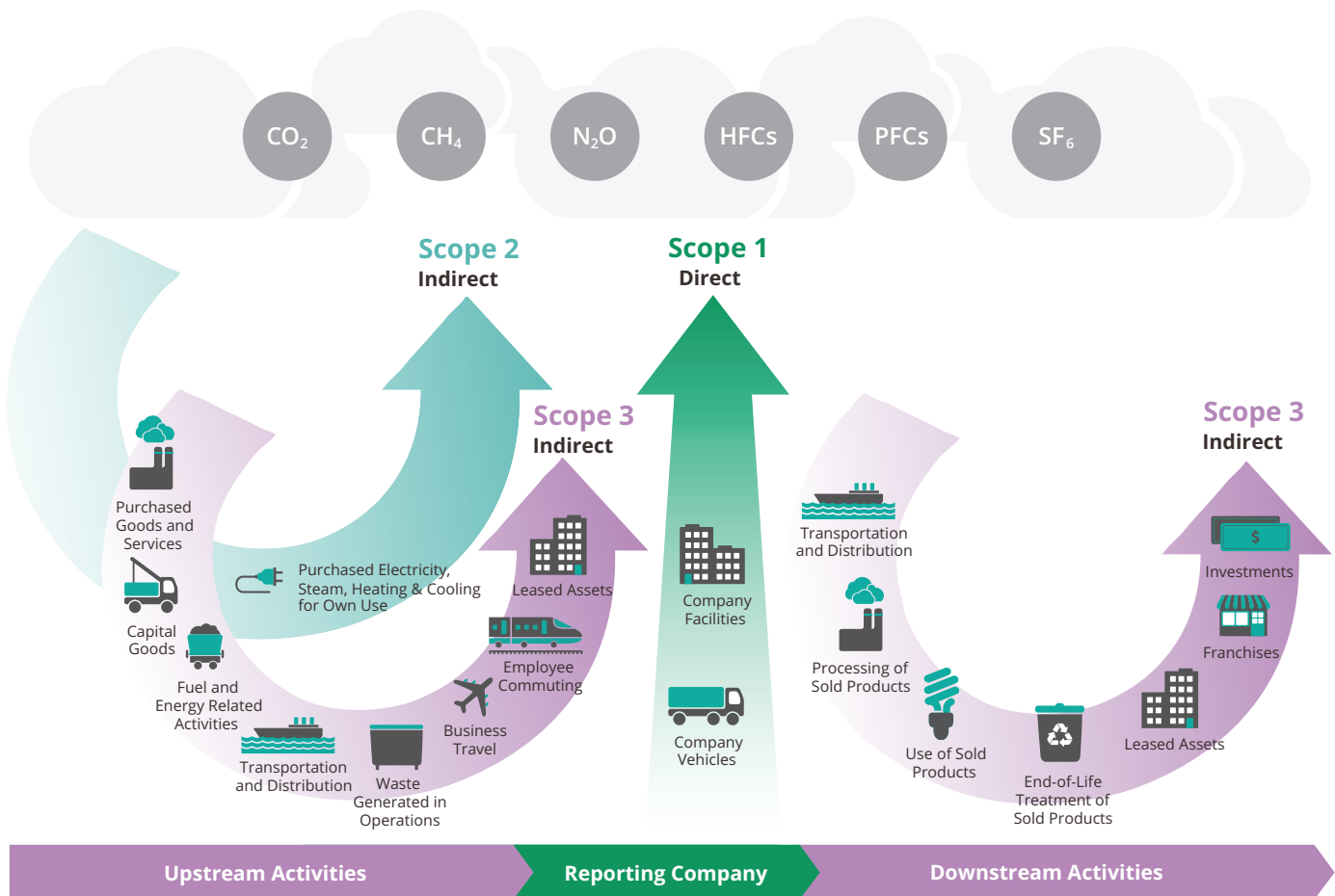
Direct Emissions:

Scope 1 includes direct emissions from owned or controlled sources

Indirect Emissions:

Scope 2 includes carbon emissions from purchased energy consumed by the reporting company

Scope 3 includes all other indirect emissions upstream or downstream in a company's value chain



Credit: Greenhouse Gas Protocol — Corporate Value Chain (Scope 3) Accounting and Reporting Standard

For most industries — and as this study found, biotech and pharma is no exception — scope 3 emissions are significantly larger than scope 1 and 2 combined. To understand the true carbon impact of an industry, it is therefore critical to evaluate the entire carbon footprint, including scope 3 emissions in the upstream and downstream value chain.

¹ Corporate Value Chain (Scope 3) Accounting and Reporting Standard https://ghgprotocol.org/sites/default/files/standards/Corporate-Value-Chain-Accounting-Reporting-Standard_041613_2.pdf



About My Green Lab

My Green Lab is a non-profit environmental organization with a mission to build a global culture of sustainability in science. The organization is the world leader in developing internationally recognized sustainability standards for laboratories and laboratory products, bringing sustainability to the community responsible for the world's life-changing medical and technical innovations. Laboratories are one of the most resource-intensive spaces in any industry, but they don't have to be. By introducing both a new perspective and proven best practices within a carefully crafted framework, My Green Lab has inspired tens of thousands of scientists to make a positive change in their labs by reducing the environmental impact of their work.

My Green Lab Certification is the global gold standard for laboratory sustainability best practices and the cornerstone of My Green Lab's mission to build a global culture of sustainability in science. Selected as a key indicator of progress for the UNFCCC High-Level Climate Champion's 2030 Breakthrough campaign, the program covers fourteen topics related to energy, water, waste, chemistry/materials, and engagement; and provides both scientists and the teams that support laboratories with actionable strategies to make real and impactful environmental changes. To date, My Green Lab has supported over 1,200 labs worldwide, engaging over 12,000 scientists from 36 different countries.

The **ACT Environmental Impact Factor Label** is the world's premier eco-label for laboratory products. The program ensures Accountability, Consistency, and Transparency in the reporting of environmental impact data to enable sustainable laboratory procurement. It was designed by both scientists and procurement specialists to provide clear, third-party verified information about the sustainability profile of laboratory products. By providing needed transparency around manufacturing, energy and water use, packaging, and end-of-life impacts, ACT makes it easy to choose environmentally preferable products and to reduce the carbon impact of laboratory supply chains.

About Intercontinental Exchange Inc. (ICE)

My Green Lab based this evaluation on reported and modelled emissions data through a partnership with ICE (which acquired Urgentem in July 2022), an award-winning independent provider of emissions data, climate risk analytics and advisory services. ICE's datasets are used primarily by financial institutions such as the European Central Bank for Climate Stress Testing, and other public bodies.

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Introduction

The global biotechnology and pharmaceutical industry play a crucial role in advancing world's medical and technical innovations. However, the industry also has a significant carbon footprint. There are likely millions of laboratories in the world, each consuming up to ten times the energy and four times the water of a typical office space.²

The total carbon impact of the healthcare industry is even more extensive. A 2019 study found that the climate footprint of healthcare was two gigaton of carbon dioxide equivalent, representing 4.4% of total global emissions.³ Of that, 71% of emissions were derived from the healthcare supply chain, which includes the biotech and pharma industry, underlying the importance of carbon reductions for this specific industry sector. As reported in last year's study, the total amount of carbon emitted annually by public companies in the biotech and pharma industry is at least 197 tCO₂e, more than the semiconductor or forestry and paper industry sector.⁴

Further, the market is growing rapidly. The global biotechnology market size was estimated at USD \$1.0 trillion in 2021 and is expected to grow at a compound annual growth rate (CAGR) of 13.9% from 2022 to 2030, reaching \$3.9 trillion by 2030.⁵ Pharmaceutical manufacturing was estimated at \$459 billion in 2021 and is expected to grow at CAGR of 15.9% from 2022 to 2030, reaching \$1.59 trillion by 2030.⁶

Given the carbon intensity and rapid growth of the biotechnology and pharmaceutical industry sector, it is critical and timely to examine the industry's carbon profile as well as key opportunities to improve it. This study evaluates a robust dataset of 231 publicly-listed and 151 privately traded companies to compare its intensity and total emissions to other carbon-intensive industry sectors.⁷ This evaluation excludes the substantial impact of government labs, universities, and healthcare systems. Therefore, the total carbon emissions of the entire healthcare and scientific research industry are, in fact, much higher than what is included within the scope of this study.

This study is the first to evaluate the upstream and downstream value chain of biotech and pharma by quantifying scope 3 emissions for both public and private companies. This analysis then identifies critical hotspots that are opportunities for positive change while charting the industry's progress towards the UNFCCC Race to Zero and the UNFCCC 2030 Breakthrough Outcomes campaign.

The conclusions are clear: the fast-growing global biotech and pharmaceutical industry is a significant contributor to climate change. On a positive note, the industry is beginning to move in the right direction on carbon intensity, with some of the largest companies demonstrating leadership on emissions reductions. Further, an increasing number of

- 2 Laboratories for the 21st Century: An Introduction to Low-Energy Design (2008) <https://www.nrel.gov/docs/fy08osti/29413.pdf>
- 3 Healthcare Without Harm and ARUP (2019) Health Care's Climate Footprint – How the Health Sector Contributes to the Global Climate Crisis and Opportunities for Action (2019) https://noharm-global.org/sites/default/files/documents/files/5961/HealthCaresClimateFootprint_090619.pdf
- 4 The Carbon Impact of Biotech and Pharma: A Roadmap to 1.5°C (2021) <https://www.mygreenlab.org/blog-beaker/my-green-lab-measures-carbon-impact-of-biotech-and-pharma>
- 5 Biotechnology Market Size, Share & Trends Analysis By Technology <https://www.grandviewresearch.com/industry-analysis/biotechnology-market>
- 6 Pharmaceutical Manufacturing Market Size Will Achieve USD 1,599.9 Billion by 2030 growing at 15.9% CAGR <https://www.acumenresearchandconsulting.com/pharmaceutical-manufacturing-market>
- 7 This study used publicly reported and inferred data, outlined in the methodology section, for 234 companies classified as Biotechnology and Pharmaceutical by the Sustainable Accounting Standards Board (SASB) Standard Industry Classification System (SICS) sub-category.



companies are adopting zero carbon targets that are aligned with a 1.5 degree world. A majority of major actors in the sector by revenue have joined the UN Race to Zero with the majority of Race to Zero members adopting the My Green Lab Certification, signaling rapid adoption and convergence around the 2030 Breakthrough Outcome.⁸ While these are important leading indicators of progress, more ambitious targets must be set and backed up by rapid short-term and medium-term action in order for the industry to prevent warming above a global average of 1.5 degrees celsius, the emission targets that the United Nations IPCC estimates will avoid the worst environmental and social impacts of climate change.

Fortunately, the leading companies in the sector are already driving year-on-year carbon reductions, and the biotech and pharma industry is in position to lead the world in achieving the UNFCCC Race to Zero. Biotech and pharma make incredible contributions nearly every day to the advancement of health and society. Unique to the industry sector, science has the organizational resources, innovative culture, and mission-focused drive for companies to lead the global fight against climate change. By becoming a global leader on addressing climate change, starting with its own footprint, biotech and pharma has the potential to inspire other industry sectors to follow in their footsteps.

⁸ 2030 Breakthroughs: Upgrading Our Systems Together <https://climatechampions.unfccc.int/upgrading-our-systems-together/>





KEY FINDINGS

01

While the largest companies by revenue have established goals and continue to reduce emission across scope 1, 2, and 3, 91% of 75 publicly traded companies analyzed in this the sector still do not have climate commitments aligned with a 1.5°C world.

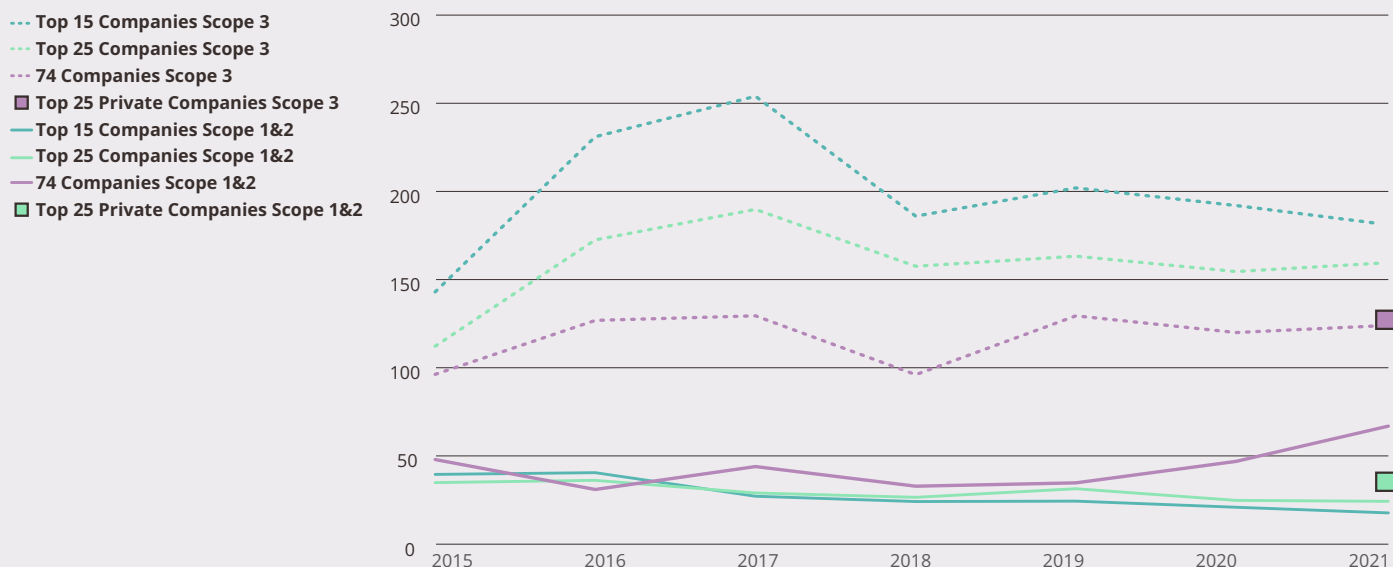
While the biotechnology and pharmaceutical industry sector has a significant global impact and is carbon intensive when compared to other sectors, the trends over the past six years show some positive signs of progress. This is particularly true for the largest biotech and pharma companies by revenue, a finding that was highlighted in the previous 2020 Carbon Impact of Biotech and Pharma report.

Scope 1 and 2 Emissions

This year's study found that the top 25 companies have continued to reduce their annual scope 1 and 2 carbon intensity by an average of 5.23% per year since 2015. The top 15 companies have performed even better, reducing carbon emissions by

Figure 1: 6-Year Industry Intensity Trends

Biotech and Pharma: Carbon Intensity (tCO₂e/\$M Rev.), 2015-2021





an average of 9.02% year-on-year. When evaluating a broader cross section of the industry, 75 companies with the best quality data available for the past 6 years, emissions have increased for scope 1 and 2, particularly over the past two years.⁹ Private Companies, which were only added to the evaluation this year, were slightly higher than the Top 15 or Top 25 for scope 1 and 2.

Scope 3 Emission

Looking over this same time period you can see that the top 25 and top 15 companies scope 3 emissions appear to have increased, but this is most likely due to an increase in reporting in 2016 and 2017. Since then, emissions have begun to decline. For the larger dataset of 75 companies, reported scope 3 intensity also appears to have increased slightly over the six-year time period. Private companies, represented by the squares in Figure 1, track the larger dataset of publicly listed companies for scope 3. As more companies fully report and the methodologies for reporting become more standardized, Scope 3 emissions are likely to increase particularly, for the larger 75 company dataset.

While the largest companies are leading with ambitious carbon targets and we are starting to see year-on-year reductions, the rest of the industry is lagging. Of the 75 companies in our dataset for which the best data is available, only 9% have targets aligned with a 1.5°C warming scenario by 2030. The remaining companies are aligned with 2-3°C warming or 3-5°C warming, which is simply insufficient to avoid the most devastating impacts of global climate change.

Figure 2: 2030 Target Temperature Alignment¹⁰

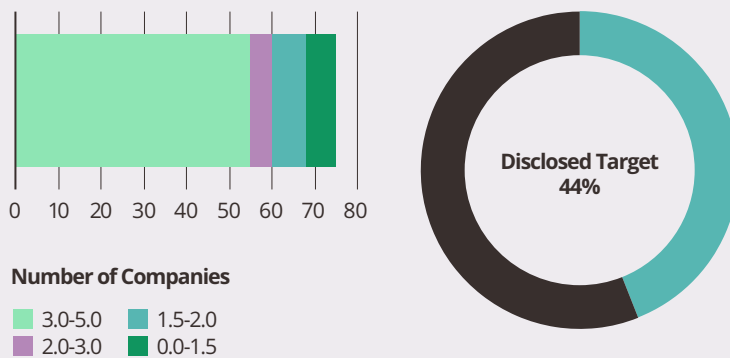
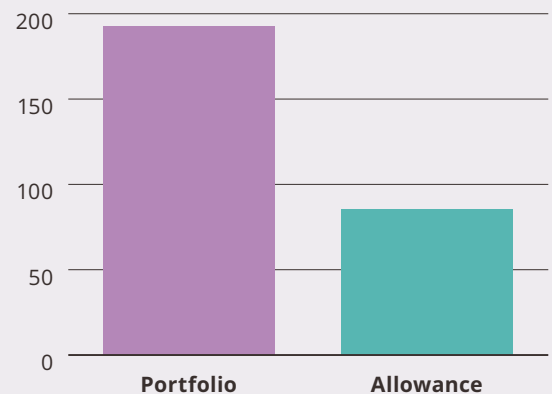


Figure 3: IPCC 1.5°Low Energy Scenario Reductions Needed by 2030¹¹



Even if every company in the biotech and pharma industry sets ambitious carbon reduction targets, these commitments must be backed up by tangible and measurable progress to be credible. The industry must rapidly move beyond commitment to action. To meet the IPCC's 1.5°Low Energy Demand Scenario by 2030, the industry must achieve an annual carbon reduction of 9.28% per annum, up from 7.03% last year, including scope 3 emissions. The longer companies wait to begin reducing emissions, the steeper their annual reductions must become to reach net zero, and the more irreversible and cascading impacts of climate change are locked in.

⁹ Only 75 companies analyzed have historical data for the past 6 years.

¹⁰ Sourced from Urgentem Element6 Climate Analytics Platform

¹¹ Sourced from Urgentem Element6 Climate Analytics Platform



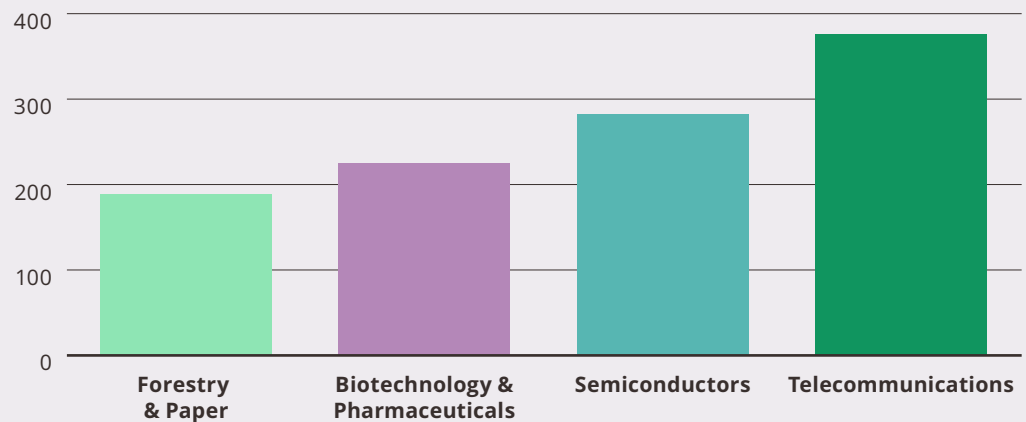
02

The total carbon impact of public companies in biotech and pharma increased 15% to 227 million tCO₂e; adding in private companies increases that by another 15%, for a total impact of 260 million tCO₂e.

Based upon an evaluation of publicly reported and inferred data for the scope 1, 2, and 3 emissions of 231 publicly-listed companies classified as biotechnology and/or pharmaceutical, the total carbon output of the industry has increased 15% from 197 million tCO₂e in 2020 to 227 million tons in 2021. Adding in private companies increases the total another 15% to 260 million tCO₂e.

Last year's report found that total emissions for the biotech and pharma industry are higher than emissions of both the forestry and paper industry and the semiconductor industry, which are widely regarded among the most carbon-intensive industries. Since then, emissions growth from the semiconductor industry has accelerated, and has grown faster and have now exceeded biotech and pharma in total carbon output.

Figure 4: Total Sector Annual Carbon Output Comparison
Total Annual Emissions (tCO₂e) in Millions



Considering only scope 1 and 2 data, category 1 data (the best quality data) for the biotechnology and pharmaceutical industry is relatively carbon intensive, ranking 22nd of all industries in 2021, and down from 17th in 2020. While the industry needs to evaluate and address the entire value chain, emissions from scope 1 and 2 remain crucial opportunities for carbon savings. To continue achieving meaningful emissions reductions, biotech and pharma must not ignore the impact of their operations. However, scope 1 and 2 emissions are only a portion of the industry's overall carbon footprint when accounting for scope 3 emissions, which must be addressed to make meaningful emission reductions along the industry's whole value chain.



03

Scope 3 emissions are 4.3 times higher for public companies and 3.3 times higher for private companies than scope 1 and 2 combined with most of that impact coming from purchased goods and services and use of sold goods.

The carbon impact of indirect emissions in a company's value chain is generally higher than emissions captured in scope 1 and 2. Scope 3 emissions are 4.3 times larger than scope 1 and 2 emissions combined for publicly-listed companies, and 3.3 times larger for privately-owned companies. While this may seem like a high ratio, in fact, it is low in comparison to other industry sectors which have a median ratio of 10.4, more than twice that of biotech and pharma.

Therefore, when factoring in scope 3 emissions, and looking at the best quality data, the biotechnology and pharmaceutical industry appears less carbon intensive as compared to other intensive industries, ranking only 32nd, up from 33rd out of 38 last year. In contrast, when scope 3 is excluded from this emission data, the biotechnology and pharmaceutical industry ranked 22nd out of 38.

This difference may be the result of inconsistent approaches taken for evaluating scope 3 emissions throughout this industry (and others). Determining exactly how biotech and pharma compares on scope 3 to other industry sectors will require additional research and engagement from companies in the sector. Based upon an evaluation of 75 companies with the best quality data, emissions are highly variable from one company to the next: total reported scope 1, 2 and 3 emissions range from 41 metric tonnes per million USD in Revenue (tCO₂e/\$m) to over 1,370 tCO₂e/\$m.

The variability may also be explained by the scope 3 calculation methodology, company's location, the type of research and manufacturing that a company is engaged in, as well as whether and how often a company utilizes contract manufacturing organizations and contract research organizations, which continues to be a growing trend.¹² Outsourcing research and manufacturing allows for increased capacity and specialization without adding to the company's operational overhead or (scope 1 and 2) carbon footprint. This underscores the importance of evaluating total emissions across a company's entire supply chain, not just the direct emissions.

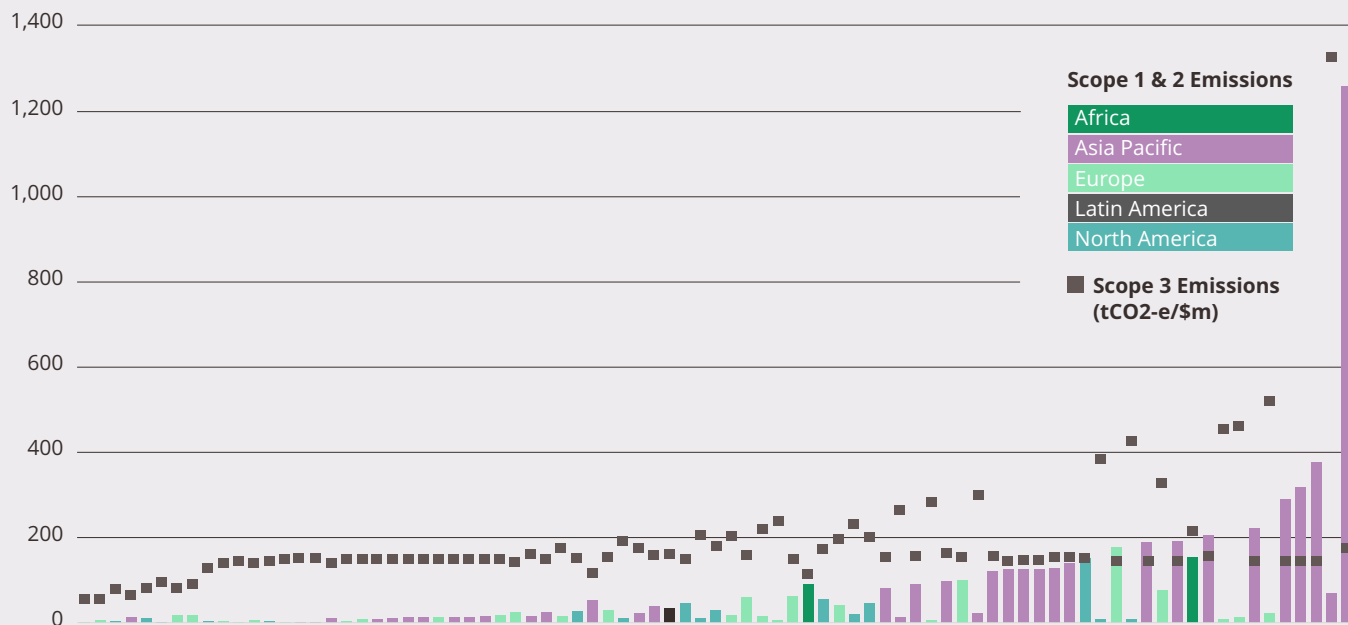
Based on reported emission data from 2015–2021, the biotechnology and pharmaceutical industry has only recently begun to report scope 3 emission data in a widespread and meaningful capacity. Reported Scope 3 emissions have increased significantly during 2015 and 2016 as the largest companies by revenue began to include scope 3 in their reporting. There is a high degree of variability between the intensity of scope 3 emission data, ranging from 34.64 tCO₂e/\$m at the lowest end to 850.62 tCO₂e/\$m at the high end.

Similar to the findings in last year's report, there is a correlation between region and carbon intensity. North American and European companies tend to have much lower

¹² Current Trends and Strategic Options in the Pharma CDMO Market (2019): <https://www.pwc.de/de/gesundheitswesen-und-pharma/studie-pharma-cdmO-market.pdf>



Figure 5: Company Level Comparison of Scope 1, 2 and Scope 3
Relative Carbon Intensities, Selected Pharma and Biotech Dataset



carbon intensities for scope 1 and 2 (27.5 tCO₂e/\$m, on average) than their Asia-Pacific counterparts, (123.7 tCO₂e/\$m, on average). The regional difference may in part be explained by the tendency of North American- and European-headquartered companies to focus on research and development in-house while outsourcing manufacturing to Asia Pacific particularly for Active Pharmaceutical Ingredients (API's).¹³ Companies with headquarters in the Asia-Pacific Region also tend to have more carbon-intensive energy grids, particularly in China and India, though this is improving.¹⁴ Further, the quality of reporting may influence these contrasts: currently, only the largest European and US biotech and pharmaceutical companies report their scope 3 data. For most of the companies headquartered in Asia Pacific and the Middle East, scope 3 data have been inferred.¹⁵

¹³ Decarbonising Healthcare Supply Chains, Recommendations on how to drive emissions reductions across healthcare supply chains (2022)

¹⁴ Assessing China's Energy and Climate Goals (2021) <https://www.americanprogress.org/issues/security/reports/2021/05/06/499096/assessing-chinas-energy-climate-goals/>

¹⁵ Please see Carbon Accounting Methodology Section for details on how Scope 3 has been inferred

¹⁶ Scope 3 greenhouse gas emissions calculation: guidance for the pharmaceutical industry (2020) <https://pscinitiative.org/resource?resource=779>

Ultimately, sector-level reporting standardization that guides this industry's carbon disclosure practices, particularly of scope 3 emissions, are necessary to better inform comparisons between companies and enable performance benchmarking. The Pharmaceutical Environmental Group has made progress on standardizing scope 3 reporting through a guidance document published in 2020, though companies still have considerable flexibility regarding in how they report and use the guidance.¹⁶ A common calculation methodology using Environmentally-Extended Input Output (EEIO) emission factors based on national GHG data can only generate a rough estimate. Product-level emission data would be more accurate and could be shared between companies that have similar supply chains. This challenge in biotech and pharma is shared by other sectors and is an opportunity for continued industry collaboration.



Figure 6: Scope 3 Sector Materiality Assessment

Scope 3 Sector Profile		Biotechnology & Pharmaceuticals (Private)	Biotechnology & Pharmaceuticals	Medical Technology	Apparel & Textiles	Health Care Retail
1	Purchased Goods and Services	53%	52%	40%	35%	43%
2	Capital Goods	7%	8%	8%	2%	8%
3	Fuel- and Energy-Related Activities	2%	2%	2%	1%	3%
4	Upstream Transportation and Distribution	3%	3%	3%	3%	3%
5	Waste Generated in Operations	1%	1%	0%	0%	0%
6	Business Travel	1%	1%	1%	0%	1%
7	Employee Commuting	1%	1%	1%	0%	4%
8	Upstream Leased Assets	1%	1%	1%	0%	1%
9	Downstream Transportation and Distribution	4%	3%	8%	2%	5%
10	Processing of Sold Products	3%	3%	3%	12%	3%
11	Use of Sold Products	22%	24%	28%	41%	25%
12	End-of-Life Treatment of Sold Products	0%	0%	0%	2%	0%
13	Downstream Leased Assets	0%	0%	0%	0%	0%
14	Franchises	0%	0%	2%	0%	2%
15	Investments	1%	1%	1%	0%	2%

The high variability in emissions between companies cited above demonstrates the importance of more consistent reporting. However, the primary contributors to scope 3 emissions across the biotechnology and pharmaceutical industry are clear and consistent with last year's report: Category 1, 'Purchased Goods and Services' dominates for public companies at 52%, while Category 11, 'Use of Sold Goods', comes in second, at 24%. Category 2, 'Capital Goods' also makes a smaller contribution at 8% of the total. Private companies are similar with 53% from 'Purchased Goods and Services' and 22% from 'Use of Sold Goods'.

This scope 3 materiality distribution is consistent with industries that have energy intensive operations similar to biotech and pharma, including medical technology, apparel and textiles, and healthcare retail. As in those industries, scope 3 reductions should focus on the supply chain of purchased goods and services and the carbon impact of using those goods and services. Decarbonizing scope 3 emissions will require companies to engage their customers and suppliers to reduce their emissions through energy efficiency, waste reduction, and resource efficiency while encouraging the purchase of renewable energy and/or carbon offsets.¹⁷

¹⁷ Decarbonising Healthcare Supply Chains, Recommendations on how to drive emissions reductions across healthcare supply chains (2022). <https://a.storyblok.com/f/109506/x/1765b17e71/smi-health-systems-supply-chains-whitepaper.pdf>



04

The largest companies by revenue are making rapid progress in adopting the UN Race to Zero. 46% of the sector by revenue has committed to the campaign, an increase from 31% at this time last year. Progress towards the Breakthrough Outcome has also been swift, with over 53% of pharma and med tech companies in the campaign starting a My Green Lab Certification.

Another positive trend is the growing number of companies in the industry that are committing to science-based targets and joining the UN Race to Zero campaign.¹⁸ The UNFCCC High Level Climate Champions' 2030 Breakthroughs report outlines three measurable and achievable goals for the short, medium, and long term to drive industry decarbonization. These goals include:

- 'Breakthrough Ambition', when at least 20% by revenue of sector-specific key actors must join the Race to Zero by 2021;
- 'Breakthrough Outcome' that indicates a key, measurable leverage point to drive system changes by 2030;
- the endgame target of net zero by 2050 at the latest.

At the time this report was published, 46% of the largest companies by revenue in pharma and med tech have committed to the Race to Zero,¹⁹ up from last year's 31%.²⁰ These companies have pledged to cut total carbon emissions by 50% by 2030 and reach net zero emissions by 2050 or sooner.

¹⁸ <https://racetozero.unfccc.int/>

¹⁹ This study uses the SASB SICs sub-category of Biotechnology and Pharmaceutical, while the UN Race to Zero defines the sector as any company in Pharma and Medtech over \$1 billion in revenue. While there is considerable overlap, this study excludes medical technology and supplies to avoid double counting the supply chain in the total sector evaluation.

²⁰ Pharma & Medtech announce critical climate breakthrough (2021) <https://racetozero.unfccc.int/pharma-med-tech-announce-critical-climate-breakthrough/>

Figure 7: UNFCCC Race to Zero Systems Transformation Model

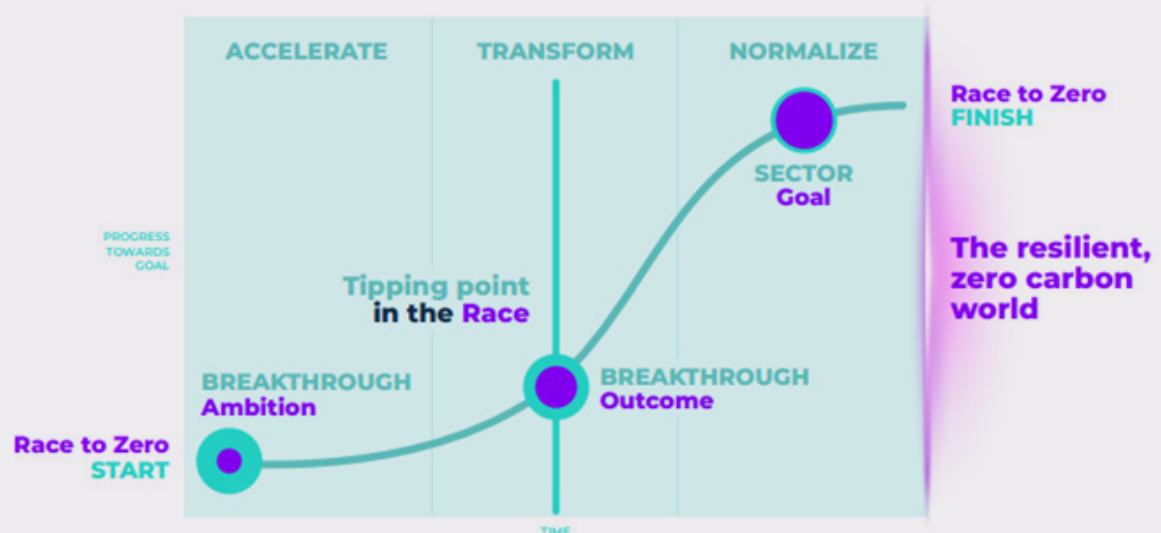


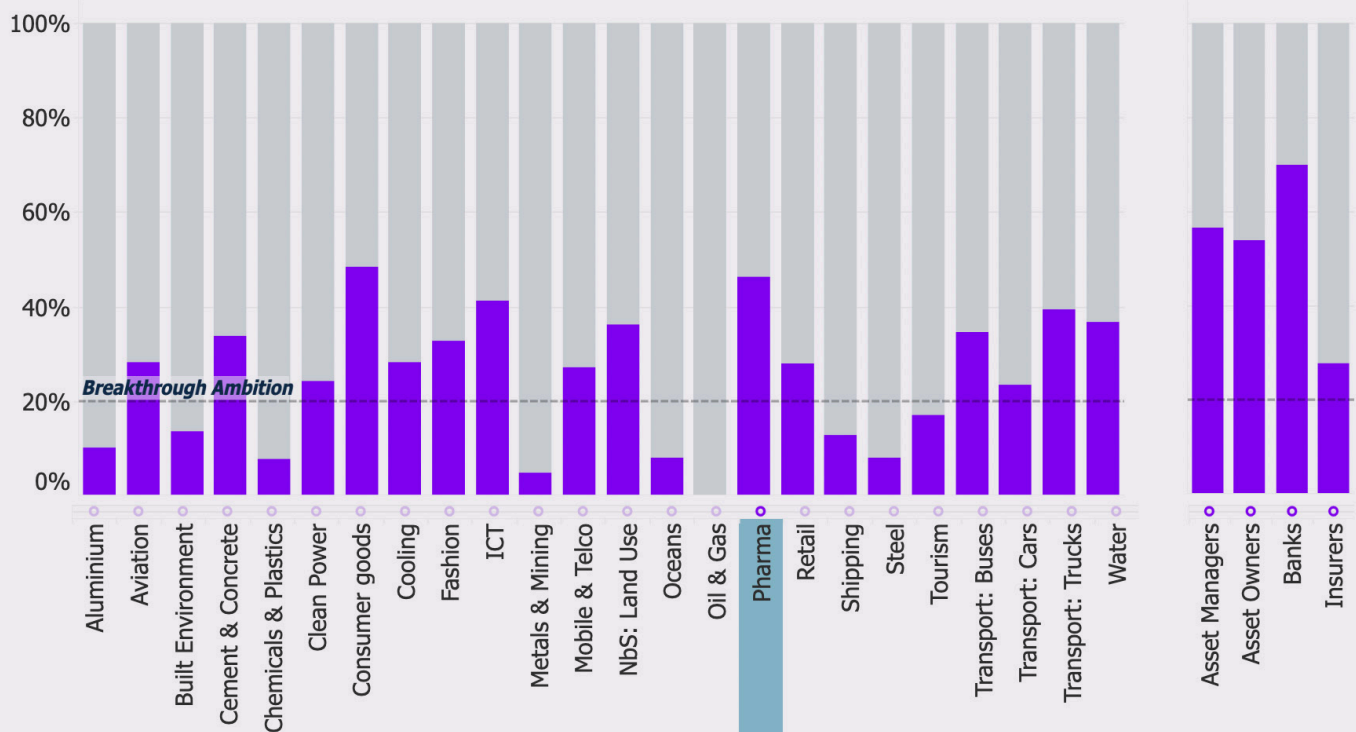


Figure 8: Tracking Corporate Breakthrough Ambitions

COMMITMENT?

- Target Race to Zero companies
- Race to Zero companies

Corporate commitments to Race to Zero by sector and finance actor type



The sector crossed the 'Breakthrough Ambition' in 2021 when over 20% of major actors by revenue committed to the Race to Zero. At the point of the Breakthrough Ambition, "sufficient momentum is generated among a critical mass of key actors, enabling them to break away from the business-as-usual path and together deliver breakthrough outcomes at pace."²¹ Biotech and Pharma has now the most major actors committed to the race to zero out of any other industry sector besides financial services and consumer goods.²²

²¹ Upgrading Our Systems Together: A global challenge to accelerate sectors breakthroughs for COP26 — and beyond (2021)

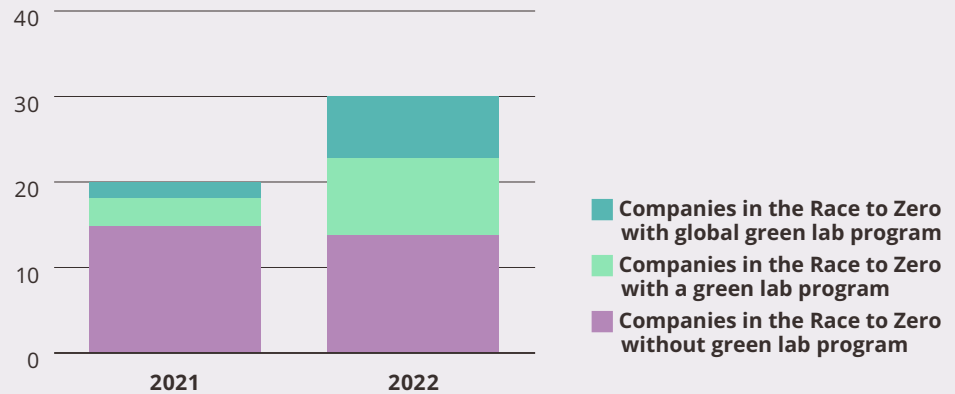
²² <https://racetozero.unfccc.int/join-the-race/whos-in/>

²³ Upgrading Our Systems Together: A global challenge to accelerate sectors breakthroughs for COP26 — and beyond (2021)

Due to its focus on key leverage points and potential to drive measurable change, My Green Lab Certification was selected in 2021 as a key indicator of progress for the UNFCCC High-Level Climate Champions' 2030 Breakthroughs, setting a goal that "95% of labs across major pharma and med tech companies are My Green Lab certified at the highest level by 2030."²³ Achieving that 'Breakthrough Outcome,' along with other decarbonization strategies, will be a crucial action to ensure the industry progresses along its pathway to a net zero future. In addition, developing a robust green lab program at every company will help instill a culture of



Figure 9: Sector Progress to Race to Zero and Breakthrough Outcome



sustainability within the organization, which has benefits that go well beyond energy, water, and waste reductions. For example, a positive culture of sustainability can influence better purchasing decisions and reduce the downstream impact of products sold, both key targets for scope 3 carbon savings.

Since publishing of this report in October 2021, companies have made significant progress towards the Breakthrough Outcome. 53% of companies in the Race to Zero sector have started a green lab program, up from 25% at this time last year, with 23% now achieving the My Green Lab Certification at a global scale.²⁴

²⁴ Global programs include at least 10 labs engaged in multiple countries.





Turning Commitment Into Action

To meet the targets of the Paris Climate Agreement, the industry must continue to improve the quality and comparability of reporting, while taking rapid, measurable actions.

Accurate reporting will provide a clear baseline from which to measure improvements as well as to identify key hotspots for change. After targets aligned with a 1.5 degrees celsius world for both 2030 and 2050 are set, practical action plans must be put in place to reduce emissions within the control of each company (scope 1 and 2) and encourage suppliers and customers to measure and reduce their own emissions (scope 3). Sharing data on a pre-competitive basis across the industry will improve the quality and actionability of reporting, as will the adoption of common and industry-wide sustainability frameworks.

Further progress is being made to better understand the healthcare supply chain and identifying opportunities for impact. The Sustainable Markets Initiative has recently released a report identifying barriers and opportunities for changes within the healthcare supply chain, including biotech and pharma.²⁵ Further, they have released a study identifying the opportunities to reduce the carbon impact of clinical trials.²⁶

My Green Lab Certification and the ACT Label are examples of common, industry-wide sustainability frameworks that are crucial tools for turning commitments into measurable impact. They provide a roadmap of practical opportunities for companies, scientists, and their suppliers to take positive action. Among other impact categories, My Green Lab Certification focuses on reducing energy consumption for scope 1 and scope 2 emissions through laboratory operations, as well as the laboratories that a company contracts within their supply chain. The ACT Label helps companies reduce their lab suppliers' impact by providing the necessary transparency and third-party verification to select lower-emission products. The ACT evaluation framework also ensures the products a company makes are produced in a sustainable manner and operate efficiently.

Biotech and pharmaceutical companies have the technical acumen, culture of innovation, and financial resources required to be a global leader on environmental sustainability. Perhaps no other industry has more experience making long-term capital investments to tackle some of the world's most complex problems for the benefit of society. The industry has just under a decade, which is roughly the same time it takes to bring a new drug to the market, to be one of the first industries to achieve net zero carbon and, in doing so, inspire the rest of the world's industry sectors to follow in their footsteps.

²⁵ Decarbonising Healthcare Supply Chains: Recommendations on how to drive emissions reductions across healthcare supply chains, (2022). <https://a.storyblok.com/f/109506/x/1765b17e71f/smi-health-systems-supply-chains-whitepaper.pdf>

²⁶ The Digital Solution for Sustainability in Clinical Research (2022). <https://a.storyblok.com/f/109506/x/86cf61245c/smi-health-systems-digital-health-whitepaper.pdf>



Opportunities for Continued Research

More research will be needed into the drivers of scope 1 and 2 emissions and the distribution of those emissions between research and manufacturing.

Further, case studies on the specific carbon reduction benefits of interventions like My Green Lab Certification and sustainable procurement through programs like ACT are needed to better understand their alignment with carbon reduction targets. My Green Lab will be charting the industry's progress relevant to the crucial activities identified in this report, including consistent and standardized reporting of scope 1, 2, and 3 emissions and encouraging industry-wide scope 3 emissions reporting that allows meaningful comparison between companies and the sharing of data. We will also conduct further examination into areas that remain poorly quantified, such as the overall carbon impact of laboratories and lab supply chains. This study will be updated regularly for the UN Conference of Parties in order to provide consistent monitoring of the industry's progress towards a zero-carbon future and measuring progress to the Race to Zero campaign and Breakthrough Outcome goal.





Carbon Accounting Methodology

Intercontinental Exchange Inc. (ICE), which acquired Urgentem in July 2022, offers a unique dataset that covers greenhouse gas (GHG) emissions data for more than 30,000 securities globally over the last ten years.

These historical emissions include scope 1, scope 2 and all 15 categories of scope 3 (value chain) emissions. ICE covers granular scope 3 emissions, which are of utmost importance for deriving the carbon footprint of a firm, encompassing all the CO₂e emitted throughout the value chain. To put the importance of scope 3 emissions into perspective, it should be noted that they represent more than 85% of the world's overall footprint. However, scope 3 emissions are difficult to measure and are rarely reported by firms.

ICE has developed a statistically robust inference model to estimate scope 3 information if a corporation fails to report this data. To ensure transparency, the dataset makes it possible to distinguish whether the emissions have been reported by the firm itself or estimated using the ICE inference model. Second, ICE offers long time series (ten years) of companies' emissions with consistency across all relevant data points. Finally, ICE ensures a very high quality of data given that it relies on sophisticated, multi-stage data-cleaning, validation processes and outlier treatment, complemented by bilateral undertakings with the companies themselves to validate the results.

ICE classifies scope 1 and 2 emissions data into various quality categories. Category 1 is data has been fully reported and third party assured, while Category 2 includes complete reporting without third-party assurance. For the purposes of this analysis, companies with data quality 1 and 2 were used for comparison between sectors and trends over time.

Carbon target data and their temperature scores are based on publicly reported targets data, collected, and treated by ICE. Only targets which have sufficient detail on base years, target years, reductions, and coverage have been used for this analysis. Targets data suffers from a reporting lag, so the analysis includes only targets set in or before 2020.

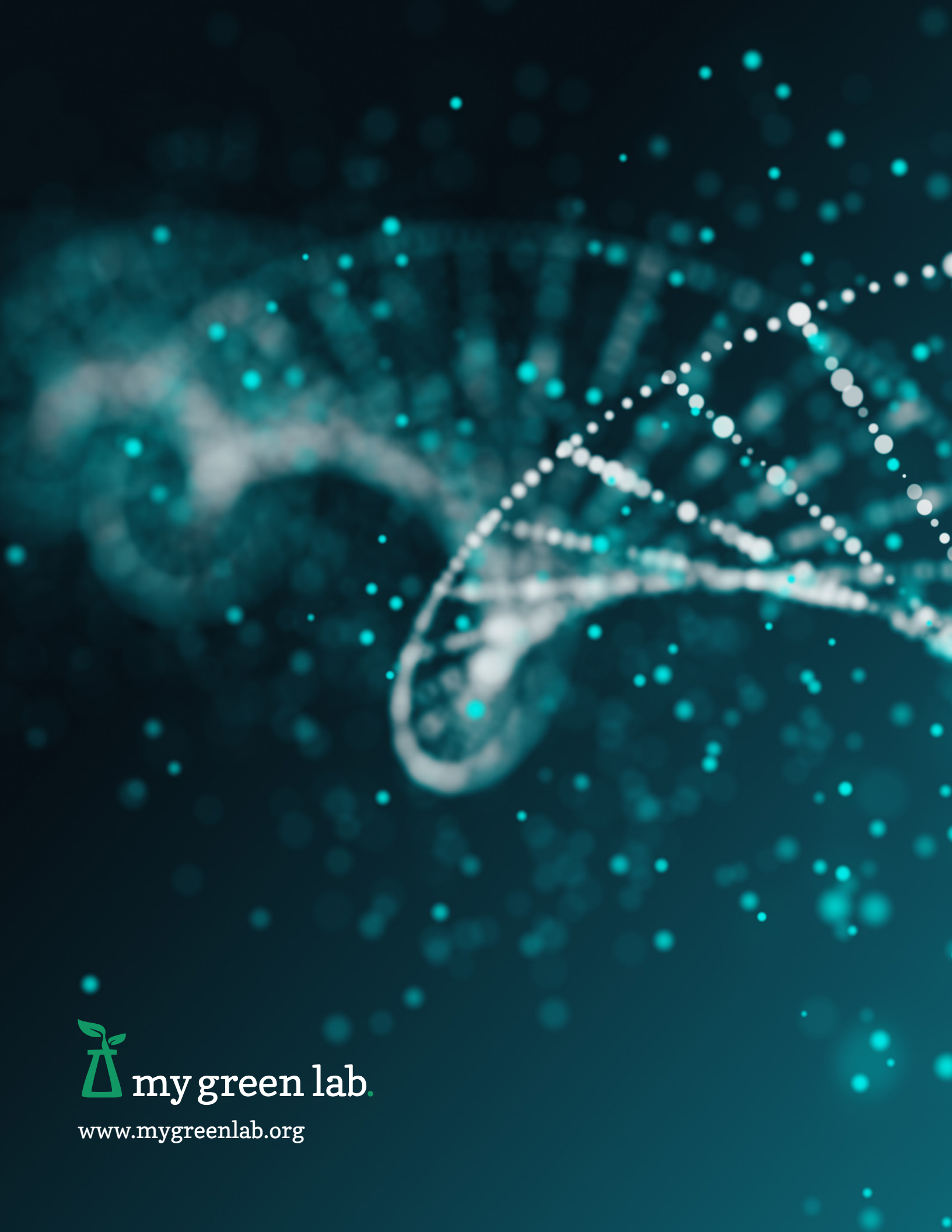
ICE translates carbon reduction targets into temperature scores through an innovative methodology developed by the Science Based Targets Initiative, alongside ICE. This methodology allows the comparison and aggregation of target ambition at the sector level.²⁷

**Scope 3 emissions
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footprint**

²⁷ Temperature Rating Methodology
A temperature rating method for
targets, corporates, and portfolios
(2020) <https://sciencebasedtargets.org/resources/legacy/2020/09/Temperature-Rating-Methodology-V1.pdf>



www.mygreenlab.org