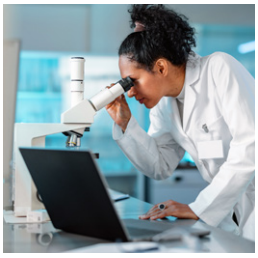
efpia

European Federation of Pharmaceutical Industries and Associations

2026 White Paper on Climate Change





Executive Summary

The research-driven pharmaceutical industry, represented by the European Federation of Pharmaceutical Industries and Associations (EFPIA), strives to improve human health and wellbeing. As climate change poses a significant threat to human health, it is essential to understand the relationship between people, health and the environment.

The mission of EFPIA is to create a collaborative environment that enables member companies to innovate, discover, develop, and deliver new therapies and vaccines for people across Europe. They play a role in fostering innovation and collaboration for their member companies to improve health outcomes while reducing environmental impact across the pharmaceutical value chain[1]. **This white paper outlines the commitments and actions taken by EFPIA member companies in recent years to decarbonise pharmaceutical operations in Europe**. It is a continuum of previous publications in 2020[2] and 2022[3] investigating and informing on industry actions to mitigate climate change.

Although the pharmaceutical industry is not among the highest-emitting sectors[4], their manufacturing and complex supply chains are contributors to greenhouse gas emissions. Changes in product design, supply chains and manufacturing processes and healthcare delivery can significantly reduce the carbon footprint of medicinal goods even within strict regulatory constraints on registration, processing, packaging, and waste treatment.

Outcome of the 2025 Climate Survey of EFPIA Member Companies in a nutshell:

EFPIA members demonstrate a clear and accelerating commitment to climate action, reflected in growing participation and measurable progress across emissions reduction, target-setting and transparency. Between 2019 and 2024, companies achieved significant reductions in Scope 1 and 2 emissions with average emissions intensity declining by around 43%, driven in particular by a rapid shift to renewable electricity. A majority of companies also reduced their Scope 3 emissions, with about 60% reporting decreases that averaged 17% (range: 4-34%), despite ongoing methodological challenges such as the collection of robust supplier data. Net-zero commitments are on the rise with most companies setting targets aligned to the Science-Based Targets initiative and an increasing share having comprehensive short- and long-term commitments across all emission scopes. At the same time, the maturity in product carbon footprinting, life-cycle assessment and climate risk analysis is increasing, supported by widespread adoption of recognised ESG frameworks and proactive alignment with emerging EU reporting requirements. Together, these trends underline both the sector's tangible progress in reducing its climate impact and the continued need for collaboration, better data and systemic solutions, particularly for Scope 3 emissions.

1 https://www.efpia.eu/news-events/the-efpia-view/statements-press-releases/clear-steps-toward-a-greener-future-pharmaceutical-sectors-environmental-sustainability-statement/#:~:text=EFPIA%20and%20its%20members%20recognise,suppliers%20to%20do%20the%20same.

2 https://www.efpia.eu/media/sydk5acr/white-paper-on-climate-change.pdf- EFPIA White Paper on Climate Change, EFPIA (2020)

3 https://www.efpia.eu/media/gtbncsjc/survey.pdf -EFPIA survey on climate change, EFPIA (2022)

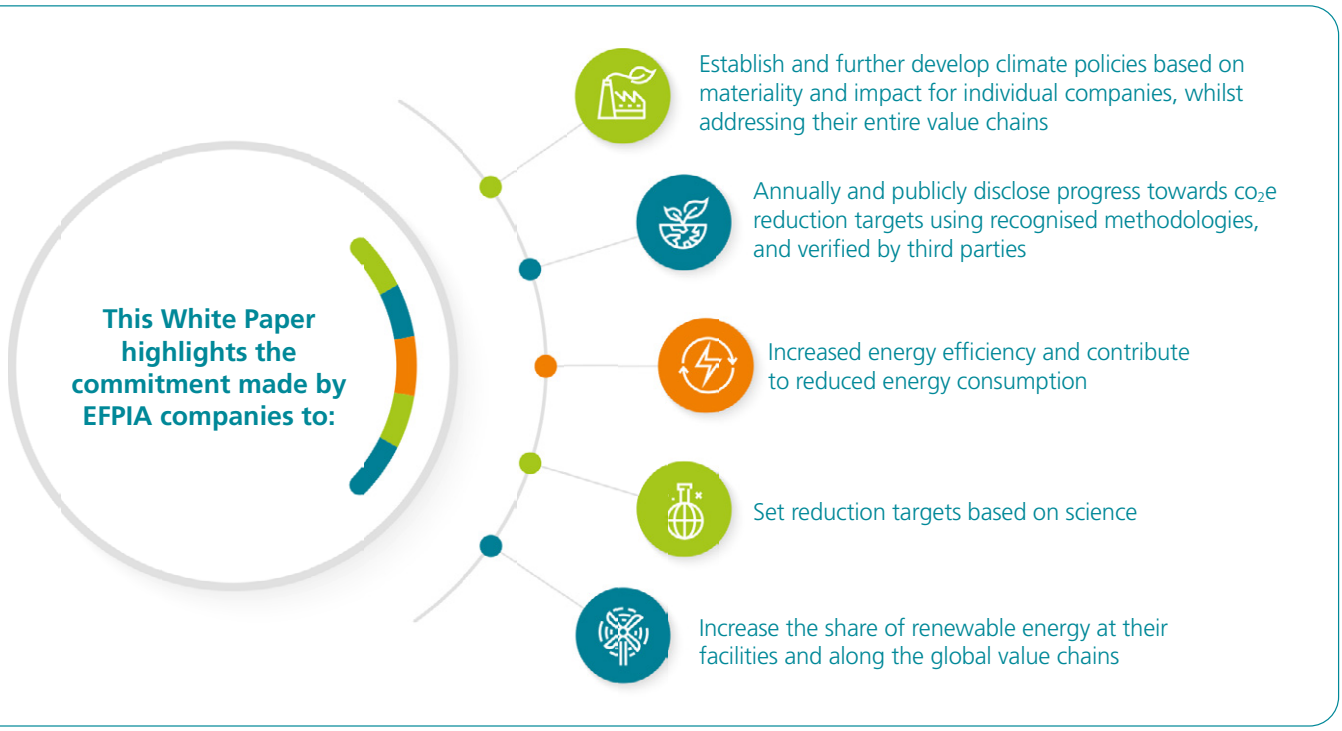
4 FTSE4Good (FTSE Russell) classifies the pharmaceutical industry as an intermediate or *medium-impact* sector for environmental impact, rather than a *high-impact* emitter

EFPIA encourages innovation that helps member companies reduce greenhouse gas emissions (e.g. carbon dioxide, methane, nitrous oxide, hydrofluorocarbons and perfluorocarbons[2]) across the value chain including strategies which address upstream Scope 3 emissions via strong supplier engagement and collaboration. To fully unlock these opportunities, industry and regulators must work together to develop regulatory frameworks that support innovation and enable sustainability improvements across the full product lifecycle, including for legacy medicines where change is often most constrained but system-wide impact can be greatest.

Our member companies' climate progress is driven by initiatives such as energy-efficiency improvements (including HVAC optimisation, heat recovery, heat pumps and ISO 50001 systems), increased renewable-electricity sourcing (through PPAs, VPPAs, on-site solar and certified renewable contracts) and renewable-energy adoption, fleet decarbonisation through hybrid and electric vehicles, transition to next generation pMDI propellant, enhanced refrigerant management to reduce high-GWP emissions, strengthened supplier engagement to encourage SBTi-aligned targets, and raw-material decarbonisation through lower-carbon and more circular material choices. In addition, they are starting to implement circular economy approaches such as elimination and reduction of materials, maximising re-use and recycling. Decarbonisation efforts require holistic evaluation to avoid unintended nature and social (human rights and labour) impacts.

EFPIA supports the adoption of "PAS 2090:2025, Pharmaceutical products – Product category rules for environmental life cycle assessments[5]" the first publicly available specification to establish a unified approach to Product Category Rules (PCR) for conducting LCAs[6] in our industry as well as to harmonize the methods for conducting Product Carbon Footprints (PCFs) of pharmaceutical products.

Delivering continued emissions reductions will require cross-sector collaboration and engagement with suppliers and value-chain partners, in line with EFPIA's commitments to science-based decarbonisation pathways and accelerate decarbonisation.



5 https://www.efpia.eu/news-events/the-efpia-view/efpia-news/advancing-environmental-sustainability-assessment-of-pharmaceuticals-through-standardisation-and-harmonisation-of-product-carbon-footprint-assessment/ - Advancing Environmental Sustainability Assessment of Pharmaceuticals through Standardisation and Harmonisation of Product Carbon Footprint Assessment, EFPIA (2025)

6 LCA is a globally recognised method for evaluating environmental impacts, including the carbon footprint, across a product's life cycle [ISO 14044:2006] -https://www.iso.org/standard/38498.html#:~:text=ISO%2014044%3A2006%20specifies%20requirements%20and%20provides%20guidelines%20for,for%20use%20of%20value%20choices%20and%20optional%20elements.

1. The Climate Change Context

Global climate science & health impact

Anthropogenic climate change, as defined by the United Nations' Framework Convention on Climate Change (UNFCCC), is attributed directly to human activities that emit greenhouse gases altering the composition of the global atmosphere beyond natural climate variability observed over comparable time periods[7].

Since 1988, findings of the Intergovernmental Panel on Climate Change (IPCC) consistently indicate that climate change is increasingly impacting the Earth's physical, biological, and human systems[8], with consequences becoming more severe, interconnected and widespread. At the same time, climate change is closely linked to the accelerating biodiversity and pollution crises, underscoring the need for mitigation actions that avoid unintended impacts on nature.

According to the World Health Organization (WHO), climate change is among the greatest health risks of the 21st century. The organization warns that it has the potential to affect human health in multiple ways: climate change influences health both directly (e.g., heatwaves, undernutrition) and indirectly by altering infectious disease patterns (geographic distribution and seasonality), raising the frequency and intensity of extreme weather events, driving food insecurity through the disruption of food production systems, and worsening respiratory diseases due to declining air quality. WHO estimates that one in every four premature deaths today is due to environmental factors[9]. The 2025 Lancet Countdown report[10] further confirms worsening health risks across 13 of 20 monitored impact indicators, with millions of preventable deaths linked to fossil fuel dependence and inadequate adaptation. These findings make clear that our personal health depends on planetary health and that urgent climate action is required across all sectors, including healthcare and pharmaceuticals. Concerningly, global temperatures from 2023-2025 averaged more than 1.5°C above the pre-industrial level (1850–1900)[11].

International Commitments

The recent COP30[9] introduced the Belém Health Action Plan[10], emphasizing decarbonization of health systems, including pharmaceutical production and distribution, and calling for green technological innovation. These efforts build on previous global pledges to align with the Paris Agreement and limit global warming to well below 2°C, preferably 1.5°C compared to pre-industrial levels.

7 Article 1 of the United Nations Framework Convention on Climate Change (UNFCCC)

8 https://www.ipcc.ch/publication/ - Publications — IPCC, Intergovernmental Panel on Climate Change (IPCC)

9 United Nations Climate Change Conference (UNFCCC COP 30), Belém, Brazil, 10-21 November 2025

10 https://www.who.int/publications/m/item/the-belem-health-action-plan-for-the-adaptation-of-the-health-sector-to-climate-change/ - The Belém health action plan for the adaptation of the health sector to climate change, World Health Organization, (2025)

EU Policy Context & Pharma Implications

Since 2022, the European climate policy framework has progressed from broad commitments toward more concrete, implementation-focused measures. The EU Green Deal, now further operationalised through initiatives such as the Clean Industrial Deal, signals a sharper emphasis on industrial decarbonisation, competitiveness, and "doing more with less." This direction is reinforced by complementary initiatives including the Net-Zero Industry Act, the Circular Economy Action Plan, and the Ecodesign for Sustainable Products Regulation, which collectively promote lifecycle-based sustainability, cleaner manufacturing, and more efficient use of materials across industrial sectors.

In 2025, the European Commission adopted the Omnibus Package 1 to reduce administrative burdens through harmonization and simplification with the goal to strengthen EU competitiveness while remaining committed to climate action. This package adjusted the Corporate Sustainability Reporting Directive (CSRD) and the Corporate Sustainability Due Diligence Directive (CSDDD) for a more proportionate approach to value chain reporting. By the end of 2025, these policy changes led to more focused reporting expectations and reinforced sustainability criteria in public procurement across sectors, including healthcare.

While pharmaceutical manufacturing is not among Europe's highest-emitting sectors such as energy and transport[11], it nonetheless represents a relevant and increasingly visible lever for climate action-carbon product and process strategies, and is increasingly expected to generate granular, high-quality environmental data to meet CSRD-aligned expectations across value chains.

11 https://www.iea.org/regions/europe/emissions - Europe – Countries & Regions - IEA, "CO_2e emissions by sector, Europe", UNFCCC/EEA, (2023)

2. Our Focus

Stakeholder collaboration driving climate action

Climate action in healthcare requires systemic change that goes beyond the capabilities of individual companies. Addressing sector-wide emissions, supply-chain dependencies, and upstream data gaps demands coordinated approaches that harmonise standards and accelerate innovation across the entire value chain.

Key value chain collaborative initiatives

Company-driven initiatives emerging from recent United Nations Climate Change Conferences continue to demonstrate the importance of partnership in accelerating decarbonization. Across these conferences, seven pharmaceutical manufacturers working under the Sustainable Markets Initiative – Health Systems Taskforce (SMI-HSTF) announced a joint commitment to advance the decarbonization of global health systems[12]. The group demonstrated strong collective ambition through commitments on common supplier standards, emissions measurement for clinical trials, harmonised product-level life-cycle assessments, joint power purchasing in fossil-intensive grids, and the development of green transportation corridors.

This momentum builds on initiatives introduced at earlier conferences such as the Energize program[13], which announced its first cohort power purchasing agreement to accelerate renewable energy adoption amongst suppliers to pharmaceutical companies. At the European scale, collaboration continues through initiatives such as LCA-SMI, and Innovative Health Initiative[14] (IHI) supported projects, including PHARMECO[15], an initiative designed to help to help industry transition to more sustainable pharmaceutical manufacturing practices by integrating environmentally-friendlier technologies, processes and standardized sustainability assessment methods, and ENKORE[16], a European initiative dedicated to accelerating circular, safe, and sustainable eco-designed solutions for single-use medical devices and healthcare packaging.

Collaboration within the Pharmaceutical Supply Chain Initiative (PSCI) further reinforces these efforts. PSCI brings together pharmaceutical companies and suppliers upstream in the pharma value chain around a common vision of advancing responsible supply chain practices and improving social, environmental, health, and safety outcomes across the sector. Through shared principles for responsible supply chain management and peer learning, the initiative contributes to greater consistency and resilience in supply chain sustainability performance.

12 https://www.sustainable-markets.org/taskforces/health-systems-taskforce/ - Health Systems taskforce | Sustainable Markets Initiative

13 https://zeigo-hub.zeigo.com/ui/program/Energize - Energize program

14 https://www.ihi.europa.eu/ - IHI Innovative Health Initiative

15 https://pharmeco.eu/ - PHARMECO

16 https://enkoreecohealthcare.eu/ - ENKORE

The role of EFPIA

EFPIA remains committed to fostering collaboration across the pharmaceutical value chain, supporting harmonised, science-based approaches to product-level carbon footprinting and life-cycle assessments (LCAs).

EFPIA amplifies member perspectives on environmental topics. An example is the environmental footprint of patient information leaflets[17] and the transition from paper to electronic product information.[18] Evidence shows that electronic patient information (ePI) can significantly reduce material use, waste generation, and lifecycle greenhouse gas emissions compared to traditional paper package leaflets, while maintaining high standards of patient information and accessibility. EFPIA therefore supports a phased and harmonised transition towards ePI across Europe, as outlined in its 2025 position papers, enabling sustainability gains alongside regulatory certainty, patient safety, and equitable access to information, while recognising the need for inclusive implementation that accommodates different patient needs and digital readiness.

EFPIA continues to monitor and synthesise member progress through regular surveys and white papers with case-studies, providing an evidence-based view of sector-wide climate action and takes pride in playing a convening role, co-creating solutions with member companies, suppliers, encouraging high-quality environmental data, and promoting transparent reporting practices across the value chain.

EFPIA is committed to
1) fostering collaboration to deliver decarbonisation across the pharmaceutical value chain,
2) supporting the development of harmonised, science-based methodologies to assess environmental impacts and
3) to monitoring and sharing member progress through regular surveys and white papers with case studies to provide an evidence-based view of sector wide climate action.

But EFPIA knows there is more that needs to be done. Member companies will continue to take significant actions to address climate change, and global planetary health, while enabling the transition towards a low carbon economy. In a time of complex challenges, the green agenda remains a priority. Through collaboration we can move industry forward to protect both patients and the planet.

17 How a paper PIL compares to an electronic PIL (ePI), Sriman Banerjee, EFPIA Guest Blog (2025) Environmental footprint of patient information leaflets (PIL) - How a paper PIL compares to an electronic PIL (ePI) (Guest Blog)

18 Phasing in of electronic product information and phasing out of the paper package leaflet, Position Papers on Electronic Product Information (ePI), EFPIA (2025), iatf-position-papers-on-epi.pdf

Outcome of the 2025 Climate Survey of EFPIA Member Companies

Participation signals growing commitment across European pharma

Survey participation rose from 18 companies in 2020 to 28 in 2025, reflecting the sector's increasing focus on climate action.

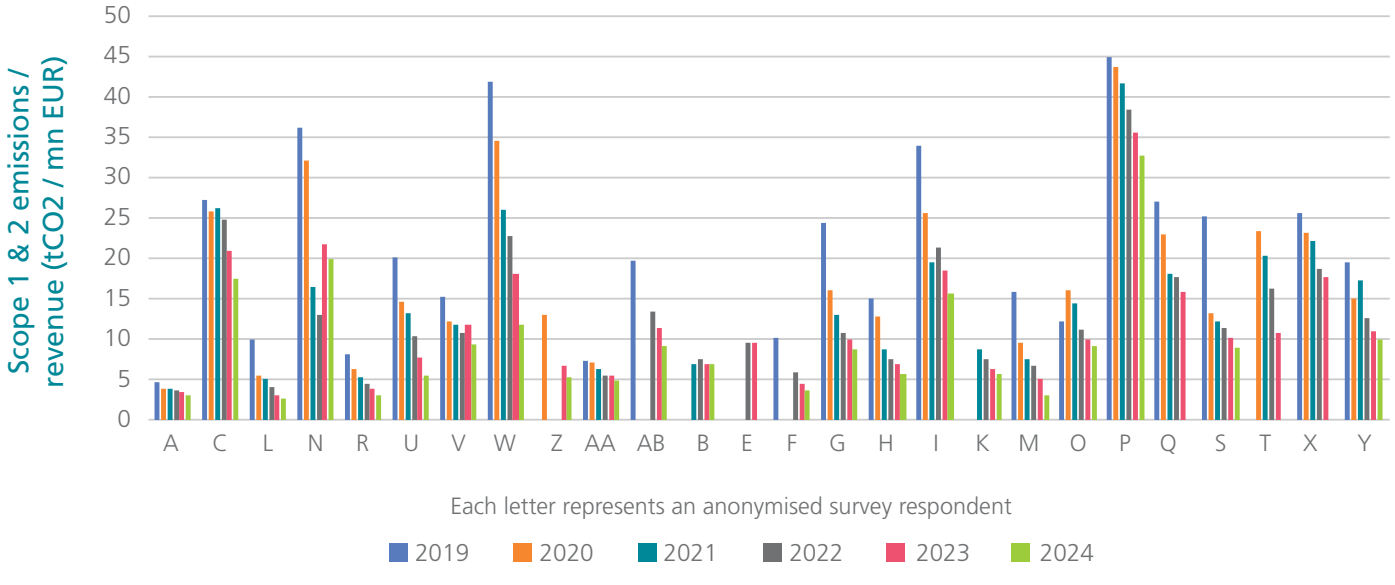
Year	Survey participants
2020	AbbVie, AstraZeneca, Bayer, Biogen, Chiesi, GSK, Ipsen, J&J, Lundbeck, Merck, MSD, Novartis, Novo Nordisk, Pfizer, Roche, Sanofi, Takeda, UCB
2022	AbbVie, Amgen, AstraZeneca, Bayer, Boehringer Ingelheim, Bristol Myers Squibb (BMS), Chiesi, GSK, Ipsen, J&J, LEO Pharma, Eli Lilly, Lundbeck, Merck KGaA, MSD, Novartis, Novo Nordisk, Pfizer, Roche, Sanofi, Servier, Takeda, UCB
2025	Abbvie, Amgen, AstraZeneca, Bayer, Bial, Biogen, Boehringer Ingelheim, Bristol Myers Squibb (BMS), Chiesi, Eli Lilly, GSK, Gilead, Ipsen, J&J, LEO Pharma, Lundbeck, Menarini, Merck KGaA, MSD, Novartis, Novo Nordisk, Pfizer, Roche, Sanofi, Servier, Takeda, Teva, UCB

Significant emissions reductions were achieved (2019–2024)

Between 2019 and 2024, Scope 1 emissions of surveyed EFPIA Companies went down 16% on average; 3 companies cut by half, 4 by a third. Scope 2 emissions down 64% on average, driven by renewable energy adoption. Scope 3 emissions were reduced for ~60% of members, averaging a 17% decrease from 2019 until 2024 (range: 4–34%). The survey respondents were referring to data from their companies' previous years.

Scope 1 as a share of total Scope 1 and 2 rose from 56% in 2019 to 70% in 2024, indicating that Scope 2 emissions have decreased more rapidly than Scope 1 emissions over this period. This is consistent with sector-wide trends, where electricity-related emissions are often easier to decarbonize than direct emissions, and suggests that further decarbonization efforts increasingly need to target Scope 1 sources to further accelerate the electrification of the sector.

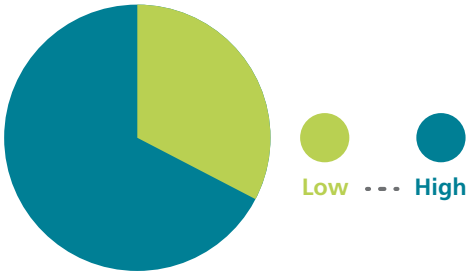
Pharmaceuticals emissions intensity Scope 1 and 2 market-based (2019-2024)



Pharmaceuticals emissions intensity Scope 1 and 2 market-based (2019-2024)

Between 2019 and 2024, all EFPIA companies with complete datasets achieved reductions in their combined Scope 1 and Scope 2 emissions intensity. Over this period, average emissions intensity declined by approximately 43%, falling from 21t CO_2e/mEUR in 2019 to 9t CO_2e/mEUR in 2024. A counterfactual Do-Nothing scenario indicates that emissions intensity would have decreased by only around 17% in the same timeframe. This comparison underscores that more than half of the observed improvement can be attributed to active mitigation measures adopted by companies. In most cases, market-based emissions intensities are lower than location-based figures, demonstrating that companies are procuring electricity with a cleaner emissions profile than the grid average, primarily through contractual instruments such as renewable power purchase agreements and certificates. By 2025, around three-quarters of companies with full data are projected to achieve near-zero market-based Scope 2 emissions, reflecting the significant uptake of renewable electricity. Two companies have also demonstrated early progress on Scope 1 mitigation, reducing their direct emissions by roughly half over the period. As market-based Scope 2 emissions approach zero for an increasing share of the industry, Scope 1 sources are expected to become a central focus of the next phase of decarbonization efforts.

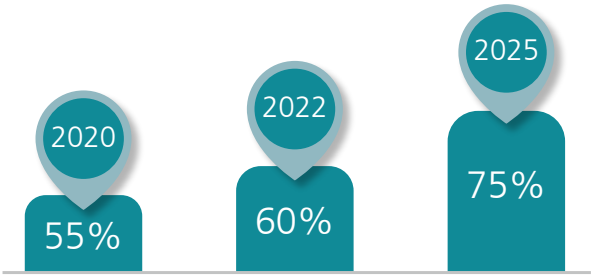
Net-Zero momentum accelerates, guided by Science-Based Targets



In 2025, **over 2/3 of surveyed EFPIA companies had committed to achieving Net-Zero**, with 90% aligning their targets to the Science Based Targets initiative (SBTi) guidelines.

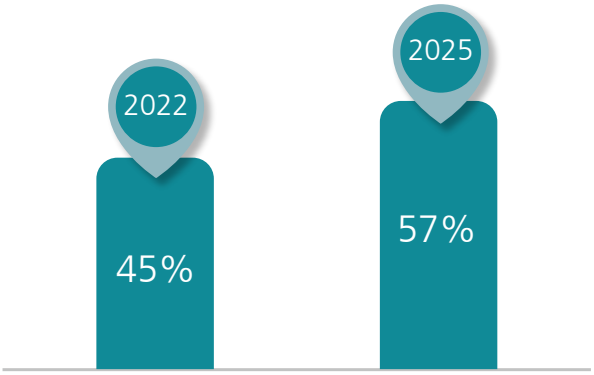
This marks a **7-point increase** from 2020, when 61% of companies reported a Net-Zero climate commitment. Long-term climate targets have also strengthened. 75% of companies now have comprehensive targets covering Scope 1, 2, and 3 emissions (2025). This trend highlights a growing commitment to lasting climate impact across the sector.

Short-term action also gains traction



Scope 1-2 short-term target growth, 2020-2025

Short-term Scope 1 & 2 targets, corresponding to emission-reduction goals for the next 5–10 years, rose from 55% (2020) to 75% (2025).

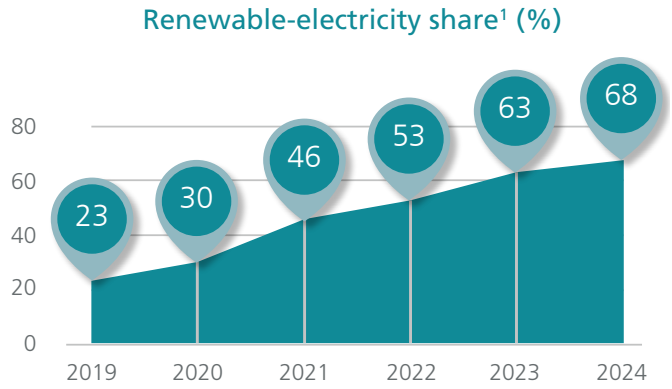


Scope 3 short-term target growth, 2022-2025

Scope 3 targets increased from 45% (2022) to 57% (2025), showing commitment to rapid progress.

This upward trend demonstrates a growing commitment to rapid, measurable progress on climate goals as short-term climate targets signal immediate action and reflect the urgency of mitigation and adaptation.

The most common initiatives contributing to progress towards these goals were Energy efficiency (HVAC optimization, heat recovery, heat pumps, ISO 50001 systems), Fleet decarbonisation (Transition to hybrid/electric vehicles), Refrigerant management (Switch to low-GWP refrigerants, improve leak prevention), Supplier engagement (Require SBTi targets and renewable energy adoption), Raw material decarbonisation (Source lower-carbon materials, promote circularity) and a clear shift toward renewable energy adoption.

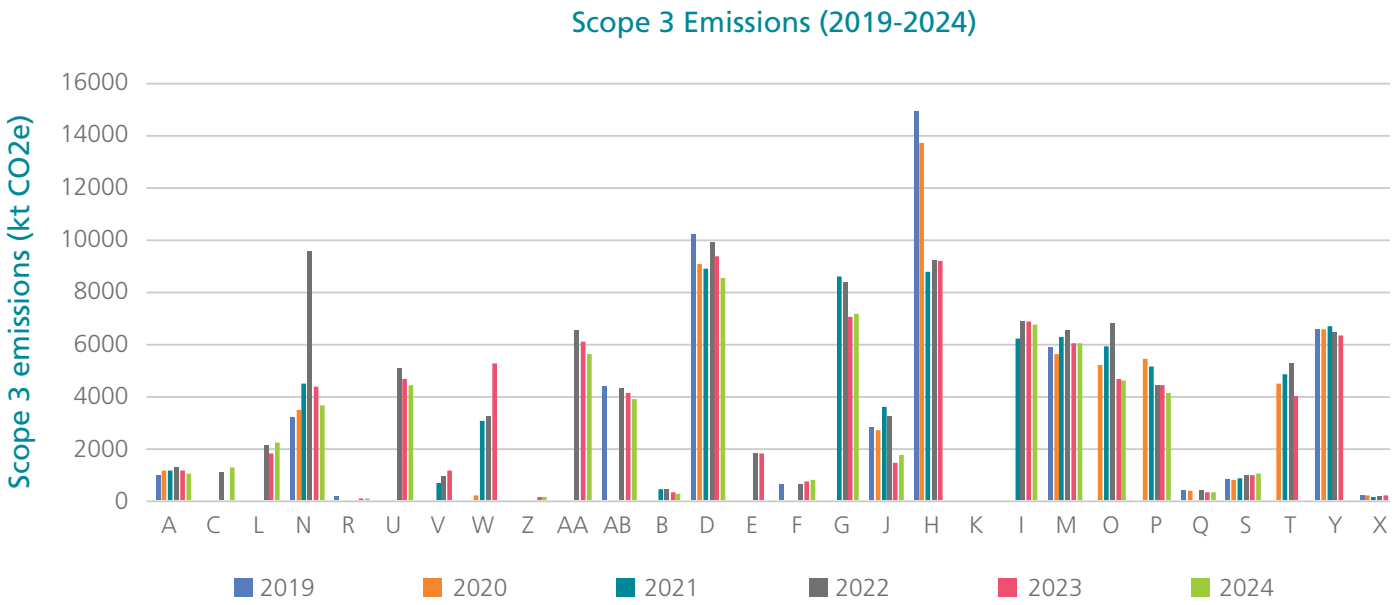


Evolution of EFPIA companies[19]' weighted average share of electricity from renewable sources (purchased and generated)

Renewable electricity consumption tripled in five years. By 2025, 71% of EFPIA members had short-term renewable energy targets, and 50% had long-term targets. The most common ambition amongst EFPIA companies is 100% renewable electricity across operations and their target years vary from 2020 (achieved) to 2040 with 2030 being the most common milestone. The switch to renewable electricity is achieved through PPAs, VPPAs, EACs, and on-site generation (solar). RE100 membership is also a recurring theme.

Scope 3 remains a challenge

About 60% of members reduced Scope 3 emissions, averaging 17% decrease (range: 4–34%). This reflects the fact that these companies have inherently different operational profiles compared to those focused solely on pharmaceutical production. The majority of respondents consistently include Categories 1–7 (Purchased goods and services, Capital goods, Fuel and energy-related activities, Upstream transportation, Waste, Business travel, Employee commuting); Category 9 (Downstream transportation), 12 (End-of-life treatment of sold products) and 15 (Investments) are also common; Categories 8 (Upstream leased assets), 10 (Processing of sold products), 11 (Use of sold products), 13 (Downstream leased assets), 14 (Franchises) are less common and often only included in later years or by specific companies.



2019-2024 evolution of Scope 3 emissions in kt CO_2e for anonymized EFPIA companies

Most companies rely on spend-based methods, highlighting the need for better primary data. 14% use advanced methods for >50% of Scope 3, which shows industry movement toward higher accuracy, supply chain supplier engagement and activity-based data.

Other elements referenced by survey participants point to an industry-wide ambition to improve data quality and advance supplier-specific methodologies, including references to the PSCI Scope 3 GHG emissions calculation guidance published in 2020 to support methodological alignment.

19 Two companies were excluded due to missing 2024 data.

EFPIA Members' progress toward Product Carbon Footprint (PCF) and Life Cycle Assessment (LCA)

A majority of EFPIA companies are now in the mid-to-advanced stages of PCF and LCA maturity, with 54% of respondents already conducting PCFs or LCAs (manual or automated) or implementing ecodesign & product specific carbon reduction plans. One company reported already having achieved full portfolio-wide LCA maturity.

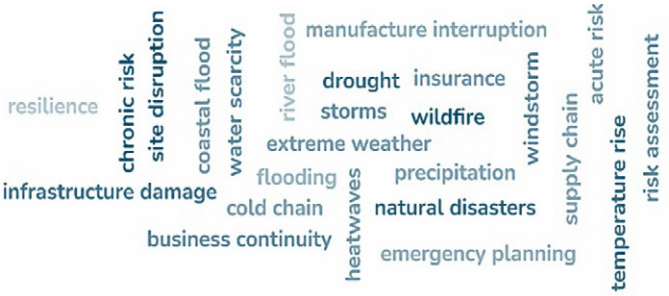
43% of pharmaceuticals surveyed remain in the early stage, showing progress but room for broader adoption. This distribution highlights room for broader adoption of advanced, portfolio-wide carbon assessment practices.

Increased understanding of climate risks

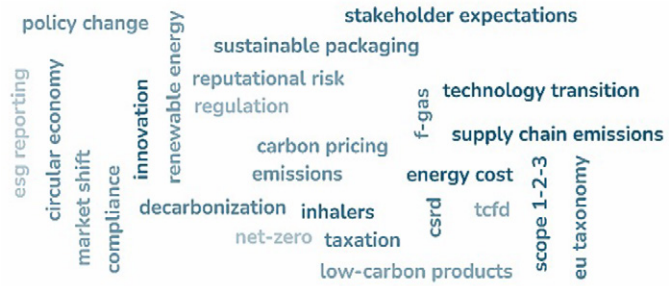
Around 90% of member companies carried out climate risk analyses in 2025, marking a 15-point increase compared with 2022. Understanding these risks is increasingly critical, as climate change can disrupt operations, supply chains, and the availability of essential raw materials.

Identified physical risks of flooding, heatwaves, or severe storms can for example directly damage manufacturing sites or interrupt temperature-sensitive logistics. Identified transition risks, referring to the business and financial risks that arise as economies shift toward a low-carbon future, mainly stem from carbon pricing, regulatory changes, and energy cost volatility, which can increase operational expenses or require adjustments to manufacturing processes and product portfolios.

Physical risks word cloud



Transition risks[20] word cloud



ESG Framework adoption is strong

On top of proactively aligning with CSRD, over 80% of companies use internationally recognized frameworks and ratings to report climate progress (CDP, Ecovadis, TCFD, MSCI ESG). Only five out of 28 did not disclose ESG ratings, signalling strong transparency. This widespread adoption demonstrates strong commitment to transparency and comparability. Further global harmonization could help reduce reporting complexity.

2025 ESG Framework adoption by EFPIA companies

20 Business and financial risks from the global shift to a low-carbon economy -driven by regulation, market shifts, stakeholder expectations, and evolving technologies

3. Shaping the Road Ahead

EFPIA and its member companies remain committed to accelerating decarbonisation across the pharmaceutical value chain. Building on the progress achieved over the past five years, these efforts aim to reduce greenhouse gas emissions by improving energy efficiency, expanding the use of renewable energy, engaging with suppliers, adopting circular economy principles to eliminate, reduce, re-use, recycle or switch to other responsibly-sourced low carbon materials and setting ambitious targets guided by science-based targets.

A critical enabler of this transition is regulatory harmonization. Product Category Rules (PCRs) are supplementary documents to the main LCA standards. They provide sector-specific guidance and clarify methodological choices to ensure LCA are conducted in a consistent and harmonised manner across specific industries or product categories. EFPIA supports the development of "PAS 2090:2025, Pharmaceutical products – Product category rules for environmental life cycle assessments" the first publicly available specification to establish harmonised Product Category Rules (PCR) for conducting LCAs and PCFs of pharmaceutical products[21]. The standard was published on the 30th of November 2025 and has been developed by key stakeholders across industry Pharmaceutical LCA Consortium, academia, and healthcare, together with the British Standards Institution (BSI) and with the co-sponsorship of NHS England and the Office for Life Sciences (UK). PAS 2090 sets requirements for data quality, methodological consistency, and reporting, and is designed to be internationally applicable.

EFPIA calls on policymakers, regulators, and healthcare stakeholders to recognise PAS 2090 as the most robust approach for pharmaceuticals, support international cross-stakeholder collaboration to endorse one internationally accepted standard in support of a harmonised approach addressing the risks of methodological variability and increasing transparency and regulatory alignment to accelerate the transition to more sustainable healthcare systems. EFPIA companies recognise that despite PCF methodology standardisation efforts, differences in data quality, data availability, and complex supply chains limit the direct comparison of PCF results of pharmaceuticals across companies. EFPIA companies reinforce the need to contextualise product comparisons within the patient care pathway. The environmental and clinical impacts of pharmaceutical products are deeply intertwined with how, when, and where they are used across the continuum of care and cannot be compared as a sole product.

Pharmaceutical products have long development times and making changes to products already approved, and on the market, can take several years. EFPIA advocates for engagement between environmental and pharmaceutical regulators to maximise alignment and ensure that evolutions or upgrades to pharmaceutical packaging or process can be validated in a more streamlined manner.

Partnerships will be key to implementing these framework components driving transparency and impact. EFPIA urges collaboration with suppliers and technology partners to improve data quality, traceability, and the use of advanced weight-based emissions calculation methodologies for Scope 3 emissions. Stakeholders across the healthcare ecosystem are invited to co-create solutions that enable a low-carbon future, whether through heat-stable medicines, resilient cold-chain logistics, or sustainable packaging and remote clinical trials.

21 Advancing Environmental Sustainability Assessment of Pharmaceuticals through Standardisation and Harmonisation of Product Carbon Footprint Assessment, EFPIA (2025)

4. Examples of activities undertaken by the pharmaceutical industry

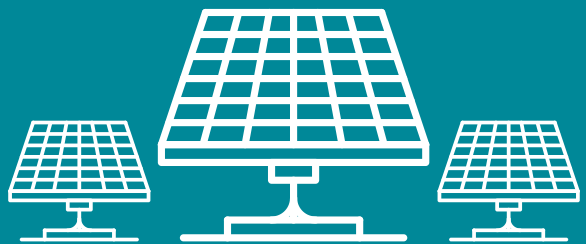
REDUCTION OF CO_2e EMISSIONS AT COMPANY SITES

PV Solar Installation at Campoverde, Italy[22]

In June of 2025, as part of AbbVie's mission to discover and deliver innovative medicines and solutions in a sustainable way, they commissioned a new PV Solar system at their manufacturing site in Campoverde, Italy. The system consists of more than 2,300 solar panels on an area of 6,800 square meters. The 1.6 MW system will generate approximately 1,500 MWh of electricity and reduce approximately 900 TCO2e emissions annually. AbbVie has established a near-term GHG reduction target of 42% by 2030 from a 2021 baseline year. Their GHG reduction target is validated by the Science Based Target initiative, and this project contributes towards the overall progress against their target.

1,500 MWh

GENERATED FROM 2,300 SOLAR PANELS



22 https://www.abbvie.it/news/GM-Ambiente-2025.html#:~:text=COMUNICATO%20STAMPA,dello%20stabilimento%20AbbVie%20di%20Campoverde

Projects for Sustainable Pharmaceutical Production at Takeda

Takeda is advancing climate-efficient, resilient pharmaceutical manufacturing through two major infrastructure investments in Germany and Austria, demonstrating how decarbonisation can be achieved even in energy-intensive and highly regulated environments.

At its Singen production site in Germany, Takeda inaugurated a EUR 14.5 million biomass heating plant in 2025[23]. The 8-megawatt steam boiler replaces up to 80% of the site's previous gas supply, reducing emissions by up to 80% and avoiding approximately 7,000 tonnes of fossil-based CO_2e emissions annually. The system uses regionally sourced waste wood, processing up to 40 tonnes per day and contributing to the local circular economy by creating value from residual materials while strengthening regional supply chains. The plant is designed for future integration of a steam turbine to enable electricity generation, supporting a longer-term decarbonisation roadmap.

At its Vienna site, Takeda launched AHEAD (Advanced Heat Pump Demonstrator) in 2025 to decarbonise high-temperature process heat — one of the most emissions-intensive aspects of pharmaceutical production. Developed with the Austrian Institute of Technology, AHEAD replaces fossil-fuel steam generation with electrified, high-efficiency heat pump technology using 100% natural refrigerants. The system can exceed 200°C, meeting pharmaceutical steam requirements, and has the potential to avoid up to 1,600 tonnes of CO_2e annually — an 80% reduction in steam-related emissions at the site.

Together, these projects combine immediate emissions reductions with scalable solutions that support Takeda's commitment to achieve net-zero greenhouse gas emissions across global operations by 2035.

23 https://www.takeda.com/de-de/pressemitteilungen/2025/biomasse-singen-2025/

How combining chilling and heating systems into one system can lead to substantial reduction of carbon footprint

Alongside investments on direct green electricity assets across its global manufacturing network and virtual power purchase agreements, Merck has implemented a thermal energy transition initiative to address its Scope 1 emissions.

In the pharmaceutical industry, precise temperature control is a critical process parameter. Chilling systems are required to remove heat and maintain low temperature while production processes simultaneously demand significant amounts of steam and hot water.

At their Aubonne site in Switzerland, rather than perpetuating the status quo by replacing an aging traditional system with something new but similar, Merck decided to totally rethink their chilling and heating systems by combining them into one system and valorize heat that would be lost in a traditional system. A new heat pump has been installed, running on green electricity, and transforms waste heat from the chilling system to warm up water for the process.

By doing this, 880t of CO_2e Scope 1 are avoided annually, representing close to 25% of the scope 1 emissions of the site (equivalent to 4.8 GWh gas saved on a yearly basis).

880t

OF CO_2e SCOPE 1 AVOIDED ANNUALLY

A 90% Emissions Reduction Model for Future Pharma Manufacturing

SOLIDA-1 is a next-generation pharmaceutical manufacturing plant in Leverkusen, Germany, setting new standards in modularity, adaptability, digitalisation, and automation. It is a strategic cornerstone of Bayer's mission of "Health for all, Hunger for none," designed to bring innovative complex medicines to patients faster than ever before whilst significantly reducing environmental footprint.

It is designed entirely around a low-temperature, low-energy utility concept that enables wide use of regenerative energy. The facility is supplied through a newly developed, CO_2-minimized warm- and cold-water system specifically engineered for SOLIDA-1. At its core, a bi-directional heat-pump architecture, powered entirely by renewable electricity, provides both heating and cooling as required. Medium-load demands are covered by high-efficiency heat pumps, while a minimal fossil steam system is retained only for rare peak loads.

It leverages existing geothermal groundwater flows available via Leverkusen Chempark's process water system as a stable heat source for the heat pumps. The creative use of existing infrastructure provides a role-model example of how industrial clusters can unlock sustainability at scale with minimal intervention.

The optimized heat/cold supply concept reduces yearly emissions by more than 90% – achieved with no increase in total cost compared to a traditional fossil-based system.

Advancing the Transition to Renewable Energy Across Global Operations

UCB continues to advance its transition to renewable energy, addressing both electricity and gas consumption across global sites[24]. The decarbonisation strategy follows a clear principle: energy efficiency first, followed by the transition to cleaner energy sources. Efforts to prioritise reducing consumption through energy audits, optimisation of HVAC (heating, ventilation and air conditioning) systems, heat recovery projects, and environmental management tools that enhance equipment performance and guide investment decisions. Laboratory sustainability is supported through participation in the My Green Lab certification program.

Reliance on fossil-based natural gas is being progressively reduced through connection to local renewable steam networks where available and exploration of on-site heat production using biomass and geothermal energy at suitable locations. The use of certified biogas produced exclusively from waste is also increasing, with the ambition to achieve 100% biogas coverage for Scope 1 emissions by 2030.

The transition to renewable electricity is supported through a combination of certified renewable sourcing, on-site generation, and long-term market commitments[25].

In 2023, UCB signed a physical Power Purchase Agreement (PPA) for its Belgium site.

In 2024, UCB entered a Virtual Power Purchase Agreement (VPPA) through the Energize coalition, a collaborative initiative among pharmaceutical companies to expand access to renewable energy contracts. This agreement contributes to the development of new solar infrastructure in Europe and will supply renewable electricity for 10 years from 2026 onward.

24 https://www.ucb.com/about-ucb/sustainability/environmentals-sustainability/co2e

25 https://reports.ucb.com/

Transitioning to renewable energy

GSK has committed to reducing greenhouse gas emissions by 80% across all scopes by 2030 and 90% by 2045, against a 2020 baseline. As a member of RE100, the company aims to source 100% of imported electricity from renewable sources by 2025 and 100% of total electricity consumption (generated and imported) from renewable sources by 2030, through a combination of on-site generation, power purchase agreements and renewable certificates.

In 2024, GSK initiated a Virtual Power Purchase Agreement (VPPA) with Schneider Electric and IGNIS, to supply 200 GWh of renewable electricity certificates annually to GSK sites[26]. This volume is equivalent to electricity consumption of approximately 32,900 European households for a year. The agreement will save an estimated 72,000 tonnes of CO_2e emissions. The agreement supports two new solar projects in central Spain and will cover approximately 50% of GSK's mainland European electricity demand for 12 years from mid-2026.

To accelerate renewable adoption across the value chain, GSK co-founded Energize[27], a supply chain renewable initiative endorsed by the Pharmaceutical Supply Chain Initiative (PSCI). In 2024, Energize facilitated 27 PPAs across 8 companies, securing 563.7 GWh of renewable energy annually for a 10-year term, avoiding an estimated 393,795 metric tons of CO_2e per year (the equivalent of 51,355 households' annual energy consumption). These agreements support 7 new solar projects in Spain; with a combined capacity exceeding 280 MW.

GSK operates 11 manufacturing sites, six R&D sites and commercial operations across mainland Europe, employing around 24,000 people.

Five healthcare leaders secure landmark renewable energy deal in China

For the first time, five global healthcare companies, AstraZeneca, Lonza, Novartis, Novo Nordisk and Roche (four are members of the Sustainable Markets Initiative Health Systems Task Force)[28], signed an industry-first, multi-party renewable power agreement in China in 2024, a key country for pharmaceutical supply chains, to help accelerate the transition to net zero health systems.

The three-year agreement unlocks around 200 gigawatt/hours (GWh) of renewable electricity annually in Jiangsu, Guangdong, Shanghai and Beijing and will result in annual emissions savings of approximately 120,000 tonnes of carbon dioxide equivalent (CO_2), comparable to taking 25,000 cars off the road. The electricity is supplied by Envision Energy. There are opportunities for other companies in the healthcare supply chain to join and decarbonise their operations.[29]

Over half of the healthcare sector's emissions are created in manufacturing supply chains, and energy consumed in these supply chains accounts for around 25% of total healthcare emissions[30]. China is a key market for pharmaceutical manufacturing, including for companies operating in Europe, making collaboration with this market critical to reduce carbon emissions at scale.

This collaboration therefore supports decarbonisation at scale, while aligning with China's wider climate objectives.

26 https://perspectives.se.com/blog-stream/gsk-in-partnership-with-schneider-electric-agrees-virtual-ppa-with-ignis-to-power-operations-across-europe-with-solar-energy

27 https://www.se.com/ww/en/about-us/newsroom/news/press-releases/the-energize-program-celebrates-landmark-multi-buyer-ppa-deal-to-decarbonize-healthcare-supply-chains-66f1563c20b8ed4e0c04bb1b

28 https://www.sustainable-markets.org/news/five-global-healthcare-leaders-secure-industry-first-multi-party-agreement-to-access-renewable-power-in-china/

29 https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle

30 https://a.storyblok.com/f/109506/x/96fc198cb8/smi-hstf-executive-summary.pdf

How AstraZeneca is decarbonising its operations, fleet and value chain

Since 2015, AstraZeneca has achieved an 88% reduction in Scope 1 and 2 emissions (those from operations and fleet) through renewable heat and power and energy efficiency across R&D and manufacturing sites and facilities, and by switching to electric vehicles.

By the end of 2025, 81.5% of the Company's global vehicle fleet, representing more than 18,000 vehicles, were battery electric vehicles, while renewable energy, including biomethane and solar panels, support medicine development and manufacturing worldwide.

AstraZeneca has pioneered clean heat solutions for its US, UK, China, and Irish operations. In the UK, the country's first industrial scale biomethane plant for life sciences, produced 69.4 GWh by end of 2025, supplying clean heat to all UK R&D and manufacturing sites, while a carbon capture facility produces biogenic carbon dioxide.

Alongside decarbonising global operations, AstraZeneca is also taking action to reduce emissions across its value chain – from suppliers, capital goods, logistics, and product use.

Sustainable product innovation is key to these efforts, including AstraZeneca's transition to the next-generation propellant (NGP) with near zero global warming potential (GWP) for its pressurised metered dose inhalers (pMDI) for respiratory medicines. This transition has taken place in the UK and is underway in Europe.

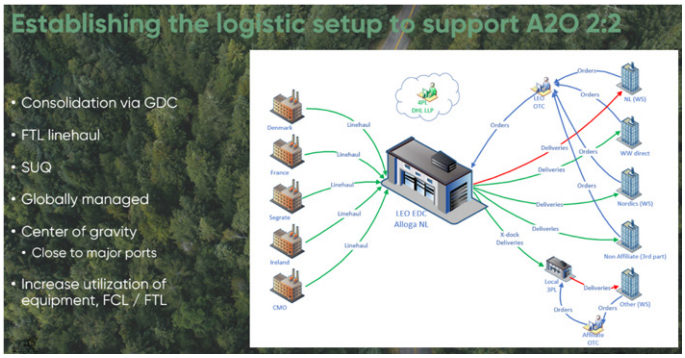
New sites maximise the use of low carbon materials, while suppliers are being encouraged to adopt science-based targets.

Switching from air freight to sea freight and optimising business travel are reducing the Company's transport footprint. Since 2019, the Company has reduced business travel by 48%.

AstraZeneca is an active player in the Sustainable Markets Initiative Health Systems Task Force, where CEO Pascal Soriot is the Chair.

Air to Ocean transportation

To enhance sustainability and efficiency, LEO Pharma is transforming how they transport their products. Previously, the high flammability and explosion risks of certain products restricted LEO Pharma from using ocean freight. However, their Global Logistics team has now developed secure solutions, enabling a greater share of global shipments to move by sea as a more sustainable alternative.



Additionally, they have optimized the logistics network by establishing a central European hub. This strategic warehouse streamlines global distribution, reducing transit times and improving operational efficiency. These changes reflect LEO Pharma's commitment to both safety and sustainability in logistics.

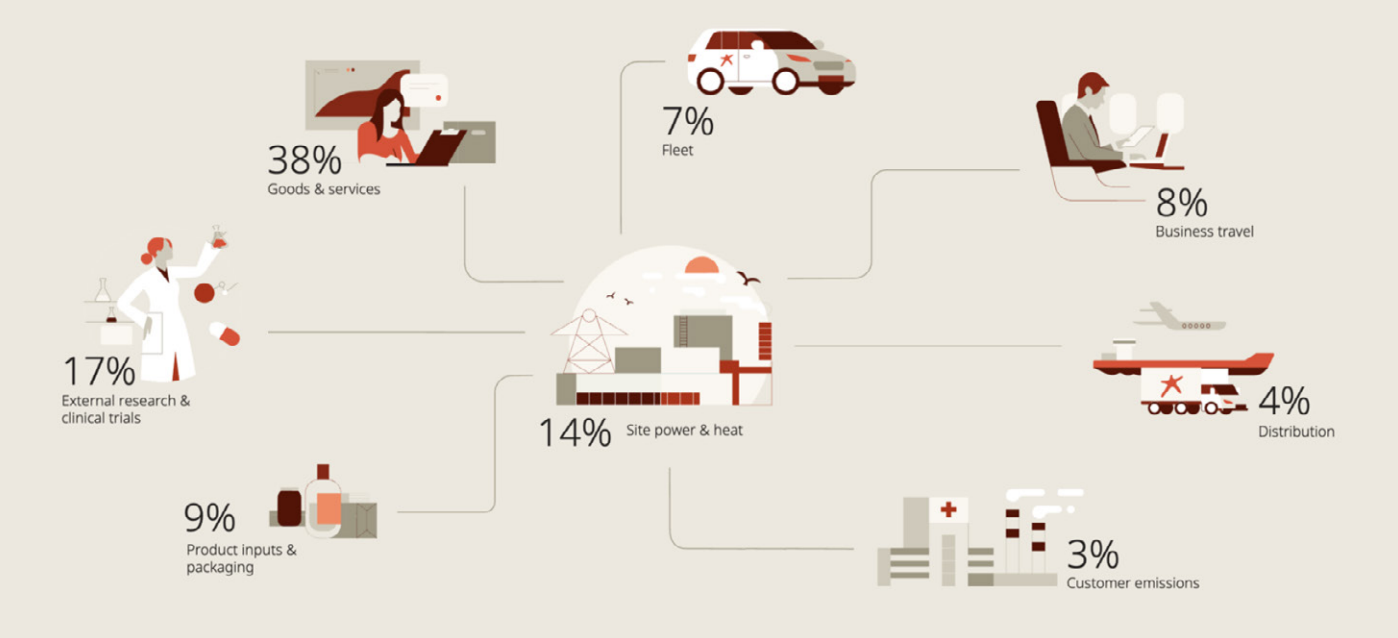
Year	% AFR for overseas destinations	% OFR for overseas destinations
2020	50%	50%
2021	35%	65%
2022	25%	75%
2023	20%	80%
2024	24%	76%
2025	14%	86%

More Green Fund to foster Sustainability and to reduce CO_2e Emissions

For environmental sustainability, Boehringer Ingelheim has established the MORE GREEN program, addressing all environmental dimensions across the company's operations. A dedicated MORE GREEN Fund accelerates climate action by supporting single green projects at sites worldwide—separate from large investments where decarbonization is already built in. To ensure sound decision-making, all projects across the company are evaluated using an internal carbon price, strengthening the business case for measures that deliver long-term CO_2e reductions. From 2020 onward, more than 85 projects have been implemented globally, with typical CO_2e reductions ranging from 100 up to several thousand tons per year. For example, at Sant Cugat in Spain, a new wastewater treatment plant enables reuse of up to 97% of water, substitutes fossil-based energy with clean electrified processes, and cuts Scope 3 CO_2e emissions by up to 3,000 tons annually.

Supplier engagement

Lundbeck has adopted a structured approach to climate-related supplier engagement as part of its decarbonization strategy. With around 80% of its total CO_2e emissions coming from Scope 3 activities in the value chain, suppliers play a pivotal role in achieving the company's climate goals[31]. To address this, Lundbeck actively engages its largest suppliers to disclose detailed emission data, transition to renewable electricity, and adopt science-based climate targets aligned with international standards. Despite these efforts, the current initiatives alone are not sufficient to reduce emissions at the pace required to meet Lundbeck's long-term targets. Recognising this challenge, the company is developing a responsible sourcing strategy aimed at strengthening and deepening engagement with suppliers. The strategy will introduce targeted measures for specific supplier categories and include sustainability-focused criteria requests for Proposal (RFPs) that prioritise sustainability performance with the purpose to meaningfully influence sourcing decisions.[32]



UCB Responsible sourcing

Another relevant example comes from UCB, who works closely with key suppliers, including Contract Manufacturing Organizations (CMOs), to accelerate decarbonisation across its value chain, prioritising those representing 80% of its purchased goods and services carbon footprint. Supplier selection criteria favour science-based targets and sustainability clauses are embedded in contracts, and CO_2e data collection is being digitalized, to improve product footprint accuracy and differentiation[33].

Through its Supplier Recognition Program and targeted sustainability campaigns, UCB promotes ambitious climate action and collaborative progress.

The company also supports suppliers through tools and engagement initiatives, including participation in industry platforms such as Energize (renewable electricity), Activate (API decarbonisation), and Converge (laboratory sustainability).

31 https://www.lundbeck.com/content/dam/lundbeck-com/masters/global-site/annual-reporting/2024/Lundbeck_Annual_Report_2024.pdf

32 https://www.lundbeck.com/content/dam/lundbeck-com/masters/global-site/pdf/sustainability/2024/05-may/Transition_plan_2024.pdf

33 https://www.ucb.com/sites/default/files/2025-10/Supplier_Sustainability_Guide_2025.pdf

Novo Nordisk Suppliers for Zero programme

One further example, comes from Novo Nordisk, who while expanding to serve more patients, is taking responsibility to reduce emissions, transform plastic use and to protect nature. Since over 95% of its environmental impact lies in its supply chain, collaboration with suppliers and contract manufacturing organisations (CMOs) is critical. Building on its Circular for Zero strategy[34], Novo Nordisk has launched Suppliers for Zero – an environmental supplier programme that sets out how the company and its partners will collaborate to meet shared targets across Climate, Plastic and Nature targets across its value chain. The programme recognises that suppliers vary in size, capability and readiness; the programme promotes practical, measurable actions — from scaling up renewable electricity use to reducing plastic waste and protecting biodiversity. More than 3,000 suppliers have already committed to sourcing renewable electricity for Novo Nordisk. By strengthening alignment, sharing knowledge and enabling innovation, Suppliers for Zero aims to build a resilient, future-proof supply chain that supports sustainable products and long-term health outcomes.

34 https://www.novonordisk.com/sustainable-business/zero-environmental-impact/suppliers-for-zero.html

Eco-design is systemic

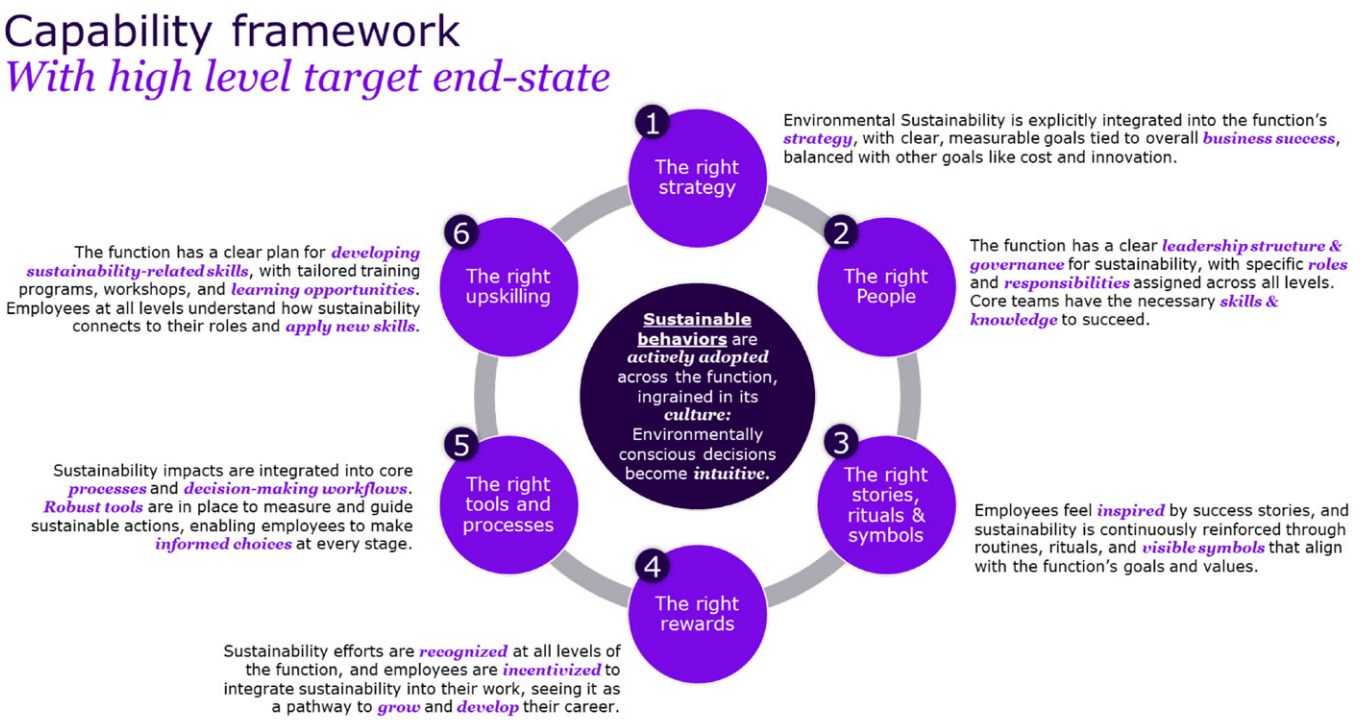
Sanofi Eco-design systemic program is a transformative approach that weaves environmental sustainability into the DNA of the company's business ecosystem[35,36]. This framework aims to seamlessly integrate Eco-design principles into day-to-day operations by empowering internal stakeholders and the full value chain with genuine ownership of environmental outcomes.

The architecture rests on six interconnected capability pillars:

- **Strategy:** Integration of environmental sustainability into business objectives and decision-making.
- **People:** Clear leadership structure with specific roles and responsibilities.
- **Stories & Rituals:** First results on insulins, mAbs and vaccines are encouraging and allow for widespread sharing of the teams' successes.
- **Reward:** Each year, the Planet Care Challenge rewards employees who propose innovative ideas to improve the company's environmental sustainability. In 2025, the theme focused on the six stages of the medicine lifecycle, promoting the integration of Eco-design as a value-creation lens. 102 projects were submitted and 5252 votes were registered.
- **Tools & Processes:** Quantitative tools (e.g.: LCA within in-house Eco-design Digital Intelligence) and qualitative support (e.g.: manufacturability standard) are embedded in the stage gate process of any new product launch and in the life cycle of any manufactured product.
- **Upskilling:** In 2024, 3974 training modules were followed on Eco-design.

First wave focuses on Research & Development (R&D), Manufacturing Science, Analytics and Technology (MSAT), Global Devices and Packaging Unit (GDPU).

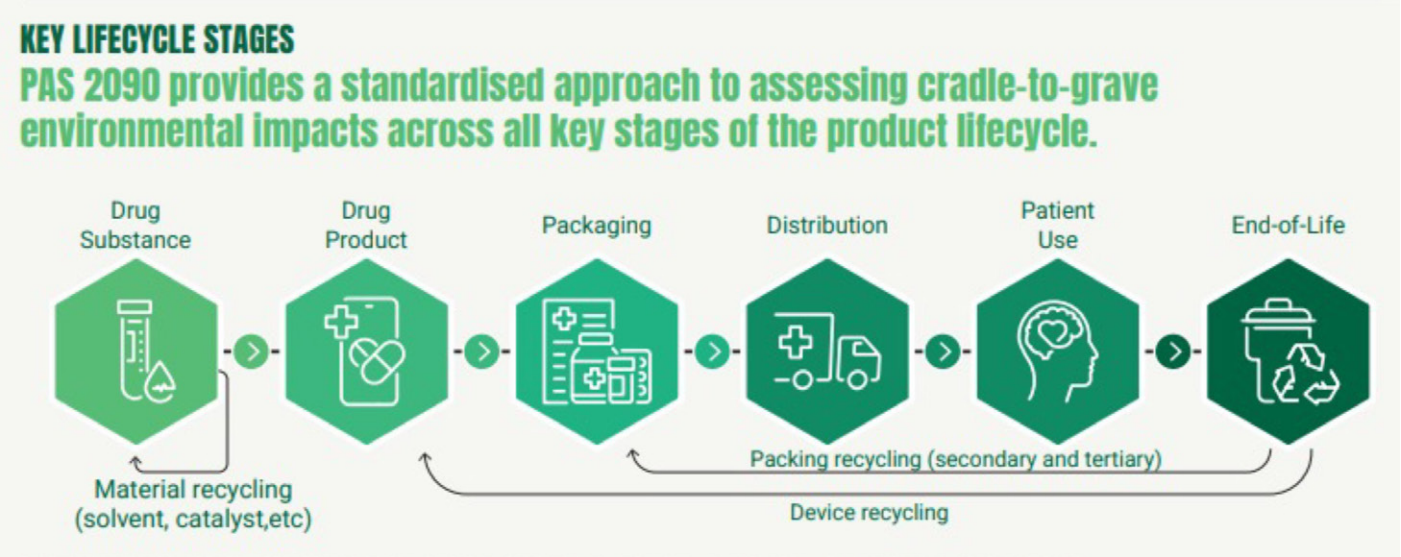
This Eco-design management system is already showcasing positive consequences on the organisation, more sustainable innovations in the pipeline, reduction of products environmental impact, and creation of business value.



35 https://www.sanofi.com/en/magazine/sustainability/how-eco-design-makes-for-a-healthier-and-more-sustainable-world-healthcare

36 Luu, D.-N., 2023. Proposal and formalization of a methodological model for the implementation of an eco-design strategy. Application to the pharmaceutical industry. HESAM Université, Paris. (http://www.theses.fr/s252368)

PharmaLCA Consortium



The Pharmaceutical LCA Consortium (comprising AstraZeneca, GSK, Johnson & Johnson, Merck, MSD, Novartis, Novo Nordisk, Pfizer, Roche, Sanofi, Takeda and SLR Consulting as project management entity) was established in 2023 in partnership with the Sustainable Markets Initiative (SMI) Health Systems Task Force and the Pharmaceutical Environment Group (PEG)[37]. Its purpose is to accelerate the adoption of Life Cycle Assessment (LCA) across the pharmaceutical sector by:

- Developing industry-wide Product Category Rules (PCR) through work package (WP) 1.
- Improving data availability and quality through WP2.
- Creating an accessible LCA tool to lower barriers to conducting LCA through WP3.
- Engaging stakeholders across the value chain to drive uptake and build capacity through WP4.

The Consortium has collaborated closely with Quantis, BSI, NHS England, the Office for Life Sciences (OLS) and a broad multi-stakeholder community to develop *PAS 2090:2025 – Pharmaceutical Products: Product Category Rules for Environmental Life Cycle Assessment*[38]. Developed through an independent consensus-based process involving over 475 stakeholders across 35 countries, PAS 2090 is the first international standard providing a harmonised and scientifically robust framework to measure and communicate the environmental impact of medicines across their entire lifecycle.

The Consortium has also developed a technical guidance document to facilitate PAS 2090 implementation[39], providing practical recommendations and illustrative examples. It has also collaborated with the Pharmaceutical Supply Chain Initiative (PSCI) to deliver an introductory LCA course tailored to the pharmaceutical sector.

To further accelerate LCA adoption, the Consortium is developing two major sector wide enablers:

- A PAS 2090-compliant Life Cycle Inventory (LCI) database tailored to the pharmaceutical sector, in collaboration with ecoinvent and Boehringer Ingelheim.
- A PAS 2090-compliant LCA tool in collaboration with AllocNow.

This coordinated investment demonstrates the sector's commitment to scientific rigor, transparency, and environmental accountability.

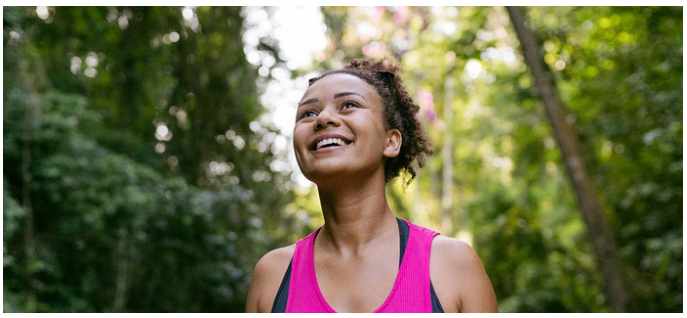
37 https://peghub.org/lca

38 https://knowledge.bsigroup.com/products/pharmaceutical-products-product-category-rules-for-life-cycle-assessments-specification

39 https://peghub.org/resource?resource=266

DRIVING THE REDUCTION OF SCOPE 3 EMISSIONS DOWN OUR VALUE CHAIN

Carbon minimal inhaler in the fight against climate change



As part of its Science Based Targets initiative (SBTi) validated commitment to achieve Net Zero by 2035, Chiesi became the first pharmaceutical company to publicly commit to reducing the carbon footprint of pressurised metered dose inhalers (pMDIs), supported by an investment exceeding €400 million.

pMDIs are essential for the treatment of asthma and COPD but currently rely on high-global-warming-potential hydrofluorocarbon (HFC) propellants subject to a regulatory phase-down. To address this, Chiesi is transitioning six pMDI formulations to the next-generation propellant HFA 152a, which is a low-GWP that can reduce product carbon footprints by up to 90%, covering both production processes (Scope 1) and use phase emissions (Scope 3). In September 2025, clinical development of these Carbon Minimal pMDIs was successfully completed, paving the way for regulatory submissions[40].

These carbon minimal inhalers maintain the same efficacy, safety, usability and extrafine formulation as current products, ensuring continuity for patients and healthcare professionals, while significantly reducing environmental impact.

In parallel, Chiesi continued investment in low-carbon Dry Powder Inhaler (DPI) technologies, ensuring patients have access to a comprehensive portfolio of Carbon Minimal Inhalers options.

Together, these initiatives demonstrate how Chiesi's product innovation and operational optimisation can drive substantial emissions reductions across the value chain.

Building a Resilient, Low-Carbon Supply Chain for Patients

Suppliers play a critical role in delivering life-saving medicines and account for the largest share of BMS's emissions. As a result, supplier decarbonisation is central to the company's climate strategy[41]. Through its Scope 3 Supplier Engagement Program, BMS supports suppliers in setting science-based targets, adopting renewable energy, and integrating sustainable practices across their operations.

Recognising that setting a science-based target is only the first step, BMS launched the Supplier Decarbonization Accelerator to help suppliers turn commitments into action. The programme provides practical tools, expert guidance, and resources to help suppliers set and validate targets, reduce emissions, and embed sustainability in their operations.

Participants receive practical tools, expert guidance, and resources to set and validate targets, reduce emissions, and operationalize sustainability. To date, more than 100 suppliers, many early in their sustainability journey, have participated. By the end of 2025, 63% of BMS supplier emissions were covered by a science-based or science-aligned target, putting the company on track to reach 75% by 2028.

The broader Supplier Engagement Program also promotes collaboration across the industry, including renewable energy initiatives, laboratory sustainability practices, and site-level decarbonisation with API partners.

40 https://www.chiesi.com/en/pmdi-carbon-minimal-clinical-development-regulatory-submissions/

41 https://www.bms.com/about-us/our-company/doing-business-with-us-as-a-supplier.html

Vx Blister-Free Compact Box Projects

Sanofi is pioneering sustainable vaccine packaging through its Vx Blister-Free Compact Box initiative, designed to minimise environmental impact while ensuring product integrity and regulatory compliance[42]. The project focuses on lightweight, plastic-free cardboard packaging optimized for storage, transport, and cold-chain logistics.

Key actions include:

- Material Optimisation: Use of recyclable, plastic-free, lightweight carton materials with complete elimination of plastic secondary packaging.
- Eco-friendly Pack Design: Compact cardboard packaging optimized for storage, transportation, and cold chain logistics, using non-solvent-based inks and glues.
- Manufacturing Innovation: Installation of automated packaging equipment to improve efficiency and reduce waste.
- Digital Transformation: Exploration of electronic patient information leaflet (ePIL) to reduce paper use and optimize pack size.

Impact:

- Lower carbon emissions through lighter, more compact packaging and improved transport efficiency.
- Elimination of plastic components and reduced material waste.
- Enhanced packaging efficiency through streamlined manufacturing processes
- Higher packaging density, especially for cold-chain products.
- Alignment with EU Green Deal objectives and Packaging & Packaging Waste Regulation compliance.
- Provides model for ePIL preparation with authorities for sustainability and supply chain resilience

Optimisation of commercial products

Roche has a small-molecule oral drug that is used to treat ALK-positive non-small cell lung cancer. The product was launched following expedited approval, using a first generation (G1) manufacturing process for the active pharmaceutical ingredient (API) that was not fully optimised. In order to address deficiencies including poor mass efficiency of this process, Roche and Chugai jointly initiated the development of a second-generation (G2) process. The G2 process was implemented in 2024, and global registration was ongoing at the end of the year. The G2 process resulted in a significant sustainability improvement by reducing the specific (per kg API) CO_2e emissions by 35% versus the G1 process. This would avoid 14 kilotonnes of CO_2e emissions yearly based on the current API forecast assuming the base-case demand scenario. Furthermore, the use of three solvents on the REACH Candidate List of substances of very high concern for authorisation were eliminated by switching to the G2 process, namely dimethylacetamide (DMA), dimethylformamide (DMF) and 1,2-dimethoxyethane (DME). (Annual report 2024 - section 5.2, p.106-108)[43]

42 https://www.sanofi.com/en/our-company/sustainability/environmental-impact
43 https://assets.roche.com/f/176343/x/09457b2a19/ar24e.pdf

Glossary

BEV	Battery Electric Vehicle
BSI	British Standards Institution
CDP	Carbon Disclosure Project
CMO	Contract Manufacturing Organization
CSDDD	Corporate Sustainability Due Diligence Directive
CSRD	Corporate Sustainability Reporting Directive
DPI	Dry Powder Inhaler
EAC	Energy Attribute Certificate
EFPIA	European Federation of Pharmaceutical Industries and Associations
ePIL / PIL	(electronic) Patient Information Leaflet
ESG	Environment, Social and Governance
GHG	Greenhouse gas
GWP	Global Warming Potential
HFC	Hydrofluorocarbon
HSTF	Health Systems Taskforce
HVAC	Heating ventilation and Air Conditioning
IPCC	Intergovernmental Panel on Climate Change
LCA	Life Cycle Assessment
LCI	Life Cycle Inventory
MSCI ESG	Morgan Stanley Capital International ESG (stock market index dedicated to ESG topics)
NHS	National Health System (UK)
PCF	Product Carbon Footprint
PCR	Product Category Rules
PFAS	Per- and Polyfluoroalkyl Substances
vPPA/PPA	(virtual) Power Purchase Agreement
PSCI	Pharmaceutical Supply Chain Initiative
PV	Photovoltaics
RE100	Renewable Energy 100 (global corporate renewable energy initiative bringing together businesses committed to 100% renewable electricity.)
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RFP	Request for Proposal
SBTi	Science Based Targets initiative
SMI	Sustainable Markets Initiative
Scope 1-3	Scope 1 - direct emissions from owned sources; Scope 2 — indirect emissions from the generation of purchased energy; Scope 3 — all other indirect emissions that occur in a company's value chain.
TCFD	Task Force on Climate-related Financial Disclosures
UNFCCC	United Nations Framework Convention on Climate Change
WHO	World Health Organization

Disclaimer: This document has been developed under the leadership of the EFPIA Environment and Chemicals expert group. The examples included are a non-exhaustive selection which do not represent the full level of activities on climate change being undertaken across our industry.

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