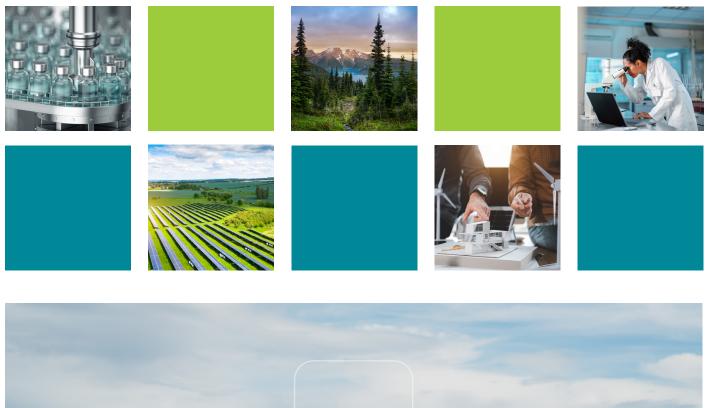


White Paper on Climate Change







The research driven pharmaceutical industry, represented by EFPIA, strives to improve human health and wellbeing. It is scientifically proven that climate change will adversely impact human health¹. Therefore, understanding the relationship between people, health and the environment is critical to ensuring the pharmaceutical industry, along with other stakeholders, plays an active role in decarbonization.

Our mission is to create a collaborative environment that enables EFPIA member companies to innovate, discover, develop, and deliver new therapies and vaccines for people across Europe. Reducing the environmental impact of medicinal products development and manufacturing is an important area of low carbon innovation and pollution control. Changes to products their supply chains and manufacturing processes to reduce the Global Warming Potential (GWP) and/or impact on the environment can be achieved through innovation. We believe that innovations will help us reduce the greenhouse gas (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride)¹ emissions from our company's productions and supply chains.

Our member companies are mitigating climate change by specifically addressing the need for increased energy efficiency and lowered energy intensity across our value chains.

Establish and further Annually and publicly Increase the share Set science-based Contribute to reduced energy develop climate policies disclose progress of renewable energy co, reduction based on materiality and towards co, e reduction at their facilities and targets consumption and impact for individual targets using recognised along the global increased energy companies, whilst methodologies, and value chains efficiency addressing their entire verified by third parties value chains

This White Paper highlights the commitment made by EFPIA companies to:

¹ WHO Publication 2016: Preventing disease through healthy environments: a global assessment of the burden of disease from environmental risks



The United Nations' Framework Convention on Climate Change (UNFCCC) defines climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods".³

Since 1988, the Intergovernmental Panel on Climate Change (IPCC), established by the United Nations Environment Program (UNEP) and the World Meteorological Organization (WMO), has regularly published reports and papers which indicate that climate change is increasingly impacting the Earth's physical, biological, and human systems.⁴

In addition, the World Health Organization (WHO) has documented the fact that this change has the potential to affect human health in several ways, including, but not limited to altering the geographic

range and seasonality of certain infectious diseases, disturbing food-producing ecosystems, rise in sea level and increasing the frequency of extreme weather events, such as hurricanes¹.

At the United Nations' Climate Change Conference 26 (Conference of the Parties or COP26) in Glasgow in November 2021 and reinforced at COP27 in Sharm el-Sheikh in November 2022, 195 Parties to the UN Framework Convention on Climate Change (UNFCCC) – pledged to curb emissions, strengthen resilience, and joined forces to take common climate action and limit global warming to well below 2°C, preferably 1.5°C compared to pre-industrial levels. The agreement encompassed all the crucial areas identified as essential for a landmark conclusion. In the European Union, the EU Green deal and related climate politics are linked to fulfill UNFCCC ambitions.

EFPIA welcomes the ambition of the European Union's Green Deal and Climate Policies to become climate neutral by 2050⁵

Ursula von der Leyen, President or the European Commission, said on the occasion of launching the EU green deal: "The European Green Deal is on the one hand our vision for a climate neutral continent in 2050 and it is on the other hand a very dedicated roadmap to this goal [...] this is Europe's 'man on the moon' moment."⁶

4 IPCC reports: https://www.ipcc.ch/reports/

² From here on, the document refers only to carbon dioxide equivalents, CO₂e. In alignment with international practice, it nevertheless means and consider the emissions from all six Kyoto protocol gases

³ United Nations' Framework Convention on Climate Change (UNFCCC) article 1: https://unfccc.int/resource/ccsites/zimbab/conven/text/art01.htm

^{5 &}lt;u>https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en</u>

⁶ European Union press corner https://ec.europa.eu/commission/presscorner/detail/en/speech_19_6749



Air, water, and soil pollution; improper waste management; and degradation of ecosystems all negatively impact human health. According to the WHO, climate change is among the greatest health risks of the 21st century. Climate change has an influence on health, both directly or indirectly by changing infectious disease patterns, increasing extreme weather events and the risk of drought, floods, and subsequent food insecurity, and increasing respiratory disease from poor air quality.

It is estimated by the WHO that one in every four premature deaths today is due to environmental factors. This illustrates that our personal health depends on planetary health.³

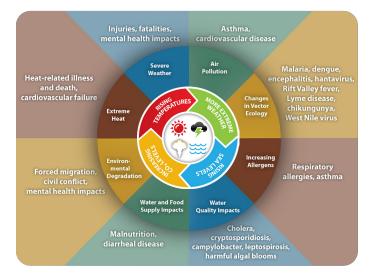
The Lancet Report 2022 notes that Decision makers can today still deliver more resilient energy systems, saving at least 1.2 million lives from cleaner air, 11.5 million lives from healthier diets, reducing energy poverty, and delivering healthier, more livable cities" ⁷

As illustrated in Figure 1, it is anticipated that climate change will affect disease patterns and outcomes in the future – in some cases adversely.⁸ Therefore, addressing climate change should be

considered as preventive care and puts the patient in the center of tackling climate change.

The pharmaceutical industry recognizes its contribution to greenhouse gas (GHG) emissions, and also that there is still more that can be done, and the industry is driving forward actions. The research-driven pharmaceutical companies represented by EFPIA, carefully evaluated the global emission data of our companies in a survey carried out during the period of 2022.

Figure 1: Impacts of Climate Change on Human Health⁹



7 2022 Report - Lancet Countdown https://www.lancetcountdown.org/2022-report/

8 Injury Prevention and Environmental Health. 3rd edition. Mock CN, Nugent R, Kobusingye O, et al., editors. Washington (DC): See chapter 8: Health Risks and Costs of Climate Variability and Change, by Kristie L. Ebi, Jeremy J. Hess, and Paul Watkiss. Fig.8.1 <u>The International Bank for Reconstruction</u> and Development / The World Bank; 2017 Oct 27.

9 Center for Disease Control and Prevention https://www.cdc.gov/climateandhealth/effects/default.htm

Our benchmark showed that, compared to high impact sectors¹⁰ such as steel¹¹, cement¹², chemicals¹³, and mining¹⁴, the pharmaceutical sector global CO_2e emissions are about 10 times lower in absolute emissions¹⁵. Comparing the intensity data, the difference is even more pronounced, as EFPIA member companies indicate an intensity of 24t CO_2e per million \in . This was evaluated by a comparison of EFPIA member companies survey data with the ten biggest companies in each sector.¹⁶

The entire healthcare system in Europe is estimated to contribute to up to 8% of greenhouse gas emission¹⁷, while pharmaceutical industry is only contributing to a fraction of these. It is acting responsibly to

progress regarding CO₂ reduction targets, specifically addressing increased energy efficiency and lowered energy intensity across our value chains and sourcing preferably renewable electricity.

In addition, early evidence suggests that innovation that improves health outcomes while optimizing resources also reduces carbon impacts. As the EFPIA mission is to create a collaborative environment that enables our members to innovate, discover, develop, and deliver new therapies and vaccines for people across Europe, we believe that innovation that also considers the use of resources will reduce the footprint of addressing diseases.



10 As a basis for all global emissions the UNFCCC dataset was used, upscale was necessary due to fact that all sectors in focus data was only fully available for Annex I countries, last dataset available for 2019

- 11 https://www.iea.org/reports/iron-and-steel-technology-roadmaphttps://www.iea.org/reports/iron-and-steel-technology-roadmap
- 12 https://iopscience.iop.org/article/10.1088/1748-9326/ac48b5/pdf
- 13 https://cefic.org/a-pillar-of-the-european-economy/facts-and-figures-of-the-european-chemical-industry/profile/
- 14 https://www.era-min.eu/sites/default/files/docs/et0320656enn.en_.pdfhttps://www.era-min.eu/sites/default/files/docs/et0320656enn.en_.pdf
- 15 https://efpia.eu/media/gtbncsjc/survey.pdf
- 16 Intensity data were based on Scope 1 + 2 emissions of the ten biggest internationally operating companies in the sector (as reported in their annual reports), for EFPIA data all 23 reporting companies in the survey were used (as average).
- 17 The Environmental Sustainability of Health Care Systems. A literature review on the environmental footprint of health care systems and interventions aiming to reduce it (IRDES) https://www.irdes.fr/english/reports/586-the-environmental-sustainability-of-health-care-systems.pdf, page 21/22



3. Outcome of the 2022 climate survey of EFPIA member companies

A survey of EFPIA members' environmental sustainability goals and activities carried out in 2022 gives the clearest indication of the pharmaceutical industry's continued commitments to making a positive impact on the lives of patients, while operating sustainably towards a healthy environment. The full data and respective graphics can be found on the <u>EFPIA website</u>.

Companies continue to establish robust climate change policies and strategies addressing their entire value chains and disclosing CO₂e performance following recognized guidance like the World Resources Institute Greenhouse Gas Protocol.

This includes pursuing science based CO₂e reduction targets, contributing to reduced energy consumption, increased energy efficiency and seeking opportunities to use energy from renewable sources throughout the value chain.

The data reveals clearly that concerns of climate change are a priority within EFPIA companies - since 2020, 70% of the members raised their ambition on climate action targets. All companies participating in the survey reported long-term targets for CO_2e emission reduction and more than 60% have short-term targets. 70% have approved "Science based Targets" and 60% have set net zero commitments.



The data in more detail:

To reach the ambitious goals of our industry, not only energy reduction initiatives but also transition to renewable energy generation are in place; be it purchased or self-generated. Several case studies mentioned in the survey showed trends to greener buildings or/and production units, use of circularity, and green chemistry principles. Some examples include recycling of solvents, sourcing recycled packaging material, or use of modern refrigerants and, increasingly, low carbon medicaments/ vaccines.



The data in more detail:

For several companies, remuneration of executive management is linked to achieving CO_2 emission targets.

Innovative companies are ready to contribute to new paths to decarbonization. Examples are multiple analytics and diagnostic tools in production and progression towards low carbon medicaments.

Climate change scenarios play an important role for our businesses due to the increase of anticipated extreme weather events in the future such as floodings and droughts. More than 70% of our members already conduct scenario analysis and take them into consideration in their future business planning.

The shadow price or carbon price method has already been introduced or is planned to be introduced by more than 60% of our members. This is seen to be a very effective tool by several of our members. This was understood in the survey to prepare for significant price increases for fossil fuels as well as for emission allowances and offsetting credits.

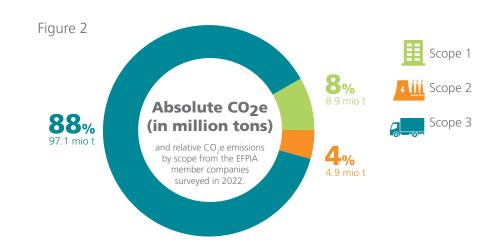
CO, e emissions from most EFPIA members can be broken down as follows:

- 10% to 20% are related to direct on-site operational activities (scope 1 and scope 2 emissions).¹⁸
- The remaining 80%+ are associated with up- and downstream value chain emissions (scope 3 emissions).¹⁹
- While the completeness of companies' CO₂e emission inventory (specifically concerning scope 3 completeness) varies, this exemplifies the shift towards decarbonization of the entire value chain.
- More than 80% of the responding companies calculate emissions following the Greenhouse Gas Protocol and report to the Carbon Disclosure Project (CDP).

The data in more detail:

Scope 3 emission targets play an important role. The 2022 survey identified that suppliers play a significant role in our industry for reducing scope 3 emissions. Almost all our member companies (95%) engage with their suppliers on climate action.

Reported scope 1 emissions of 23 of EFPIA member companies participating were totaling 8.9 million tons CO_2e , scope 2 were 4.9 million tons CO_2e , and scope 3 were 97.1 million tons CO_2e (see Figure 2).



18 Scope 1 emissions are direct emissions from owned or controlled sources. Scope 2 emissions are indirect emissions from the generation of purchased energy: https://ghgprotocol.org/sites/default/files/standards_supporting/FAQ.pdf

19 Scope 3 emissions are all indirect emissions (not included in Scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions. https://ghgprotocol.org/sites/default/files/standards_supporting/FAQ.pdf



4. Our Approach - How the pharmaceutical industry is contributing to address global warming concerns

The Pharmaceutical Industry undertakes initiatives to promote climate action by supporting:

- The principles in UN Global Compact regarding climate;
- United Nations' Sustainability Development Goal 13, aiming for urgent action to be taken to combat climate change and its impacts;
- The Paris Climate Accord approved at COP21 by supporting the long-term goal to hold the increase in global average temperatures well below 2°C and to pursue efforts to limit the increase to 1.5°C compared to pre-industrial level;
- The European Union's ambition to be climate neutral²⁰ by 2050;
- Adoption of a global framework (based on COP26 and reinforced at COP27) to accelerate emission target actions by updating the "nationally determined contributions (NDCs)" and realizing short-term targets by 2030.

EFPIA members are consistently working towards reducing greenhouse gas emissions. Companies are at the forefront of numerous groundbreaking initiatives to help reduce CO₂e emissions to reach their ambitious goals. Companies have set targets for their direct operations, energy optimization and transition to renewable energy. Based on our survey, these actions have led to solid results: 1.5 million tons of CO₂e reduced, which amounts to a reduction of more than 10% over a 3-year period. While during the same time-frame economic growth has been significant.

It was also shown that the scope 2 emissions play a significant role in our industry with about 35% of the operational emissions (scope 1 + 2 combined) of our member companies. Due to the use of low carbon electricity, the biggest progress was made in scope 2 emission reductions.

A further concrete step to reduce the greenhouse gas emissions is to replace paper leaflets with electronic leaflets²¹. A transfer from paper to electronic product information will save paper and natural resources. This can also be used to provide patients with more detail on regional best-practices on using recycling and waste systems within the EU. Discarding unused medicines to the wastewater should also be prevented in all cases – as removal of active pharmaceutical ingredients is challenging and energy-intensive.

We applaud company-driven initiatives coming out of the United Nations Climate Change Conference COP27 held in Sharm El-Sheikh, Egypt in 2022. Uniting under the Sustainable Markets Initiative -Health Systems Taskforce, seven pharmaceutical manufacturers announced their joint efforts to decarbonize health systems globally²². The group seeks to harness its collective influence and increase impact, by agreeing on a set of concrete commitments and initiatives such as: common standards for suppliers, building a framework to measure emissions related to clinical trials, agreeing on a common life cycle assessment methodology for measuring product carbon footprint and exploring joint power purchasing agreements in some of the most fossil-intensive grids globally, as well as green transportation corridors.

²⁰ https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

²¹ https://www.medicinesforeurope.com/wp-content/uploads/2021/02/IATF-ePI-report_final_complete.pdf

²² https://www.sustainable-markets.org/taskforces/health-systems-taskforce/

The Activate program²³ was launched to accelerate decarbonization in the active pharmaceutical ingredient (API) supply chain whereby global pharmaceutical companies are working with supply chains to enable environmental impact reduction of the healthcare sector.

The Energize program²⁴ launched at COP26 announced its first cohort power purchasing agreement to accelerate renewable energy adoption amongst suppliers to pharmaceutical companies.

Activities under the Innovative Health Initiative (IHI)²⁵, a European public-private partnership dedicated to advancing health research and innovation, aim also to address innovations and outcomes within the context of the European Green Deal. This would help ensure that advances are part of Europe's sustainability goals, supporting commercial sustainability transition and reducing the overall environmental impact of healthcare. As a start, a project call launched in July 2023 aims to pave the way for European healthcare industries to collaborate cross-sectorially to improve the manufacturing efficiency of drug substances of

chemical/biological origin by saving natural resources like water and fossil or fossil-based raw materials and consumables in addition to reducing waste in accordance with circularity principles (reduce, reuse, refine, recycle) and decrease emissions.

Companies collaborate within the Pharmaceutical Supply Chain Initiative (PSCI)²⁶. This is a group of pharmaceutical and healthcare companies who share a vision of better social, health, safety and environmental outcomes in the communities and have joined forces to promote responsible supply chain management and better business conditions across the industry.

But we know there is more that needs to be done. Our member companies will continue to take significant actions to address climate change, and global planetary health and 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, protect patients, and the planet.



²³ https://manufacture2030.com/how-we-work/activate-program

²⁴ https://neonetworkexchange.com/energize

²⁵ https://www.ihi.europa.eu/

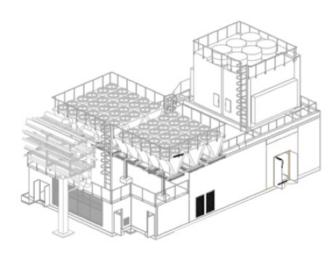
²⁶ https://pscinitiative.org/home



5. Examples of activities undertaken by the pharmaceutical industry

A selection of concrete actions of our member companies to reduce emissions are showcased below.

REDUCTION OF CO, EMISSIONS AT COMPANY SITES



SANOFI

In 2015, 50,000 tons of Sanofi's CO_2 equivalent emissions came from refrigerant leaks in the chillers. Sanofi has launched a program to prioritize natural fluids and better control leaks. In four years, our CO_2 emissions linked to refrigerants have been reduced by 40% with 22,000 tons of CO_2 savings. For example, on a chemical site in France, a single cold loop at -20° C with ammonia and CO_2 was able to replace 6 chillers (R507A) and 6 cooling towers and thus increased energy efficiency

BOEHRINGER INGELHEIM

Boehringer Ingelheim recognizes the negative effects of greenhouse gas emissions and has identified the use of renewable energies and reducing energy consumption as key strategic priorities. Within their worldwide environmental sustainability program 'BE GREEN', they are now working to reduce their total greenhouse gas emissions notably. In addition, they are reducing emissions across the value chain. In order to foster its transition to a low carbon economy, BI has implemented for all investments and business systems a green fund and an internal carbon price of $100 \notin /$ ton CO_2 equivalent. Creating environmental awareness at work contributes to environmental protection and the reduction of greenhouse gas emissions.



SERVIER - Climate Commitment program



OBJECTIVE TO CUT GREENHOUSE GAS EMISSIONS ACROSS SCOPES 1,2 AND 3 (COMPARED WITH 2015/2016)

2025: 16% 2030: 25%

As part of its Servier Climate Commitment program, Servier is committed to reducing its greenhouse gas emissions by 25% between 2016 and 2030²⁶.

Servier has put in place various actions aimed at reducing its energy consumption and improving the energy performance of its sites.

- Servier has deployed "Start & Stop" technologies to only use utilities when necessary.
- They also take the energy dimension into consideration in new projects, purchasing industrial equipment which delivers better energy performance levels than before.
- In 2021/2022, the Group's energy consumption levels were reduced by nearly 4% compared to the previous year.
- 44% of the industrial sites, in addition to the Group's headquarters in France, are ISO 50001 or ISO 14001 certified.
- Servier's objective: to achieve ISO 50001 or ISO 14001 certification for 80% of its industrial and R&D sites by 2025, then 100% by 2030.

OBJECTIVE FOR ISO 50001 CERTIFICATION ACROSS OUR INDUSTRIAL AND R&D FACILITIES

2025: 80% 2030: 100%

Servier is increasing the percentage of renewable energy within its energy mix from year to year.

- Currently, four Servier industrial sites, equipped with photovoltaic panels, generate renewable electricity directly at their sites.
- In addition, four industrial sites source renewable electricity from external suppliers.
- In total, five industrial sites have 100% renewable electricity supplies.
- At Group level, renewable electricity represents 13% of Servier's electricity mix.

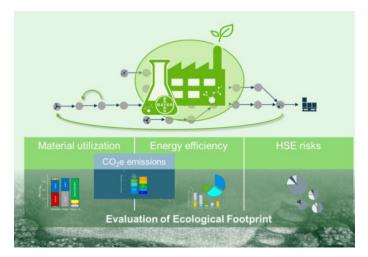
^{26 &}lt;u>https://servier.com/en/newsroom/folders/servier-committed-to-fight-climate-change/#:~:text=25%25%20reduction%20in%20</u> <u>emissions%20by,CO2%20metric%20tonnes%20equivalent.</u>

BAYER - Green Chemistry for sustainable API manufacturing

The Green Chemistry approach: Application of green chemistry metrics to chemical syntheses, manufacturing processes, and products.

Green Chemistry offers great opportunities to improve the ecological footprint of Active Pharmaceutical Ingredient (API) manufacturing. At Bayer, embedded in an evaluation tool includes the assessment of material resource efficiency (generation of waste), the energy efficiency (greenhouse gas emissions), and the environmental impact (use of substances). Potentials for improving the ecological footprint are identified and quantified over the different process development phases. Examples include more efficient and less complex chemical synthesis routes, the use of greener solvents and improved energy efficiency. It also includes avoiding chemicals with increased requirements for safe storage and handling.

The Green Chemistry evaluation tool has been successfully piloted and will now be used systematically for end-to-end evaluation of API



manufacturing processes, i.e. from early synthesis development via piloting to industrialization. The integrated assessment of the ecological footprint together with additional criteria such as manufacturing costs allows for a holistic view on the full manufacturing process and thus ultimately leads to more sustainable solutions.

CHIESI - Net Zero

As a biopharmaceutical B Corp, Chiesi set an ambitious plan to become Net Zero by 2030 on direct emissions and emissions from purchased electricity and heat (scope 1 and 2) and by 2035 on all the other indirect emissions (scope 3).

Chiesi's reduction targets have been approved in April 2021 by the Science Based Target Initiative (SBTi) and are aligned with the Paris Agreement's most ambitious goal to limit global temperature rise to 1.5°C above pre-industrial levels. However, Chiesi's targets also go beyond these requirements. Following the publication of the new SBTi Corporate NetZero Standard in October 2021, Chiesi has decided to transition from the concept of carbon neutrality to the more stringent new standard of Net Zero Emissions. This choice represents a game-changer and one that will definitely step up our ambition: Chiesi is working to revise reduction targets to fully adopt the more demanding requirements of the new SBTi standard. Their mitigation strategy follows a hierarchical approach: avoid, reduce, substitute and remove. In this way, by avoiding carbon-intensive processes by design, we reduce the emissions we generate.

Reductions will be achieved by improving business operations, maintaining 100% renewable electricity consumption at Chiesi sites who have already achieved this and transitioning to 100% renewable electricity at the remaining sites and electrifying the car fleet and working with suppliers to reduce emissions coming from the value chain. Moreover, an abatement system has been installed in Parma and Blois manufacturing sites to condensate the propellant lost during MDIs production processes.

In May 2021 Chiesi launched the campaign #ActionOverWords^{27,28}: an invitation to move from celebrating commitments to celebrating measurable progress in the fight against climate change.



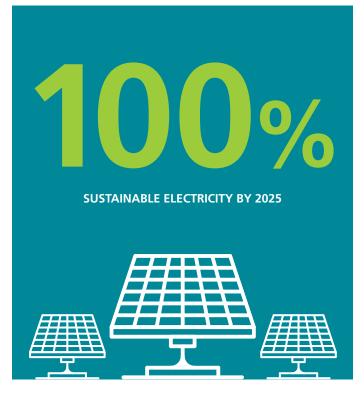
²⁸ https://www.chiesi.com/en/chiesi-group-calls-for-actionoverwords-in-the-fight-against-climate-change/

ROCHE - Lighthouse Initiative

The goal at Roche is to become fully powered by sustainable electricity by 2025 and to achieve a real zero-carbon footprint by 2050.

As part of this commitment, Roche reduced the greenhouse gas emissions by 45% absolute from 2009 – 2019 and set goals to further reduce emissions by another 75% from 2019 – 2029, to use 100% sustainable electricity by 2025 and to achieve real zero in 2050.

The Lighthouse Initiative - Roche recently extended their site in Kaiseraugst (Switzerland) with numerous new buildings, including our global IT centre, learning centre, quality labs etc. This site is fully driven with sustainable energy (heating, cooling, electricity). The buildings are highly energy-efficient and we built a woodchip heating plant, geothermal cooling, and several solar power installations, including one of the biggest facade solar plants in Switzerland²⁹.





LUNDBECK - Power purchase agreement

A new solar park was built through an agreement between Lundbeck and renewable energy company, Better Energy. With this solar park, 100 percent of Lundbeck's annual Danish electricity consumption is now matched by an equal amount of solar power. The solar power produced at this site feeds back into the national electrical grid, thus putting Lundbeck closer to net-zero carbon emissions globally³⁰.

The solar park is doing more than just greening Lundbeck; it's a significant contribution towards Denmark's transition to a zero-carbon electricity grid³¹.

29 https://actionoverwords.org

³⁰ https://www.chiesi.com/en/chiesi-group-calls-for-actionoverwords-in-the-fight-against-climate-change/

³¹ Sustainability_Report_2021.pdf.coredownload.pdf (lundbeck.com) page 18

NOVARTIS - Switching to 100% renewable electricity supply in Europe and North America

Novartis announced at the end of 2020 the signature of five Virtual Power Purchase Agreements (VPPA) which are expected to collectively add 277 megawatts of clean power to the electrical grid.

Novartis committed to the environmental sustainability goal of using only renewable energy (carbon neutral own operations) by 2025. In April 2021, we joined the "RE100" initiative of the Climate Group and the CDP (Climate Disclosure Project) to accelerate its shift to 100% renewables. Six solar and wind parks will be built in Spain by three developers, with whom Novartis has contracts for periods between 10 and 15 years.

With these new VPPAs Novartis can achieve 100% carbon neutrality for electricity procured in Europe. These projects are expected to eliminate ~30% of the remaining global Scope 1 and 2 emissions, after 100 megawatts of wind energy went live in Texas, US already in 2019 ensuring 100% renewable energy for Novartis' North America operations³².



GSK - Protecting and restoring the planet's health to protect and improve people's health

As a global biopharma company, addressing environmental impact is fundamental to GSK's purpose, so that together with partners, GSK can help protect and restore the planet's health, in order to protect and improve people's health^{33,34}.

GSK has committed to a net zero, nature positive, healthier planet, with ambitious goals set for 2030 and 2045. These include an 80% reduction in carbon emissions by 2030, and investment in naturebased solutions for the remaining 20% of their footprint (all scopes), net zero emissions across their whole value chain by 2045 (all scopes) and 100% renewable electricity by 2025. GSK is also working to have a net positive impact on nature by 2030, taking action on water, waste and materials, and biodiversity.

GSK have long been committed to reducing their environmental impact and were one of the first pharmaceutical companies to set ambitious environment targets in 2010. Since then, across operations, they have reduced carbon emissions by 34%, waste to landfill by 78% and total water use by 31% (2019 figures)³⁵.

As part of progress toward the achievement of renewed sustainability targets, good progress has been made on reductions in carbon and nature impact including:

- a 32% reduction in scope 1 & 2 carbon emissions since 2017
- 73% of global electricity consumption now from renewable sources

- Zero waste to landfill across global operations
- Joining the UN Water Resilience Coalition
- The first biopharma company to join the UN Race to Resilience campaign
- Launching sustainable sourcing standards for suppliers highly dependent on nature ³⁶.

GSK commitments also include major investment in renewable energy at our manufacturing sites in the UK and US, supporting the goal of sourcing 100% of global electricity usage from renewables by 2025.

^{32 &}lt;u>https://www.novartis.com/sites/novartis_com/files/novartis-environmental-sustainability-strategy.pdf</u> (page 32)

³³ https://www.gsk.com/en-gb/responsibility/environment/

³⁴ https://www.gsk.com/media/7195/putting-health-at-the-centre-of-action-on-climate-and-nature.pdf

³⁵ https://www.gsk.com/media/7223/gsk-esg-infographic.pdf

³⁶ https://www.gsk.com/media/10152/gsk_sustainable_sourcing_standards.pdf

TAKEDA - Natural resource conservation

At the plasma-derived therapies manufacturing site in Lessines, Belgium, the team pioneered the recycling of rainwater and production wastewater. This is the first large-scale wastewater recycling facility of its kind to be used in the pharmaceutical industry in Belgium. The investment in the system also helps to reduce the use of chemicals such as acid and caustic soda in water treatment. It is part of a much wider strategy to sustain and protect natural resources at Lessines.

This project was done in collaboration with the Belgian enterprise Ekopak, which developed this innovative technology. By re-using rainwater and treating our wastewater, the manufacturing site is currently reducing its freshwater consumption by 60%, aiming for a 90% reduction by 2025. To put this figure into perspective, it's equivalent to the annual water use of nearly 18,000 Belgian citizens, which just happens to be the size of the population in the city of Lessines.



TAKEDA - On-site energy efficiency

The Vienna manufacturing sites, which make up Takeda's largest manufacturing location worldwide comprising five separate production areas, have become significantly more energy efficient in the years since.



The energy center already in operation and using 100% natural refrigerants — which don't emit CO_2 — has led to more than 30% greenhouse gas reduction at the major production sites in Vienna. By centralizing the cooling of the sites, the excess heat from the refrigeration system can be reused. In the future it is also going to produce steam and become the foundation for future sustainability projects.

One of those projects called AHEAD was just launched in January 2023. The project will replace burning natural gas with heat pumps, which in this case work by repurposing heat waste from chiller systems onsite. Since these can only heat to about 120 degrees Celsius, they'll be combined with steam compressors to generate steam at 184 degrees Celsius — hot enough to meet the sites' production requirements.

The project, which is a partnership between Takeda, the Austrian government and the Austrian Institute of Technology, includes developing a concept to replicate the system at our other locations in Austria and worldwide. It could serve as an example for the pharmaceutical industry and other industries and make a significant environmental impact globally.

UCB - Existing and new asset optimisation

In support of the ambition to render operations UCB directly control carbon neutral, they simultaneously work on optimising existing facilities as well as limiting emissions coming from new projects.

Two leverages are used to reduce their current footprint:

- Optimizing energy consumption by making operations more energy efficient. For example, considering that in the pharma sector the biggest share of the energy consumption is attributable to the HVAC (air management), this system is the subject of a vast optimisation program aimed at ensuring that ventilation rates are reduced to the minimum required and that temperature and humidity ranges are as wide as possible, considering the requirements both during and outside the periods of occupancy (night set back).
- Reducing GHG emissions by increasing the usage of energy generated from renewable sources, either produced at UCB's sites or purchased (on a percentage basis). For example, they continue to move away from fossil fuels in favour of biogas, accelerating CO₂ reduction.

In parallel to the improvement of the existing systems, a 'green by design' principle has been embedded within their Engineering processes to build green requirements and objectives from the beginning of the projects and to ensure that they are respected in the design and execution. This process is combined with Green building certification (BREEAM or LEED depending on geography). For example, for the construction of our new biologics Plant in Belgium, our environmental projections have been validated by the Walloon region, proving its green efficiency (21% lower

 $CO_2e \& -22\%$ water consumption compared to average bio plant).

Making the existing **greener** and building a **`green by design'** future



ASTRAZENECA - Delivering on our renewable energy strategy

In 2022, Astrazeneca invested in energy efficiency and on-site renewable energy through their dedicated Natural Resource Efficiency Fund. They have achieved a 14% absolute reduction in total energy consumption since 2015 and are committed to using 100% renewable energy sources to meet all their needs by the end of 2025. In 2021 they started work to look at how they can maximise the positive impact of our renewable energy procurement and in 2022 identified three focus areas for development to align with their ambition to lead in sustainability:



- 1. Additionality investments and energy purchase agreements deliver on-site or new-to-grid renewable energy capacity. They are aiming for over half of our renewable energy globally to come from new sources.
- 2. Geographic relevance energy purchase agreements deliver real world GHG emissions reductions by displacing fossil energy sources in the grid stems where they consume that energy.
- 3. Temporal relevance energy attribute certificates (EACs) that are tagged with the time and date of generation can be matched against their hourly consumption data to improve the utilisation of renewable energy sources and deliver real world GHG emissions reductions.

MSD - Ireland's "See Green, Be Green" Program and our Climate Transition

MSD Ireland's 'See Green, Be Green', launched on World Earth Day 2021, is a comprehensive, enterprisewide and awardwinning initiative to embed a sustainability mindset into their operations to play their part in creating a green and healthy future while becoming an employer, business partner and neighbour of choice.

Ireland is a best practice case for other companies to follow. Some highlights include:

- MSD Ireland's Group Energy Management System (EnMS) forms the basis for their decarbonization strategy.
- Site sustainability strategies governed through local leadership are in place with subsequent action plans and glidepaths to 2025 and beyond.
- Use of the global 'Low Carbon Transition Playbook' to determine their action plans and indicates each site's level of environmental sustainability maturity.
- Thermal heat pump assessments completed and retrofit projects already in progress including Ballydine Pharm Ops Electric Heat Pump (1200KW) retrospective project, replacing steam to heat Heating, Ventilation, and Air Conditioning.
- 15 Acre large scale solar farm installed and commissioned in Nov 2022 at MSD Ballydine.
- Energy Utility Analytics (KGS Clockworks) deployment across the MSD Ireland sites as part of the company asset management – digitalisaton strategy.
- Any capital investing in plant operations will be sustainable by design using EED.
- Electric Car chargers at all sites;
- Electric fleet options for all eligible employees;
- MSD supports cycle to work and public transport TaxSaver schemes;
- 'Sustainability Humans' ongoing webinar series highlighting individual case studies
- MSD Ireland Neighbour of Choice partner for 2023 is VOICE (VOICE of Irish Concern for the Environment)





BRISTOL MYERS SQUIBB - Driving energy efficiency



In 2019, the high energy costs in the UK placed the BMS Moreton, UK facility as the company's No. 1 site by energy cost. The solution would launch a journey that would put Moreton in a leadership position for sustainability among all BMS facilities, as well as all buildings in the UK. In 2022, this facility was named one of the top four buildings in England and Wales for energy performance and the only one of the top four that is occupied and air conditioned.

The learnings from this design are being incorporated into a new, multi-million dollar building at the site, designed to have zero greenhouse gas emissions and reduce energy costs by as much as 82%. The new building will have an abundance of smart technology to ensure top efficiency both actively and passively, with solar photovoltaic panels to supplement the power, along with a ground source heat pump and system to convert thermal energy to electricity. The building glass will be cutting-edge, using suspended prismatic filters between the panes to reflect highangled summer sunlight for cooling and to absorb low-angled sunlight for warming.

The surrounding site is planned to save water, resist flooding, and provide an environment that promotes wellness. A balancing pond that drains to the local river will have reed beds that help clean the water and native plantings that provide a biodiverse scent and sensory palette. Also, the surface of the parking area will be permeable to maximize the absorption of water into the ground.

TEVA - Minimizing impact on the planet



The Science Based Targets initiative (SBTi) validated the Teva GHG emissions reduction targets in 2022 as being in alignment with the goals of the Paris climate agreement. This includes targets to reduce scope 1 and 2 GHG emissions by 46% by 2030 (vs. 2019), aligning to a 1.5°C limit on global temperature increase, and to reduce absolute scope 3 GHG emissions by 25% by 2030 (vs. 2020), aligning to a well-below 2°C limit. As a result, they have reduced scope 1 and 2 GHG emissions by 24.1% in 2022 (vs. 2019). The CDP, a global nonprofit disclosure system for environmental issues, has recognized their efforts and transparency on climate change, improving their B climate change score in 2021 to an A-rating in 2022.

The Sustainability Taskforce drives energy efficiency and decarbonization projects across our global network of facilities. 23 renewable energy initiatives were mapped to reduce consumption and GHG emissions.

- Teva UK and Ireland performed carbon footprint assessments in partnership with the Carbon Trust for various Teva inhaler products. Results indicated that some of Teva's MDI products have less than half the carbon footprint of comparable competitor products across their life cycle.
- Teva Croatia partnered with a large supplier of energy and renewable electricity to construct a solar power plant for production facilities with 17,820

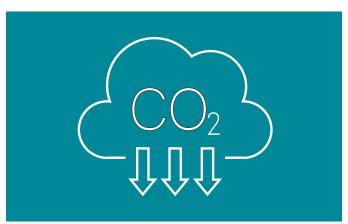
solar panels. The plant covers 60,000 square meters and generates 9.61 MW of power, which will cover 28% of the site's total electricity needs.

- Teva Germany's logistics fleet reduced CO₂ emissions by using liquefied natural gas–fuelled trucks, which emit 35% less CO₂ than the diesel trucks they replaced.
- Teva Netherlands implemented an energy savings program, installing an efficient hot water tank and dry-cooling water chiller. As a result, operations consumed 1.5% less electricity and 30% less gas in 2022, relative to 2021, and the site's carbon footprint was reduced by 1,160 kg CO, a year.
- Teva Czech Republic introduced site goals for energy reduction, including reducing compressed air loss during distribution, using residual, low-potential heat and optimizing electricity consumption by regulating the inflow of water. Projects saved around 600,000 kWh of electricity, resulting in 1% savings for the site's total consumption.



CHIESI - Carbon minimal inhaler combatting climate change

As part of Chiesi's goal to become Net Zero by 2035 on direct greenhouse gas (GHG) emissions and indirect GHG emissions from purchased electricity and heat and on all the other indirect GHG emissions, Chiesi was the first pharmaceutical company to publicly announce a solution to address the carbon footprint of pressurized metered dose inhalers (pMDIs) while continuing to invest in dry powder inhaler (DPI) technology to provide the range of therapeutic options that asthma and COPD patients need. The first carbon minimal pMDIs containing a low global warming potential (GWP) propellant, and thus ensuring a 90% carbon footprint reduction, will be developed by 2025 and will start to be rolled out across geographies. Chiesi is actively investing €350M to fast-track and bring this innovative solution to market. This exemplifies how Chiesi will not



only reduce its environmental footprint by managing operations but also by rethinking and innovating products, for patients and planet.

NOVARTIS - Addressing the Scope 3 challenge by supplier engagement

Novartis' ambition is to extend its influence significantly beyond "own operations", to also include carbon emissions across the value chain, is a bold and ambitious target, that will require a coordinated approach to encourage and support suppliers to make similar commitments toward delivery of these targets. To this end, Novartis has launched "Novartis Environmental Sustainability Criteria for Suppliers³⁷" to ensure we have a consistent approach working with supplier on this topic.

A new Novartis Third Party Code was launched effective 1st Jan'2023 to ensure a unified and consistent approach while engaging with all their suppliers to drive HSE compliance & sustainability priorities Novartis are working on 5 key aspects to address Scope 3 emissions:

- 1. Undertaking supplier consolidation to ensure a manageable number of suppliers to engage on sustainability topics
- 2. Look for opportunities to switch to more sustainable suppliers especially in commodity and services
- 3. Active supplier engagement with an aim to work closely with long-term suppliers to develop product specific action plan to reduce emissions.
- 4. Focus on innovative technologies like fuel cell, green hydrogen, carbon capure and storage technologies etc.
- 5. Leverage the power of partnerships similar to the ENERGIZE³⁸ program.

^{37 &}lt;u>https://www.novartis.com/sites/novartiscom/files/novartis-third-party-code-v-3.pdf</u>

³⁸ https://perspectives.se.com/blog-stream/energize-program-for-pharma-suppliers

NOVO NORDISK - Decarbonizing the supply chain

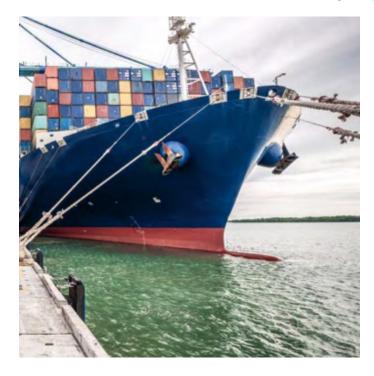


Facilitating rapid decarbonization throughout its supply chain is central to Novo Nordisk' efforts to mitigate climate change as 96% of the company's total carbon footprint comes from their supply chain.

To this end, Novo Nordisk in 2020 took a pioneering step, when they announced that all direct suppliers (approx. 60.000) needs to utilise renewable power when supplying them by 2030. Novo Nordisk also urges its suppliers to ask the same of their suppliers. It is one of the most impactful measure Novo Nordisk can take to reduce its global supply chain emissions, considering speed of implementation and drastic CO₂ savings. Further, especially power consumption is a major source of emissions for the healthcare sector overall.

In a little over 2 years, Novo Nordisk has by Q4 2022 secured renewable power commitments representing approx. 46% of CO₂ emissions from their direct suppliers.³⁹

SERVIER - Climate Commitment program to reduce scope 3 emissions



Servier uses marine transport as an alternative to air transport in order to prioritize more environmentally responsible means of transport to deliver its medicinal products to its subsidiaries, distribution platforms and direct clients.

- Between 2021 and 2022, Servier reduced the volumes transported by plane from its Loiret site (France) and Arklow site (Ireland) by 5.2%, with a shift to marine transport.
- The tonnage transported by sea, including departures from other sites (Bolbec in France), increased by 25%.
- In 2021/2022, 45% of intercontinental flows were transported by boat and 55% by plane.
- The objective for 2022/2023 is to reverse this ratio, transporting 55% of intercontinental flows by boat and 45% by plane.

GSK - Partnering for Climate Change



In 2021, GSK partnered with COP26 to raise awareness of the health impacts of climate change, drive collaborative action to reduce emissions, and support commitments to build low carbon, resilient healthcare systems. This included:

Action to reduce emissions: No one company or organisation can act alone to achieve net zero – by its very definition, reductions in scope 3 emissions requires action across the entire value chain. To highlight the scale of the challenge, GSK alone has over 30,000 suppliers. There is huge appetite for collaboration to find solutions, and GSK has been central to driving a number of programmes e.g.:

- The Energize programme is a collaboration between 10 pharmaceutical companies – a first-of-its-kind industry initiative to support our supply chains to buy renewable energy.
- Commitments to low carbon, resilient healthcare systems: GSK has partnered with the UK Government, 'Climate Action for Health', where countries made commitments to net zero. Healthcare accounts for nearly 5% of global emissions. The NHS was the first healthcare system to commit to net zero for its own operations by 2040, and now 12 more countries have made similar commitments, including Indonesia, Spain, Belgium, Kenya and Nigeria. These countries now need to develop implementation plans to make this a reality, which will require partnerships with suppliers, including GSK.40/41/42

MERCK commitment to smaller footprints with Slim Pack - A compelling example of innovation driven by continuous improvement!

Slim Pack is a proof point of Merck's commitment to minimizing the ecological footprint of their operations.

Born through a cross-functional collaboration between Global Healthcare Operations, the Global Fertility Franchise and other functions, Slim Pack is also a compelling example of how continuous improvement can drive innovation and result not only in more efficiency but also in enhanced sustainability by using fewer raw materials and reducing transport volumes, as well as more convenience for customer and patients by requiring less storage space.



40 GSK announced as a Principal Partner of COP26 UN Climate Change Conference | GSK

41 Three ways business can put human health at the centre of action on nature | LinkedIn

42 Putting commitments into action post COP26 | LinkedIn

MERCK - Leading the way on the sustainability front from the manufacturing site to the patient

As the world leader in the Fertility therapeutic area, Merck has always been at the leading edge with its unique portfolio of therapeutics, technologies, and services.

They are also leading the way on the sustainability front. They are producing Fertility medicines at sites certified ISO14001 for their environmental management (essentially Aubonne, Bari and Tres Cantos) and continuously decreasing the CO_2 emissions associated with their logistics by shifting from air freight to sea transportation (with Spezzatino).

They are now going a step further towards end-toend sustainability for their Fertility portfolio – from the manufacturing site to the patient - with the Take-Back pilot program currently rolled out in Denmark. In essence, Merck in Denmark has agreed to initiate an 18-months pilot program that gives patients the opportunity to return back used Fertility injection pens, designed to address the challenge of recycling injection pen devices together with external partners.⁴³



JOHNSON & JOHNSON - Palladium - Recovery from the production of Active Pharmaceutical Ingredients



Palladium is a precious metal with a critical role in the production of certain active pharmaceutical ingredients. The silver-white metal used in this process is rare, so J&J are always looking for ways to reduce wastage and maximize reuse. A partnership was set up with a specialized Flemish company focused on the circular economy. They have a one-stop-shop concept that enables us to recycle the precious metal much faster and much more efficiently. That means J&J can cut down scope 3 CO₂ emissions related to mining and refining of virgin Palladium, reduce logistics and eliminate additional processing costs. On top of that they can generate an economic saving. This is an example of how innovation and sustainability work hand in hand, even at the heart of our production processes. Naturally, this is fully in line with their focus on innovative business and their Health for Humanity goals.

43 https://www.linkedin.com/posts/enrique-%C3%A1lvarez-fern%C3%A1ndez-72bba52_recycled-fertilitytreatment-greenagenda-activity-6907321471484751872-5XRI?utm_source=linkedin_share&utm_medium=member_desktop_web

JOHNSON & JOHNSON - Site recognized as new Sustainability Lighthouse



The Janssen Pharmaceutical Companies of Johnson & Johnson (Cork): Janssen Sciences Cork, Ireland has been long supporting regional initiatives for sustainability improvement and is now helping Johnson & Johnson reach its climate commitments, which include: sourcing 100% of the company's electricity from renewable sources by 2025, achieving carbon neutrality in its global operations by 2030 and to reduce upstream, value chain (Scope 3) emissions by 20% by 2030 (from 2016 levels). Through Fourth Industrial Revolution-enabled real-time release, adaptive process control and other sustainability efforts, including an onsite wind turbine, closed loop water systems, zero waste to landfill initiative and more, the site has optimized its processes and reduced carbon emissions per kg of product by 56%, while the site footprint has expanded by 34% to meet growing business needs.⁴⁴

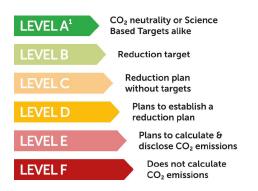
UCB - Supplier's engagement: from climate mitigation to resilience

To strengthen UCB's overall strategy to reduce its environmental footprint across its value chain, two distinct but complementary mechanisms have been fully integrated into their supplier management: (1) climate change mitigation and (2) resilience.

UCB set a target that 60% of their suppliers (by emissions) will commit to Science-Based (SBTi) targets by 2025, aiming for everyone to do its part in mitigating climate change.

In order to achieve this goal, they engage and influence employees and suppliers while adapting their ways of working.

Annually, they are assessing their current supplier's portfolio to have the necessary information to make transparent decision and supporting their strategic suppliers to commit to SBTi. They also integrated sustainability into their selection process and contracts. Scoring suppliers has been systematically integrated into their "Request For Proposal" processes and sourcing managers trained accordingly to promote sustainable suppliers. They now have a green clause in their contract in which the supplier is asked



to support UCB's ambition to reach the COP21 target of reducing greenhouse gas emissions. They also organize sustainability events that provide employees and suppliers knowledge about UCB's sustainability credentials in each area, as well as a common language for cohort of internal green ambassadors.

Moreover, to maintain a robust supply chain whatever unavoidable effects of climate change they face, they implemented a climate related risk assessment analysing their suppliers' resilience to environmental physical hazards, with the ultimate goal to continue delivering greener medicine to their patients.

PFIZER - Pfizer's Climate Ambitions to become Net Zero

Our Climate Ambitions: to become Net Zero

We have demonstrated our commitment to climate action through our history of greenhouse gas (GHG) emission reductions, with our first formal GHG goal set in 2001. Through successive goal periods, we reduced our GHG emissions by more than 60 percent over the period 2001 to 2020.

As one of the first companies to receive validation of our GHG reduction goal by the Science Based Target Initiative in 2015, Pfizer remains committed to ambitious long-term actions. Our drive to effect positive change is demonstrated through our ambition to achieve the Net-Zero Standard.

Achieve Net-Zero Standard by 2040

We aim to reduce our company (Scope 1 & 2) emissions by 46% by 2030 compared to a 2019 baseline; as an interim milestone to reduce our company emissions by 95% by 2040.

Recognizing that value chain (Scope 3) emissions account for approximately 80 percent of our Greenhouse Gas footprint, we aim to reduce value chain emission by 90% by 2040. As a near term target toward this longer-term goal, by 2025 we aim for 64 percent of our purchased goods and services suppliers by spend to set their own science-based GHG reduction targets. We also aim to reduce emissions, from a 2019 baseline, for upstream logistics by 10 percent and business travel by 25 percent.⁴⁵



ASTRAZENECA - Next-generation pressurised metered-dose inhaler (pMDI)

In 2022, AstraZeneca announced it was partnering with Honeywell to deliver on a key product-related element of our Ambition Zero Carbon strategy, to develop the next-generation pMDI, using HFO-1234ze, a near-zero global warming potential (GWP) propellant. This is a significant innovation given the level of clinical need. AstraZeneca expects its fixed-dose triple-combination therapy to be the first medicine to transition to the next generation pMDI platform, subject to regulatory approval, and made significant progress in 2022 to advance its clinical programme in coordination with key regulatory authorities. Positive Phase I data was presented at the 2022 American Thoracic Society (ATS) congress.



TEVA - Sustainable Procurement



Teva has targets to reduce absolute scope 3 GHG emissions by 25% by 2030 (vs. 2020). They have already reduced scope 3 GHG emissions by 12% (vs. 2020). For scope 3 target, they are engaging with suppliers to reduce their GHG emissions through various initiatives. To participate in a request for proposal, suppliers must agree to comply with Teva's Supplier Code of Conduct. In 2022, they integrated ESG criteria, including the first ESG Toolkit for Suppliers, into the RFP and Scoring Matrix Standard Template, which provides a data-based approach to support fair vendor selection. For the sixth consecutive year, Teva is using the EcoVadis sustainability assessment to evaluate suppliers' ESG performance and track and monitor corrective and preventive action plans (CAPAs) that are created for improvement and mitigation of ESG risks. In 2022, 56% of 522 critical suppliers were assessed by EcoVadis. Teva continued annual audits of suppliers in compliance with the Pharmaceutical Supply Chain Initiative (PSCI). They have created a Global Procurement ESG Handbook for procurement employees to help boost their knowledge on ESG, targets and programs, and to help them better communicate ESG expectations to suppliers.



To make the above commitments even stronger, EFPIA will partner with stakeholders so that:

- Public policies are clear and stable, allow for flexible and predictable approaches and allow sufficient time and technical, organizational and procedural freedom for change and development to achieve emission reduction targets;
- Public policies address the links between climate change, water scarcity, biodiversity and public health risks;
- The entire value chain is driven to improve performance;
- The broader healthcare community is engaged in developing future climate policies.



Disclaimer: This document has been developed under the leadership of the EFPIA Environment, Health and Safety 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.

