Environmental Resiliency

PhRMA member companies are dedicated to researching, developing, and delivering lifesaving and quality of life enhancing innovations for both patients and the planet. There are a range of ways PhRMA member companies work to bolster environmental sustainability including partnering to achieve climate goals, broadening the adoption of sustainable technologies, and reducing carbon footprints, water use, and waste.

Understanding Environmental Resiliency:

Environmental resiliency refers to the capacity for biopharmaceutical companies to quickly respond to and overcome environmental changes and disturbances, while also being able to mitigate the environmental impacts of their activities without negatively impacting business operations. The U.S. health sector – which includes everything from biopharmaceutical manufacturing to hospitals – is responsible for an estimated 8.5% of national carbon emissions.[1] America's research-based biopharmaceutical companies have been focusing on efforts to reduce their environmental footprint for decades. Companies are committed to reducing their carbon footprint by prioritizing actions in the following areas:

- **Direct emissions** controlled by the company, such as those from manufacturing plants or automotive fleets (scope 1 emissions)
- **Indirect emissions** from the company's generation of energy, such as electricity, steam, HVAC, etc. (scope 2 emissions)
- **Indirect environmental footprints** that come from a company's value chain, such as emissions from suppliers, distributors, or manufacturers (scope 3 emissions)

Beyond reducing their greenhouse gas (GHG) emissions and committing to renewable energy, PhRMA member companies are reducing their waste and water usage and expanding the adoption of sustainable technologies throughout their R&D, manufacturing, and supply chain operations. Examples of activities that PhRMA member companies are using to achieve their ambitious sustainability goals include increasing sourcing of renewable energy, leveraging sustainable design and construction methods in new facilities, investing in advancements in packaging and transportation, and using carbon offsets.

The Importance and Objectives of Environmental Resiliency:

As companies continue to implement newer, more efficient processes, the industry can continue to bring new treatments and cures to patients with the added benefits of eliminating potential environmental harm. Environmental resiliency yields numerous benefits, including:

Reduced greenhouse gas emissions: With an understanding of the severe implications associated with the effects of climate change, America's innovative biopharmaceutical companies are actively seeking to reduce their GHG emissions. 27 PhRMA member companies publicly state their GHG reduction goals in percentage terms; of these, roughly half (13) publicly state that their goal is carbon neutrality—an especially ambitious goal (e.g., explicit public statements pledging "carbon neutral" or "net zero" or "100% reduction" in GHG emissions). Fourteen companies had other GHG reduction goals: overall aims to reduce carbon emissions among PhRMA member companies were by an average of 73% (unweighted).[2]

Increased usage of renewable energy: As part of their efforts to reduce GHG emissions, companies are altering their energy portfolios to emphasize sustainable technologies and green energy sources. Twenty-seven member companies include goals related to their indirect emissions and energy usage (Scope 2). Many companies are also encouraging renewable energy among suppliers, including the nine PhRMA member companies participating in the Energize program, which seeks to accelerate renewable energy adoption across the biopharmaceutical value chain.[3]

Reduced water usage: Water is an important natural resource for the biopharmaceutical industry, with numerous uses throughout the development and production pipeline. Among PhRMA member companies, 27 are publicly tracking their water usage across their operations, with 16 developing goals or implementing activities to reduce or neutralize their usage, and 11 others tracking these metrics to inform potential future efforts.

Reduced liquid or solid waste: From limiting runoff to reducing landfill usage, biopharmaceutical companies are frequently aiming to reduce waste in their operations. Among PhRMA member companies, 27 publicly state they are tracking their waste. Among these companies, 16 have explicit goals related to waste, including four that have identified goals of achieving zero waste in landfills. An additional 11 companies are tracking waste outputs, but do not publicly state their waste reduction goals.

Improved optimization of inputs/resources: By gathering detailed data on their environmental operations, biopharmaceutical companies can also limit the usage or waste of other inputs. For example, rare materials, packaging, and other inputs may be managed in a more efficient manner as a result of resiliency activities and detailed tracking.

Environmental Resiliency: Examples of PhRMA Members in Action

Almost all PhRMA member companies provide public "sustainability" statements, goals or metrics addressing GHG emissions or carbon dioxide equivalent (CO_2e) emissions. Furthermore, 27 PhRMA members have publicly stated that they track their waste and water usage in an effort to improve environmental resiliency both now and into the future. Notable examples of PhRMA member companies working to advance and ensure environmental resilience are highlighted below:

THE ENERGIZE PROGRAM

Nine PhRMA member companies – Biogen, GSK, Johnson & Johnson, Merck, Novartis, Novo Nordisk, Pfizer, Sanofi and Takeda – are among the 18 total companies collaborating together through Energize, a program which aims to accelerate renewable energy adoption, reduce greenhouse gas emissions, and enable bold climate action within the biopharmaceutical value chain.[4] The Energize program helps biopharmaceutical suppliers address their own indirect GHG emissions through green power procurement (Scope 2 emissions), which in turn helps reduce the emissions at other places in the participant's value chain (Scope 3 emissions). Because renewable energy procurement can be challenging for companies of all sizes for a variety of reasons, the Energize program is designed to support suppliers in overcoming typical market barriers such as inadequate knowledge about renewable energy transactions, load size, lack of credit, and the need for guidance throughout a complex and protracted contracting process. This first-of-its-kind industry program helps biopharmaceutical suppliers learn more about renewable energy adoption and contracting; provide internal resources and expertise; and offer opportunities to participate in the market for power purchase agreements (PPAs), arrangements where third-party developers install, own, and operate an energy system on a customer's property.

GREEN CHEMISTRY INSTITUTE PHARMACEUTICAL ROUNDTABLE

Eighteen PhRMA member companies serve on the American Chemical Society's Green Chemistry Institute Pharmaceutical Roundtable, the leading organization dedicated to catalyzing the integration of green chemistry and engineering in the biopharmaceutical industry.[5] Participating companies include Amgen, Bayer, Biogen, Boehringer Ingelheim, Eli Lilly and Company, EMD Serono, Gilead, GSK, Ipsen, Johnson & Johnson, Merck, Novartis, Novo Nordisk, Pfizer, Sanofi, Takeda, and UCB. With a focus on designing chemical products and processes that reduce or eliminate the use or generation of hazardous substances, green chemistry plays a critical role in reducing environmental externalities related to biopharmaceutical manufacturing. This roundtable encourages environmental resiliency through the advancement of green chemistry research and sharing tools for innovation and education (e.g., best practices in implementation, choices in chemical selection, access to tools and metrics, global networking, etc.).

SCIENCE BASED TARGETS INITIATIVE (SBTI)

Eleven PhRMA member companies are working with the Science Based Targets initiative (SBTi) as members of the Business Ambition for 1.5°C Campaign, a commitment among companies globally to reducing emissions in line with Paris Agreement goals.[6] Targets are considered 'science-based' if they are in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement—limiting global warming to well-below 2°C above pre-industrial levels and pursuing efforts to limit warming to 1.5°C. Participating companies include Bayer, Biogen, Eisai, GlaxoSmithKline, Merck, Novartis, Novo Nordisk, Pfizer, Sanofi, and Takeda. While not official campaign members, an additional nine companies have had their near-term climate goals certified by SBTi: Amgen, Astellas, Boehringer Ingelheim, Daiichi Sankyo, EMD Serono, Gilead, Ipsen, Otsuka, and UCB.

INNOVATIVE MANUFACTURING FACILITIES

Amgen is investing in innovative technologies at new manufacturing facilities under construction in Ohio and North Carolina to reduce carbon, waste and water footprints.[7] Amgen's new facilities in North Carolina and Rhode Island are utilizing an approach called Amgen Ecovation™, the company's approach to innovative and sustainable manufacturing, which they embed into the upfront design, development and execution of all new laboratory, manufacturing and administrative buildings. The facility in North Carolina is called FleXBatch manufacturing, where the new plant supports both traditional stainless steel-fed batch manufacturing and next-generation single-use technologies, allowing flexibility for multiple pipeline products in one plant. This combination of capabilities makes the facility more flexible and efficient, requires less physical space, and has lower environmental footprints than

a traditional plant. Additionally, Amgen's new final product advanced assembly and packaging plant in Ohio as well as their North Carolina facility are designed to Leadership in Energy and Environmental Design or "LEED" building standards to maximize energy efficiency and waste reduction.

SUSTAINABLE INFRASTRUCTURE

Merck is emphasizing sustainable infrastructure, prioritizing reductions in its demand for energy and establishing internal policies and practices focused on reducing energy use at its sites and minimizing greenhouse gas (GHG) generation throughout the company.[8] The company actively invests up to $12 million annually in sustainability projects at company sites around the world that bring long-term value to the company and focus on carbon footprint, water use and solid waste reduction. Since 2015, more than 95 projects have been completed through the Sustainability Capital Fund. For example, Merck invests in designing efficient processes that use fewer and less-hazardous organic solvents and using water-based methods for cleaning process equipment where they are as effective as solvent-based methods. To reduce emissions from processes where organic solvents are used, Merck uses pollution-control technologies such as conservation vents, carbon filters, thermal oxidizers, condensers and scrubbers.

REDUCING ENERGY USE AND PLASTIC WASTE

For Biogen, reducing energy use and plastic waste is helping accelerate action to meet climate goals, and is an important part of broader commitments to sustainable drug development.[9] As part of this, approximately 470 employees in 14 Biogen labs piloted Green Lab Certifications in 2021. Working through the nonprofit My Green Lab, Biogen's effort assessed the labs' operations and materials, including fossil fuel-derived plastics, which are widespread in the biopharmaceutical space. Changes made by the labs to minimize plastic consumption include working with key suppliers to procure reusable containers and adjusting processes to reuse plastic items (e.g., vials, pipettes, and petri dishes), and consolidating orders to minimize plastic packaging use. Other sustainability actions prompted by this program included reduction of energy use, initiation of multi-site recycling and waste audits, and an infrastructure lighting review. After implementing these sustainable practices, four labs were awarded Green Lab Certification (highest level), four Platinum and six Gold. By 2023, Biogen aims to have more than 40 labs complete the baseline assessment of the Green Lab Certification. By 2025, the target is for 50% of Biogen labs to achieve a Gold certification or higher.

TAKING A LONG-TERM PERSPECTIVE

UCB adopts a long-term perspective, considering the overall environmental impact of its business activities alongside its growth.[10] This includes collaborating with partners throughout the end-to-end value chain. Efforts are made to minimize the environmental footprint of existing assets by increasing renewable energy procurement and implementing various solar and geothermal technologies. Energy and water consumption, as well as waste production, are optimized. UCB strives to embed green-by-design in the development of all new assets through a "Green scorecard" encompassing Life Cycle analysis and reduction target per product. Similarly, green building certifications are pursued for all new infrastructures; their Atlanta Warehouse is the first dually certified WELL Platinum and LEED Gold pharmaceutical project in the world. The company also integrates climate change mitigation and resilience mechanisms into its supplier management activities. Contract manufacturing organizations (CMOs) and other partners are encouraged to define ambitious targets aligned with the latest climate sciences. Furthermore, supplier resilience to environmental physical hazards is analyzed to ensure the continued delivery of environmentally friendly medicine to patients.

1 New England Journal of Medicine Perspectives "Decarbonizing the US Health Sector – A Call to Action." See: https://www.nejm.org/doi/full/10.1056/NEJMp2115675
2 TEConomy Partners analysis of PhRMA Member Company Environmental Statements
3 "Welcome to Energize." See: https://neonetworkexchange.com/Energize
4 *Ibid.*
5 American Chemical Society, "About the ACS GCI Pharmaceutical Roundtable." See: https://www.acsgcipr.org/
6 "Science Based Targets Initiative." See: https://sciencebasedtargets.org/
7 Amgen "*2022 Environmental, Social, and Governance Report*" and follow-up confirmation. *See: https://www.amgen.com/responsibility/-/media/Themes/CorporateAffairs/amgen-com/amgen-com/downloads/responsibility/amgen-2022-esg-report.pdf*
8 Merck, "Environmental, Social & Governance (ESG) Progress Report 2021/2022." See: https://www.merck.com/wp-content/uploads/sites/5/2022/08/MRK-ESG-report-21-22.pdf
9 Biogen, "2021 Year in Review: Our Commitment to Social Responsibility." See: https://www.biogen.com/content/dam/corporate/en_us/YIR-2021/Biogen-YearInReview-2021.pdf
10 UCB, "Sustainability," "Integrated Annual Report 2022" and follow-up confirmation. See: https://www.ucb.com/our-company/sustainability