MERCK

Impact Report 2022/2023

About this report

This is the 2022/2023 Impact Report of Merck & Co., Inc., Rahway, NJ, USA, which is known as MSD outside the United States (U.S.) and Canada. All data is current as of December 31, 2022, unless otherwise noted. Information on documents filed with the Securities and Exchange Commission (SEC), such as our 2022 Form 10-K and 2023 Proxy Statement, can be found on our corporate website, which is intended only for residents of the U.S. and Canada.

To align with U.S. government reporting requirements, the data for gender diversity in this report uses the terms *men* and *women*. We recognize and embrace the gender spectrum and diversity of our employees, and have internally established voluntary Self-ID options for employees to self-report on their gender identity. The totals in this report may not equal 100 percent due to rounding or employees who have not reported their gender and/or race/ethnicity.

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A letter from our CEO

Dear Stakeholders,

Thank you for your interest in Merck and our ongoing commitment to operating responsibly and creating value for patients, our stakeholders and our business. We continue to take inspiration from our purpose and our unique opportunity to use the power of leading-edge science to save and improve lives around the world.

Sustainable value creation is core to how we do business as we work to advance global health, apply innovative science and ultimately protect and improve the health of people and animals through the development and delivery of medicines, vaccines and technology solutions. We are passionate about this work and committed to making a positive difference for patients and the world while driving strong business outcomes. Working globally as One Team, we organize our sustainability efforts across four focus areas to create long-term value: 1) expanding access to health; 2) developing and rewarding a diverse, inclusive and healthy workforce; 3) protecting the environment; and 4) operating with the highest standards of ethics and values.

Expanding access to health

Two years ago, we set a goal to enable 100 million more people to access our innovative portfolio globally, through access strategies, solutions and partnerships, by 2025. We exceeded this goal already in 2022. As a result, we increased our ambition and more than tripled our original goal. We now aim to enable 350 million more people to access our innovative portfolio by 2025.

We are eager to reach more people not only now, but in the years to come. To this end, we pursued new scientific discoveries with an investment last year of $13.5 billion in research and development. In total, our products and pipeline seek to address 83 percent of the top 20 global burdens of diseases.

Robert M. Davis | Chairman and Chief Executive Officer

In 2022, our MECTIZAN® Donation Program turned 35 years old. The longest-running disease-specific drug donation program of its kind, this successful effort to combat river blindness and lymphatic filariasis reached nearly 360 million people last year. We also invested $38 million to advance health equity through initiatives like Merck for Mothers. These investments support our goal to reach over 30 million people in low- and middle-income countries (LMICs) and in U.S. underserved populations with our social investments, by 2025. We surpassed this goal as well in 2022. Our new goal is to reach over 50 million people in LMICs, underserved populations in the U.S. and, going forward, underserved populations in other high-income countries, by 2025.

Developing and rewarding a diverse, inclusive and healthy workforce

We are committed to investing in our colleagues and building a strong pipeline of talent as an employer of choice. Across our organization, we value diversity and inclusion as both an ethical and business priority.

We are becoming even more inclusive in our hiring, working with organizations including OneTen, a business coalition striving to close the opportunity gap for Black workers without

four-year college degrees. In order to create more access to meaningful career opportunities for diverse candidates, we posted about 900 job openings not requiring a four-year degree, which was twice as many as the previous year. In addition, in 2022 we hosted 90 student interns through Year Up, a nonprofit serving economically disadvantaged young people. Women represented more than half of our new hires globally, and in the United States, 47 percent of new hires came from underrepresented ethnic groups.

We have a longstanding commitment to fair and equitable pay for all employees doing similar work. In the U.S., our 2022 study found that we had achieved greater than 99 percent pay equity for female and male employees, as well as non-white (including Black, Hispanic and Asian employees) and white employees. Our commitment to diversity and inclusion also extends to our business partners. Last year, we spent $3.2 billion with diverse Tier 1 and 2 suppliers globally.

Protecting the environment

Our Company has a long history of environmental stewardship, and we believe a healthy planet is essential to improving health and protecting the sustainability of our business. As part of this work, we have committed to the Science Based Targets initiative (SBTi) to set a net-zero target for our greenhouse gas (GHG) emissions across our global operations (Scopes 1, 2, 3).

We know that each of our research, production and office facilities plays a role in achieving our goals for energy efficiency, waste reduction and overall sustainability. In 2022, we created a Waste Diversion Playbook to help sites contribute to our goals through local waste-diversion strategies, such as composting and recycling, and environmentally responsible procurement practices.

Operating with the highest standards of ethics and values

We operate responsibly every day, holding ourselves to the highest standards of ethics and values. Our code of conduct defines our corporate character and helps us protect our reputation as a trustworthy company. We maintain 100 percent compliance to regulatory requirements for active incident monitoring, risk and harm analysis, and timely notification of data breaches. We also encourage employees to speak up and report potential concerns, ensuring our ethics and values are reflected in all we do.

As a signatory to the United Nations Global Compact (UNGC), Merck remains committed to improving our communities through our operations, aligning our efforts with the Ten Principles of the UNGC.

In late 2021, we announced the issuance of our first $1 billion sustainability bond to support initiatives and partnerships contributing to the advancement of the United Nations Sustainable Development Goals. Through June 2022, we allocated $760 million of the net proceeds toward social and green projects, in alignment with our sustainability financing framework.

While my colleagues and I are pleased by our 2022 progress, we remain committed to doing more to advance and protect the health of our employees, communities and planet. Indeed, I want to thank our colleagues and partners for the passion and expertise brought to this work every day. I am honored to work alongside such a talented and dedicated team.

Thank you again for your interest in our Company's progress and performance. We are excited for our future—and the unique opportunity we have to make a difference through our research, our medicines and vaccines, and our enduring commitment to sustainable innovation and value creation.

Very best regards,

Rob Davis
Chairman & Chief Executive Officer

Our Company

At Merck, known as MSD outside of the U.S. and Canada, we are unified around our purpose: We use the power of leading-edge science to save and improve lives around the world.

For more than 130 years, we have brought hope to humanity through the development of important medicines and vaccines. We aspire to be the premier, research-intensive biopharmaceutical Company in the world—and today, we are at the forefront of research to deliver innovative health solutions that advance the prevention and treatment of diseases in people and animals.

We strive to foster a diverse and inclusive global workforce and operate responsibly every day to enable a safe, sustainable and healthy future for all people and communities.

As of December 31, 2022, we had approximately

69,000

employees worldwide

More than

500M people

reached with our innovations in 2022[1]

2022 annual revenue:

$59.3B

R&D spend in 2022:

$13.5B

How we operate

We manage the Company through two operating segments, Pharmaceutical and Animal Health.

The Pharmaceutical segment includes human health pharmaceutical and vaccine products. Human health pharmaceutical products consist of therapeutic and preventive agents, generally sold by prescription, for the treatment of human disorders.

The Company sells these products primarily to drug wholesalers and retailers, hospitals, government agencies and managed health care providers such as health maintenance organizations, pharmacy benefit managers and other institutions. Human health vaccine products consist of preventive pediatric, adolescent and adult vaccines, which are sold primarily to physicians, wholesalers, physician distributors and government entities.

The Animal Health segment discovers, develops, manufactures and markets a wide range of veterinary pharmaceutical and vaccine products, as well as health management solutions and services, for the prevention, treatment and control of disease in all major livestock and companion animal species. The Company also offers an extensive suite of digitally connected identification, traceability and monitoring products. Animal Health products are sold to veterinarians, distributors, animal producers, farmers and pet owners.

Our approach

For more than 130 years, we've been dedicated to operating responsibly and creating value for society. That commitment is one of our ongoing strengths and core to our business, which is why operating responsibly is part of the foundation of our Strategic Framework, denoting our commitment to enable a safe, sustainable and healthy future for people and communities.

We believe creating greater accountability for our sustainability strategy will help drive financial results and long-term shareholder value. This is why we added new measures to our 2023 Company Scorecard that link the compensation for a majority of our employees, including our executives, to certain key sustainability metrics in the areas of Access to Health and Employees.

Our Purpose

We use the power of leading-edge science to save and improve lives around the world

Our Aspiration

We aspire to be the premier research-intensive biopharmaceutical company

Our strategic framework

Our Priorities

- Invest in, augment, and accelerate our pipeline to deliver life-changing products
- Demonstrate value to our stakeholders and extend access to solutions that address unmet medical needs
- Drive innovation, growth and productivity enabled by digital and data
- Invest in the growth, success, and well-being of our people

Our Ways of Working

Win as one team

Focus on what matters

Act with urgency

Experiment, learn and adapt

Embrace diversity and inclusion

Speak up and be open-minded

Our Values

- Patients First
- Ethics and Integrity
- Respect for People
- Innovation and Scientific Excellence

We operate responsibly every day on behalf of society, shareholders and all our stakeholders to enable a safe, sustainable and healthy future for people and communities everywhere.

Our sustainability focus areas

Over the past year, we challenged ourselves to innovate and make ambitious commitments within each of our focus areas. Through collaborative partnerships and a holistic approach, we're creating scalable solutions to major global issues.

Access to Health

In collaboration with key stakeholders, we work to ensure our science advances health care, and our products are accessible and affordable to those in need.

*To learn more, see **page 14**.*

Employees

Our Company's success is built on a culture that embraces different perspectives and values the contributions of each individual. We recognize that our competitiveness is strengthened by a diverse, skilled and engaged workforce.

*To learn more, see **page 23**.*

Environmental Sustainability

A healthy planet is essential to human health and the sustainability of our business, while also providing opportunities for product innovation and reducing cost and risk. Our Company has a long history of environmental stewardship and compliance, and we realize that our strategy and efforts need to continuously evolve in the face of a changing climate.

*To learn more, see **page 27**.*

Ethics & Values

We operate with the highest standards of ethics and integrity. By putting our ethics and values at the foundation of everything we do, we create an accountable culture that betters our Company's decision-making, adaptability and reliability.

*To learn more, see **page 30**.*

ESG materiality assessment

There are hundreds of ESG topics a company can focus on at any given moment. An ESG materiality assessment is the process through which our Company gathers information about the external landscape, and our internal priorities, in order to fine-tune this larger list down to the most important strategic topics for our Company to address.

Understanding and prioritizing the issues that matter most to our business and stakeholders enables us to focus, act and report on them effectively and transparently. Our ESG materiality assessment process helps us to focus on potential business risks and opportunities that influence our ability to create value. It helps us determine where we should be prioritizing our efforts in order to maximize the benefit for our stakeholders, our Company and the world.

*To learn more about our ESG materiality process, please see **page 49**.*

Material topics

In our 2023 ESG materiality assessment, the following topics emerged as the most critical for our Company to address, and are grouped below by our four focus areas:

Access to Health

- **Access to health care and medicine (pages 54-76)**
- **Equity and affordability (pages 64-76)**
- **Product safety and quality (pages 54-76, 77-82, 148-155, Clinical trials page)**
- **Public health risks (pages 54-76)**

Employees

- **Employee diversity and inclusion (pages 134-142)**
- **Employee health and safety (pages 119-129)**
- **Talent management (pages 39, 47-49, 114-142)**

Environmental Sustainability

- **Climate change risks and management (pages 52-53, 88-91, 101-106)**

Ethics & Values

- **Ethical corporate behavior (pages 44-45, 81-82, 154-155, Code of Conduct & Compliance)**
- **Privacy and data security (pages 156-157)**

Our priority UN Sustainable Development Goals (SDGs)

The SDGs represent the international community's plan of action for "people, planet and prosperity." The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for the planet and its people. At its core are the 17 Sustainable Development Goals (SDGs).

We believe we have an important role and a responsibility to help reduce the burden of disease and improve access to medicines and vaccines around the world. That is why SDG 3 (Good Health and Well-being) is at the heart of our business. It also aligns with our purpose to save and improve lives.

While every SDG is essential to fostering sustainable development, we have prioritized eight goals where we believe we can have the biggest impact.

*A full SDG index can be found on **page 171**.*

Sustainability Goals & Performance

We are driving sustainability progress by setting ambitious goals across four focus areas that matter most to our Company and create value for our stakeholders:

Access to Health

Goal	Progress 2021	Progress 2022	Progress Total
Further advance health equity by reaching 30 million people in low- and middle-income countries (LMICs) and in U.S. underserved populations with our social investments, by 2025.[2,3] (number of people in millions)	15.0	**18.6**	**33.6**
Reach at least 75% of countries around the world annually with our products.[4]	79%	**76%**	
Enable 100 million more people to access our innovative portfolio globally, through access strategies, solutions and partnerships, by 2025.[5] (number of people in millions)	66.7	**189.2**	

Employees

Goal	Progress 2021	Progress 2022
Increase representation in senior management roles,[6] **by 2024:**		
Women globally to 40%, up from 31% in 2020.	36%	**34%**
Black/African Americans in the U.S. to 10%, up from 3% in 2020.	7%	**6%**
Hispanics/Latinos in the U.S. to 10%, up from 5% in 2020.	6%	**8%**
Maintain or exceed our current inclusion index score, by 2025.[7]	On track	**On track**
Maintain or exceed our current employee engagement index score, by 2025.[7]	On track	**On track**

Environmental Sustainability

Goal	Progress 2021	Progress 2022
Reduce our operational greenhouse gas (GHG) emissions (i.e., Scopes 1 & 2) 46% by 2030, from a 2019 baseline.[8]	9% reduction	**9% reduction**
Achieve carbon neutrality across our operations by 2025 (Scopes 1 & 2 emissions).[8]	In progress. Any remaining emissions will be offset with high-quality offsets in 2025.	
Source 100% of our purchased electricity from renewable sources by 2025.[9]	41%	**45%**
Reduce our value chain (Scope 3) GHG emissions 30% by 2030, from a 2019 baseline.[10]	9% increase	**6% increase**

Ethics & Values

Goal	Progress 2021	Progress 2022
Foster a "Speak Up" culture by maintaining or exceeding our current percentage of employees responding favorably to the "Willingness to report" question in the Pulse survey as an annual average.[11,12]	On track[12]	**On track**
Maintain 100% compliance to regulatory requirements for active incident monitoring, risk/harm analysis and on-time notification of data breaches.[13]	100% compliance maintained	**100% compliance maintained**

2022/2023 Highlights

Access to Health

359 million
People reached through the MECTIZAN Donation Program to treat river blindness and lymphatic filariasis in 2022

$38 million
Our social investments made in 2022 to address health equity

>100 million doses
Our HPV vaccine commitment for use in Gavi-supported countries from 2021-2025

>5 million courses
Investigational antiviral COVID-19 medicine delivered to more than 20 low- and middle-income countries for distribution (2021-2022)

Merck for Mothers
Our $650 million global commitment to help create a world where no woman has to die while giving life

Environmental Sustainability

Net zero
In 2023, our Company made a commitment to the Science Based Targets initiative (SBTi) for our greenhouse gas (GHG) emissions across our global operations (Scopes 1, 2, 3)

6 years
Consecutive times since 2017 our Company has been honored as a winner of the Green Chemistry Challenge Awards sponsored by the Environmental Protection Agency (EPA) and/or the American Chemistry Society

Employees

>99%
Pay equity achieved in the U.S. in 2022 for female and male employees, as well as for non-white (including Black, Hispanic and Asian employees) and white employees

47%
New hires in the U.S. in 2022 who are members of underrepresented ethnic groups

$3.2 billion
Spending with diverse Tier 1 and 2 suppliers globally in 2022

Ethics & Values

24/7
Availability of our MSDethics.com reporting tool, which allows employees and third parties to raise concerns confidentially and anonymously (where permitted by law)

>99%
Employees who completed our Code of Conduct training series in 2022

10 points
Allocation (out of 100) to sustainability metrics tied to our Access to Health and Employees focus areas in our 2023 Company Scorecard, which impacts annual incentive pay for executives and the majority of global employees

Select awards and recognition

We're proud that our longstanding commitment to drive responsible actions across the business has received external recognition as we strive to manage ESG-related risks and create value for our Company, society and our stakeholders.

Barron's

Top 100 Most Sustainable U.S. Companies

#29 overall and #1 in the sector (2023)

Newsweek & Statista

America's Most Responsible Companies list

#4 overall and #1 in the sector (2023)

Investor's Business Daily

100 Best ESG Companies

#9 overall and #1 in the sector (2022)

3BL Media

100 Best Corporate Citizens

#6 overall and #1 in the sector (2022)

Fortune

Recognized on the Change the World list for the third time in five years for our work to expand access to medicines (2022)

JUST Capital

America's Most JUST Companies

#26 overall and #1 in the sector (2023)

Human Rights Campaign

Recognized on the Best Places to Work for LGBTQ+ Equality list for receiving a 100% rating (2022)

Latino Leaders Magazine

One of 30 companies on the Best Companies for Latinos to Work list (2022)

Seramount

One of 75 companies on the Top Companies for Executive Women list (2022)

Focus area:

Access to Health

Access to Health is core to our Company's purpose to use the power of leading-edge science to save and improve lives around the world. We focus on discovering, developing and delivering innovative products and services that improve health and address unmet needs. We actively work in partnership with a range of stakeholders, including multilateral organizations, NGOs, and governments to strengthen health systems, doing our part to ensure care is affordable, efficient and equitable.

Our guiding principles

Our multi-prong, enterprise-wide approach is anchored in our Access to Health Guiding Principles, which are embedded across our Company, with accountability for progress held at leadership levels. These Principles include leading scientific discovery and invention of medicines and vaccines that address unmet need; ensuring availability and affordability of our innovative portfolio; and addressing barriers to health equity. Our Access to Health goals reflect our commitment to deliver on these Principles for all stakeholders.

Goals

- Further advance health equity by reaching **30 million people** in LMICs and in U.S. underserved populations with our social investments, by 2025[2,3]
- Reach at least **75% of countries around the world** annually with our products[4]
- Enable **100 million more people** to access our innovative portfolio globally, through access strategies, solutions and partnerships, by 2025[5]

More than 500 million people reached with our innovations[1]

In 2022, we reached more than 500 million people with our innovations across commercial channels, clinical trials, access strategies like our partnership with Gavi and UNICEF, voluntary licensing of antiviral treatments including our investigational antiviral COVID-19 medicine, and medicine and vaccine donations.

Discovery and invention

We build on our legacy of putting patients first by inventing medicines and vaccines to address unmet medical need, including for conditions with high global burden of disease. As part of our R&D strategy, we evaluate our candidates early for their potential to address significant public health concerns in underserved settings, including LMICs.

Our research pipeline, products which we currently market, and our external collaborations seek to address 83 percent of the world's top health burdens, including some that primarily affect LMICs. For example, our investigational vaccine for dengue fever is currently in a Phase 2 trial. With approximately half of the world's population, or four billion people, at risk for dengue disease, dengue is a critical public health challenge. Annually, there are an estimated **105 million** dengue infections worldwide; on average, 50-60 million of those cause symptoms. We also have a **collaboration** with Instituto Butantan to share data and learnings from our dengue vaccine programs.

In addition, we collaborate with academic institutions, nonprofit organizations, government entities and other biopharmaceutical companies, so we can follow the latest science and bring our medicines and vaccines to patients. In 2022, we entered into 97 significant external licenses, collaborations, and acquisitions with a broad range of partners, from early-stage science to clinical-stage programs. These collaborations are deemed "significant" because they involve an asset or technology with the potential to make an important enhancement to our R&D capabilities or potential portfolio.

Collaborating to fight infectious disease

We continue our strong legacy of infectious disease research, including for those diseases with greater impact to LMICs like tuberculosis (TB), HIV and malaria.

In late 2022, Merck entered into a licensing agreement with the Bill & Melinda Gates Medical Research Institute for two preclinical candidates with potential in combination regimens for treating TB, one of the **top 10** causes of death in LMICs;

one of these compounds advanced to a Phase 1 clinical trial earlier this year. Merck scientists discovered the compounds as part of the **TB Drug Accelerator**, a collaboration among biopharmaceutical companies, research organizations and universities to accelerate new TB therapies, supported by the Bill and Melinda Gates Foundation.

HIV is a global epidemic that disproportionately affects populations in LMICs in sub-Saharan Africa. In fact, two-thirds of the more than **35 million** people living with HIV reside in the region, accounting for about 75 percent of HIV-related deaths, globally. Merck continues its more than 35 years of scientific research to address the HIV epidemic. We have a broad R&D program, including a Phase 3 development program for a new once-daily two-drug regimen and a Phase 2 study evaluating an investigational weekly oral combination treatment of our antiviral islatravir and Gilead Sciences' lenacapavir, part of an agreement with Gilead to study long-acting HIV treatments. In addition, as part of our ongoing partnership with the Bill & Melinda Gates Foundation, we recently began a Phase 1b study to evaluate potential mechanisms for an oral long-acting HIV prevention option.

We continue to collaborate on new options for malaria, an infection with rising resistance to existing treatments and which remains one of the largest killers of pregnant women and children under the age of five in most resource-poor countries. A new antimalarial drug candidate, discovered through our longstanding collaboration with the Walter and Eliza Hall Institute of Medical Research in Australia and with funding from the Wellcome Trust, recently entered Phase 1 clinical testing.

A legacy of bettering human health

We strive to discover treatments for diseases that affect people across a breadth of countries globally, such as cardiovascular disease. Merck has a long history of developing treatments for cardiovascular disease. More than 60 years ago, we introduced our first cardiovascular therapy and our scientific efforts to understand and treat cardiovascular-related disorders have continued, including with our investigational, once-daily oral proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitor in adults with hypercholesterolemia. Merck plans to start a Phase 3 pivotal study of the potential treatment in the second half of 2023.

Did you know?

Analysis from the **Institute for Health Metrics and Evaluation** notes a growing global disease burden from chronic issues like high cholesterol.

Importantly, our discoveries often benefit human health over the long term, like the steroid dexamethasone, HIV treatment raltegravir and antihypertensive losartan, all of which remain on the World Health Organization's Essential Medicines List decades after their discovery.[14]

Our R&D expenditure

In 2022, Merck's R&D spend was $13.5 billion, making us a leader in funding R&D within the biopharmaceutical industry.

Reformulating our products for patient benefit

Innovation goes beyond new treatments. With a focus on improving adherence and enhancing the patient experience, we also strive to provide new options that increase the ease of administration. For example, in HIV, we are researching long-acting medications designed to reduce the frequency of administration.

Increasing diversity of patients in clinical trials

Clinical trials play a critical role in advancing scientific innovations. Our Company is determined to expand access to trials—including through increased diversity. In 2022, we reached more than 85,000 people through our clinical trials in more than 60 countries worldwide.

It will take a comprehensive approach to increase the diversity of participants in clinical trials, which is why we are tackling a variety of associated factors, many in partnership with other stakeholders.

Our team of clinical trial operations experts implements best practices in our studies globally. For every late-stage trial, we require plans to recruit patients that appropriately reflect the diversity of the people who will ultimately take the medicines we make. We also prioritize placement of study sites in communities with higher populations of individuals who have historically been underrepresented in clinical trials. In 2022, approximately 50 percent of enrollees were from underrepresented groups.

Partnerships are critical to increasing diversity in clinical trials. In 2022, we joined the Novartis-led collaboration Beacon of Hope, a 10-year program that establishes clinical trial Centers of Excellence at four Historically Black Medical Schools to increase diversity among clinical trial investigators and participants. We are also a contributor to sponsorships to connect with, support and train more clinicians from underrepresented groups.

To ease logistical barriers that make it difficult for some patients to visit clinical trial sites, we're working with Greenphire, a provider of global financial lifecycle management solutions for clinical trials. The organization's ClinCard debit card provides direct stipends and travel reimbursement. In addition, we have developed tools to reach study participants within their communities, including through local pharmacies and mobile study sites.

*For more information, please see the Discovery & Invention section in GRI 203 on **pages 54-57**.*

Availability

At Merck, we believe scientific innovation fuels long-term value to society. And to make those innovations as impactful as possible, we must also focus on strong commercialization, quality manufacturing, and operational excellence in our global supply distribution, while reducing our environmental impact.

Our goal to reach at least 75 percent of countries in the world annually with our medicines and vaccines demonstrates our commitment to global product availability. In 2022, we surpassed our goal for the second consecutive year, reaching 76 percent of countries around the world with our products.

76%

of countries reached with our products in 2022[4]

Maintaining a global supply network

Through our manufacturing and supply division, we strive to maintain a reliable global supply network of the highest quality. Our supply chain is designed to operate a lean and efficient network that produces our medicines and vaccines to the highest quality, safety and environmental standards, in full compliance with regulations and current Good Manufacturing Practices (cGMPs), as well as industry best practices.

Through digitally enabled "end-to-end supply planning," we are modernizing our manufacturing operations and conducting efficient and balanced planning to maximize business results and deliver medicines and vaccines to customers, when and where they need them. Our facilities, along with our external suppliers and partners, make up an integrated, interdependent global manufacturing network.

Developing new models and business strategies to expand access

From digital upgrades to blockchain technology, integrated access planning early in the product development cycle and planning for new manufacturing models, we are evolving systems to ensure broad availability of our medicines and vaccines to better meet patient needs.

Manufacture and supply of vaccines

In the last few years, countries have introduced new or expanded routine vaccination programs, creating unprecedented increases in the global demand for vaccines. To meet this demand, we have increased our capacity and supply capability across our vaccines portfolio and are committed to continuing to do so.

*For more information, please see the Availability section in GRI 203 on **pages 58-63**.*

We have made

more than $2 billion in capital investments

over the last five years to help increase supply and extend access to our HPV vaccines

Based on our 2022 performance, we are increasing our access to health goal: We will enable

350 million more people

to access our innovative portfolio through dedicated access strategies, solutions and partnerships, by 2025

"We can never rest until a way has been found to bring our finest achievements to everyone."

George W. Merck

Affordability

Our purpose to deliver medicines and vaccines to save and improve lives is not fulfilled if our inventions cannot reach the people who most need them. It's why we are committed to helping shape the health care ecosystem, ensuring people are empowered with the options to pursue high-quality, affordable medicines and vaccines, in a sustainable way.

Exceeding and expanding our goal to enable access to our innovative portfolio

In 2021, we set a goal to use strategies, solutions and partnerships to enable 100 million more people to access our innovative portfolio globally by 2025.[5] In 2022, we were proud to exceed this goal, having enabled access for more than 189 million people. This is why we are taking our goal further, increasing it to 350 million people by 2025.

How we enable access

To advance our goal of enabling more people to access our innovative portfolio, we are focusing on building health care capacity, strengthening channels for care delivery and fostering sustainable financing.

In building health care capacity, we help to create greater efficiency for patients in the health care system through collaborations with hospitals and health care networks. For example, we work with partners using a data-based approach to understand how a patient's cancer journey can be optimized from earlier diagnosis through to treatment.

We also collaborate with different financial institutions and payers, supporting them to expand funding options that help patients and their families cope with potentially high out-of-pocket costs caused by critical illness.

Through collaborations that reach underserved populations, we are working with health care providers and others in the digital health and financial sectors to develop solutions that enhance disease awareness and health care access.

In addition, we are committed to engaging with global health organizations to improve the resilience of immunization programs and to advance equitable access to our vaccines, especially in LMICs. For example, through our long-term commitment to Gavi and UNICEF, we broaden access to our vaccines to help prevent HPV-related cancers and diseases in Gavi-supported countries by providing them at an accessible price.

Broadening the reach of our COVID-19 treatments

Access planning is a key part of our research and development process. One example is our global, multi-faceted strategy to facilitate timely and equitable access to our investigational antiviral COVID-19 medicine. This strategy was particularly important in the face of the global COVID-19 pandemic.

Our strategy includes advance purchase and supply agreements with more than 40 countries; and voluntary license agreements with Indian generic manufacturers and the Medicines Patent Pool, enabling availability of generic versions of our investigational antiviral COVID-19 medicine to more than 100 LMICs. In addition, we allocated up to three million courses of therapy to UNICEF for LMICs as a "bridge strategy" until the voluntary licensees were able to produce supply.

Thanks to this strategy, more than **five million courses of our investigational antiviral COVID-19 medicine have been delivered to over 20 LMICs through 2022**. In addition, Merck's direct supply has treated more than four million patients worldwide through 2022.

*For more information, please see the Affordability section in GRI 203 on **pages 64-69**.*

We committed to provide over 100 million doses

of our HPV vaccine for use in Gavi-supported countries through a long-term agreement with UNICEF from 2021-2025

A longstanding commitment to product donations

When market-based solutions are inadequate or unavailable, we pursue programs to provide direct access to our medicines and vaccines, including through product donations. One donation program we're particularly proud of is our longstanding MECTIZAN Donation Program (MDP). For more than 35 years, the MDP has donated our medicine MECTIZAN for the treatment of onchocerciasis (known as river blindness) and, for more than 25 years, also for the treatment of lymphatic filaraisis. MDP is the longest-running disease-specific drug donation program and partnership of its kind and is widely regarded as one of the most successful public-private health collaborations in the world.

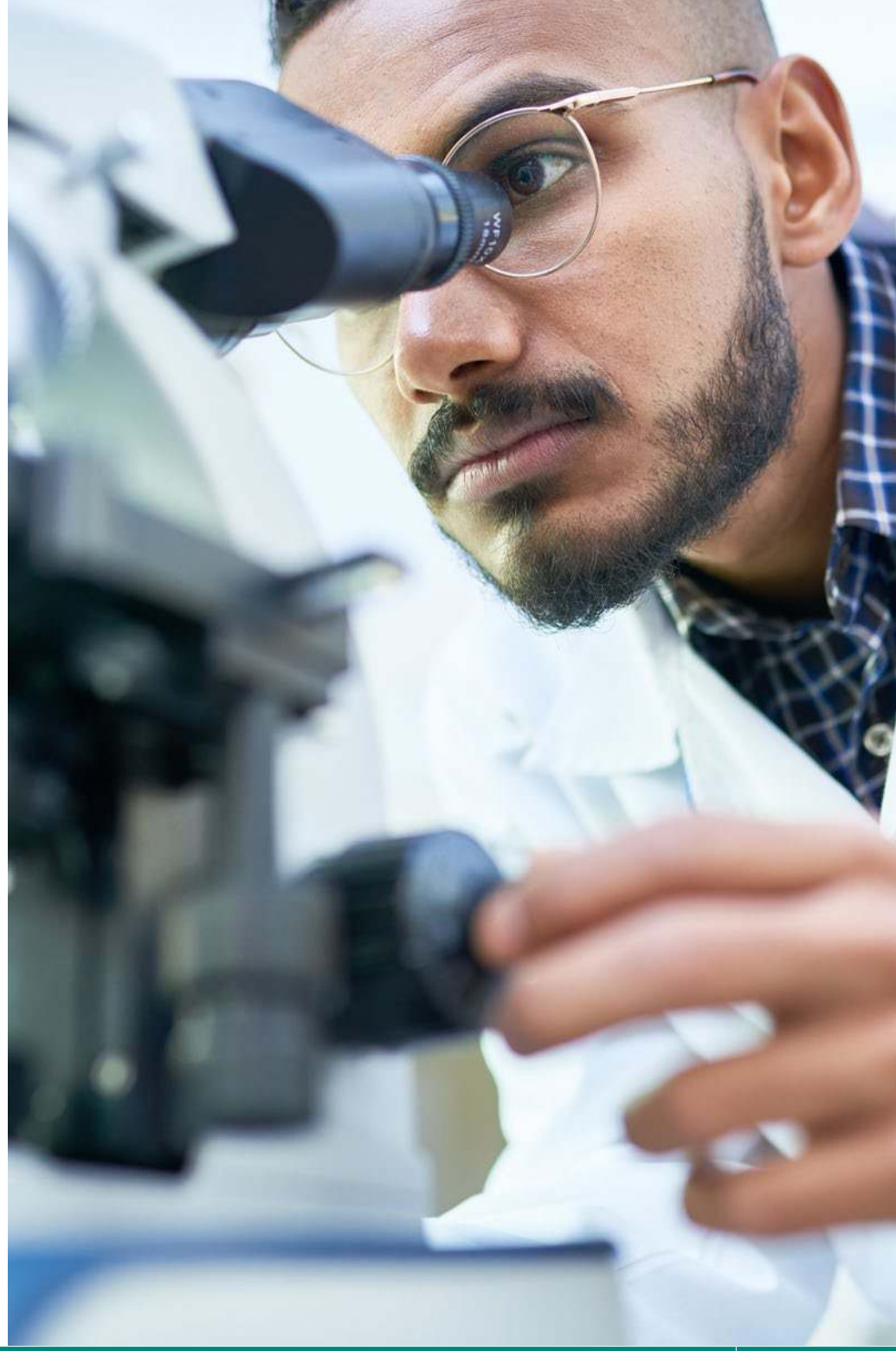
In 2022, we reached

approximately 359 million people

with our MECTIZAN donations

Our Merck Medical Outreach Program (MMOP) is the primary way we donate our medicines and vaccines for global disaster relief and humanitarian assistance in LMICs. In 2022, we reached more than 118,000 people through the MMOP.

*For more information on our product donations, please see GRI 203 on **pages 69-72** for more information.*



Health systems strengthening and addressing health equity

To save and improve lives with our medicines and vaccines, we recognize we have a role to play to help advance global health, and to reduce barriers for underserved populations so that all patients have access to high-quality health care. Our focus on health equity aligns to our deepest-held Company values.

In 2022, we invested $38 million in social investments to address health equity. Our social investments help advance health equity around the world by addressing the barriers that many individuals face in seeking and receiving high-quality health care. We provide support in several ways, including through key initiatives like Merck for Mothers, health equity initiatives, and our impact investments. Our Foundation is funded entirely by our Company and is our chief source of financial support for qualified, eligible nonprofit organizations whose programs align with our philanthropic priorities.

In 2021, we set a goal to reach 30 million people with social investments for health equity in LMICs and underserved populations in the U.S. Through 2022, we exceeded this goal, reaching more than 33 million people, including more than 18 million in 2022 alone.

To drive continued action, we have increased this health equity goal to now reach 50 million people by 2025. We're now including underserved populations in high-income countries beyond the U.S. in this goal as our health equity investments evolve to meet the needs of underserved populations everywhere.

Making pregnancy and childbirth safer

Maternal health outcomes can serve to shine a light on the strength of a health system. In many countries, inequitable maternal health outcomes persist despite having preventable causes. Merck for Mothers is our $650 million global initiative to create a world where no woman has to die while giving life. For more than a decade, the program has brought Merck's scientific and business expertise to help make maternal health outcomes more equitable and pregnancy and childbirth safer.

*For more information, please visit the **Merck for Mothers website**.*

Based on our 2022 performance, we are increasing our health equity goal: By 2025, we aim to reach

50 million people

in LMICs and underserved populations in high-income countries with our social investments

Addressing cancer care disparities

Our social investments support multiple programs and partnerships to advance more equitable cancer treatment. In the U.S., we have supported the American Cancer Society's Get Screened Initiative aimed at reducing disparities in cancer screening. These disparities have been exacerbated by the COVID-19 pandemic. Also, through the CEO Roundtable on Cancer, we support Historically Black Colleges and Universities and Hispanic-Serving Institutions in improving health equity, education, and access in communities disproportionately affected by cancer.

In addition, through a nearly **$2 million grant** from our Foundation, we support the American Cancer Society in establishing patient navigation programs in resource-limited settings in sub-Saharan Africa. The output includes a toolkit that can help other countries adopt similar programs.

Investing for impact

Another way we advance health equity is through impact investments, which deploy financial resources to generate improved health care access—all while growing a sustainable global health ecosystem and attracting additional capital and partners. For example, we invest in Mamotest, a company in Latin America providing AI-enabled telediagnosis for breast cancer.

*Learn more about our impact investments on our **corporate site**, as well as in GRI 201-1 on **page 51**.*

Our latest alliance for better cancer care

In 2022, we built on the success of our **Alliance to Advance Patient-Centered Cancer Care** with a new U.S.-based initiative—the **Alliance for Equity in Cancer Care**. Over the next five years, this $20 million commitment from our Foundation will address persistent disparities across the cancer care continuum and improve the delivery of equitable, culturally responsive care in underserved communities in the U.S.

*For more information on our cancer care initiatives, see GRI 203 on **page 74**.*

Harnessing the power of our employees

In 2022, we launched a $1 million Health Equity Catalyst Fund for employees to empower our teams to develop solutions that promote equitable health outcomes, particularly for underserved populations. The fund currently supports 15 community-level efforts, initiated by employees, in 13 countries. In addition to funding opportunities, we are working across the enterprise to better apply social determinants of health information to business strategies, and track our progress in reducing barriers to access. These efforts serve as a mechanism to engage our employees in innovative thinking that reduces inequities, advances our goals and extends our corporate purpose to save and improve lives.

*For more information, please see the Strengthening health systems and addressing inequity section on **pages 73-76**.*

Focus area:

Employees

Our best-in-class talent share in our purpose to save and improve lives. To hire and retain the best people—those who will invent and deliver medicines and vaccines that change the world—we must be an employer of choice.

Fostering a culture that is inclusive and supportive is fundamental to our talent strategy. Our longstanding commitment to diversity, equity and inclusion is based on our belief that unique, passionate perspectives are critical to innovation and in turn, provide a competitive advantage for our Company. We also foster a positive working environment by providing resources designed to improve the well-being of our employees and their families.

In addition to supporting our talent strategy, we recognize that our culture plays a fundamental role in fulfilling our Company's purpose. In 2023, we introduced sustainability metrics tied to our Access to Health and Employees focus areas in our Company Scorecard, which include indicators of the overall employee experience.

Goals

- Increase representation in senior management roles,[6] by 2024:
  - Women globally to **40%**, up from 31% in 2020
  - Black/African Americans in the U.S. to **10%**, up from 3% in 2020
  - Hispanics/Latinos in the U.S. to **10%**, up from 5% in 2020
- Maintain or exceed our current inclusion index score, by 2025[7]
- Maintain or exceed our current employee engagement index score, by 2025[7]

Progress toward our goals

We remain on target with our employee-focused goals, including our aim to meet or exceed our inclusion score and our employee engagement index score by 2025. We have demonstrated progress against our baseline diversity measures. We're delivering on our commitments overall, as well as addressing annual fluctuations in senior management (vice president/senior vice president) representation to ensure we're well-positioned to meet our multi-year targets.

Along the way, we are building a strong pipeline of talent: globally, 52 percent of new hires in 2022 were women and in the U.S., 47 percent were members of underrepresented groups. We aid our employees' growth through broad leadership development programs as well as through affinity-based initiatives that consider our colleagues' unique backgrounds.

Attracting and retaining the best talent

One of the primary ways we attract and retain the best talent is through training and development. By investing in our employees, we also invest in their ability to deliver innovative medicines and vaccines for patients.

Our leadership development programs cut across all levels, divisions and geographies of the Company. Some focus on business acumen, others on creating positive change. For example, our General Management Acceleration Program is an application-based, early-talent development initiative that grows participants' business and financial acumen as well as their critical thinking abilities.

Our affinity-based development programs for female, LGBTQ+, Hispanic/Latino, and Black colleagues build a sense of community and aim to increase the number of diverse leaders ready to progress in their careers while furthering leadership capabilities and business acumen.

Diversity, equity and inclusion at the center

Enhancing diversity in Merck's employee population betters our understanding of our customers, promotes the inclusion of diverse populations in our clinical trials, and encourages the innovation that drives our business. Put simply, diversity and inclusion is a business imperative.

Our enterprise-wide Global Diversity & Inclusion (GD&I) strategy focuses on the following:

Our People
Strengthen the foundational elements of diversity

Our Culture
Ensure accountability to drive an inclusive culture

Our Business
Continue to leverage diversity and inclusion to ensure business value

Our World
Transform the environment, culture and business landscape

Our GD&I strategy also supports the UN Sustainable Development Goals (SDGs) to advance gender equality, provide fulfilling work and economic growth, reduce inequalities within and among countries, and strengthen our global partnerships.

Our enterprise-wide strategy demonstrates our commitment to diversity and inclusion as a business priority. It is endorsed at the highest levels of the organization, including by the CEO and Executive Team. Our Board of Directors also has a diversity policy.

We also have collaborative, cross-functional teams who integrate diversity and inclusion (D&I) capabilities into our operations, and employees are encouraged to link their annual priorities to D&I.

The power of our employees

Our 10 Employee Business Resource Groups (EBRGs) include almost 20,000 members. For more than 50 years, we have built communities within our Company that foster retention, facilitate growth, provide mentorship and strengthen networks. They also make direct contributions to our business strategy with culturally relevant insights that drive our success and improve our decision-making.

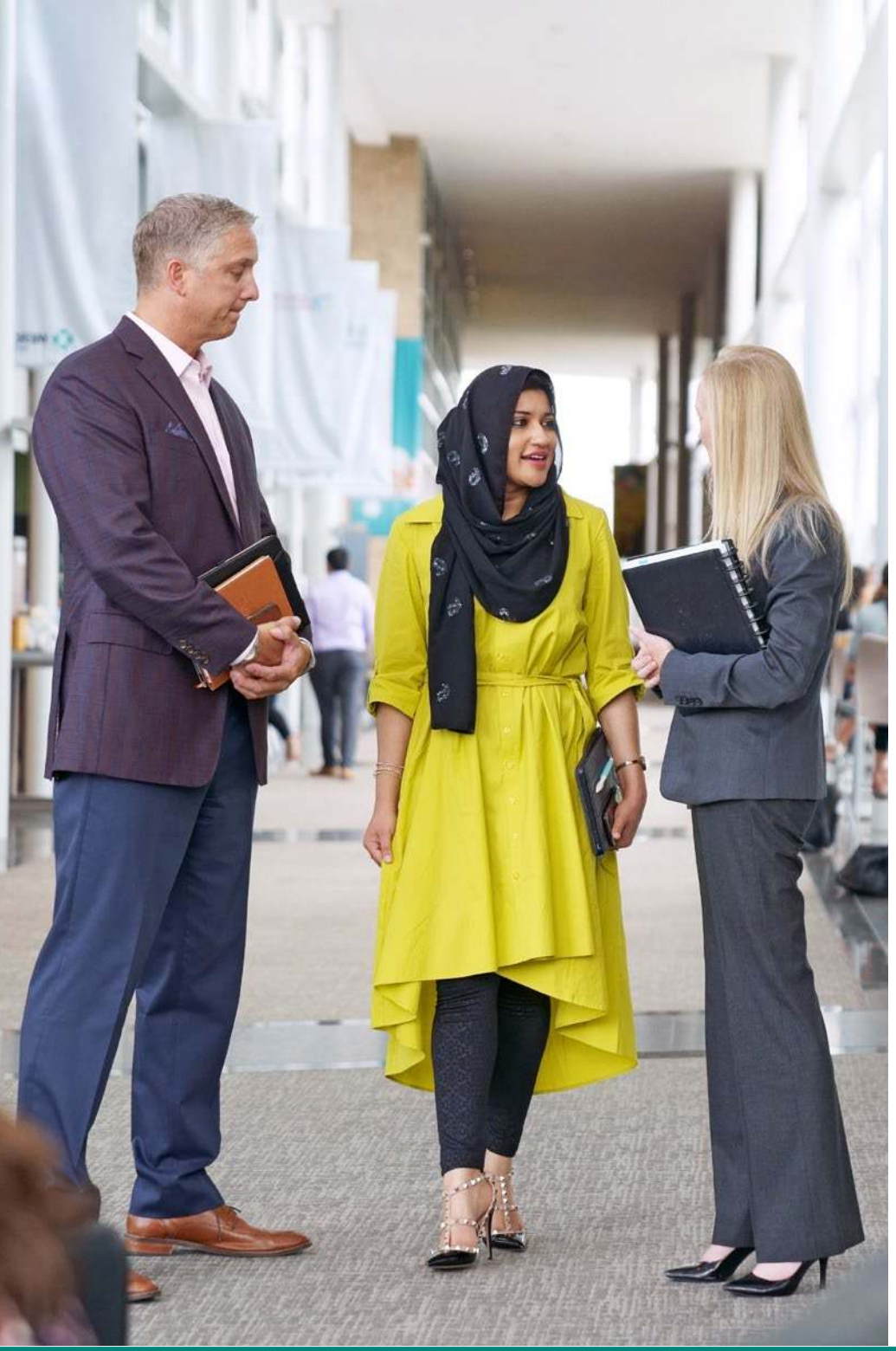
Pay equity

We have had a longstanding commitment to fair and equitable pay for all employees doing similar work. In 2022, our pay equity study achieved nearly worldwide coverage, encompassing approximately 90 percent of our global employee population, or nearly 60,000 employees. In the U.S., our study showed that we have achieved greater than 99 percent pay equity for female and male employees, and that we have achieved greater than 99 percent pay equity for non-white (including Black, Hispanic and Asian employees) and white employees.

*Read more about our efforts toward pay equity in GRI 405 on **page 134**.*

Did you know?

In 2021, we created a global digital accessibility policy to ensure equal access across our digital landscape, for stakeholders both internally and externally. In 2022, we strengthened our support for digital accessibility with a five-year roadmap to ensure we have a universal design standard for our facilities around the world. These guidelines reflect designing for accessibility, usability and inclusion, and go beyond the Americans with Disabilities Act.



Building a pipeline of diverse talent

Skills-first is a paradigm shift happening throughout our Company in how we attract, develop and advance talent. For appropriate roles, the new approach increases the focus on skills instead of a four-year degree, creating equitable access to meaningful career opportunities for diverse candidates.

In 2022, our Company posted approximately 900 roles without a four-year degree requirement. That's twice as many as the year before. Key partners in our efforts include:

- OneTen, a coalition of leading companies helping to close the opportunity gap for Black talent in the U.S.
- Year Up, a nonprofit that offers economically disadvantaged youth six months of training followed by a six-month corporate internship

Our Company was proud to host approximately 90 Year Up interns in 2022, with plans to expand the partnership further for 2023. We also launched our debut Skills-First apprenticeship program with over 30 apprentices in digital marketing, data analytics and information technology.

Valuing the well-being of our employees

As an innovation-based company, the expertise and engagement of our employees is critical to our business. We cannot be successful unless we prioritize employees' health, well-being and safety. We provide benefits covering employees' physical and mental health, including a wide range of programs, resources, and tools to help them make healthy choices and live better lives.

We conduct our Employee Pulse surveys multiple times a year to measure colleagues' perception on inclusion and other critical workforce issues.

*See our **Well-being Report** on our corporate website for more on our commitment.*

Dedicated to a safe and healthy workplace

We are focused on providing a safe and healthy workplace.

All employees, service providers and Company-managed contractors must follow our safety standards. In addition, we have comprehensive programs focused on reducing risks, work-related injuries and illnesses, and other safety incidents. Our active Employee Safety Committees are an example of how we engage employees in these efforts and partner to proactively maintain a safe and healthy working environment.

*For more information on safety, please see GRI 403 on **pages 119-129**.*

Recognition as a great place to work

We are proud of the many external awards that recognize our Company as a great place to work, both for employees generally and for specific affinity groups. In 2022, we were recognized as a great place to work for LGBTQ+ employees, women, veterans and Latinos, among others.

Extending our diversity commitment to suppliers

We are proud to be a leader in supplier diversity, in both their hiring and development.

In 2022, our spend with minority-, women-, veteran-, LGBTQ+- and disability-owned business enterprises represented 14 percent of our total procurement spend.

We actively support the small and diverse businesses we work with. Our Advanced Leadership Program for Diverse Suppliers provides development opportunities for business owners of diverse backgrounds with a focus on leadership skills and business acumen. In 2022, we had 15 diverse suppliers graduate from the second cohort of the program.

In addition to ensuring we have diversity among our suppliers, we also monitor our large Tier 1 suppliers to make certain they, in turn, use diverse suppliers, extending our community impact. In 2022, 21 Tier 1 suppliers participated in our Second Tier program, generating an impact of over $258 million through their inclusion and utilization of diverse suppliers for direct purchases on behalf of our Company.

$3.2 billion

in spending with diverse Tier 1 and 2 suppliers globally

Focus area:

Environmental Sustainability

Our purpose to save and improve lives is inextricably linked to fostering a healthy planet. It's why our commitment to enabling a safe, sustainable and healthy future is embedded within our strategic framework. And it's why we continuously build on our long history of environmental stewardship and compliance, evolving our efforts in the face of a changing world.

Our environmental strategy and commitments

Our environmental sustainability strategy has three focus areas:

- Driving operational efficiency
- Designing new products to minimize environmental impact
- Reducing any impacts in our upstream and downstream value chain

Goals

- Reduce our operational greenhouse gas (GHG) emissions (i.e., Scopes 1 & 2) **46%** by 2030, from a 2019 baseline[8]
- Achieve **carbon neutrality** across our operations by 2025 (Scopes 1 & 2 emissions)[8]
- Source **100%** of our purchased electricity from renewable sources by 2025[9]
- Reduce our value chain (Scope 3) GHG emissions **30%** by 2030, from a 2019 baseline[10]

Our approach to climate change

Scientific data supports that climate change is occurring, and we are taking action to reduce the economic and public health risks associated with a changing climate.

We have adopted a set of climate goals to help position our Company to succeed in an increasingly resource-constrained world. These goals were developed to align with the latest climate science and address the rising expectations of our customers, investors, external stakeholders and employees regarding the environmental impact of our operations and supply chain.

Our Company has also committed to the Science Based Targets initiative (SBTi) to set a net-zero target for our greenhouse gas (GHG) emissions across our global operations (Scopes 1, 2, 3).

Environmental, Health and Safety (EHS) governance

We ensure our ongoing commitment to these areas through thoughtful governance. Our Environmental, Health and Safety (EHS) Council is a cross-functional body with leadership representation from each area of our business. As sponsors to our sustainability strategy, policy and business risk mitigation controls, the Council monitors performance on our targets, while also increasing visibility and transparency internally to the business, Executive Team and the Board of Directors.

*For more information, please refer to the Environmental Health and Safety Management and Governance document located on the **Sustainability Resources page** on our corporate website.*

Playbooks for a sustainable environment

Our local sites are crucial to achieving our ambitious environmental sustainability goals, and we continue to launch tools to assist them, particularly for our climate and waste targets.

In 2021, we launched our Low Carbon Transition Playbook (LCTP), a common platform that includes a gap assessment to help our global sites evaluate the maturity of their energy programs and help create short- and long-term plans to reduce sites' carbon intensity and build toward a low-carbon future. Based on learnings from use, LCTP 2.0 was issued in 2022 with a capability to facilitate knowledge sharing across sites.

Thanks to the success of the LCTP, we took a similar approach for waste diversion. In 2022, we created the Waste Diversion Playbook to guide sites on developing a roadmap to our shared 2025 goals, including local waste-diversion strategies and environmentally responsible procurement practices.

These tools aid in the reporting and tracking of projects that support achievements towards meeting our corporate targets.

Realizing the benefits of green chemistry

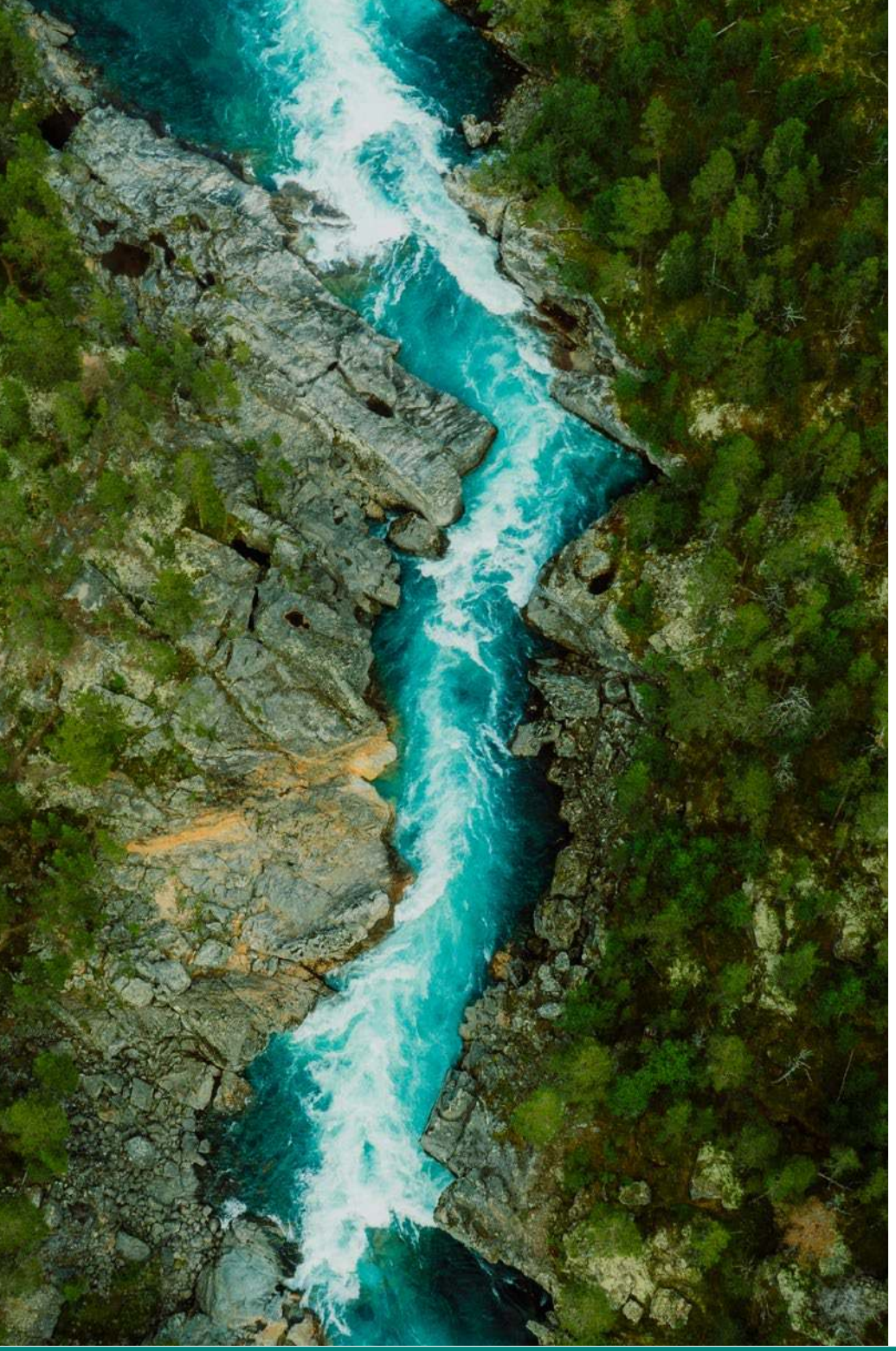
Meeting our environmental sustainability goals is intrinsically linked to the creation of innovative, cost-efficient manufacturing processes with low environmental impact. We see transformative science/engineering and innovation as critical enablers to developing sustainable, low-cost manufacturing processes that provide environmental and economic benefits over the life cycle of our products.

Our aim is to develop the most efficient and sustainable processes at product launch, with the goal of minimizing material use and waste from our commercial manufacturing. Our Company utilizes an innovative “green-by-design” development strategy to progress from an initial early clinical supply route to a fully optimized and sustainable commercial manufacturing process.

For the third year in a row, we were proud recipients of the Peter J. Dunn Award for Green Chemistry and Engineering Impact, an award given by the American Chemical Society in recognition of outstanding implementation of novel green chemistry in the pharmaceutical industry. The team earning this 2022 award reduced an 11-step synthesis for a product to just two steps, replacing toxic solvents with biorenewable ones.

Did you know?

Since the establishment of the Green Chemistry Challenge Awards by the Environmental Protection Agency (EPA) and the American Chemistry Society (ACS) in 1996, we have been recognized with nine Green Chemistry Awards for innovative process improvements, with six of those consecutively since 2017.



Waste diversion

We continuously evaluate our sites' waste disposal methods to gain a better understanding of our network and changes therein, as well as to identify risks and opportunities in our value chain. Based on our evaluation, we implemented programs resulting in diversion of 60 percent of landfill waste from our highest landfill-generating sites.

We are currently meeting our 2025 public waste diversion goal with 16 percent of total operational waste being sent to landfill or incineration without energy recovery, and we will continue to strive to improve our waste minimization, recycling and diversion efforts.

Water as a shared resource

Access to clean water is critical for human health. As water is a key input to our manufacturing operations, we assess water risk throughout our network as a standard business practice. Both of our priority water-stress risk sites have conservation plans in place and are actively working on water use reduction and recycling improvement projects.

In 2022, we achieved a 17 percent reduction in our water use compared to our 2015 baseline. This reduction is consistent with our ongoing commitment to achieving our stated target: by 2025, we will maintain global water use at or below 2015 levels. Our sites are employing various technologies and techniques aimed at reducing our water footprint and improving operational performance.

Our continued endorsement of the UN CEO Water Mandate enables continued alignment of our water program with its principles directly in our operations. We continued to identify partnerships that will help us advance our water stewardship priorities in the areas in which we operate.

Focus area:

Ethics & Values

Our stakeholders trust us to do the right thing, and it is imperative we uphold that trust. That means operating responsibly to enable a safe, sustainable and healthy future for people and communities everywhere, and to always put patients first. Our strong commitment to ethics and integrity is the bedrock of our Company and enables us to fulfill our purpose.

Our policies and procedures reinforce that commitment, from how we conduct research and development, to the management of our supply chain, to available and affordable products.

In addition, our workforce is united by four key values that represent who we are and how we work together as a Company:

- Patients first
- Respect for people
- Ethics and integrity
- Innovation and scientific excellence

Goals

- Foster a "Speak Up" culture by **maintaining or exceeding** our current percentage of employees responding favorably to the "Willingness to report" question in the Pulse survey as an annual average[11,12]
- Maintain **100%** compliance to regulatory requirements for active incident monitoring, risk/harm analysis and on-time notification of data breaches[13]

Fostering a Speak Up culture

Our Company communicates regularly with employees to encourage a speak-up culture and to ensure they understand how to report potential concerns.

We invest in Our Code of Conduct—available in 21 languages—which outlines our ethical expectations for employees and for our Company. Our Office of Ethics ensures employees understand the Code of Conduct, Our Values and Standards, and corporate policies that address our ethics and compliance. Our Business Partner Code of Conduct reflects similar and consistent principles for our business partners.

The Office of Ethics oversees our global Speak Up program and the third-party MSDethics.com tool for reporting ethics concerns 24/7. Employees and suppliers can anonymously (where permitted by law) raise concerns or ask questions at MSDethics.com. The reporting tool is available via phone or online, and in employees' preferred languages.

Sustaining trust within our teams

In 2019, we introduced an industry-leading program to build trust between employees and management and to promote our speak-up culture through the use of listening circles facilitated by regional ethics officers. Today, the Ethics and Integrity Culture Building Assessment and Listening Program continues to empower employees to share their views on the Company's speak-up culture. Managers gain perspective on the strengths and opportunities for their teams' cultures, and action plans help to address what's learned.

In 2022, the program was rolled out in two markets, Japan and Brazil. It is expanding to additional markets in 2023 as we continue to invest in our ethical culture and our people.

Recognition for our transparency

The Company's integrity extends to our political giving, where we carefully make bipartisan contributions on a case-by-case basis in support of policies that enhance innovation and patient access to health care.

For the last six years, the University of Pennsylvania Wharton School's Center for Political Accountability at the Zicklin Center for Business Ethics and Research has named us a "Trendsetter" in their annual CPA-Zicklin Index of Corporate Political Disclosure and Accountability report, demonstrating our commitment to transparency around our political giving.

*All of our contributions can be found on the **Transparency Disclosures page** of our corporate website.*

Our commitment to human rights

Our respect for human rights extends to our suppliers, all of whom must follow our Business Partner Code of Conduct. We are also committed to the Pharmaceutical Supply Chain Initiative (PSCI) Principles. In addition, to manage potential risks associated with third-party business relationships, our Global Supplier Management Group (GSMG) uses a third-party risk management committee and program to evaluate risks for Labor and Human Rights (LHR) in our supply chain. Our sourcing professionals also receive appropriate training on evaluating partners for these risks.

We investigate any concerns quickly, and regularly conduct due diligence on our suppliers, including audits to verify they uphold LHR standards. Where we find issues, they are held accountable for addressing them. We also ask suppliers to support initiatives like the PSCI Human Rights.

*Learn more about our approach to human rights in GRI 412 on **pages 143-144**.*

*Learn more about our approach to a more ethical supply chain in GRI 414 on **pages 145-147**.*

References

[1] This people reached metric estimates the number of people who have received a Merck & Co., Inc. product through commercial, clinical trials, voluntary licensing and donations channels. Donations include people reached with products through the MECTIZAN Donation Program, U.S. Patient Assistance Programs, and the Merck Medical Outreach Program. Sources of data are Merck & Co., Inc. and third-party data sets that are tracked within an enterprise-wide internal database. The people reached metric for all sources is calculated as doses sold divided by the average dose schedule for a given market in a given year. People taking multiple products may be counted as multiple people towards the total estimate. In some instances, this estimate may include people enabled to access our products through access strategies, solutions and partnerships, which are calculated as part of our goal to enable access to our innovative portfolio (**page 10**). The people reached metric does not include people reached through social investments, which are calculated as part of our goal to further advance health equity for underserved populations (**page 10**).

[2] Social investments include our Company's philanthropic partnerships, programs and impact investments. Underserved populations are defined as those that face health disparities due to disadvantages related to insurance status, social determinants of health, race, ethnicity, gender identity/sexual orientation, age and/or language preference. The goal is cumulative across the reporting period of 2021-2025, and is independent of a baseline period.

[3] Third-party reporting is used to calculate the number of people reached through our social investments. In some cases, third-party reports may include cumulative people reached for the reporting period, and/or data that is attributable to other partners as well as our Company's philanthropic investment.

[4] Countries are as defined by the World Bank Country and Lending Groups. Includes only human health products.

[5] Metrics contributing to this goal are displayed on an annual basis and provide information on the number of people who now have the option to access medicines and vaccines as a result of our sustainable access strategies, solutions and partnerships, including our commitment to Gavi and UNICEF (rather than doses shipped), collaborations to optimize resources in health systems, expanded financial coverage through insurance, and new community-based channel partnerships in LMICs. "Innovative portfolio" of products refers to our Company's on-patent products. "Enable more people" is defined as implemented and launched in market and will be in comparison to the baseline (2020) as of 2025. Evidence for metrics are sourced from the best publicly available data and proxy sources by market. While proxies differ by market, all methodologies are evaluated and represent the best estimate of people enabled to access our innovative portfolio through access strategies, solutions and partnerships (see **page 19** for additional information). People who were enabled to access innovative medicines and vaccines did not necessarily receive such innovative medicines and vaccines.

[6] "Senior management roles" are defined as individuals holding either vice president or senior vice president titles.

[7] In 2022, we revised employee survey measurements to align with evolving best practices. In this report, 2022 data is used as the baseline for future comparison.

[8] Scope 1 greenhouse gas (GHG) emissions are direct emissions from owned or controlled sources such as on-site fuel combustion and fleet vehicles. Scope 2 GHG emissions are indirect emissions from the generation of purchased energy consumed by the reporting company.

[9] We have defined "purchased electricity" as electricity sourced from external suppliers as well as renewable electricity that was generated and utilized onsite where we retained the renewable attributes or where we have obtained renewable attributes through contract.

[10] Scope 3 GHG emissions include all other indirect emissions in a company's value chain.

[11] Favorable response indicates the percentage of respondents who respond "yes" to the question stating, "I am willing to report employee misconduct and potential ethics or compliance issues."

[12] In 2021, we developed the "Willingness to Report" question referenced in footnote 11 to align with evolving best practices. This question was first included in the Pulse survey in March 2022, and 2022 data will be used as the baseline for future comparison.

[13] Regulatory requirements differ by region.

[14] Products we no longer market are not included in the total number of Global Burdens of Disease we seek to address through our pipeline and products.

GRI/SASB disclosures

General disclosures

GRI 2-1 Organizational details

We are a global health care company that delivers innovative health solutions through our prescription medicines, including biologic therapies, vaccines and animal health products. In the U.S. and Canada, we are known as Merck & Co., Inc., or Merck. Outside of the U.S. and Canada, we are known as MSD.

*For more information on our locations and ownership, please see our **2022 Form 10-K** (pages 24, 39 and 41).*

GRI 2-2 Entities included in the organization's sustainability reporting

All of our Company's global operations, including those of subsidiaries, are in scope for this report unless stated otherwise. This report includes activities at all facilities, owned and leased, over which we have operational control, unless otherwise noted.

The basis for reporting on other matters specific to the operations of our business can be found in our **2022 Form 10-K**.

GRI 2-3 Reporting period, frequency and contact point

Except as otherwise noted, we report on our policies, initiatives and performance annually. The data in this report covers the same period as our annual financial reporting, from January 1, 2022, to December 31, 2022. In some cases, the narrative in the report also includes content regarding decisions and initiatives that took place in the first half of 2023.

Our last report was published in August 2022.

We welcome your feedback on this report as well as any other comments or questions you may have. You may contact us at the address, email, phone number or web address below.

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GRI 2-4 Restatements of information

Any restatements of information from prior reports, and the reasons for these restatements, are described in the footnotes beneath the performance data tables.

GRI 2-5 External assurance

ERM CVS provided limited assurance of select 2022 greenhouse gas and water data included in this report and submitted to CDP. To view the ERM CVS limited assurance statement for our environmental data, please visit the **Sustainability Resources page** of our corporate website. The limited assurance engagement was performed in accordance with the International Standard on Assurance Engagements ISAE 3000. We did not obtain external verification for this Impact Report in its entirety.

GRI 2-6 Activities, value chain and other business relationships

Our Company is committed to the highest ethical standards to help maximize the long-term sustainability of our business, and of the communities in which we operate. We strive to conduct business with third parties that share our commitment to high ethical standards and operate in a responsible and ethical manner. The term “third party” is broadly interpreted to include any individual or entity that provides any type of goods or services in support of our sourcing initiatives.

We expect all third parties with whom we engage to comply with all applicable regulations, as well as share in our commitment to the principles outlined in our **Business Partner Code of Conduct**.

We manufacture, package and distribute products to many markets around the world. We have established business relationships with thousands of suppliers, including direct suppliers (including external manufacturing providers), capital expenditure suppliers, indirect suppliers and research providers. Our direct suppliers provide us with goods such as packaging, components and ingredients. Capital expenditure suppliers provide goods and services such as engineering and construction. Our indirect suppliers include those that provide services such as logistics, travel and meetings, facility management, and marketing. Our research providers include lab supplies and other research and development-related services.

Third-Party Risk Management team

To help manage and address potential areas of risk associated with third-party business relationships, we have an established Third-Party Risk Management program and committee chaired by the senior vice president for Global Procurement. The committee establishes, implements and monitors environmentally sustainable, socially responsible and ethical sourcing practices to ensure that performance is aligned with our purpose. In 2022, cross-functional leaders sponsored an enterprise-wide program to streamline our third-party due-diligence process, leveraging one IT platform to launch assessments, and to review and mitigate risks from Compliance, Global Safety and the Environment, Information Technology Risk Management & Security, Pharmacovigilance and Global Security.

Supplier selection and setting expectations

We select suppliers that share our commitment to our values and principles. We expect appropriate standards of conduct and respect for human rights from our suppliers, contractors, vendors and external partners, consistent with our own. We use our Business Partner Code of Conduct to communicate our expectations for Human Rights, Labor & Employment, Health, Safety & Environment, and Ethical Business Practices. Our Business Partner Code of Conduct, along with our **Supplier Performance Expectations**, are communicated to existing and potential third parties. They are included in requests for information, proposals and quotes, as well as in our purchase order terms and conditions. We make our Business Partner Code of Conduct available in 26 languages.

Our Business Partner Code of Conduct references the Pharmaceutical Supply Chain Initiative (PSCI) Principles for Responsible Supply Chain Management (the Principles). PSCI is a group of more than 50 pharmaceutical and health care companies which promotes sustainable sourcing and better business conditions across the industry, and the Principles set the standard for human rights, ethics, labor, health and safety, environment and related management systems. We are an active member of PSCI. The member companies share a vision of better social, health, safety and environmental outcomes in the communities where we buy.

Our approach to sustainable sourcing

We have a sourcing management process in which environmental sustainability, social responsibility, and economic inclusion and supplier diversity principles are integrated in each stage. Throughout the supplier life cycle, our Company establishes expectations, assesses risk, supports supplier development and manages performance.

Our Global Supplier Management Group (GSMG) is responsible for driving our Sustainable Sourcing program and maintaining the associated standards and processes by which suppliers are identified, qualified and managed.

Our Sustainable Sourcing program has the following key elements:

- Integration into our Global Sourcing & Procurement Strategy and processes
- A cross-functional team that oversees program development and the processes and guidelines to encourage best practices, prevent violations of supply chain standards and limit risk
- Established sustainability requirements that are communicated to our suppliers and included in supplier selection
- Review, tracking and communication of supplier sustainability programs
- Collaboration as we educate and learn from our supply chain, peer companies and best-in-class organizations

Supplier due diligence assessments

We have a defined risk-management process, and our supply base is measured against the process criteria. Using a risk-based approach, supplier assessments and audits are conducted based on multiple factors (e.g., risk profile, engagement and activity type, geography). The assessments and audits evaluate a supplier's ability to meet both industry and our own standards for quality, safety and ethical business practices. Results are reviewed with senior management across the Company.

Our due diligence includes:

- Anti-bribery and corruption
- Conflict minerals
- Denied-party screening
- Ethics and compliance
- Financial solvency
- Information security and cybersecurity
- Intellectual property
- Labor and human rights
- Privacy (data protection)
- Supply-chain security

Where assessments and audits identify deficiencies or opportunities for improvement, we monitor suppliers to ensure that our concerns are addressed in a responsible and compliant manner. As part of our oversight and monitoring, we have established mechanisms to report, track and monitor supplier plans to address nonconformance and help drive continued improvement. Additional review(s) are performed for external manufacturing suppliers and suppliers that manage personal and private information.

Protecting the privacy of personal information

Some of our suppliers, such as contract research organizations, market research agencies, information technology systems developers, corporate card suppliers, and travel and meeting agencies process personal information in connection with their performance of services for our Company. We require these suppliers to provide appropriate privacy protection for personal information that they handle in accordance with our privacy policies and applicable privacy laws, regulations and guidelines.

*See more about our privacy program in GRI 418 on **page 156**.*

Training

We understand the importance of training, and continue to develop numerous training events that are assigned to employees and provided to industry peers and suppliers. Most of our internal classes are assigned through our centralized learning system. In addition to providing training through our internal systems, we also work with PSCI to develop and provide training to our suppliers and peers.

*Additional details regarding our supplier-focused programs can be found in GRI 204 on **page 77**, GRI 308 on **page 112** and GRI 414 on **page 145**.*

Assessing the effectiveness of our program

During 2022, we reviewed the following metrics to help us assess the effectiveness of our efforts in our business and supply chain. We use these measures to monitor our performance and identify opportunities to help improve our programs.

Supply chain	2018	2019	2020	2021	**2022**
Employees trained on updated Business Partner Code of Conduct (Edition II)[1]	148	190	183	137	**173**
Employees trained on Third-Party Risk Management[1,2]	N/A	N/A	185	997	**126**
Supplier Self-Assessments[3]	595	706	547	127	**103**
Supplier Labor and Human Rights (LHR) audits conducted[4]	104	39	47	10	**12**
Supplier Labor and Human Rights (LHR) audit Corrective Actions and Preventive Actions (CAPA) closed[5]	100%	100%	100%	100%	**52%**
Supplier personnel trained in ESG[6]	N/A	N/A	1,492	1,856	**2,471**

N/A: Not available.

[1] Primary target: Procurement and business development staff with responsibility for supplier management.

[2] Formal training was created and rolled out in late 2020 and is provided to all new relevant hires going forward. Prior to 2020, informal training was provided on an as-needed basis.

[3] Undertaken as part of initial supplier due diligence, managed and overseen by GSMG; scope includes labor and human rights, environment and safety, and ethical business practices. Decrease in number of assessments was due to the change in criteria in late 2020 for when a Supplier Self-Assessment is required using a risk-based approach.

[4] Announced on-site audits, independently performed by third-party audit firms; primary focus on direct material (Tier 1) supplier facilities located in certain high-risk countries.

[5] Monitoring closure Corrective Actions and Preventive Actions (CAPA) for past audit observations revealed by supplier LHR audits. Not all CAPA plans are due within the same year. All CAPAs from previous reporting periods have been closed. For the current reporting period, the CAPA closed percentage is as of April 10, 2023; open CAPAs are being monitored for closure.

[6] Formal training was created and conducted as joint effort with PSCI for responsible sourcing, environmental, and human rights and labor topics.

*You can find a **list of our products and an update on our pipeline** on our corporate website.*

*For more information on our sector, business relationships, financials, operations and organization changes, please see our **2022 Form 10-K**, pages 1-24 and 71-129.*

GRI 2-7	Employees
GRI 2-8	Workers who are not employees

Employees

As of December 31, 2022, we had approximately 69,000 employees worldwide. This includes approximately 27,000 employed in the U.S., excluding Puerto Rico, and approximately 15,000 third-party contractors globally. Third-party contractors include the Company's temporary workers, independent contractors and freelancers who are viewed as full-time equivalent employees. They exclude outsourced service providers. Approximately 67,000 employees are full-time.

Employees by region (2022)

Number of employees[1]	Worldwide percentage
U.S.	27,256 | 39%
Latin America	4,554 | 7%
Canada	610 | 1%
Europe (Western)	18,642 | 27%
Eastern Europe, Middle East and Africa (EEMEA)	2,285 | 3%
Asia-Pacific	6,016 | 9%
China	6,541 | 9%
Japan	3,131 | 5%

[1] Full-time equivalents reported.

GRI 2-9	Governance structure and composition
GRI 2-10	Nomination and selection of the highest governance body
GRI 2-11	Chair of the highest governance body
GRI 2-12	Role of the highest governance body in overseeing the management of impacts
GRI 2-13	Delegation of responsibility for managing impacts
GRI 2-14	Role of the highest governance body in sustainability reporting

Board of Directors

Our **2023 proxy statement** (pages 8-14, 18-26, 32-39, and 112) includes information on our Board nomination process and the Board's roles and responsibilities for the management of and reporting on sustainability topics at the Company.

We are committed to governance policies and practices that serve the interests of the Company and its shareholders. Our governance structure is an integral part of this commitment. Our Executive Team (ET) and senior management are responsible for reviewing, refining and implementing our Company's long-term sustainability strategy. Through groups such as the Policy and ESG Council, senior leaders from across the Company direct the day-to-day supervision of our efforts supporting this strategy.

Our ET updates the Board on our long-term sustainability strategy and performance as part of the Board's annual strategic planning meeting. Discussions and updates also occur at the Board and its Committees on specific topics. For example, the Board's Governance Committee, which monitors and assists the Board in its oversight of sustainability matters, ensures that relevant issues are subject to review by Board committees with relevant areas of competency.

Management

The groups below are responsible for directing the day-to-day supervision of the Company's sustainability strategy and driving performance:

Policy and ESG Council (PEC)

The PEC, under the guidance of the Executive Team, serves to ensure the Company is advancing its strategic framework through public policy and sustainability efforts that proactively shape and respond to the changing landscape in which the business operates. This group of cross-functional senior leaders recommends positions for decision to the Executive Team on critical public policy and sustainability issues, and monitors related performance across regions and functions and resources allocated to meet goals and objectives.

ESG Strategy Management Team (ESMT)

With guidance from the PEC, the ESMT advises, shapes and drives the Company's long-term sustainability strategy, including providing recommendations regarding risks and opportunities to the Company. The role of ESMT is to create long-term value, differentiate our Company as a leader in sustainability, and answer to stakeholder demands about key issues across our four focus areas: Access to Health, Employees, Environmental Sustainability, and Ethics & Values. The ESMT works to ensure that our sustainability strategy and priorities are aligned with and support our corporate strategic framework, in order to meet the Company's public commitments and expectations of our stakeholders.

ESG Strategy & Engagement Team

The team is responsible for raising the visibility of sustainability issues and activities across the Company, and fostering connections across business units and functional areas to assist with the integration of sustainability principles into business policies, strategies and practices. This includes producing the Company's annual Impact Report.

Corporate governance	2018	2019	2020	2021	**2022**
Independent directors on the Board	11	12	12	12	**12**
Board members who are independent	92%	92%	92%	86%	**92%**
Separate chairman of the Board and CEO[1]	No	No	No	Yes	**No**
Lead independent director	Yes	Yes	Yes	Yes	**Yes**
Women on the Board	33%	46%	46%	43%	**46%**
Members of underrepresented ethnic groups on the Board	17%	23%	31%	21%	**15%**

Note: Except as otherwise noted, all figures above are derived from our proxy statement filed the following year and are rounded.

[1] From July 1, 2021 to November 30, 2022, the positions of Board chairman and CEO were separate. As of December 1, 2022, the positions of Board chairman and CEO are not separate.

*For information on communicating with the Board, please see our **2023 proxy statement** (page 26).*

GRI 2-15 Conflicts of interest

*Information on our Board's Conflict of Interest policy can be found in our **Policies of the Board** in Section 13 (pages 8-9).*

GRI 2-16 Communication of critical concerns

*For information on communicating to the Board, as well as topics discussed with shareholders, please visit our **2023 proxy statement** (pages 25-26).*

GRI 2-17 Collective knowledge of the highest governance body

GRI 2-18 Evaluation of the performance of the highest governance body

*Information on our Board's and its Committees' responsibilities, including with respect to sustainability matters, as well as information on our Board's and its Committees' self-evaluations can be found in our **2023 proxy statement** (pages 14, 15-24) and in the Policies of the Board and the Committees' charters, which are available on our **corporate website**.*

GRI 2-19 Remuneration policies

*A full discussion of our remuneration policies for our Board and for Named Executive Officers (NEOs) can be found in our **2023 proxy statement** (pages 40-85).*

*For information on how our Company's performance against certain sustainability metrics will be linked to compensation for employees eligible for our Annual Incentive Plan in 2023, please see page 59 of our **2023 proxy statement**.*

GRI 2-20 Process to determine remuneration

*A full discussion of our approach to remuneration for our Board and for Named Executive Officers (NEOs) can be found on pages 40-85 of our **2023 proxy statement**.*

*To learn more about the non-binding advisory vote to approve the compensation of our NEOs, please see our Form 8-K filed with the Securities and Exchange Commission on May 26 2023, a copy of which is available on our **corporate website**.*

GRI 2-21 Annual total compensation ratio

*For more information on the CEO pay ratio, and methodology for determining this ratio, please see page 65 of our **2023 proxy statement**.*

GRI 2-22 Statement on sustainable development strategy

*Please see the letter from our Chairman and CEO on **pages 3-4**.*

GRI 2-23 Policy commitments

GRI 2-24 Embedding policy commitments

SASB 510a.2 Code of ethics governing interactions with health care professionals

Below are select examples of external charters, principles and initiatives that guide our work in our four focus areas, or that we have endorsed.

Access to Health

- AMR Industry Alliance: Common Antibiotic Manufacturing Framework
- AMR Industry Alliance: Industry Roadmap for Progress on Combating AMR
- Health for Animals: Antibiotics Commitment
- Declaration of Helsinki (For more information, see our Access to Health Statement of Guiding Principles)
- International Council for Harmonisation: Good Clinical Practice (ICH-GCP)
- International Federation of Pharmaceutical Manufacturers & Associations (IFPMA) Code of Practice
- Kigali Declaration on Neglected Tropical Diseases
- U.S. National Academy of Sciences: Guidelines for Human Embryonic Stem Cell Research

*For more information on our approach to access, please see GRI 203 on **pages 54-76**. For more information on Merck Animal Health, please visit our **Animal Health website**.*

Employees

- CEO Action for Diversity and Inclusion
- International Labour Office (ILO) Code of Practice on Recording and Notification of Occupational Accidents and Diseases
- OneTen Initiative
- Paradigm for Parity
- United Nations Women's Empowerment Principles

*For more information on our employees, please see GRI 401 to GRI 405 on **pages 114-142**.*

Environmental Sustainability

- American Chemistry Council's (ACC) Green Chemistry Initiative
- Eco-Pharmaco-Stewardship (EPS) initiative
- Paris Climate Agreement
- Science Based Targets initiative (SBTi)
- UN CEO Water Mandate
- We Mean Business Coalition
- Conference Board: Product Stewardship & Regulatory Affairs Council
- ACS Green Chemistry Institute Pharmaceutical Roundtable (ACS GCIPR)

*For more information on our approach to environmental sustainability, please see GRI 301 to GRI 308 on **pages 84-113**.*

Ethics & Values

- European Federation of Pharmaceutical Industries and Associations (EFPIA) Code of Practice
- International Covenant on Civil and Political Rights
- International Covenant on Economic, Social and Cultural Rights
- International Federation of Pharmaceutical Manufacturers & Associations (IFPMA) Code of Practice
- International Labor Organization core labor standards
- Organization for Economic Cooperation and Development Guidelines for Multinational Enterprises
- Pharmaceutical Supply Chain Initiative (PSCI) Principles for Responsible Supply Chain Management
- PhRMA Code on Interactions with Health Care Professionals
- Ten Principles of the UN Global Compact
- UN Guiding Principles on Business and Human Right
- UN Universal Declaration of Human Rights

*For more information on our approach to ethics and values, please see GRI 205 on **page 81**, GRI 206 on **page 82**, GRI 412 on **page 143** and GRI 418 on **page 156**. For more information on our supply chain, please see GRI 2-6 on **page 35**, GRI 204 on **page 77** and GRI 308 on **page 112**.*

*For links to our corporate policies, please visit the **Policies & Positions page** on our corporate website.*

Precautionary principle

We take a precautionary approach when evaluating potential human exposures and environmental impacts resulting from our manufacturing processes. Conservative assumptions are made when data is limited, and safety factors are added to address uncertainty and variability in our assessments. This type of approach is particularly relevant to our work in toxicology, industrial hygiene, biosafety and environmental protection.

GRI 2-25 Processes to remediate negative impacts

GRI 2-26 Mechanisms for seeking advice and raising concerns

Our Company's Office of Ethics is responsible for ensuring that employees are aware of and trained on the **Code of Conduct** and corporate policies addressing ethics and compliance.

Our Code of Conduct is available in 21 languages and applies to all employees worldwide. Corporate policies are reviewed every three years by business-content owners and updated as needed. We abide by strict ethical standards in our own operations and, to the extent possible, we insist on equivalent standards from our suppliers. Our Business Partner Code of Conduct reflects similar and consistent principles for our business partners.

The Office of Ethics also serves as a channel for the receipt, triaging and redress of ethics- and compliance-related concerns. Depending on the concern type, the concerns will be investigated by the Office of Ethics, the Office of General Counsel, Global Security or Human Resources.

Employees are encouraged, prepared and empowered to raise their concerns to their management, Human Resources, Legal, Compliance or the Office of Ethics.

The Office of Ethics maintains a global Speak Up program and the MSDethics.com reporting tool. The reporting tool is operated by an independent third party and is available 24/7. MSDethics.com allows employees and suppliers to raise concerns or ask questions confidentially and anonymously (where permitted by law) in their preferred language via phone or online. The Company communicates regularly with employees to encourage and foster a Speak Up culture and ensure that they understand how they can report potential misconduct or concerns.

In alignment with our priority to protect and enhance our Company's reputation through safe, ethical and compliant behaviors, and to foster a strong culture of ethics and compliance, regional ethics officers manage a network of site-based volunteer ethics ambassadors outside of the U.S. These ethics ambassadors are trained to answer employee questions about the Company's reporting and investigation process and actively support the Speak Up program. We maintain a fulsome process for escalation and investigation of potential compliance-related concerns. The process is designed to ensure that we promptly and discreetly investigate all reports of conduct and/or behavior that could violate our policies, values or standards.

If allegations of misconduct are substantiated, appropriate remediation and disciplinary actions are taken to ensure that those who were responsible are held accountable and recurrence is prevented. Disciplinary actions can include, but are not limited to, dismissal from the Company, issuance of final written warning letters and/or financial penalties. In addition, we take appropriate steps to address any needed improvements in organizational and process controls.

Code of Conduct	2018	2019	2020	2021	**2022**
Employees trained on the Ethics & Compliance training series	99%	99%	>99%	>99%	**>99%**

Subject to local law, the Company also has the discretion to reduce incentive payments made to employees in certain instances of misconduct. This may apply when employees engage in misconduct that results in a material policy violation. Retaliation against employees who report concerns is a violation of corporate policy and is strictly prohibited.

The Office of Ethics and the Office of General Counsel are responsible for overseeing investigations into potential ethics and compliance concerns to ensure consistent and timely resolution of potential concerns and implementation of remediation actions.

*Please visit our corporate website for more information on our **Code of Conduct**.*

Ethics & Integrity Culture-Building Assessments & Listening Program

As an example of an industry-leading best practice, our Company developed the Ethics and Integrity Culture-Building Assessment and Listening Program which aims to build and sustain trust between employees and management and to promote and enhance our Speak Up culture.

In 2022, we brought the program to two markets: Japan, across all divisions; and Brazil, where we focused on an Animal Health manufacturing plant. In both markets, our regional ethics officers partnered with local teams to facilitate a series of listening sessions with management and employees. During the sessions, employees were empowered to share their views on the Company's culture with respect to speaking up and listening up. At the same time, managers were able to gain valuable insights into the strengths and areas of opportunity for their own teams' cultures. After the listening sessions were completed, leaders implemented action plans to further strengthen their organization's Speak Up culture.

This program supports the Company's priority to "Invest in the growth, success and well-being" of its people. It also reflects a commitment to two of the Company's Ways of Working: "Speak up and be open-minded" and "Embrace diversity and inclusion." The program aligns with our sustainability goals by helping to build diverse and inclusive team cultures while enhancing employee engagement.

GRI 2-27 **Compliance with laws and regulations**

Notices of violations, fines and settlements

We report all forms of EHS compliance notices using the term Notices of Violation (NOVs), which includes citations, letters of warning and notices of noncompliance from environmental- and safety-focused regulatory agencies.

In 2022, we had 196 EHS-related regulatory agency inspections of our facilities around the world. We received 3 safety-related and 11 environmental-related NOVs, and paid $6,693 in fines in 2022. None of the environmental-related NOVs were the result of a significant spill.

Notices of violations, citations and fines	2018	2019	2020	2021	**2022**
Notices of violations (NOVs) and citations					
Environmental	6	9	9	16	**11**
Safety	1	4	3	2	**3**
Fines					
Environmental fines paid	$0	$17,690	$21,022	$191,870	**$6,693**
Number of environmental fines	0	3	3	4	**2**
Safety fines paid	$0	$0	$0	$736	**$0**
Number of safety fines	0	0	0	1	**0**

*For more information regarding compliance-related matters, please see GRI 416 on **pages 148-153**.*

GRI 2-28 Membership associations

Our Company is a member of numerous U.S.-based industry and trade groups. We work with these groups because they represent the pharmaceutical industry and business community in debates led by governments and other stakeholders, and because they help the industry reach consensus on policy issues.

Our top three trade associations in 2022:

- Pharmaceutical Research and Manufacturers of America (PhRMA)
- U.S. Chamber of Commerce
- Biotechnology Industry Organization (BIO)

When our trade associations actively lobby on our core business issues, we seek to align their positions with our own. There are times, however, when we may not share the views of our peers or associations—both on issues that are central to our business and on those that, while important, are not directly material to our purpose. With representatives on the boards and committees of industry groups and trade associations, we can voice questions or concerns we may have about policy or related activities. We may even recuse ourselves from related trade association or industry group activities when appropriate.

The Governance Committee of the Board of Directors has ongoing oversight of our membership in trade associations and grassroots lobbying activities. Each year, the full Board of Directors receives a report that lists for the previous year (a) the U.S. industry and trade groups in which we are a member for which our dues are greater than $25,000 and (b) the amount of our dues that were spent by these groups on lobbying and political activity in the U.S.

*Please see the **Transparency Disclosures page** on our corporate website for a list of our U.S. industry and trade groups.*

Through our top three trade associations, we engaged on the following policy issues in 2022:

In the U.S., the top issues at the federal level for which our Company lobbied were:

- Medicare Part B
- Medicare Part D
- Prescription Drug User Fee Act (PDUFA)

In the U.S., we lobbied at the state level to address these key issues:

- Market-based solutions to support patient access to innovative medicines, vaccines and care
- Regulatory policies to enable a strong business environment for U.S. operations
- Support for a strong immunization infrastructure
- Strengthening access to animal health products

In Europe, the top issues we focused our advocacy on included:

- Addressing the European Commission's review of incentives for biopharmaceutical products
- Fostering frameworks for sound pricing and procurement regimes in and across diverse European Union (EU) member state economies
- Supporting government vaccination, hepatitis and diabetes programs
- Advancing the dialogue for sustainable models to fund future cancer care
- Improving standards for health technology assessment and health literacy
- Ensuring science-based policies for biological medicines
- Strengthening access to animal health products
- Science-based trade policy for farm animals and food products derived from farm animals
- New Veterinary Regulation (NVR)
- EU Chemicals Sustainability Strategy and the zero pollution initiative
- Antimicrobial Resistance (AMR)
- Animal Health as a contributor to food sustainability
- One Health strategy
- New technological and data developments

In 2022, we conducted a climate policy alignment assessment of U.S. trade associations in which we were a member in 2021 and for which our dues were greater than $25,000. For this assessment, we determined whether these trade associations had publicly disclosed formal positions on climate change and, if so, we reviewed those positions in the context of our Company's own position on climate change. This assessment can be found on the **Sustainability Resources page** on our corporate website.

*Information on our approach to climate change, and related performance data, can be found in GRI 305 on **page 101**.*

GRI 2-29 Approach to stakeholder engagement

We engage with a diverse group of stakeholders to gain insights that can inform our efforts and foster our progress toward solutions that benefit society and support our business.

Many of these engagements with partners can be found throughout this report. The groups of stakeholders with which we regularly engage include:

Patients and caregivers

For patient communities—which includes individual patients, their caregivers and family members, patient advocacy leaders and patient organizations—it is critical that we respect and honor their life experiences to better understand their health care journeys, expected outcomes and decision-making considerations.

*For more information on our work with patient groups, please see our **Patients & Caregivers page** on our corporate website and our **Commitment to Patients document** on our corporate website.*

Shareholders

Throughout the year, we regularly engage with our shareholders and seek to better understand their perspectives.

We have established a proactive shareholder engagement program, in which members of Investor Relations, the Office of the Secretary, Human Resources and the ESG Strategy & Engagement Team, as well as other subject-matter experts within the Company, engage with our shareholders to remain well informed regarding their perspectives on current issues and to address any questions or concerns. These teams serve as liaisons between shareholders, members of senior management and the Board.

In addition, we conduct an extensive shareholder outreach program twice a year focused on governance, executive compensation and sustainability matters. We believe it is most productive to discuss these matters well in advance of the annual meeting. This enables management and the Board to gather information about investor perspectives and make educated and deliberate decisions that are balanced and appropriate for our diverse shareholder base and in the Company's best interests.

In 2022, we hosted **a virtual investor event** with our CEO and other members of his Executive Team to discuss our Company's sustainability priorities and goals, and how our sustainability strategy is fundamental to our long-term business value and success. A **webcast of this event** is available on our corporate website.

*For more information on our engagements with shareholders, including topics discussed, please see our **2023 proxy statement** (pages 25-26).*

Health care professionals

We are committed to providing appropriate and balanced information to physicians and other health care providers about our medicines, vaccines and ongoing research.

*For more information on our work with health care professionals, please see GRI 203 on **pages 54-76**, GRI 206 on **pages 82-83** and GRI 417 on pages **154-155**.*

*For our disclosures on payments to health care professionals, visit the **Transparency Disclosures page** on our corporate website.*

Employees

We strive to foster a positive and inclusive working environment for our employees by providing resources to improve their health and that of their families, opportunities to further their professional development and ways to get more involved in the communities where they live.

As part of our efforts to maintain a satisfying and productive work environment, we routinely survey all employees to learn about their perspectives on the business and on how we are responding to the needs of our global workforce. The Employee Pulse Survey, our Company's all-employee engagement survey, is our flagship employee feedback mechanism and is conducted multiple times a year.

*To learn more about our work with employees, please see GRI 401 to 405 on **pages 114-142**.*

Payers

We work with payers worldwide to inform their understanding of the relationship between the prices of our products and the true value they deliver to patients and health care systems.

*For more information on our work with payers, please see our 2022 Pricing Action Transparency Report on the **Sustainability Resources page** of our corporate website.*

Governments, multilateral organizations and regulators

We work with policymakers, legislators, multilateral organizations and governments worldwide to ensure that policy and regulatory environments globally, nationally and locally foster patient access to medicines and vaccines, and that these environments are conducive to ethical business practices, science and innovation.

*For more information on these engagements, please see GRI 415 on **page 147**.*

Suppliers and business partners

We strive to engage a diverse supplier base and to encourage responsible approaches on the part of suppliers regarding labor, employment, human rights, health and safety, ethics, diversity and protection of the environment.

*To learn more, please see GRI 2-6 on **page 35**, GRI 204 on **page 77**, GRI 308 on **page 112**, GRI 412 on **page 143**, and GRI 414 on **page 145**.*

Trade and industry associations

We engage with stakeholders through membership in numerous organizations. Our Company is a member of numerous U.S.-based industry and trade groups. We work with these groups because they represent the pharmaceutical industry and business community in debates led by governments and other stakeholders, and because they help the industry reach consensus on policy issues.

*To learn more about work with membership organizations, please see GRI 2-28 on **pages 46-47**.*

Veterinary professionals and animal caretakers

We value our partnership with veterinary professionals and animal caretakers to contribute to the health of the animals in their care with innovative products and solutions for farm and companion animal species. We regularly communicate and collaborate with our customers and industry leaders in our shared pursuit of continuously improving the health of animals.

*To learn more about our work with veterinarians and animal caretakers, please visit the **Animal Health website**.*

Local communities

We work toward developing culturally-appropriate mechanisms to engage and build relationships with our local community stakeholders and nongovernmental organizations (NGOs). We conduct this engagement predominantly through our philanthropic efforts, which can be found on the **Philanthropy page** on our corporate website.

GRI 2-30	Collective bargaining agreements

*For information on the number of employees covered by collective bargaining agreements, please see our **2022 Form 10-K**, page 20. Working conditions and terms of employment for employees not covered by collective bargaining agreements are not determined based on other collective bargaining agreements.*

GRI 3-1	Process to determine material topics
GRI 3-2	List of material topics
GRI 3-3	Management of material topics

An ESG materiality assessment helps us to prioritize the environmental, social and governance topics that matter most to our stakeholders, our Company and the world. Our assessment provides insight into future trends and potential business risks and opportunities.

Our priority topics

In our 2023 ESG materiality assessment, the following topics emerged as the most critical for our Company to address. They are grouped below by our four focus areas.

Access to Health

- Access to health care and medicine (**pages 54-76**)
- Equity and affordability (**pages 64-76**)
- Product safety and quality (**pages 54-76**, **77-82**, **148-155**, **Clinical trials page**)
- Public health risks (**pages 54-76**)

Employees

- Employee diversity and inclusion (**pages 134-142**)
- Employee health and safety (**pages 119-129**)
- Talent management (**pages 39**, **47-49**, **114-142**)

Environmental Sustainability

- Climate change risks and management (**pages 52-53**, **89-91**, **101-106**)

Ethics & Values

- Ethical corporate behavior (**pages 44-45**, **81-82**, **154-155**, **Code of Conduct & Compliance**)
- Privacy and data security (**pages 156-157**)

Our approach

To conduct the assessment, we partnered with Datamaran, an ESG materiality and risk-management firm, which uses a data-driven process for evaluating the relevance of topics and trends to our business and our stakeholders. We began with a list of material issues for our industry, which is aligned with the European Sustainability Reporting Standards (ESRS) and applies SASB's accounting metrics.

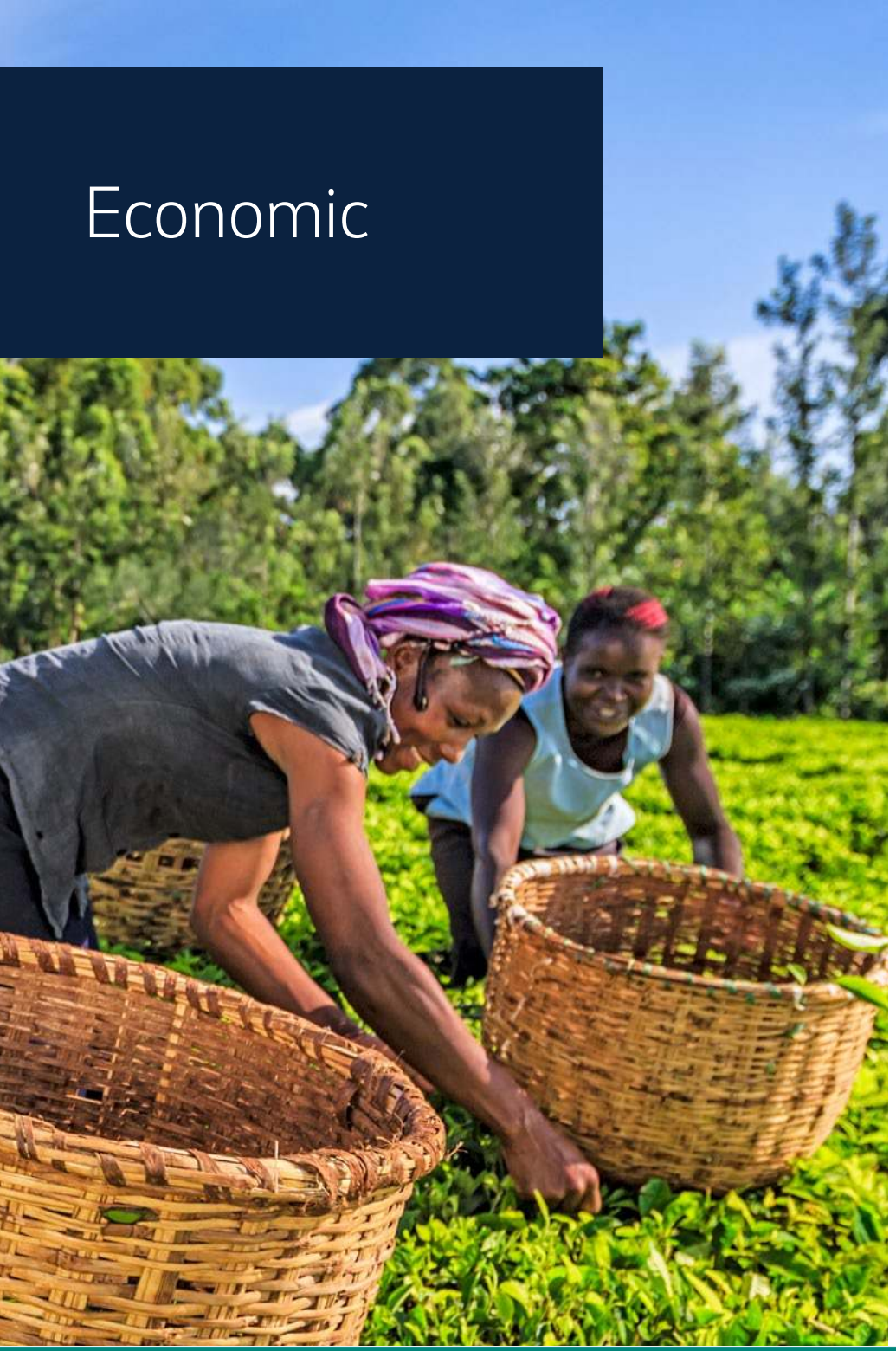
These topics included:

- Access to health care and medicine
- Air emissions
- Business model resilience
- Climate change risks and management
- Community relations
- Competitive behavior
- Customer practices
- Customer privacy and data security
- Ecological impacts
- Employee diversity and inclusion
- Employee health and safety
- Energy management
- Equity and affordability
- Ethical corporate behavior
- Ethics in R&D
- GHG emissions
- Governance structures and mechanisms
- Human rights
- Innovation and technology
- Labor practices
- Management of local impacts
- Management of the legal and regulatory environment
- Natural capital
- Physical and sociopolitical risks
- Product and service safety and quality
- Product design and lifecycle management
- Public health risks
- Responsible consumption and production
- Selling practices and product labeling
- Sourcing efficiency and management
- Talent management
- Transition to renewables and alternative energies
- Transparency
- Waste and hazardous materials management
- Water and wastewater management

We used Datamaran's GRI-certified software platform to scan competitor, supplier and customer ESG reports and financial communications, as well as news sources and mandatory and voluntary regulations from around the world. This assessment was coupled with surveys to leaders at the Company as well as investors with whom we engage regularly on sustainability issues.

GRI's management approach disclosures are included in this report for our material ESG topics as well as disclosures for many of the topics above that are relevant for our industry. We have previously conducted these ESG materiality assessments in 2015, 2018 and 2021.

Economic



Economic performance

GRI 201-1 **Direct economic value generated and distributed**

*For information about our business and economic performance, please see our **2022 Form 10-K** for the year ended December 31, 2022, on our corporate website.*

*For information on our overall tax strategy, please see our **Global Tax Strategy** on our corporate website.*

In December 2021, we issued a $1 billion sustainability bond, as part of an $8 billion underwritten bond offering. Our Company is utilizing the net proceeds from the sustainability bond offering to support projects and partnerships in our priority areas and contribute to the advancement of the United Nations Sustainable Development Goals. Through June 30, 2022 (the most recent reporting period for the bond), we have allocated $760 million of the net proceeds towards social and green projects in alignment with our sustainability financing framework.

*For more information, please see our **2022 Sustainability Bond Allocation Report** on our Investor Relations page of our corporate website.*

*Information on our employee compensation can be found on **page 52**.*

*For more information on our benefits, please see GRI 201-3 on **page 53**.*

Employees and compensation	2018	2019	2020	2021	**2022**
Total compensation paid to employees/payroll, including benefits (in billions)	$8.98	$9.56	$10.18	$9.92	**$10.15**

Impact investing

Impact investing is one of our core approaches to advancing sustainable global health solutions in line with our Company's overall objectives. Through impact investing, we deploy financial resources in ways that may generate not only improved access to health care for underserved populations, but also financial returns and strategic opportunities—all while growing a sustainable global health ecosystem and attracting additional capital and partners.

Impact investing is led by our Office of Social Business Innovation with guidance from our Impact Investing Committee. Established in 2019, the Impact Investing Committee is a cross-functional team of senior Company leaders that reviews and approves new investments in line with established policies and guidelines and monitors the financial and social returns of the impact portfolio.

We are members of several external networks through which we can contribute to and benefit from the growing body of expertise in the impact investing ecosystem.

*For more information on our impact investments, please visit our **Impact Investing page** on our corporate website.*

GRI 201-2 Financial implications and other risks and opportunities due to climate change

Climate change, or legal, regulatory or market measures to address climate change, may negatively affect our business, results of operations, cash flows and prospects. We are exposed to physical risks (such as extreme weather conditions or rising sea levels), risks in transitioning to a low-carbon economy (such as additional legal or regulatory requirements, changes in technology, market risk and reputational risk) and social and human effects (such as population dislocations and harm to health and well-being) associated with climate change. These risks can be either acute (short-term) or chronic (long-term).

The adverse impacts of climate change include increased frequency and severity of natural disasters and extreme weather events such as hurricanes, tornados, wildfires (exacerbated by drought), flooding and extreme heat. Extreme weather and sea-level rise pose physical risks to our facilities as well as those of our suppliers. Such risks include losses incurred as a result of physical damage to facilities, loss or spoilage of inventory, and business interruption caused by such natural disasters and extreme weather events. Other potential physical impacts due to climate change include reduced access to high-quality water in certain regions and the loss of biodiversity, which could impact future product development. These risks could disrupt our operations and our supply chain, which may result in increased costs.

New legal or regulatory requirements may be enacted to prevent, mitigate or adapt to the implications of a changing climate and its effects on the environment. These regulations, which may differ across jurisdictions, could result in our Company being subject to new or expanded carbon pricing or taxes, increased compliance costs, restrictions on greenhouse gas emissions, investment in new technologies, increased carbon disclosure and transparency, upgrade of facilities to meet new building codes, and the redesign of utility systems which could increase our operating costs, including the cost of electricity and energy we use. Our supply chain would likely be subject to these same transitional risks and would likely look to pass along any increased costs to our Company, all of which may affect our ability to procure raw materials or other supplies at the quantities and levels required for the operation of our business.

While we understand the potential risks to our Company, there is limited data around the potential financial implications of these risks. In 2022, we continued performing a Task Force on Climate-related Financial Disclosures (TCFD) gap analysis. This included a high-level TCFD-aligned qualitative physical and transitional climate risk and opportunity scenario assessment to examine which parts of our business are at highest risk due to climate change, and the associated costs.

These potential risks are integrated into our business planning, including investment in reducing energy usage, water use and greenhouse gas emissions (GHG).

We have made it a priority to reduce our demand for energy, and have established internal policies and practices focused on reducing energy use at our sites and minimizing GHG generation throughout the Company. By taking these steps, we are not only minimizing GHG emissions but also reducing operating costs and mitigating the business impacts expected to be associated with future climate change requirements.

Our Sustainability Capital Fund is used exclusively for environmental sustainability projects that bring long-term value to the Company, focusing on carbon footprint, water use and solid waste reduction at our sites around the world. The fund allocates up to $12 million per year, which allows us to adopt low carbon technology, better positions us to respond to climate change and supports a more circular economy.[1] Since 2015, our sites have completed more than 159 projects through the Sustainability Capital Fund, which has avoided the production of an estimated 57,100 metric tons of carbon emissions per year.

Management does not believe that expenditures related to our environmental sustainability initiatives should have a material adverse effect on our financial condition, results of operations, liquidity or capital resources for any year.

*For more information, please see GRI 305 on **page 101**.*

*Our CDP Climate Change Questionnaire is available on **CDP's website**, which CDP has aligned to the TCFD reporting recommendations.*

[1] As defined by the Ellen MacArthur Foundation, "a circular economy is based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems."

GRI 201-3 Defined benefit plan obligations and other retirement plans

Worldwide, we offer core and ancillary financial security and retirement benefits that routinely rank among the most valuable and progressive of other large multinational corporations.

Outside the U.S., we have more than 80 pension plans (including defined benefit, cash balance and defined contribution plans) in over 40 countries. These plans often supplement government-sponsored social security pension benefits to improve employees' financial security through added retirement income.

In the U.S., we offer a defined benefit pension plan as well as a 401(k) plan with matching contributions. The average employee contribution rate of pay into the 401(k) plan is approximately 10 percent. Approximately 97 percent of U.S.-based employees participate in the 401(k) plan, and 100 percent participate in the pension plan. Additionally, U.S.-based employees who are at least age 55 and those who have at least 10 years of service after age 40 are eligible for subsidized medical benefits at retirement.

Benefits vary based on region and country, employee group and status, collective bargaining agreements and local legal requirements.

*For information on our other benefits, please see our **Well-being Report** on our corporate website.*

Indirect economic impacts

GRI 203	Management approach
SASB 240a.1	Access to health care for priority diseases and in priority countries
SASB 240a.2	Products on WHO's List of Prequalified Medicinal Products
SASB 240b.2	Percentage change in: (1) average list price and (2) average net price across U.S. product portfolio compared to previous year
SASB 240b.3	Percentage change in: (1) list price and (2) net price of product with largest increase compared to previous year

As we pursue our core purpose to use the power of leading-edge science to save and improve lives around the world, we also work with key stakeholders to help ensure that our science advances health care and that our products are accessible and affordable to those in need. We do this in several ways, including:

- **Discovering and inventing** medicines and vaccines that address vital global health needs where we can have the greatest impact, now and in the future
- Making **available** a reliable, safe global supply of quality medicines and vaccines, and investing in solutions to enable timely access to our products in a responsible and sustainable manner
- Developing, testing and implementing innovative solutions that address barriers to access and **affordability** of our medicines and vaccines
- Through partnerships, investment and innovation, applying our expertise and investing our human and financial resources to address systemic barriers to access to health and **health equity**

Our multi-pronged, enterprise-wide approach to access is guided by our **Access to Health Guiding Principles**, and is responsive to internationally-recognized standards and priorities. We embed strategies and actions across the Company to enable access.

Discovery and invention

For more than a century, we have been inventing medicines and vaccines for many of the world's most challenging diseases. We are committed to addressing unmet medical needs through innovative research and development (R&D). Our R&D expenses of $13.5 billion in 2022 reflected robust clinical development spending as well as increased investment in discovery research and early drug development from 2021.

Global burden of disease

As defined by the Global Burden of Disease (GBD) visualization tools developed by the Institute for Health Metrics and Evaluation (IHME), the diseases that our products address rank high on the list of worldwide causes of illness, disability, and death. Our research into vaccines and infectious diseases seeks to address major burdens of disease that are prevalent in all countries. We believe that the resulting vaccines and treatments can have the greatest impact in lower-income countries where drug donation and immunization programs have been shown to save lives and prevent disease and disabilities, reducing the risk of extreme poverty and economic instability.

Considering our pipeline, the list of products we currently market, and our external collaborations, we estimate that our Company is seeking to address 83 percent of the top 20 global burdens of disease as defined by the IHME. This is higher than the 71 percent reported in 2021 due to the inclusion of external malaria and maternal health partnerships, which were not accounted for in prior years.

Research and development	2018	2019	2020	2021	**2022**
Research and development expenses (in billions)[1,2]	$9.8	$9.7	$13.4	$12.2	**$13.5**
Top 20 global burdens of diseases addressed by our products and pipeline[3,4]	88%	100%	88%	71%	**83%**
Established significant external licenses and collaborations[5]	64	78	123	92	**97**

[1] R&D expenses include a $2.7 billion charge in 2020 related to the acquisition of VelosBio, Inc., a $1.7 billion charge in 2021 for the acquisition of Pandion Therapeutics, Inc. and $1.7 billion of intangible asset impairment charges in 2022.

[2] The historical results of the businesses that were contributed to Organon & Co. in the 2021 spin-off have been reflected as discontinued operations in the Company's consolidated financial statements through the date of the spin-off and therefore are excluded from the 2019, 2020 and 2021 figures presented. Recast figures for 2018 are not available.

[3] Institute for Health Metrics and Evaluation (IHME) using GBD 2019 data. We exclude road injuries and age-related hearing loss from our GBD accounting, as they are not subject to pharmaceutical intervention.

[4] All calculations for our Company's GBD impact are based on the latest IHME report available, from 2019. As such, impact from more recent diseases like COVID-19 is not accounted for. We also do not include road injuries or age-related hearing loss in our GBD accounting since they are not subject to pharmaceutical intervention.

[5] These partnerships are deemed 'significant' because they involve an asset or technology with the potential to make an important enhancement to our R&D capabilities.

Systematic evaluation to inform product access strategies

Embedded within our development R&D process, we systematically evaluate our candidates to identify the potential to address significant public health burden and unmet medical needs in underserved health care settings. This evaluation process informs our product access strategies, with the goal of making our medicines and vaccines available to as many people as possible through sustainable solutions.

To facilitate access, we undertake a systematic evaluation at the onset of Phase 2 clinical studies to determine a candidate's potential to address unmet medical needs in LMICs. Our approach involves evaluating the level of disease burden that exists, the availability of alternative medications, and the appropriateness of our pipeline candidates to improve public health. For candidates with significant potential in underserved settings, access planning may start in the pre-clinical phase. Additionally, understanding where health system infrastructure and funding mechanisms are in place is an important component of enabling safe and effective usage, which ultimately facilitates meaningful patient access.

Our R&D Governance Committee is accountable for the evaluation process, and all recommendations are reviewed by our Policy and ESG Council (PEC), an internal cross-divisional forum of senior leaders. When a drug or vaccine candidate with the potential to address significant public health burden in underserved health care settings is identified, the access planning process includes engaging all parts of our enterprise, as well as external stakeholders, to identify the optimal solution.

Once approved, we commit to making the product available in all countries where clinical trials have been conducted. Products continue to be evaluated for their potential to address disease burden throughout their life cycle to account for changes in the external environment.

Sometimes the evaluation of a candidate during the R&D process reveals barriers to access in low-income countries or underserved settings. In these situations, the evaluation process can inform our approach to strengthening health systems and improving health equity. We recognize that addressing the complex and multi-faceted challenges to accessing health care in LMICs requires the collaboration of multiple stakeholders. We actively seek partnerships to achieve solutions that enable access.

One example of our approach to early access planning in the clinical trial process is our global access strategy for our investigational antiviral COVID-19 medicine. This strategy aims to ensure timely and widespread access in the context of a pandemic. For details on our work to accelerate broadening the reach of this medicine, please visit the Affordability and Sustainable Access section on **page 69**.

Clinical research

Our Global Clinical Development organization is responsible for conducting clinical trials worldwide to evaluate the safety and efficacy of our pipeline candidates. In accordance with our **Public Policy Position Statement on Clinical Trial Ethics**, all investigational studies in human subjects are conducted in a manner consistent with laws, regulations and guidelines for the protection of human subjects, including those issued by the International Council for Harmonisation: Good Clinical Practice (ICH-GCP). However, individual country regulations and guidelines remain the primary determinant of specific requirements for the conduct of medical research.

We are committed to the study of appropriately diverse patient populations—including groups that have been previously underrepresented in clinical trials: women and children, people of varying ages, sexual orientation and gender identities, various socioeconomic backgrounds and other characteristics—in our clinical trials. Currently, we conduct our trials in more than 60 countries worldwide. In support of this commitment, we have implemented a number of programs and processes over the past several years.

Internally, we have a team of clinical trial operations experts focused on ensuring our clinical trials reflect the broad diversity of the populations we serve, and on implementing best practices in the conduct of clinical trials globally. This begins with the selection of clinical trial sites in communities serving historically underrepresented ethnic groups. We also provide resources and training to increase awareness and best practices for improving diversity in clinical research. Clinical research studies sponsored by our Company are also planned and conducted to incorporate enrollment and other goals focused on increasing diversity.

Externally, our Company continues to be an active contributor and participant in various collaborations intended to connect with, support and train more U.S.-based clinicians from underrepresented groups. The aim is to help drive equitable access to clinical research at the community level. We also co-sponsor the Improving Patient Access to Clinical Trials (IMPACT) study at the Lazarex Cancer Foundation.

IMPACT is a three-year pilot program that strives to increase the diversity of patients enrolled in clinical trials, as well as improve retention and equitable access in oncology trials. We have also implemented novel tools and approaches to build relationships and reach potential study participants within their own communities (e.g., partnerships with local pharmacies and mobile study sites). Consistent with ICH-GCP requirements, as part of the informed consent process clinical trial participants are made aware of the compensation or treatment available to them and whom to contact in the event of a treatment-related injury. In addition, we maintain procedures that address the costs of treatment in the event of trial-related injuries, in accordance with applicable regulatory requirements.

Compliance

Compliance in our research laboratories is focused not only on the conduct of clinical trials, but also on helping ensure robust oversight of effective policies and procedures, training, auditing and risk management, as well as sponsoring risk identification, prioritization and mitigation for our Merck Research Laboratories (MRL).

We have a Compliance Committee within MRL, with the objective of ensuring ongoing compliance through appropriate management structure, processes and training.

The Compliance Committee comprises members of the Research Leadership Team (RLT). Including the RLT in the Compliance Committee ensures cross-functional awareness and ownership of ethics and compliance at the senior-management level.

The Compliance Committee promotes ethical science and provides guidance to our employees within the research organization on our Company's standards and corporate policies, as well as necessary education related to specific requirements applicable to the research community.

Genetic research

The rapid development of new technologies that interrogate variability in human DNA and RNA, combined with powerful computing hardware and software, has made it practical to investigate genetic and genomic determinants for risk of human disease or predictors of human response to drugs.

We conduct genetic and genomic research within our clinical trials and in collaboration with external organizations that have collected human genetic and genomic samples and health data. We also conduct genetic and genomic analysis of our clinical trial samples, primarily to understand how genetic and genomic variation impact patient responses to medicines. This enables us to communicate information to regulatory authorities and prescribers that will improve the use of our medicines and the understanding of how genetics contribute to the underlying disease, which has the potential to identify new drug targets.

We obtain subject consent for use of genetic and genomic samples in accordance with ethical principles of human-subjects research, which include respect for persons/autonomy, beneficence and justice, consistent with the Declaration of Helsinki, U.S. FDA requirements, ICH E6 Good Clinical Practices guidelines and the 1997 UNESCO Declaration on the Human Genome and Human Rights. When collaborating with external organizations, we also ensure they've obtained consent from individuals who have contributed DNA, RNA and/or health-related data.

Use of stem cells

Together with the scientific community, we believe that research using stem cells has the potential to help identify medicines, therapies and vaccines to help treat, cure or prevent disease. Many of the most advanced scientific technologies in regenerative medicine involve animal or human embryonic stem cells.

For more than a decade, we've applied advances in stem-cell technologies to support our research and development. The capacity of stem cells to differentiate into specific cell types underscores their versatility and utility, from early target validation and identification, to the screening and testing of potential new therapeutics, disease-modeling and pre-clinical proof of concept.

We conduct research using stem cells in full accordance with all applicable laws and regulations, and our own internal research policies. Our research policy involving stem cells adheres to the U.S. National Academy of Sciences guidelines as well as those of the International Society for Stem Cell Research.

Our Regenerative Medicine Oversight Committee, which comprises both internal and external experts, oversees Company-sponsored research involving stem cells, including highly-targeted research using human embryonic stem cells and induced pluripotent stem cells. The committee is responsible for ensuring that all projects involving stem cells adhere to our policies.

*For more information on our R&D efforts, please visit the **Research & Products page** on our corporate website.*

Availability

Scientific innovation relies on excellent manufacturing and commercialization execution to support broad access across the world, enabling our inventions to reach all patients in need while reducing our environmental impacts.

Our supply chain is designed to ensure we operate a lean and efficient network that produces our medicines and vaccines to the highest quality, safety and environmental standards, in full compliance with regulations and current Good Manufacturing Practices (cGMPs), and industry best practices.

Rapidly evolving external landscape

Our Company is adapting, innovating and planning for a dynamic, evolving landscape so we can continue to expand availability of lifesaving medicines and vaccines. Some of this evolving landscape includes significant global economic pressures, including rising inflation, geopolitical insecurity and climate-related disasters.

We continue making investments and driving innovations in our supply chain, with a focus on both the short- and long-term horizon. Examples include:

- Adaptations in manufacturing and supply that support greater complexity of oncology and vaccine value chains, driven by new product modalities, new delivery mechanisms, and evolving regulatory requirements
- Planning for increased demand for several new indication approvals in oncology, in addition to multiple new medicines launching in multiple countries over the short- and long-term
- Supporting channel expansion for vaccines, including through new public tenders
- Responding to an expanding base of customer decision-makers and expanding our distribution models to address increasing shifts in private and public channel mix, including government distributors handling a greater proportion of our products

Strong supply chain systems, made more robust with innovations for efficiency and distribution to under-resourced and remote locations, will be the engine that helps us navigate these challenges. These innovations are also driving our focus to address key supply chain constraints, while delivering on our Company's goals for environmental sustainability.

Innovations in manufacturing and supply chain

Our Company has made significant inroads in digital capabilities across supply chain processes to respond in real time to the evolving health care ecosystem. The most notable digital capabilities impacting availability include orchestrating the supply chain ecosystem, supply chain planning, strengthening logistics capabilities and connecting distribution channels.

Orchestration: Integrating data and decision-making across the supply chain

We are improving the quality and agility of strategic and integrated decision-making across a supply chain ecosystem. Our objective is to connect manufacturers, transporters, third-party providers, suppliers and partners with real-time data. These improvements have shortened sales and operations planning cycle time from seven weeks to four weeks, increasing our ability to respond to customer opportunities and to meet patient needs.

Supply chain planning

Throughout 2022, we worked to improve real-time supply chain analytics and execution, increasing resiliency and adaptability to future supply chain disruptions and customer opportunities. In addition, we have established automated data governance with centralized resources for master data, which has allowed for demand forecast automation and significantly improved forecast accuracy. This planning enables us to continue to surpass our target of 95 percent of orders shipped on time and in full, with an achievement of 98.2 percent in 2022 (see Availability table on **page 60**).

Logistics

We are building digital capabilities and enhancing business processes to create a more agile, efficient and sustainable distribution and logistics infrastructure. These enhancements give us visibility into shipments in transit through digital logistics, enable interventions to prevent loss of product, and ensure reliable product delivery. We also maintain our commitment to logistics security, including our track record of 100 percent of logistics partners completing security assessments (see Availability table on **page 60**).

Connected channels

We are using blockchain and advanced technologies to improve the end-to-end, secured flow of information with trading partners, industry peers, regulators, health care professionals and patients. In addition, we're collaborating on the development of an industry technology platform, **PharmaLedger**, to enable e-leaflet capabilities at scale. Our goal is to provide patients and health care professionals a streamlined access to the latest product information approved by health authorities and to enhance safety and adherence to treatment. As we onboard an increasing number of markets, we are committed to significantly reducing the number of paper inserts while improving regulatory compliance.

Imperatives in manufacturing and supply chain to advance access

Innovations across our supply chain digital strategy support our strategic intent, focused on the following imperatives:

- **Protect affordability:** innovating supply chain designs enabling affordable, compliant and reliable access to our innovative medicines
- **Flex operations:** plan for supply disruptions with improved risk management and business continuity planning, including flexible manufacturing, to enable accelerated pharmaceutical formulation and process development. Modular and podular laboratory and manufacturing allows for rapid reconfiguration to implement new process capabilities for innovative drug delivery technologies
- **Adapt to exceed customer expectations:** agile supply chains can pivot when the unexpected happens, improving strategic and integrated decision-making to rapidly react to patient and customer opportunities and increase the reach of new medicines
- **Reduce environmental impact:** lower our carbon footprint and increase the sustainability of our supply chains

Integrating access planning in business strategies

Our enterprise-wide business strategy brings access planning early into our product development cycle and balances two objectives:

- Appropriately ensure people with unmet medical needs have access to our innovative, high-quality products
- Maintain and grow a responsible and sustainable business

For our manufacturing efforts, this means we are balancing internal and external licensing opportunities, including assessing new voluntary licensing and technology transfer strategies and expanding our network for supply chain design.

This business strategy enables enterprise-level strategic segmentation, highlighting the specific access gaps in markets and guiding us to commercially sustainable solutions, including new archetypes for manufacturing and supply execution.

As part of the enterprise-wide strategy, our manufacturing division will engage early in the life cycle of a program through a new product development and commercialization process to understand and facilitate future manufacturing, supply chain and network needs. While not all elements will be known, an early concept of the supply and manufacturing strategy will be critical to preserve future options. This means we start supply chain design early in Phase 1 of development.

Availability[1]	2020	2021	2022
Logistics partners with security risk assessment completed, annually (Target: 100%)	100%	100%	**100%**
Reach at least 75% of countries around the world annually with our products (Target: 75%)[2]	78%	79%	**76%**
Orders shipped on time and in full (Target: 95%)	98.3%	98.3%	**98.2%**

[1] Reporting on KPIs started with 2020 performance data.

[2] As defined by the World Bank Country and Lending Groups. Includes only human health products.

COVID-19 antiviral medicine—manufacturing and supply

To accelerate broad global access, our comprehensive supply and access approach includes producing millions of courses of our investigational antiviral COVID-19 medicine through our global network, which includes manufacturing sites in nine countries across three continents.

*Read more about our approach on **pages 65-66**.*

Going above and beyond—emergency drone delivery experiment combines supply chain innovation and corporate responsibility

Currently, more than 20 percent of the world's population cannot be reached through health care delivery systems. No one in need should be denied access to lifesaving medicines due to lack of infrastructure or transportation.

Our Company's vision to increase access to our medicines and vaccines across the globe includes exploring the delivery of our products by drones in rural areas. Drone delivery helps us serve low-resource settings with limited logistical capabilities. It also helps us provide medical supplies during and after acute events like natural disasters or pandemics.

We started exploring the use of drone delivery after Hurricane Maria isolated many people in Puerto Rico. The use of drones can be a safe, compliant and reliable method of delivering cold chain-dependent products when patients are isolated. We have also developed a proof-of-concept drone delivery with a validated thermal protection system for isolated Native American communities in rural Alaska and in North Dakota. The proof of concept showed we can create access to our patients and customers despite logistical challenges.

Vaccines—manufacturing and supply

In the last few years, various countries have introduced new or expanded routine vaccination programs creating unprecedented increases in global demand for vaccines. To meet this demand, we will continue to increase our capacity and our supply capability across our vaccine portfolio.

Our Company plans to invest approximately $20 billion in capital projects from 2021-2025, with a portion dedicated to vaccines. We continue to invest in manufacturing and end-to-end supply improvements in both capability and capacity to help ensure a sustainable, reliable supply of quality and affordable vaccines to serve global needs. Our manufacturing division continuously works to improve manufacturing processes and reduce operating costs by increasing efficiency, minimizing procurement spending and improving supply performance.

Maintaining product quality is paramount. To provide high-quality vaccines to people who need them, we manage our supply chain through policies and procedures designed to keep the distribution system secure. We also continue to explore potential strategic partnerships with other manufacturers to increase supply and promote greater access in local markets.

Vaccines—key accomplishments and milestones

The global reach of our vaccines has increased significantly. Ex-U.S. distribution of our vaccines was 78 percent in 2022, up from 34 percent in 2013. This represents important progress toward ensuring that these vaccines reach people around the world, including in LMICs, who are at high risk for certain vaccine-preventable illnesses. For example, we have committed over 100 million doses of our HPV vaccine for use in Gavi-supported countries from 2021-2025.

ERVEBO® (Ebola Zaire Vaccine, Live) is the world's first FDA-approved, WHO-prequalified vaccine for the prevention of Ebola virus disease. Through our agreement with UNICEF, we have built a 500,000 dose ERVEBO® stockpile, and continue delivering licensed doses to maintain the stockpile. As of March 2023, the vaccine has been approved in ten African countries.

Additionally, in response to the health and humanitarian crisis of the Sudan ebolavirus outbreak in Uganda in 2022, our Company collaborated with IAVI, a global nonprofit scientific research organization, to produce and donate vials of investigational candidate Sudan ebolavirus vaccine for use in IAVI's Sudan ebolavirus vaccine development program. The vials were produced from existing investigational bulk drug substance previously manufactured by our Company.

Product registration and prequalification

We seek to ensure global access to our medicines and vaccines by obtaining and maintaining up-to-date product registrations around the globe. In order to make our products available to the people who need them throughout the world, we registered 156 products and devices in 2022.

The majority of these products were registered in LMICs in the Asia-Pacific, Central and Eastern Europe, Middle East and Africa, and Americas regions. In addition to having our medicines and vaccines approved by regulatory authorities, when relevant to enhancing access in LMICs, we also work to have certain medicines and vaccines prequalified through the WHO prequalification process so that our products may be easily procured by and distributed to these LMIC populations. The table on the following page summarizes the registration and WHO prequalification status of a select list of our vaccines.

WHO prequalification facilitates product procurement by United Nations agencies in many LMICs. In the absence of stringent national medicine authorities, it serves to certify products meet required quality, safety and efficacy standards. WHO's prequalification program covers routine vaccines and medicines for HIV/AIDS, malaria, tuberculosis (TB), hepatitis, diarrhoeal diseases and select neglected tropical diseases.

We have made efforts to address the unique needs of LMICs where the infrastructure and personnel to deliver immunization services can be severely limited. Specifically, we have focused on product improvements such as the introduction of vaccine vial monitors (VVMs) for use to assess controlled-temperature-chain conditions. In May 2022, we obtained WHO approval for our Human Papillomavirus (HPV) vaccines' compatibility for use outside the cold chain for up to four days. This helps enhance accessibility for hard-to-reach populations.

Products prequalified by WHO	International Nonproprietary Name (INN)	Date of prequalification	Number of countries pre-qualified
Vaccines			
MMR-II®	Measles, Mumps, Rubella Virus Vaccine Live	January 2009	77
ROTATEQ®	Rotavirvus Vaccine, Live, Oral, Pentavalent	October 2008	124
GARDASIL®	Human Papillomavirus Quadrivalent (Types 6, 11, 16, 18) Vaccine, Recombinant	May 2009	129
GARDASIL® 9	Human Papillomavirus Quadrivalent (Types 6, 11, 16, 18) Vaccine, Recomninant (including a two-dose-regimen variation)[1]	February 2018	85
VARIVAX®	Varicella Virus Vaccine Live (first varicella vaccine to receive WHO prequalification)	February 2018	87
ERVEBO®	Ebola Zaire Vaccine, Live	November 2019	45
HIV/AIDS treatments			
STOCRIN®	Efavirenz (600mg tablet, Oral Solution 30mg) Efavirenz (50mg tablet, 200mg tablet)	May 2006 May 2008	54

[1]Not currently available through UNICEF procurement; awaiting Vaccine Vial Monitor (VVM).

Product registration	2018	2019	2020	2021	**2022**
New product and device registrations (annual)[1,2]	124	97	79	141	**156**
Products submitted that have achieved WHO prequalification (cumulative)[3,4,5]	13	13	13	7	**7**
Number of patent applications filed in low-income countries[6]	NR	0	0	0	**0**

NR: Not reported

[1] Data include new products and new indications.

[2] Data for all years have been updated based on a tracking system upgrade that corrected miscounts in prior years.

[3] Three products previously reported are no longer part of the Company's product portfolio due to the Organon & Co. spin-off in 2021.

[4] The three GARDASIL® (HPV 9-valent Vaccine, Recombinant) products that had been previously reported separately are reported as one product starting in 2021.

[5] CRIXIVAN® (indinavir sulfate) was removed from our product list in 2019 and is no longer included in the total number of products that have achieved WHO prequalification.

[6] Countries classified as low-income countries in the 2019 World Bank Country and Lending Group classifications.

Affordability

Working to solve affordability challenges to broaden reach of our innovative portfolio

Inspired by our former chairman, George W. Merck, who once said "We can never rest until a way has been found to bring our finest achievements to everyone," we are working towards a world where everyone, everywhere has the option to receive the right medicines or vaccines when they need them. We strive to do this in a way that creates sustainable access to innovative medicines and vaccines, creating long-term value for patients, health systems and our Company.

We seek to understand the barriers that stand in the way of people receiving the right medicines and vaccines when they need them. The underlying challenges that constrain patient access range from adequate capacity and channels for care delivery to sustainable financing.

Within a wider ecosystem, different stakeholders—including private, governmental, multilateral and nonprofit organizations—have a unique role in reducing barriers and expanding sustainable access to health. Our approach is predicated on the belief that broadening access to medicines and vaccines is best achieved through collaborating with multiple stakeholders to enable solutions that solve the needs of people today and for generations to come.

Policy environment

We recognize that an enabling policy environment is critical to solving access and affordability challenges. Therefore, we engage with governments, industry associations, trade and economic forums, think tanks and academia to advocate for evidence-based policy solutions.

For example, we are actively involved in the **Asia-Pacific Economic Cooperation's (APEC)** Health Care Financing initiatives. Through this effort, we are creating a roadmap that outlines priorities, objectives and targets for strengthening health care financing, sharing best practices from APEC economies, and strengthening the dialogue across industry, governments and academia to diagnose and solve pressing affordability challenges.

We also participated in dialogue at the Health20 (H20), Business20 (B20) side-event, with the **Atlantic Council**, the **World Cancer Congress**, and alongside the **UN General Assembly** to promote evidence-based policies that can improve investment in health.

To achieve sustainable access, health care resources must be used in a more efficient and equitable way. This transformation can only be achieved by learning and progressing together with cross-industry partners. The Global Coalition for Value in Healthcare was launched at the World Economic Forum in 2019, and aims to accelerate the development of value-based healthcare around the world. We are also contributing to the **Global Innovation Hub Expert Review Committee** by acting as advisor to the group.

By supporting early adopters in value-based health care and spreading the learnings, we are working to inspire other health systems around the globe to embrace and implement value-oriented health care strategies and models, which would contribute to achieving sustainable access.

Similarly, we work with organizations like **ThinkWell** to study and promote policies for sustainable financing for immunizations and comprehensive cancer prevention and care.

Our Company goal to enable more people to access our innovative portfolio

Through collaborating with multiple stakeholders to address access to health challenges, we believe that more patients would benefit from a broad range of innovative medicines and vaccines, including ours. We work in partnership to develop and deliver solutions that enable more people to have sustainable access to medicines and vaccines.

In 2021, we set a goal to enable 100 million more people globally to access our innovative portfolio—through access strategies, solutions and partnerships—by 2025, relative to a 2020 baseline. In 2022, we exceeded this goal and enabled access for 189.2 million people (see table below). We are committed to continue driving our aspiration and therefore increased this goal from 100 million to 350 million more people enabled to access to our innovative portfolio by 2025.

We continue expanding the reach of our innovative portfolio through developing therapy-specific access strategies, solutions and partnerships.

Sustainable access strategies, solutions and partnerships

We operate as an integrated Company across global, regional and market teams to address access challenges through multiple initiatives. We have established a systematic framework, which is available to all our markets, for diagnosing barriers to access, designing and delivering practical solutions that can help solve access challenges. We have also established a dedicated internal unit to systematically accelerate innovation, continuously evolve the relevant capabilities and capture learnings across various countries. Through this approach we have been able to accelerate the development of innovation in patient access models and solutions to expand the accessible population across the globe.

In collaboration with Financial Times Longitude, we launched the **Sustainable Access** website to advocate for greater collaborations among various stakeholders to develop, test and scale solutions that help expand sustainable access to innovative treatments and vaccines.

Enabling access to our medicines and vaccines	2019	2020	2021	**2022**
Number of countries where dedicated affordability solutions have been initiated	40	40	NR	**NR**
Total number of people enabled to access our innovative portfolio through access strategies, solutions and partnerships (in millions)[1]	NR	NR	66.7	**189.2**
People reached globally through product donation and patient assistance programs and partnerships (estimate in millions)[2] (including MECTIZAN)	403.7	268.3	197.3	**359.2**

NR: Not reported.

[1] Metrics contributing to this goal are displayed on an annual basis and provide information on the number of people who now have the option to access medicines and vaccines as a result of our sustainable access strategies, solutions and partnerships, including our commitment to Gavi and UNICEF (rather than doses shipped), collaborations to optimize resources in health systems, expanded financial coverage through insurance, and new community-based channel partnerships in LMICs. "Innovative portfolio" of products refers to our Company's on-patent products. Enable more people is defined as implemented and launched in market and will be in comparison to the baseline (2020) as of 2025. Evidence for metrics are sourced from the best publicly available data and proxy sources by market. While proxies differ by market, all methodologies are evaluated and represent the best estimate of people enabled to access innovative medicines and vaccines. People who were enabled to access innovative medicines and vaccines did not necessarily receive such innovative medicines and vaccines.

[2] Includes people reached through the MECTIZAN Donation Program, the Merck Medical Outreach Program, and the U.S. Patient Assistance Program. Total people reached with the MECTIZAN Donation Program increased in 2022 as partner countries resumed additional MECTIZAN distribution following disruptions due to the pandemic. For more information on the details related to the people reached through donations, please see **page 70**.

We have been building capabilities to support a portfolio of initiatives aimed at advancing sustainable access globally. These include enabling health care systems to better serve those in need through customer collaborations, health care financing, employer benefit design, and new delivery channels in LMICs.

Enabling health care systems to better serve those in need through customer collaborations

We recognize that in some environments, the challenge lies in having resilient health care systems that can reach patients at the right time with the right intervention. That is why we collaborate with health care and service providers in the United Kingdom, France, Canada, Brazil and Colombia to understand challenges across the care pathway and help advance solutions that can strengthen health care systems.

Leveraging our clinical expertise, particularly in oncology, and our deep understanding of the health care ecosystem, we partner with the health care systems to better understand cancer patient pathway constraints and identify solutions that enable access and the optimal use of resources.

One such approach is in the United Kingdom. We convened a broad coalition of eight National Health Services (NHS) Cancer Alliances and five national representative organizations to create the **Do It For Yourself Campaign**. This campaign raises awareness of distinguishing symptoms of lung cancer from those of COVID-19, and encourages people living in areas with high incidence to seek advice from their doctors if they have concerns about such symptoms.

We also partner with more than 20 NHS Trust and Cancer Alliances to leverage data and analytical tools to help them better understand oncology treatment capacity constraints and explore opportunities to optimize their existing capacity.

In Colombia, we have been working with multiple health maintenance organizations (HMOs) and oncology health care providers (HCPs) to identify inefficiencies and pain points in diagnosis pathways in lung and breast cancers to reduce the time to diagnosis.

Enabling multiple sources of financing health care

One of the recurring access challenges in LMICs is the potentially high out-of-pocket costs for critical illness treatments. Recognizing this issue, we have continued collaboration with reinsurers and insurance companies in, among others, South Africa, Thailand and Indonesia to develop affordable health insurance products for the population, including covering innovative cancer therapies.

We are also actively collaborating with public health authorities to provide access to immunotherapy financing through supplemental medical insurance in China, providing options for the population and driving greater health care inclusion.

We believe that expanding the reach of insurance products will help solve major access hurdles and, in turn, help increase access to innovative cancer therapies for patients. This collaborative approach to addressing access challenges reinforces our commitment to being part of a wider ecosystem, collaborating with others with complementary capabilities to tackle these access challenges.

Employers' role in benefit design

In the U.S., employers play an important role in the health care system through their employee health plans. In recent years, many organizations have faced spiraling costs—especially related to cancer care and treatment. The principles of value-based insurance design (V-BID) focuses on structuring health plans so that they incentivize high-value interventions and disincentivize low-value care. This aims to achieve two outcomes: improve patient outcomes and manage costs, which allows funding to be reallocated to support innovative new treatments.

We have evaluated a V-BID Oncology Pilot that pioneered the use of V-BID principles in corporate cancer coverage for our employees in the U.S. We are leveraging data to better understand our employees' health risks and our cancer care expenditure in order to:

- Identify opportunities to move from low-value to high-value care
- Use data continuously to refine and evolve the plan

We have been sharing the lessons that we have drawn from this pilot with various stakeholders and other employers. By sharing our experience, we hope that this will help other employers to develop their own innovations to improve their employee health care plans and widen access to quality care.

New access channels in low-and middle-income countries

Many underserved populations around the world rely heavily on the private sector for accessing health care. This is exacerbated in LMICs, where supply chain and distribution in these markets are often highly fragmented and multi-layered. To address these challenges, we are supporting local networks and leveraging technology solutions that optimize supply chains in resource constrained settings. For example, we are one of the sponsors of the **Investing in Innovation (i3)** initiative, a global network of industry players, donors and international organizations that seeks high-potential startups who aspire to transform the availability, accessibility, affordability, quality and visibility of health products at scale across Africa.

Another example is our collaboration with a health care provider with a presence in 12 African countries. Through this partnership, we seek to reimagine the prevention, screening and treatment of cervical cancer across Africa. We are committed to working with the health care providers on disease awareness and in designing innovative access solutions to our medicines and vaccines by increasing affordability for more people.

*Additional information on sustainable access strategies, solutions and partnerships can be found on the **Sustainable Access website**.*

Partnerships and collaborations to advance vaccination equity

Inequitable access to vaccines and vaccination services threaten to stall and even reverse progress made in combating the spread of vaccine-preventable diseases (VPDs). Every year, 1.5 million deaths occur due to VPDs, particularly among historically marginalized groups and populations. We are committed to expanding access to our vaccines for people and communities around the globe. Among the specific actions we have taken with our vaccines are:

- Collaborating with Gavi and UNICEF to expand global access to our vaccines
- Obtaining approval in May 2022 from WHO for our HPV vaccines to be used outside the cold chain for up to four days, helping to enhance accessibility for hard-to-reach populations
- Establishing a research and development collaboration with Hilleman Laboratories to bring forward a more thermostable, second-generation Zaire Ebolavirus vaccine candidate
- Developing an investigational vaccine for the prevention of dengue fever in collaboration with Instituto Butantan (IB). Under the agreement announced in December 2018, we and IB are sharing clinical data and other learnings from their respective dengue vaccine development programs

Collaboration with Gavi/UNICEF

Gavi, the Vaccine Alliance (Gavi) is a public-private partnership that helps vaccinate half the world's children against some of our planet's deadliest diseases. According to its **Annual Progress Report**, since its inception in 2000 Gavi has helped to immunize a whole generation—reaching one billion children—and prevented more than 16.2 million future deaths. Gavi's work has cut child mortality in half in 73 lower-income countries.

Gavi also plays a key role in improving global health security by supporting health systems and funding global stockpiles for Ebola, cholera, meningococcal and yellow fever vaccines. As a permanent member of Gavi's board, and the world's biggest buyer and supplier of vaccines for developing countries, UNICEF has a pivotal role in implementing immunization programs in Gavi-supported countries and in shaping the Vaccine Alliance's policies. UNICEF's Supply Division procures the majority of Gavi-funded vaccines. It helps countries analyze and overcome obstacles to improving immunization coverage and equity, and works with WHO to support countries applying for and implementing health-system-strengthening grants.

Our commitment to helping protect global health by improving the resilience of immunization programs and broadening access to our vaccines around the world is fundamental to our mission and highlighted through our long-term commitment to Gavi and UNICEF. To broaden access to our Human Papillomavirus (HPV) vaccine, which is indicated to help prevent HPV-related cancers and diseases, our Company provides this vaccine to the public sectors of countries that are eligible for support from Gavi at an access price that is significantly less than the value-based price in other countries.

Through a long-term agreement with UNICEF, we committed to provide over 100 million doses of our HPV vaccine for use in Gavi-supported countries, from 2021-2025. In addition, through our agreement with UNICEF, we have built a 500,000 dose ERVEBO® stockpile, and continue delivering licensed doses to maintain the stockpile. As of March 2023, the vaccine has been approved in ten African countries.

Finally, for 2021-2025, we committed to extend our current Gavi prices for our HPV vaccine to Gavi-graduated countries with a per-capita gross national income (GNI) not exceeding $3,200. This greatly assists in expanding and sustaining access in countries that have transitioned out of Gavi support.

We believe that our pricing approach—in conjunction with our commitment to partner with stakeholders to strengthen resilience of immunization programs—contributes to broader access to our vaccines worldwide.

Expanding the reach of our innovations

We expand reach of our innovations to at-need population and patients—including those in LMICs—through our access strategies and planning as well as programs and partnerships, taking into consideration unmet public health need, economic conditions and health care infrastructure.

Our pricing approach

We have a long history of making our medicines and vaccines accessible and affordable through responsible pricing practices and industry-leading patient-access programs.

We are working to bring our medicines and vaccines to more people around the world in ways that are as accessible and affordable as possible for the patients who need them.

While each individual situation varies based on factual circumstances and market dynamics, generally we consider:

- Value provided to patients
- Value provided to health care systems
- Unmet need
- Access
- R&D sustainability
- Competition

U.S. product pricing

In 2017, we began disclosing information about the price of our medicines in the U.S. Our 2022 U.S. Pricing Transparency Report shows an average annual net price increase of 4.3 percent in 2022. The average annual list price across our portfolio increased by 4.4 percent in 2022. The Company's gross U.S. sales were reduced by 39.7 percent in 2022 as a result of rebates, discounts and returns.

*For more information on our approach to pricing, please see our **U.S. Pricing Transparency Report** which is available on the **Transparency Disclosures** page of our corporate website.*

Voluntary licensing

In the face of the global COVID-19 pandemic, and realizing our opportunity to help meet a significant unmet medical need globally, including in under-resourced settings, we implemented a multi-faceted strategy to facilitate timely access to our investigational antiviral COVID-19 medicine through our comprehensive supply and access approach that includes:

- We entered into advance purchase and supply agreements with the governments of more than 40 countries, and are currently in discussions with additional governments, implementing a tiered-pricing approach based on World Bank country income criteria to reflect countries' relative ability to finance their health response to the pandemic
- We signed voluntary license agreements early on during the clinical development process, with multiple established Indian generic manufacturers and the Medicines Patent Pool to facilitate the availability of generic versions of our medicine to more than 100 low- and middle-income countries
- We allocated up to three million courses of therapy to UNICEF for low-and-middle-income countries as a "bridge strategy" until the voluntary licensees were able to supply

This strategy has been successful to minimize the gap between the supply to high income counties and the supply to LMICs.

We welcomed the Bill & Melinda Gates Foundation's commitment of $120 million to accelerate access to generic versions of our medicine. This commitment complements our voluntary license agreements with generic manufacturers and highlights the importance of actions from multiple stakeholders to effectively increase timely access to medicines for patients globally.

Through our licensing agreements with generics manufacturers and the Medicines Patent Pool, more than five million courses of generic therapy have been delivered to more than 20 low-and-middle-income countries included in the licenses from 2021-2022.

Donating medicines and vaccines when and where it's needed

When market-based solutions are inadequate or unavailable, we pursue programs to provide direct access to our medicines and vaccines, including product donations and patient assistance programs. In 2022, we reached over 359 million people with product donations through the MECTIZAN Donation Program, the U.S. Patient Assistance Program, and the Merck Medical Outreach Program (MMOP) for disaster relief and humanitarian aid.

People reached through donation programs	2018	2019	2020	2021	**2022**
Total estimated number of people reached through donation programs (millions)[1] (including MECTIZAN)	403.6	403.7	268.3	197.3	**359.2**
Estimated number of people reached through the MECTIZAN Donation Program (millions)	403.0	403.0	267.8	197.0	**358.9**
Patients utilizing our U.S. Patient Assistance Program (millions)[2]	0.233	0.239	0.190	0.130	**0.113**
Estimated number of people reached through the Merck Medical Outreach Program (millions)[3,4]	0.349	0.458	0.283	0.139	**0.119**

[1] People reached is defined as people who received a medicine or vaccine through the MECTIZAN Donation Program, U.S. Patient Assistance Program, or the Merck Medical Outreach Program. Estimated figures assume all product reached patients, and are based on converting volume of medicines and vaccines donated. This estimate calculates the number of people who accessed the treatment, and is therefore a sub-set of treatments approved.

[2] Totals represent 2018-2022 volumes of our U.S. Patient Assistance Program. Volumes vary across years based on changes in covered product offerings and changes across the health care landscape. Volumes in 2021 reflect a decline as a result of products transitioned to Organon & Co. in the 2021 spin-off.

[3] Estimated figures, which assume all product reached patients, are based on converting volume of medicines and vaccines donated. Conversion factors for this estimate were developed using a combination of IQVIA SMART Data and U.S. product information found on our product website.

[4] Decline in patients reached in 2021 and 2022 relative to 2020 and prior years is primarily due to the decreased availability of certain products offered for donation because they moved to Organon & Co. in the 2021 spin-off.

Product donations	2018	2019	2020	2021	**2022**
Product donations through U.S. Patient Assistance Program (in millions)[1]	$1,242	$1,460	$1,603	$1,455	**$1,685**
Product donations for ex-U.S. programs and U.S. disaster relief (in millions)[2,3,4]	$1,464	$1,550	$1,280	$284	**$97**

[1] Total contributions for 2021 include approximately $4.9 million for in-kind donations of PPE and other equipment in response to COVID-19 pandemic.

[2] In 2021, we stopped reporting on the market value of donated MECTIZAN, leading in large part to a decrease in our overall reporting of the value of product donations for ex-U.S. programs.

[3] Includes our Medical Outreach Program (including U.S. disaster relief), the MECTIZAN Donation Program and Merck division and subsidiary donations.

[4] In 2022, OSBI donated products through MMOP to our NGO partners was valued at $66.2 million in support of the Ukraine crisis specifically and another $26.9 million was donated to other countries outside of the U.S. via our MMOP partnering NGOs.

The MECTIZAN Donation Program

Our Company has committed to providing as much MECTIZAN as needed for as long as needed to treat river blindness through the MECTIZAN Donation Program (MDP) globally. The 35-year, global program is the longest-running disease-specific drug donation effort of its kind. Our donation commitment has expanded over the years to include the treatment of lymphatic filariasis. Since the program's inception, our Company has donated nearly five billion MECTIZAN treatments and has made significant impacts on health systems in some of the hardest-to reach communities around the world. The MDP is one of the most successful public-private health partnerships of its kind.

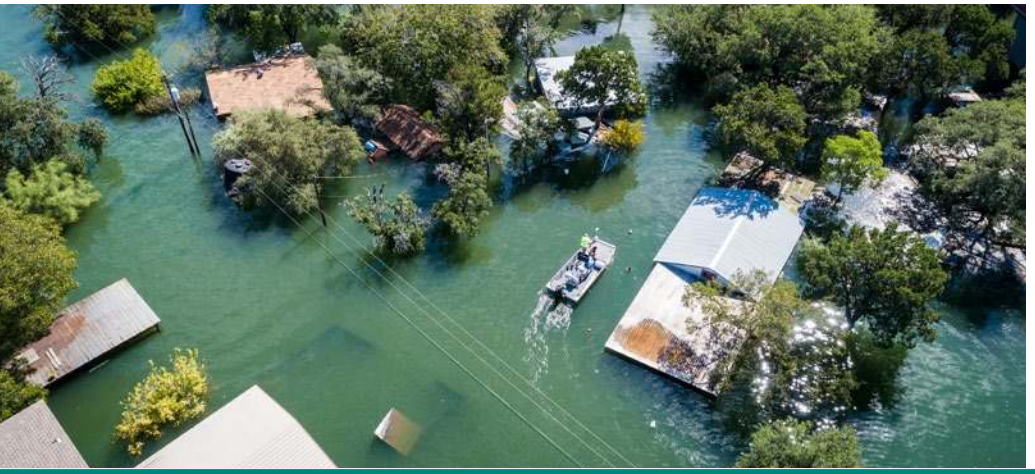
*For more information, please see the **MECTIZAN story** on our corporate website.*

MECTIZAN Donation Program	2018	2019	2020	2021	**2022**
Direct financial investment in the program (in millions)[1,2]	$2.20	$3.10	$2.74	$1.88	**$2.12**
Total treatments approved (in millions)	346	403	417	364	**378**
Treatments approved for river blindness (in millions)	111	131	139	105	**213**
Treatments approved for lymphatic filariasis (LF) in river blindness endemic countries (in millions)	140	141	141	95	**64**
Treatments approved for joint river blindness and LF programs (in millions)	83	71	75	101	**39**
Treatments approved for lymphatic filariasis (LF) in countries not endemic for river blindness[2]	12	60	62	63	**62**
River blindness endemic countries where elimination of LF has been validated by the World Health Organization (Target: 30)	1	2	3	3	**3**
Latin American countries where the elimination of river blindness has been verified by the World Health Organization (Target: 6)	4	4	4	4	**4**

N/A: Not available.

[1] Direct investment includes operational support and grants.

[2] Following our Company's commitment in 2017 to expand the donation of MECTIZAN to support the implementation of triple-therapy for the elimination of LF in certain settings, the MECTIZAN Donation Program expanded in 2018 to include donations for LF elimination in countries not endemic for river blindness.



Disaster relief

We are committed to supporting communities around the world that are affected by natural disasters and humanitarian crises. We look to local authorities and humanitarian relief agencies to first assess need and then respond in a timely, coordinated manner. We provide aid through financial and product donations to meet the immediate needs of affected communities.

Disaster relief	2018	2019	2020	2021	**2022**
Total giving value of disaster relief contributions (cash and products, in millions)[1,2,3]	$10.2	$16.7	$20.3	$9.0	**$100.3**

[1] Value includes donations made through the Office of Social Business Innovation (OSBI) as well as our Company's local regions.

[2] We set the value of our product donations based on the U.S. wholesale acquisition cost.

[3] 2022 shows a significant increase over prior years due to product and cash donations to the Ukraine crisis. Value also includes relief for Hurricane Ian, Hurricane Fiona and support to the Red Cross' efforts.

Medical Outreach Program (MMOP)	2018	2019	2020	2021	**2022**
Countries and territories reached by the MMOP[1,2]	72	56	46	56	**21**

[1] Distribution of product by country is managed and provided by third-party partners who provide the related reporting.

[2] Decline in countries reached in 2022 relative to prior years is primarily due to the decreased availability of certain products offered for donation because they moved to Organon & Co. in the 2021 spin-off.

Medical Outreach Program

The Merck Medical Outreach Program (MMOP) is the primary means through which we donate pharmaceuticals and vaccines for humanitarian assistance in the developing world and in support of disaster relief worldwide. The MMOP helps expand access to our products, particularly in developing countries, by donating pharmaceuticals and vaccines to a limited number of qualified, U.S.-based NGO partners. The scope and reach of the MMOP varies from year to year and is influenced by changing medical needs in developing countries, the quantity of our medicines available for donation and the unpredictable nature of emergencies or disasters.

As the war in Ukraine continues, we're committed to getting life-saving support, medicines, vaccines and supplies to those who need them most. In 2022, we committed donations of more than $100 million in essential products and funds to various organizations, working in tandem with our own subsidiary in the region to ensure that refugees and those who remain inside the country have access to health care.

As the COVID-19 pandemic continued through 2022, our Company donated 100,000 courses of our investigational antiviral COVID-19 medicine to Direct Relief, a global humanitarian aid organization, for distribution to refugees, including 50,000 courses for people affected by the invasion of Ukraine.

*For more information, please visit the **MMOP page** on our corporate website.*

Medicine Assistance Tool (MAT)

As a demonstration of our commitment to helping low-income, uninsured patients gain access to Merck medicines and adult vaccines, we participate in the Pharmaceutical Research and Manufacturers of America's **Medicine Assistance Tool (MAT)**. MAT is a free search engine designed to help patients, loved ones and health care providers access hundreds of public and private assistance programs. To date, this tool has helped millions of Americans in financial need get free or reduced-cost prescription medicines.

Strengthening health systems and addressing inequity

In 2022, we invested $38 million in partnerships, programs and impact investments that support health care capacity building and address underlying barriers to access to health. These social investments accelerate our Company's purpose of saving and improving lives by advancing global health equity, deploying our resources where and when needed, and creating long-term value for society and our business. We are improving cancer prevention, diagnosis and treatment; strengthening the vaccination ecosystem; advancing maternal health and strengthening health systems to advance equitable health outcomes for all patients.

We provide this support in several ways, including through philanthropic social investments, key initiatives and impact investing. To be most effective, where appropriate we align our investments with country and community-led priorities and partner with governmental, multilateral and nonprofit organizations.

We reached more than 18 million people in LMICs and underserved populations in the U.S. in 2022 with our social investments, bringing our two-year total (2021-2022) to more than 33 million people, beyond our initial five-year goal of reaching 30 million people. We are further strengthening our longstanding commitment to advancing health equity by setting a more ambitious goal to reach 50 million people by 2025.

In addition to the people we reach through our social investments, we also track health care workers trained through the initiatives we support—extending impact for years to come. In 2022, our partners trained an estimated 316,000 health workers. This result includes a significant increase in health workers trained through our Merck for Mothers program as we continue to scale those efforts.

Addressing barriers to health	2018	2019	2020	2021	**2022**
Further advance health equity by reaching 30 million people in LMICs and underserved populations in the U.S. with our social investments, by 2025 (in millions)[1,2]	N/A	N/A	N/A	15	**18.6**
Health care workers trained through major programs and partnerships (estimated in millions)[2,3,4]	0.067	0.068	0.078	0.099	**0.316**
Annual investment in partnerships, programs and impact investments that support health care capacity building and address underlying barriers to access to health (in millions)[2]	$37	$63	$49	$36	**$38**
People reached through investment in partnerships, programs and impact investment that support health care capacity building and address underlying barriers to access to health (estimate in millions)[1,2,3]	357	422	285	212	**378**

[1] Social investments include our Company's philanthropic partnerships, programs and impact investments. Underserved populations are defined as those that face health disparities due to disadvantages related to insurance status, social determinants of health, race, ethnicity, gender identity/sexual orientation, age and/or language preference. The goal is cumulative across the reporting period of 2021-2025, and is independent of a baseline period.

[2] Third-party reporting is used to calculate the number of people reached through social investments. In some cases, third-party reports may include cumulative people reached for the reporting period, and/or data that is attributable to other partners as well as our Company's philanthropic investment.

[3] Represents investments made by our Office of Social Business Innovation.

[4] Increase in 2022 driven by Merck for Mothers training programs scaled through digital delivery and with integration into national training campaigns.

Philanthropy and health equity

Our philanthropic investments help advance health equity around the world by addressing the barriers that many individuals face in seeking and receiving high-quality health care.

Our approach to these investments is guided by these key principles:

- Meeting critical global health needs where we can have a meaningful impact
- Promoting health equity by helping to reduce health disparities in underserved communities
- Collaborating with diverse partners across sectors to build healthier, stronger communities
- Leveraging our range of resources (financial, product and expertise) to improve population health outcomes

Established in 1957, our Foundation is funded entirely by our Company and is our chief source of financial support for qualified, eligible nonprofit organizations whose programs align with our philanthropic priorities. Since its inception, our Company and Foundation have supported innovative programs and partnerships to improve the health and well-being of people around the world. Through these programs, we believe that by working closely with others—governments, donors, patient groups, health care professionals, nonprofit organizations, academic institutions, multilateral agencies and the private sector—we can help build stronger health systems that provide better and more equitable care.

Our Foundation has invested in programs that help people living with chronic conditions, including cancer, to receive high-quality health care. Over the past five years, we have supported efforts to increase timely access to patient-centered care and reduce disparities in cancer care across the U.S. through the **Alliance to Advance Patient-Centered Cancer Care**. This $15 million initiative supports evidence-informed, multi-faceted programs to enhance the delivery of equitable cancer care in underserved communities across six U.S. cities.

Building on the successes of the Alliance to Advance Patient-Centered Cancer Care, the Foundation launched a new U.S.-based initiative in 2022—the **Alliance for Equity in Cancer Care**—to address persistent disparities across the cancer care continuum and improve the delivery of high-quality, culturally-responsive care in underserved communities in the U.S. With a $20 million commitment over five years, the Foundation will support the development and implementation of innovative, comprehensive cancer care programs that can improve patient outcomes and help ensure equitable care by addressing access barriers related to social determinants of health.

The Foundation also supports programs that aim to improve the delivery of cancer care in low- and middle-income countries. Through a **grant of nearly $2 million** over five years, the Foundation is supporting the American Cancer Society to establish patient navigation programs in resource-limited settings in sub-Saharan Africa and develop a toolkit to help other countries adopt navigation programs as part of delivering comprehensive cancer care.

*For more information on our philanthropy programs, please visit the **Philanthropy page** on our corporate website.*

Our social investments are guided and approved by internal and external expert advisory bodies, including an internal advisory board for our Foundation, an internal Impact Investing Council, an internal Economic Inclusion, Workforce Development and Health Equity Council and external expert advisory committees for the MECTIZAN Donation Program and Merck for Mothers.

Community engagement

We also recognize that our success depends in large part on our relationships and interactions with local communities, including patients, community leaders, nonprofit organizations, local businesses, schools, elected officials and local media. The communities where we operate are home not only to our customers but also to our workforce and many of our suppliers. It is critical to understand the concerns and needs of our communities and address local challenges so that we can help build stronger communities and support the sustainability of our business.

We contribute to the economy of local communities directly and indirectly through employment, training, support of local suppliers, local R&D and paying taxes. We also strive to have a positive impact on communities by protecting the environment, maintaining safe operations and respecting human rights.

Our community engagement programs aim to strengthen communities where our employees live and work by helping address critical health and social needs. The Solutions for Healthy Communities program—formerly known as the Neighbor of Choice program—seeks to catalyze innovation in community solutions that facilitate access to quality health care for underserved populations. This program invests in NGOs that are addressing cross-cutting barriers to heath care access in the global communities where we operate.

Improving maternal health

Maternal health outcomes highlight the strength of a health system. In many countries, unacceptable and inequitable maternal health outcomes persist. Merck for Mothers is our $650 million global initiative to help create a world where no woman has to die while giving life. For a decade and counting, we have brought Merck's scientific and business expertise to help carve a path to a better world where maternal health outcomes are more equitable, and pregnancy and childbirth are safer.

Our efforts are focused on bringing fresh thinking and infusing new approaches to help end the longstanding challenge of maternal mortality. We focus on strengthening health systems to sustain the delivery of high-quality maternity care services that benefit women and their communities. With our grantees and collaborators, we are improving health systems for women today and for the long term by advancing quality standards, catalyzing solutions that respond to community needs and harnessing private sector innovations for maternal health.

*For more information, please visit the **Merck for Mothers website**.*

Addressing cancer disparity

In addition to the philanthropic investments mentioned above, we are building a range of partnerships to strengthen cancer prevention, care and support systems to help improve health equity in underserved communities. In the U.S., we have supported the American Cancer Society's Get Screened campaign, aimed at reducing existing disparities in cancer screening that have been exacerbated by the COVID-19 pandemic.

Through the CEO Roundtable on Cancer, we support Historically Black Colleges and Universities (HBCUs) and Hispanic-Serving Institutions (HSIs) in "Going for Gold" to help improve health equity, education, navigation and access in communities disproportionately affected by cancer.

Globally, we collaborate with City Cancer Challenge Foundation to improve equitable access to quality cancer care in nine cities around the world by strengthening patient navigation, care coordination and data capacity through the integration of digital platforms in health systems.

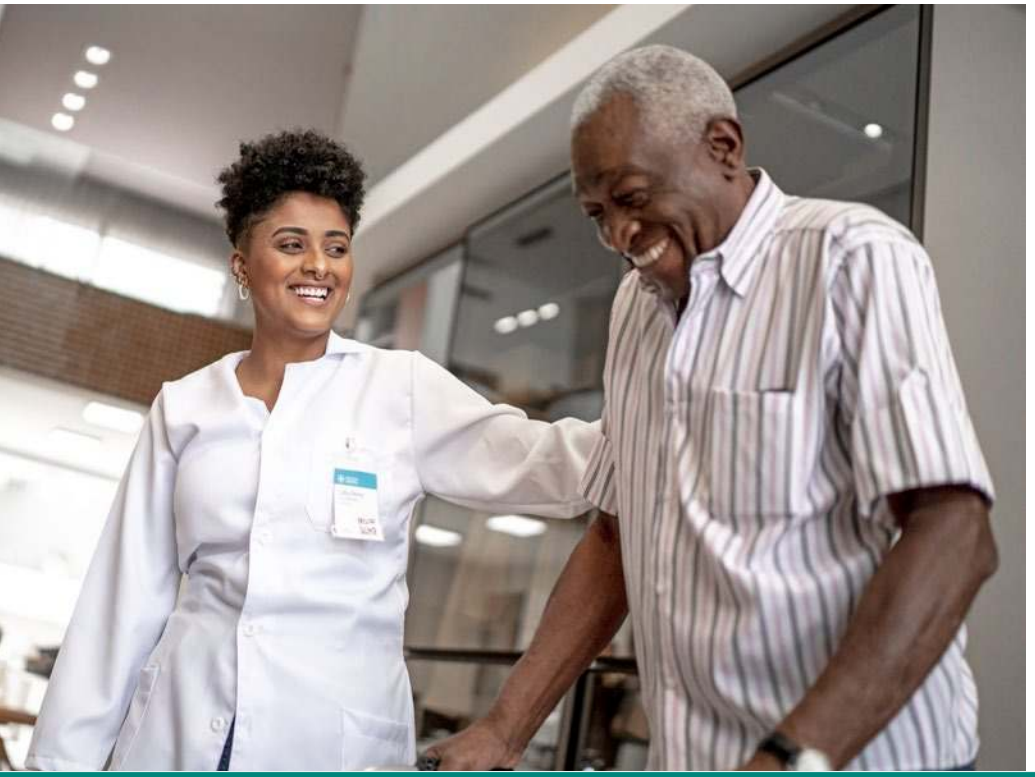
In working with Go Further, we have created a partnership that aims to reduce the incidence of cervical cancer in women living with HIV who reside in one of 12 African countries, which have some of the highest rates of HIV prevalence and cervical cancer incidence in the world.

Impact investing and health equity

Impact investing is one of our core approaches to advancing sustainable global health solutions and health equity in line with our Company's overall objectives. Through impact investing, we deploy financial resources in ways that may generate not only improved access to health care for underserved populations, but also financial returns and strategic opportunities—all while growing a sustainable global health ecosystem and attracting additional capital and partners. In addition, to support the sustainability of our work, we intend to direct any financial returns from our impact investing into new investments to grow our portfolio.

For example, our Company is an investor in Mamotest, a company providing AI-enabled telediagnosis for breast cancer and digital solutions for oncology patient support for women in Latin America.

*For more information, please visit our **Impact Investing page** on our corporate website, as well as GRI 201-1 on **page 51**.*



Embedding health equity capabilities across our Company

Our approach to health equity is key to our Sustainability and Global Diversity & Inclusion (GD&I) commitments, and is reflected in how business units across the enterprise are integrating health equity goals and capabilities in their business strategies and performance objectives.

These efforts are guided by an enterprise Health Equity Strategic Framework that lays out clear goals, and a roadmap with an implementation plan to guide how we integrate health equity across our core business functions and practices. In 2022, we launched a $1 million Health Equity Catalyst Fund to empower teams at the local and regional levels to create solutions that promote more equitable health outcomes and care experiences, particularly for populations who are underserved. The Health Equity Catalyst Fund is supporting 15 community-level efforts in 13 countries to remove barriers to care and/or strengthen health systems to deliver on high-quality and accountable care.

We are also investing in strengthening internal data capabilities so that we can apply social determinants of health data to support the design and rollout of effective solutions and partnerships, as well as track key metrics that help us to better understand the impact of our social investments. We support our employees so that they have the latest knowledge and data through the development of training resources, guidelines, tools and a collaborative health equity learning network.

Procurement practices

GRI 204 **Management approach**

Global Economic Inclusion & Supplier Diversity

Global Economic Inclusion & Supplier Diversity (EI&SD) is integrated into our overall Global Diversity & Inclusion (GD&I) strategy, and supports our corporate aspiration. Global Economic Inclusion and Supplier Diversity is a key priority of the GD&I Business Consortium (for more information, see GRI 405 on **page 134**).

The EI&SD Center of Excellence (CoE) is the epicenter of our Company's diverse and inclusive procurement practices. We create economic opportunities for underrepresented communities by procuring products and services from minority-, women-, veteran-, LGBTQ+- and disability-owned enterprises.

Our goals go beyond the amount of money we spend with small and diverse-owned businesses, as we focus on the growth and development of our suppliers to drive economic impact and value delivery to our Company. We are committed to supporting the small and diverse businesses that are the economic engine of growth around the world through global economic inclusion.

Advanced Leadership Program for Diverse Suppliers

High-performing businesses not only build diverse workforces, but also effectively leverage talent to fully realize diverse perspectives. Part of leveraging diverse talent involves partnering with suppliers that understand how to lead and motivate others to achieve common goals, communicate strategies effectively and make sound financial decisions. The Advanced Leadership Program (ALP) for Diverse Suppliers provides an executive development opportunity for diverse business owners to enhance their leadership and business acumen to strengthen and grow their business.

Designed in collaboration with Drexel University and Diversity Alliance for Science (DA4S), this experiential development program focuses on application and is supported by evidenced-based research and practitioner-industry experience. Participants have an opportunity to engage with Drexel University faculty, their peers, and organizational leaders from our Company in thought-provoking, facilitated discussions that enhance self-reflection and personal development while building relationships across the broader community network.

The ALP integrated-program modules support an overarching theme of growing and scaling small and/or diverse businesses by building the leadership abilities and business acumen of diverse business owners. Led by an interdisciplinary faculty and subject-matter-expert team, each module provides an experiential and applied approach to executive development. In addition, participants complete a Request for Proposal (RFP) Capstone Challenge that offers an invaluable experience through the coaching and feedback they receive on their presentations and overall performance.

Topic areas include:

- Leadership, Communication and Teams
- Building Personal Brand and Storytelling
- Strategic Networking
- Digital Presence and Strategy
- Customer Digital Journey
- Digital Media Metrics and Measurement
- Financial Reporting, Planning and Budgeting
- Short-term and Long-term Business Decisions
- Intersecting Finance and Operations
- Operations and Production Planning
- Purchasing and Contract Management

In 2022, we had 15 diverse suppliers graduate from our second cohort. We are proud to continue with this program in 2023.

Performance

In 2022, our spend with minority-, women-, veteran-, LGBTQ+- and disability-owned business enterprises represented 14 percent of our total procurement spend.

$3.2 billion
in spending with diverse Tier 1 and 2 suppliers globally

Supplier diversity—Tier 1 (in millions)[1]	2018	2019	2020	2021	**2022**
Diverse-supplier spend: Global[2]	N/A	N/A	N/A	$2,858	**$2,964**
Diverse-supplier spend: U.S.	$2,111	$2,433	$2,270	$2,374	**$2,269**
Small-business spend: U.S.	$973	$979	$775	$1,027	**$1,088**

N/A: Not available.

[1] Status as a diverse-supplier or a small-business supplier is validated at the time of spend with such supplier using applicable criteria.

[2] Starting in 2021, our reports include global spend data.

Second Tier Diverse Supplier Program

We have expanded our supplier diversity program through our Second Tier Diverse Supplier Program. In addition to monitoring our own purchases to ensure we have diverse suppliers providing quality goods and services, we also monitor our large Tier 1 suppliers to ensure the inclusion of diverse suppliers within their own supply chain as well.

The overall objective is to encourage the development of sustainable opportunities for diverse suppliers to participate in the procurement process. The Second Tier Diverse Supplier Program serves as an enhancement to, and not as a replacement for, existing efforts aimed at increasing meaningful opportunities for diverse suppliers to participate at the Tier 1 level.

In 2022, 21 Tier 1 suppliers participated in our Second Tier Diverse Supplier Program, generating an impact of over $258 million through their inclusion and utilization of diverse suppliers for direct purchases on behalf of our Company.

Supplier Diversity—Tier 2 (in millions)	2020	2021	**2022**
Second Tier	$54	$115	**$258**

Impact spend in the U.S.[1,2]

$2.269 billion
spending with diverse suppliers

30,405
jobs supported through small and diverse suppliers

$4.8 billion
economic impact through supplier diversity

$1.3 billion
earnings through jobs created/sustained

[1] Based on 2022 data.
[2] Billion Dollar Roundtable Economic Impact Study. University of Washington, Foster School of Business.

Billion Dollar Roundtable

Our ongoing economic inclusion and supplier diversity efforts will enable us to continue our membership in the Billion Dollar Roundtable (BDR), an exclusive industry organization that recognizes and celebrates corporations that achieve spending of at least $1 billion with minority-, women-, veteran-, LGBTQ+- and disability-owned enterprises headquartered in the U.S. and globally.

Our membership in the BDR allows us to share and access best practices in supply chain diversity excellence with other organizations that have also achieved this status. As part of our 35 years of inclusion and impact, we hosted the 2022 Billion Dollar Roundtable Summit with the theme, “The Future is Now: Supplier Diversity as a Force of Sustainability, Economic Equality and Societal Impact.”

The Summit provided another opportunity to chart a course for the bold and transformative steps that are urgently needed to ensure we are optimizing positive economic impact to some of our most distressed areas, sharing best practices and encouraging global partners to continue to deliver on our purpose.

*To learn more about our **involvement with BDR**, please visit our corporate website.*

In addition to the Billion Dollar Roundtable, we work in partnership with others, including:

- Canadian Aboriginal and Minority Supplier Development Council (CAMSDC)
- Disability:IN
- European LGBTIQ Chamber of Commerce (EGLCC)
- Integrare—Integrare Centro de Integração de Negócios (Brazil)
- LGBT-owned Business Certification in Canada (CGLCC)
- Minority-owned Business Certification in Canada (CAMSC)
- Minority Supplier Development Council UK (MSDUK)
- National LGBT Chamber of Commerce (NGLCC)
- National Minority Supplier Development Council (NMSDC)
- National Veterans Business Development Council (NVBDC)
- South Africa Supplier Diversity Council (SASDC)
- SupplyNation (Australia)
- United States Hispanic Chamber of Commerce (USHCC)
- United States Pan Asian American Chamber of Commerce (USPAACC)
- WBE Canada
- WeConnect International
- Women Business Enterprise National Council (WBENC)

Global Economic inclusion in South Africa

For more than 10 years, we have pursued economic inclusion and supplier diversity efforts outside of the U.S. as well. We believe that global supplier diversity can help foster inclusivity, drive innovation, expand market reach, reduce risks, comply with regulations and build a positive reputation. One example of our efforts outside of the U.S. is in South Africa, where we are proud to be creating a more sustainable and resilient supply chain while making a positive economic impact.

Despite the right to equality, not all people in South Africa are born into equal circumstances. The history of South Africa has resulted in an economic and opportunities disparity based on race, and has resulted in many Black people in South Africa continuing to experience economic marginalization in one of the world's most unequal societies. Broad-Based, Black Economic Empowerment (B-BBEE) is a government policy to advance economic transformation and enhance the economic participation of Black people in the South African economy.

B-BBEE related strategies that we establish help achieve this goal and ensure that our South African subsidiary is compliant with the government's B-BBEE regulations while helping to transform South Africa. The B-BBEE program is also an important strategic enabler to our Company's growth strategy in the region and key to addressing the significant unmet health needs of patients. Our efforts include a $756,000 grant through MSD for Mothers to Unjani Clinics. This clinic is a South African-based, low-fee primary health care organization that services patients in disadvantaged communities who cannot afford private health insurance, so that they can access basic services such as maternal health. As part of this grant, we supported the ACFS-Feeding Scheme, a nonprofit organization that provides meals, school materials, clothing and toiletries to 1,000 children from child-headed households. These households are led by children largely due to the continuing challenges linked with HIV/AIDS.

Furthermore, to address youth unemployment, which sits at a staggering 59 percent in South Africa, we are a proud participant in the Youth Employment Service (YES) Initiative. This program seeks to connect talented and engaged young work seekers to various opportunities, and hosts its own biennial graduate development program, which has provided jobs to 30 youth since its inception in 2021.

*For more information on our procurement practices and supplier diversity, please also see GRI 2-6 on **page 35**, GRI 308 on **page 112**, GRI 405 on **page 134** and GRI 414 on **page 145**.*

Anti-corruption

GRI 205 **Management approach**

Our Company is built on its reputation for ethics and integrity forged with health care professionals (HCPs), patients and other stakeholders. Bribery and corruption are illegal, tarnish a company's reputation, and undermine public trust. Offering or paying bribes or kickbacks is against the laws of the markets where we do business.

We are committed to observing the laws and regulations that govern our operations and activities wherever we do business. To that end, we maintain policies, procedures and processes that apply to Company activities involving transfer of value (TOV), including TOV to HCPs and third-party intermediaries that perform agreed-to services on our behalf.

We have a well-established global ethics and compliance program that is consistent with the International Federation of Pharmaceutical Manufacturers & Associations (IFPMA) Code of Practice requirements, as well as with other applicable regional or country industry codes of conduct, including those issued by the Pharmaceutical Research and Manufacturers of America (PhRMA) and the European Federation of Pharmaceutical Industries and Associations (EFPIA).

Our Board of Directors and senior management, including our chief ethics and compliance officer, provide the foundational elements of leadership, accountability and structure to oversee the Company's global ethics and compliance program. Our chief ethics and compliance officer reports directly to our CEO, and provides regular updates to senior leaders and the Audit Committee of the Board of Directors on key indicators of ethical culture and compliance and risk trends. This reporting structure supports transparent and independent communication of relevant risk information relating to ethics and compliance issues.

Our Company's anti-bribery/anti-corruption program and policies give employees (and third parties with whom we engage) the awareness, knowledge and resources to operate with integrity and comply with applicable laws and regulations, and to understand that we will not tolerate any act, or even the appearance, of impropriety.

Our corporate anti-corruption policy prohibits the offer, promise or giving of any payment or benefit at any time to an individual or entity for the purpose of improperly influencing decisions or actions with respect to our business. The policy also prohibits any act that may give the appearance of offering anything of value for a business advantage. It applies to direct engagements (i.e., those conducted by our Company) as well as to indirect engagements (i.e., those managed through a third-party intermediary or partner). There are additional divisional policies reinforcing these principles in connection with certain activities.

Our **Business Partner Code of Conduct** presents similar and consistent principles for our business partners. It states that business partners shall not offer pay, ask for or accept anything of value—or give the appearance that they do—in order to improperly influence decisions or actions with respect to any Company business or government activities. We expect all our business partners to adhere to these principles and operate in full compliance, including maintaining processes and procedures to prevent and detect corrupt activities.

GRI 205-2 **Communications and training on anti-corruption**

Annual ethics and policy certification

An important component of our corporate ethics and compliance program is our annual ethics and policy certification. The annual review process requires selected employees to certify adherence to the Code of Conduct and corporate policies on preventing bribery and corruption, antitrust-law compliance, conflict of interest and insider trading. These employees are also expected to regulate their outside activities to avoid any conflicts of interest and to certify, in writing, whether actual or potential conflicts of interest exist. Where potential conflicts are identified, the Office of Ethics will work with management to take actions to mitigate the potential conflict.

In addition, U.S.-based (including Puerto Rico) employees must certify compliance with our policy on the effects of exclusions, debarments, suspensions and health care-related criminal convictions, reporting and screening. The annual compliance certification process is supplemented by periodic market and regional risk-based discussions and ongoing risk data monitoring.

Training is an important part of creating a strong ethics and compliance culture. To ensure that all employees understand our ethical expectations and principles, we provide an annual ethics and compliance training series that includes relevant content to enable employees to perform with integrity and to make appropriate value-based decisions in the course of their work.

In 2022, more than 99 percent of our employees completed assigned training on anti-bribery and anti-corruption. Supplemental training on anti-bribery and anti-corruption is provided for employees who engage with non-U.S. government officials. As our Company is headquartered in the U.S., with a global footprint, our employees in the Human Health Division outside of the U.S. are made aware of the implication of statutes like the Foreign Corrupt Practices Act.

Employees in the Human Health Division in the U.S. are also required to understand, among other things, their responsibilities under the Anti-Kickback Statute, the U.S. Prescription Drug Marketing Act and applicable FDA promotional regulations.

>99% employees

trained on anti-bribery and anti-corruption

Anti-competitive behavior

GRI 206 Management approach

Our Company believes that our customers—and society as a whole—benefit from fair, free and open markets. While ours is a competitive industry where it is important that we compete aggressively, it is equally important that we do so fairly, legally and based on the merits of our products and services.

Our interactions with customers, suppliers and competitors are governed by antitrust and competition laws, as well as corporate policies. We enforce these external and internal standards through our ethics and compliance program.

We recognize that our reputation for integrity, trust, honesty and fair dealing continues to be dependent on our ethical practices. Consequently, we want to make certain that the ways in which we promote customer choice, business relationships and business practices are positive and fair. Our professional sales representatives are guided by our policies to recognize that competitive advantage is gained through the merits of our products and services, never through unethical or illegal business practices.

Fostering pro-competition practices

We believe that our marketing, sales and advertising activities make an important contribution to medicine by informing our customers of treatment options based on the most recent scientific information and findings from rigorous clinical studies.

Our sales and marketing practices are governed by external laws and regulations and industry codes of conduct, our own global Code of Conduct, our corporate policies and procedures, and our ethics and compliance program.

Our ethics and compliance program addresses and seeks to prevent inappropriate practices, and we evaluate our policies and procedures as appropriate. Our practices are monitored and compliance is enforced, to ensure that our interactions with customers and consumers do not include making unsubstantiated competitive claims. Also, a part of the business requires the Company to communicate with policymakers and other stakeholders to address certain gaps in a market and promote patient access. In such interactions, we are careful not to develop tactics aimed at preventing or delaying access of generic products into the market, and such communications are governed by our marketing communications principles.

GRI 206-1 Anti-competitive behavior

All new employees receive training and testing, and must be certified on relevant policies and our Company's ethical operating standards. Although many of our employees who market and sell our medicines and vaccines have advanced scientific or medical degrees and backgrounds, all of our sales representatives must complete general sales and product training. Training is specific to the country where an employee is based and covers the scope of the employee's responsibilities in ensuring compliance with applicable laws and regulations. We stress that if our employees are unsure about the appropriateness of the conduct that they ask for help. There are several places where employees can turn for assistance.

The first option is to talk with their manager. If they do not feel comfortable with that course of action, the other resources they may contact are:

- Divisional Compliance Departments
- Office of Ethics
- Privacy Office
- Office of General Counsel
- Human Resources Department
- MSDethics.com

In addition to mandatory training on our Code of Conduct, employees receive training on other levels of business practice and compliance according to their roles and responsibilities. We evaluate and update the content for all marketing and sales training periodically to ensure that it remains relevant and current.

While antitrust and competition laws may differ in the countries where our Company operates, the fundamental principles remain the same. From a broad perspective, antitrust and competition laws are legislated to promote competitive markets with the notion that when competitors and sellers can compete effectively against each other, customers will be the ultimate beneficiary. All employees are educated on the overall principles and, with the help of the relevant legal and compliance functions, they are expected to carry out their duties in a pro-competitive manner while safeguarding and advancing the Company's interests.

Tax

GRI 207-1 Approach to tax

*For information on our tax strategy, the responsible party within our Company and our approach to compliance, please see our **Global Tax Strategy** on our corporate website.*

Environmental

Materials

GRI 301 **Management approach**

By using more efficient and innovative processing methods and technologies, we are reducing the amount of energy, water and raw materials we use to make our products, thereby minimizing the amount of waste we generate. We go to great lengths to ensure that our products are designed and made in a safe, effective and environmentally sound manner.

We deliver on this commitment by maintaining a highly trained and capable scientific staff, and by actively pursuing manufacturing process improvements that minimize environmental impacts. We have set environmental sustainability goals with concrete targets and timelines to demonstrate this commitment. To ensure that our knowledge stays current with that of thought leaders and experts in the industry, we also collaborate with external resources and industry groups, such as the American Chemical Society (ACS), the European Federation of Pharmaceutical Industries and Associations (EFPIA) and Animal Health Europe (AHE).

Products

We conduct extensive testing of our products to identify and understand any potential safety, health and environmental hazards. We manage and communicate information about hazardous materials to keep our employees, contractors, transporters and other partners safe.

We are actively engaged in conversations on product stewardship to understand and act on the issues specific to our industry worldwide. We share best practices within the industry via our membership in the Conference Board Product Stewardship Council, the American Chemistry Council's (ACC) Green Chemistry Initiative, the EFPIA, the International Federation of Pharmaceutical Manufacturers & Associations (IFPMA) and the ACS Green Chemistry Institute Pharmaceutical Roundtable (ACS GCIPR). Our objective is to maintain compliance and assure supply of lifesaving medicines as we look to further minimize our future environmental footprint.

Our Company also supports the development of science-based, cost-effective and environmentally sound programs that promote the proper disposal of unused medicines and their packaging in accordance with regional requirements.

*For more information, see our position statement on the **responsible disposal of medicines**, which can be found on our corporate website.*

Governance

Our efforts in this area are overseen by our Green & Sustainable Science Steering Committee and our Environmental Health and Safety (EHS) Council.

Programs and initiatives

Our chemists and engineers are trained in green design principles and are provided with tools and resources to help them develop manufacturing processes that use safer chemicals and reduced quantities of raw materials. We use innovations like nanotechnology to make our products more effective, while ensuring that product safety always remains of utmost importance.

Complying with chemical substance and product requirements is a top priority for us. We track numerous existing and emerging chemical control regulations that require us to register specific types of chemicals with the proper authorities. To meet these requirements, our scientists complete assessments of the environmental and human health risks of the substances with which we work and submit the required regulatory notifications. Additionally, we provide details on product use and risk-based control measures in accordance with applicable regulations.

Packaging

Our product stewardship program extends to our customers and patients through the design of effective, low-impact product packaging.

These packaging materials serve a range of important purposes; the foremost is to protect the purity, efficacy and physical integrity of the products that reach our patients.

Packaging also helps ensure our products are used safely, conveniently and with adherence. Prescribing and educational information is conveyed at the point of purchase and packaging can include child-resistant access, tamper-evident features and anti-counterfeiting features.

In addition to these critical packaging functions, we recognize the environmental impact of our packaging. After it has served its critical functions, packaging becomes our patient or caregiver's waste and therefore must be accounted for.

We are actively re-imagining our approach to reducing the environmental impact of our packaging. We have developed a long-term roadmap to fundamentally change our business processes, including better prediction, quantification and verification of impact to drive changes in product, packaging and supply chain designs. We intend to integrate this roadmap into our ways of working, and ultimately use it to reduce our environmental impact.

A foundational part of our path forward includes evolving how we measure and maintain packaging data to enable transparent, data-driven decision making. This includes:

- Reduction of packaging material mass
- Minimization or elimination of materials of concern
- New materials research
- Introducing more recycled content into our packaging
- Increasing the recyclability of our packaging systems

We continue to use a simplified life cycle analysis tool as a standard business practice. All new human health packaging designs are reviewed in the development process to understand and minimize environmental impacts as much as possible, while still providing adequate protection for our products.

We continue to monitor global trends around packaging and packaging materials, and work to incorporate circular economy concepts into the critical functions of packaging for pharmaceuticals.

Governance

Environmental packaging is managed by the Global Pharmaceutical Commercialization and Global Pharmaceutical Operations areas of the Company with oversight from our Environmental Health and Safety Council.

In 2022, we responded to the CDP forest questionnaire for timber products, specifically for paper and secondary and tertiary packaging. CDP graded our disclosure with a C- "Awareness" rating, indicating that we have "Knowledge of impacts on, and of, forests issues". According to CDP, our Company is among 57 percent of companies that reached "Awareness" level in our Activity Group (Biotech and pharma) for timber. We performed a gap assessment of our questionnaire response and developed a roadmap for improvements in this area over the next several years. We are in the early stages of our program development and are in the process of assessing the impact of other forest risk commodities.

Solvent use

Solvents play a key role in the research and manufacturing of our products, as well as in equipment cleaning. Because of their significance to our business and the life cycle impact they represent, we focus on designing our processes to minimize or avoid their use where practical. Where we do use solvents, we maximize efficiency and control them in our emissions, effluents and waste.

We have an active Green and Sustainable Science program (see **page 28**) to design our new processes using fewer, less toxic solvents and other hazardous materials, and to reuse and recycle more of the solvents we do use.

For cleaning our manufacturing equipment, we use water-based methods where they are as effective as solvents. At each of our manufacturing sites, we have engineers who are responsible for identifying and driving process improvement projects. When it is not practical to reuse regenerated solvents in our own production processes, we work with suppliers who recover the spent solvents for resale to other industries or safely burn them as a source of energy, where feasible. Any used solvents that leave our site as hazardous waste are managed at off-site facilities that are on our list of approved waste management sites.

Chemical management

A comprehensive and effective chemical management program is critical to the safety and protection of our employees, the communities in which we operate, and the environment.

We have put in place procedures, systems and processes to manage the approval, procurement, inventory, receipt, transfer, storage, use and disposal of chemicals at all of our sites. We provide our employees and others with information about the identities and potential hazards of the chemicals in our operations and final products through proper labeling of chemicals and the creation of safety data sheets.

Green and sustainable science

Green and sustainable science is the development and application of green chemistry principles and quantitative sustainability metrics and goals to the process of scientific inquiry. Our Company employs this framework because we recognize that our ability to meet our environmental sustainability goals is intrinsically linked to the creation of innovative and cost-efficient manufacturing processes with low environmental impact. Green and sustainable commercial chemical route development also helps to mitigate potential issues in the supply chain of tomorrow by reducing our raw material requirements today. Our Company's objective in this space is to be the industry leader for the development of innovative, efficient, green and sustainable commercial syntheses of our small molecule active pharmaceutical ingredients (API) from sustainable commodity raw materials. We are also exploring ways to reduce the environmental impact of biologics and vaccine manufacturing.

Strategy

Our integrated strategy involves several stages and aims to provide innovative solutions rather than incremental improvements to historical practices. We see transformative science/engineering and innovation as critical enablers to developing sustainable, low-cost manufacturing processes that provide both environmental and economic benefits over the life cycle of

our products. We aim to develop the most efficient and sustainable processes at product launch, with the goal of minimizing material use and waste from our commercial manufacturing. Our Company utilizes an innovative "green-by-design" development strategy to progress from an initial early clinical supply route to a fully optimized and sustainable commercial manufacturing process.

Programs and initiatives

As part of our Green & Sustainable Science program, we calculate the process mass intensity (PMI) of our small molecule human health products. PMI represents the number of kilograms of raw materials (including water) used to produce one kilogram of an API, and indicates the efficiency by which we convert raw materials into final products. We use this metric internally to compare different manufacturing methods, identify process improvement opportunities and track our progress.

We have developed a SMART (in-Silico MSD Aspirational Research Tool) PMI tool which provides ambitious, molecule-aware PMI targets for our API manufacturing processes. We routinely evaluate PMI at every stage to drive the development of all our new small molecule processes to achieve our aspirational goals for green and sustainable processes. For our large-molecule processes, we are pioneering new modality-appropriate metrics which outperform PMI in their ability to recommend ways of reducing the environmental impact of biologics and vaccine manufacturing. We are also using streamlined life cycle analysis tools to further evaluate the environmental impacts of our processes.

American Chemical Society's Green Chemistry Institute

We are a founding member of the American Chemical Society's (ACS) Green Chemistry Institute® (GCI) Pharmaceutical Roundtable, a partnership between the ACS GCI and member pharmaceutical companies. The Roundtable drives the advancement of education and research on new ways to apply green and sustainable science to pharmaceutical discovery and manufacturing. This is done through the development of industry-wide sustainability metrics, tools and technologies.

Awards and recognition in green chemistry

Since the establishment of the Green Chemistry Challenge Awards by the Environmental Protection Agency (EPA) and the American Chemistry Society (ACS) in 1996, we have been recognized with nine Green Chemistry Awards for innovative process improvements with six of those consecutively since 2017. The Green Chemistry Challenge Awards have been sponsored by the Environmental Protection Agency (EPA) and/or ACS, and we are proud to have been recognized. In 2022, we were recognized for developing a greener process to manufacture our investigational antiviral COVID-19 medicine. Lastly, our Company has been honored by ACS as the winner of the Peter J. Dunn Award for Green Chemistry & Engineering Impact in the Pharmaceutical Industry for the last three years.

*Learn more about the Green Chemistry Awards and how we are **safeguarding the environment through green chemistry** on our corporate website.*

Energy

GRI 302 **Management approach**

We recognize the important role we play in identifying, adapting and responding to the public health risks associated with climate change, such as threats to clean air and water, insufficient food supplies and the spread of disease. Our longstanding support of stronger health systems in underserved areas is even more important given the evidence that certain disease patterns are associated with changing climate conditions.

Energy-demand reduction and the utilization of renewable energy are an essential part of our climate mitigation strategy, as it positively impacts our efforts to reduce our direct GHG emissions.

Programs and initiatives

We have established internal policies and practices focused on reducing energy use at our sites. We will achieve this by optimizing systems and equipment, consolidating excess facility space when possible and designing with the environment in mind. In addition, we have launched initiatives to understand and reduce our supply-chain-related impacts. By taking these steps, we are not only minimizing GHG emissions but also reducing our operating costs and mitigating the business impacts associated with climate change.

Our manufacturing facilities, warehouses, laboratories, offices and vehicle fleet are the primary targets of our energy-demand-reduction programs, as they represent the majority of our energy consumption. Our Global Energy & Sustainability Center of Excellence (CoE) supports sites by providing them with tools, best practices and access to funding for energy saving projects.

*For further information on our Sustainability Capital Fund, please see GRI 201-2 on **page 52**.*

Facilities

To support our sites' energy reduction plans, we have created a Low Carbon Transition Playbook (LCTP). The LCTP was the result of a cross-functional effort at our Company that pulled together experts into a "design-thinking" workshop organized to develop strategies to reduce GHG emissions. The LCTP includes a gap assessment for sites to evaluate the maturity of their energy programs and helps create short- and long-term plans to reduce sites' carbon intensity and build toward a low carbon future.

All new laboratories, offices and major renovations are built following cost-effective and energy-efficient practices, and are designed to meet the Leadership in Energy and Environmental Design (LEED) rating system, or a comparable country standard (e.g. Building Research Establishment Environmental Assessment Method [BREEAM], Excellence in Energy Efficiency Design [EXEED], Haute Qualité Environnementale [HQE], etc.). Offices and laboratories are expected to achieve LEED Gold certification at a minimum.

Construction at our sites over the past few years has resulted in two recent laboratories receiving LEED gold ratings, one in the U.S. and one in Europe.

Renewable energy

We have committed to sourcing 100 percent of our purchased electricity from renewable energy by 2025. Photovoltaic (PV) arrays, wind turbines and other renewable-energy installations avoid emissions, help reduce energy demand peaks and postpone or preclude adding new power plants. We continually look for opportunities for new on-site installations, vendor-supplied renewable energy through the electrical grid and virtual power purchase agreement (VPPA) and power purchase agreement (PPA) projects.

As of early 2023, our continued efforts at renewable energy procurement since 2019 have resulted in a total of 208 MW of VPPA and PPA commitments. The regional breakdown of these commitments is as follows:

- North America: 118 MW
- Europe: 85 MW
- Asia Pacific: 4.6 MW

In addition to these commitments, a 7.3 MW solar PV array installation was completed at a site in Ireland in 2022. This array is providing 20.6 percent of the total site demand.

Vehicle fleet

Approximately seven percent of our total energy use is associated with our vehicle fleet. We have a roadmap to transition to a full battery electric vehicle (BEV) fleet. The implementation depends on the availability of like-for-like electric vehicles (EV) and the development of public charging infrastructure. Our current emphasis includes introducing hybrid vehicles as a bridge in Latin America and Asia Pacific/Japan (APJ), deploying EVs in mature European, Middle Eastern and African (EMEA) markets, and starting EV pilots in North America. Currently, these vehicles account for 18 percent of our fleet in EMEA; 59 percent in APJ; and 1 percent in Latin America and North America. However, the worldwide vehicle supply shortage has slowed our transition.

GRI 302-1 Energy consumption within the organization (Scopes 1 & 2)

GRI 302-4 Energy reductions

Total energy use	2018	2019	2020	2021	**2022**
Total energy use (GJ)	18,274,900	17,710,000	17,182,600	17,224,600	**17,516,000**

Scope 1 and location-based Scope 2 energy use (% of total)[1]	2018	2019	2020	2021	**2022**
Natural gas (Scope 1)	62%	62%	64%	62%	**63%**
Renewable energy generated and used on site (Scope 1)[2]	0.06%	0.07%	0.06%	0.06%	**0.09%**
Fleet fuel (Scope 1)	10%	9%	7%	7%	**7%**
Fuel oil (Scope 1)	2%	2%	2%	2%	**2%**
Biofuel (Scope 1)	0.7%	0.6%	0.7%	0.8%	**0.2%**
Spent solvents (Scope 1)	0%	0%	0%	0%	**0%**
Coal (Scope 1)	0%	0%	0%	0%	**0%**
Purchased electricity (Scope 2)[3,4]	22%	23%	23%	25%	**24%**
Purchased steam (Scope 2)	3%	3%	3%	3%	**3%**

Note: We have defined "purchased electricity" as electricity sourced from external suppliers as well as renewable electricity that was generated and utilized on site where we retained the renewable attributes or where we have obtained renewable attributes through contract.

[1] May not add to 100 percent due to rounding.

[2] Includes solar, wind and other renewables generated on site where renewable energy credits or guarantees of origin have been retained or retired.

[3] Reported using Scope 2 location-based value in accordance with the Greenhouse Gas Protocol.

[4] Includes solar, wind and other renewables generated on site where renewable energy credits (RECs) have been sold.

Scope 1 and market-based Scope 2 energy use (% of total)[1]	2018	2019	2020	2021	**2022**
Natural gas (Scope 1)	62%	62%	64%	62%	**63%**
Renewable energy generated and used on site or purchased (Scope 1)[2]	2%	6%	9%	10%	**10%**
Fleet fuel (Scope 1)	10%	9%	7%	7%	**7%**
Fuel oil (Scope 1)	2%	2%	2%	2%	**2%**
Biofuel (Scope 1)	0.7%	0.6%	0.7%	0.8%	**0.2%**
Spent solvents (Scope 1)	0%	0%	0%	0%	**0%**
Coal (Scope 1)	0%	0%	0%	0%	**0%**
Purchased electricity (Scope 2)[3,4]	20%	17%	14%	15%	**15%**
Purchased steam (Scope 2)	3%	3%	3%	3%	**3%**

[1] May not add to 100 percent due to rounding.

[2] Includes solar, wind and other renewables generated on site where renewable energy credits or guarantees of origin have been retained or retired.

[3] Reported using Scope 2 market-based value in accordance with the Greenhouse Gas Protocol.

[4] Includes solar, wind and other renewables generated on site where renewable energy credits (RECs) have been sold.

In 2022, our sites' fuel usage and purchased electricity consumption increased due to capital expansion, but our purchased steam and biomass consumption decreased due to boiler efficiency initiatives.

In March 2023, the U.S. EPA again recognized our Company with our 16th consecutive Sustained Excellence Award. This is also the 18th consecutive year in which we have been recognized by ENERGY STAR for excellence in energy management.

In 2023, we continued to successfully use ENERGY STAR benchmarking tools such as the ENERGY STAR Portfolio Manager to obtain the ENERGY STAR Certified Building label for four buildings.

Our Puerto Rico facility was awarded the ENERGY STAR Pharma Energy Performance Indicator (EPI) for superior energy efficiency and environmental performance among U.S. pharmaceutical manufacturing plants for the 14th consecutive year.

*For more information, please see GRI 305-5 on **page 103**. Our CDP Climate Change Questionnaire is available on **CDP's website**.*

Water and effluents

GRI 303 **Management approach**

As we strive to meet the health needs of our patients, we understand that we may encounter water risks in the areas in which we operate. Our global water strategy aims to achieve sustainable water management within our operations and our supply chain, which supports UN SDG 6: Clean Water and Sanitation.

To achieve these strategic objectives, we are focusing on the following commitments:

- Ensuring that our wastewater discharges comply with local and national standards, as well as internal requirements
- Understanding and controlling our operational water footprint
- Managing water risk at our facilities and in our supply chain
- Reporting publicly on our water use and goals

In our **Business Partner Code of Conduct**, we request that suppliers conserve natural resources and engage in activities aimed at reducing water usage. We also ask that they have systems in place to quantify the amount of water used.

*For more information on supplier engagement on water related topics, please see GRI 308 on **page 112**.*

Governance

Each site is responsible for management of water resources. Water management is overseen globally by the Water Center of Excellence (CoE). This CoE reviews water data to monitor sites' progress and provides assistance as needed to support sites' work towards meeting our goals.

The Environmental Review Committee provides oversight in establishing our internal Environmental Quality Criteria (EQC) standards.

*For more detailed information on our environmental management and governance, please see the Environmental Health and Safety Management and Governance document on the **Sustainability Resources page** on our corporate website.*

We have established water goals to help us manage water-related risks in our operations.

Water goal

Goal	Performance in 2022
We will maintain global water use at or below 2015 levels. Target Year: 2025	3.9 million m^3 reduction (17% below 2015 levels)

Stewardship

We have endorsed the UN CEO Water Mandate, a public commitment to adopt and implement a comprehensive approach to water management, and we have aligned our water program with its principles. CEO Water Mandate endorsers have a responsibility to make water resource management a priority and to work with governments, UN agencies, NGOs, local communities and other interested parties to address global water challenges. We continue to work to identify partnerships that will help us advance our water stewardship priorities in the areas in which we operate. These projects also support the goals of SDG 15, which strives to "protect, restore and promote sustainable use of terrestrial ecosystems." We report our water security annually through CDP. In 2022, CDP graded our disclosure with a B- "management" rating, indicating that we "provide evidence of actions associated with good environmental management" and are "taking coordinated action on water security."

In 2022, through The Nature Conservancy (TNC) we supported the implementation of green stormwater infrastructure projects in the Delaware River watershed. This was done in collaboration with private, community-based landowners such as affordable housing providers, schools and social service institutions, along with the Philadelphia Water Department. The project aims to reduce stormwater runoff and improve water quality to help make the Delaware River and its tributaries more swimmable, fishable and drinkable for millions of residents in the region.

Green stormwater infrastructure presents an attractive and effective water quality solution using tangible, on-the-ground, nature-based projects—rain gardens, permeable pavements, green roofs, pocket parks, planters and other water-slowing, natural solutions—to keep stormwater runoff out of sewer systems, rivers and streams while adding safe, beautiful, green spaces to communities.

The contribution to TNC will support the design and implementation of projects across multiple blocks in the city that will filter stormwater pollution, restore urban habitat, create new green spaces, and provide many other layered benefits to residents. Our West Point, Pennsylvania facility is located within the Delaware River watershed and this project demonstrates our commitment to collective action in the catchments where our manufacturing sites operate. As a result of COVID-related delays, the project is taking place in 2023.

In 2021, through TNC, we supported a watershed conservation project in Montes Claros, Minas Gerais, Brazil with a $100,000 contribution to the Belo Horizonte Water fund, led by the Agencia Peixe Vivo. As a result of COVID-related delays, the project was completed in 2022. This TNC-sponsored project promotes governance strengthening of local partners to enable the restoration of native forest, implement soil conservation techniques, make improvements to dirt roads and conserve existing forests in the Juramento River watershed. The Juramento River is a source of potable water for the City of Montes Claros, and the water security at our manufacturing operations in Montes Claros is directly impacted by this project.

TNC and partners expect that this project will improve water security in the city of Montes Claros through:

- Increasing rainwater infiltration
- Creating a more stable outflow of water over the course of the year
- Reducing erosion and sedimentation

GRI 303-1 Water as a shared resource

Access to clean water is critical for human health and is a key input to our manufacturing operations. We assess water risk throughout our network as a standard business practice.

Our process is as follows:

1. The World Resource Institute's (WRI) Aqueduct Water Risk Atlas tool is used as an initial step to map water risk. Sites are categorized annually using the "Baseline Water Stress" indicator, which is the ratio of total annual water withdrawals to total annual renewable supply and accounts for upstream consumptive use. Higher stress values indicate more competition among water users.
2. Sites that are identified as high risk are further assessed utilizing a catchment-specific approach to confirm that the catchments are experiencing high water stress
3. Sites that are known to experience water risk, regardless of the Aqueduct Water Risk Atlas tool assessment, are included as high-risk sites
4. Water conservation plans are put in place at high-risk sites that use more than 100,000m^3 of water per year. We work with a third-party water use expert to evaluate opportunities for water use reductions at these sites, resulting in site-specific water conservation plans.
5. Sites that do not meet the water use threshold will continue to be monitored for operational risk and conservation plans will be put in place as needed

Performing this assessment ensures that we can adapt our strategy to changing stressors in each catchment. It enables us to better prioritize facilities and catchments for water stewardship activities and lays the foundation for potential future water targets in priority locations.

In 2022, the WRI tool identified four of our manufacturing and/or research facilities as being in areas with "extremely high" Baseline Water Stress, and 12 as being in areas with "high" Baseline Water Stress. In 2022, there were two more sites in areas of "extremely high" and four more sites in "high" risk than in 2021 due to sites coming in and out of the network. As a result of the above methodology, we continue to have two sites that have water conservation plans in place.

The sites that use the most water in our network are located in the U.S. Of these, two are in areas of "high" Baseline Water Stress according to the Aqueduct Water Risk Atlas tool but, through the assessment process described above, are considered medium risk.

GRI 303-2 Water discharge-related impacts

We conduct environmental risk assessments on our products (small molecules, biologics and vaccines) from the development phase through product launch, to understand and manage product impacts both from manufacturing and patient use. We assess products in a manner consistent with the most stringent applicable global regulations, including the regulatory review processes of the U.S. Food and Drug Administration and the European Medicines Agency. Product environmental safety profiles are reassessed during periodic renewals of product filings, and risk-mitigation actions are implemented when needed.

We use the information from our risk assessments to establish or update our internal, compound-specific EQCs, which are used to confirm that wastewater discharged from our facilities does not contain levels of residual products that present a risk to human health or the environment. Our manufacturing facilities are required to use these EQCs, along with industry-accepted risk assessment methods, to establish procedures for managing and controlling active pharmaceutical ingredients (APIs) in their wastewater.

Each facility uses the internal EQC standards to:

- Assess the potential risk from its operations using science-based and industry-accepted risk assessment methods
- Minimize environmental impacts from wastewater discharges in the local watershed
- Establish procedures for managing, treating or controlling APIs in wastewater prior to discharge where needed

Our facilities have, or will be provided with, API-treatment technology such as advanced oxidation where needed, so that our wastewater discharges meet both regulatory requirements and these internal standards.

We also provide wastewater discharge criteria to suppliers that manufacture pharmaceutical compounds for us and have initiated detailed assessments of our suppliers to better understand and address potential impacts.

As a member of the Antimicrobial Resistance (AMR) Alliance and signatory to the Industry Roadmap for Progress on Combating AMR, we are working to deliver on our commitments to reduce the environmental impacts from antibiotic residues in wastewater through implementation of the AMR Alliance Common Antibiotic Manufacturing Framework. We have reviewed the operations of our human health antibiotic manufacturing facilities and third-party human health antibiotic suppliers to assess their wastewater treatment controls. We have developed a mechanism for transparently demonstrating that our supply chain meets the standards in this framework, which was presented in the **AMR Industry Alliance Progress Report**.

We participate in efforts to address water-discharge-related impacts with various organizations, including the European Federation of Pharmaceutical Industries and Associations (EFPIA). The EFPIA, Medicines for Europe and the Association of the European Self-Medication Industry (AESGP) have worked together to develop the Eco-Pharmaco-Stewardship (EPS) initiative. The EPS initiative considers the environmental impacts of a medicine throughout its entire life cycle, and addresses the roles and responsibilities of all parties in managing those impacts. This includes public services, the pharmaceutical industry, environmental experts, doctors, pharmacists and patients.

*For more information on our supply chain, please see section GRI 2-6 on **page 35**.*

Please refer to the following resources for additional information related to water stewardship and related discharge impacts on our corporate website:

- **Public policy statement: Water Stewardship**
- **Public policy statement: Pharmaceuticals in the Environment**
- **Global Antimicrobial Resistance Action Plan**
- **CDP Water Security**
- **Business Partner Code of Conduct**

GRI 303-3 Water withdrawal

Water use by source (million m³)[1]	2015	2018	2019	2020	2021	**2022**
Groundwater	12.0	10.3	10.2	10.1	9.7	**10.1**[2]
Third-party water	7.1	7.2	6.9	7.0	7.1	**7.1**[2]
Total surface water	3.9	2.3	2.6	2.9	2.6	**2.0**[2]
Total[3]	23.0	19.8	19.7	20.0	19.3	**19.1**[2]

ERM CVS provided limited assurance of select 2022 greenhouse gas and water data included in this report and submitted to CDP. To view the ERM CVS limited assurance statement for our environmental data, please visit the **Sustainability Resources page** of our corporate website. The limited assurance engagement was performed in accordance with the International Standard on Assurance Engagements ISAE 3000.

[1] In accordance with the Greenhouse Gas Protocol, prior-year data have been adjusted to add or remove facilities that have been acquired and sold. 2015 data is presented as a baseline year to demonstrate progress against our goal in addition to the most recent five years data.

[2] Externally assured by ERM CVS. Total pumped water withdrawal is the total of Groundwater and Surface water, 12.11 million m³.

[3] All values above are rounded to one decimal place. As a result, the total values shown may not equal to the sum of the individual source totals.

Water use by risk in the following tables is categorized according to data obtained via the WRI Aqueduct Water Risk Atlas tool and our internal risk assessment.

Water use and risk by region (million m³)—WRI Aqueduct Risk Tool output (2022)	Extremely High	High	Med to High	Low to Med	Low	N/A	Total water use by region	% of Total
North America	0.01	2.27	2.91	9.57	0.42	0.05	15.23	80%
Europe, Middle East and Africa	0.03	0.39	0.03	0.43	1.52	0.16	2.56	13%
Asia Pacific	0.01	0.00	0.08	0.00	0.96	0.11	1.16	6%
Latin America	0.00	0.10	0.00	0.00	0.03	0.03	0.16	1%
Total[1]	0.06	2.76	3.02	10.00	2.92	0.35	19.11	100%

N/A: Not available.

[1] All values above are rounded. As a result, the total values shown may not equal the sum of the individual source totals.

Water use in areas of high to extremely high water risk by region (million m³)—WRI Aqueduct Risk Tool output (2022)	Groundwater	Fresh surface water	Salt or brackish surface water	Third-party water	Total[1]
North America	0.34	0.00	0.00	1.94	2.28
Europe, Middle East and Africa	0.03	0.00	0.00	0.39	0.42
Asia Pacific	0.00	0.00	0.00	0.01	0.01
Latin America	0.03	0.00	0.00	0.07	0.10
Total[1]	0.40	0.00	0.00	2.41	2.81

[1] All values above are rounded. As a result, the total values shown may not equal the sum of the individual source totals.

Water use in areas of high to extremely high water risk by region (million m³)— after internal risk assessment methodology (2022)	Groundwater	Fresh surface water	Salt or brackish surface water	Third-party water	Total[1]
North America	0.00	0.00	0.00	0.00	0.00
Europe, Middle East and Africa	0.00	0.00	0.00	0.00	0.00
Asia Pacific	0.00	0.00	0.00	0.64	0.64
Latin America	0.03	0.00	0.00	0.07	0.10
Total[1]	0.03	0.00	0.00	0.71	0.74

[1]All values above are rounded. As a result, the total values shown may not equal the sum of the individual source totals.

In 2022, we used approximately 19.1 million cubic meters of water globally, versus 23.0 million cubic meters in 2015, representing a 17 percent reduction in water use. Water withdrawal is variable based on manufacturing and research activities year to year.

Approximately 10 percent of the total water we used in 2022 was supplied from surface water sources, and 53 percent was supplied by groundwater water sources, with the balance sourced from third-party water supplies. Our sites employ a variety of technologies and techniques aimed at reducing our water footprint and improving operational performance.

Closed-loop cooling systems, which reduce freshwater use, are employed at many of our facilities worldwide. Reverse osmosis (RO) "reject water" is reused for non-potable and non-process applications such as cooling tower feed water. In all, 1.0 million cubic meters of water was recovered, reused or recycled at our facilities in 2022, which is equivalent to five percent of our total water use.

Our water use reduction initiatives include:

- Consideration of water use in process design
- Cooling system optimization
- Prompt repairs and maintenance of steam distribution systems and traps
- Recovery and reuse of steam condensate and "reject water"
- Process water purification system optimization
- Avoiding the use of water in mechanical seals, such as those in pumps

An innovative project was completed in 2022 to reduce water consumption from cooling towers at our Singapore West manufacturing facility. The project involved utilizing air conditioning condensate as make-up water for cooling towers to reduce third-party water usage. To mitigate the potential for corrosion and bacterial growth, a new water chemistry control skid was installed to ensure there was no impact to the cooling water chemistry. With the completion of this project, the site, which is located in a water stressed area, surpassed its water reduction target for 2022 and is currently projected to meet the site's 2025 goal as well. This project was recognized internally for its innovation and collaboration.

*For information on the specific water sources affected in areas experiencing high and extremely-high water risk, please see our **CDP Water Security** response. For our water assurance letter, please visit the **Sustainability Resources page** on our corporate website.*

GRI 303-4 Water discharge

In the following tables, water discharge by receiving water body risk is categorized according to data obtained via the WRI Aqueduct Water Risk Atlas tool and our internal assessment. We understand that following the annual assessment, site water risk categorization could change.

Total water discharge by region (million m³) (2022)[1]	Fresh surface water	Salt or brackish surface water	Groundwater	Third-party water	Total water discharge by region[2]	% of total
North America	8.39	0.00	0.00	3.62	12.01	79%
Europe, Middle East and Africa	0.57	0.13	0.00	1.63	2.33	15%
Asia Pacific	0.04	0.02	0.00	0.67	0.72	5%
Latin America	0.01	0.00	0.00	0.12	0.13	1%
Total[1]	9.00	0.14	0.00	6.04	15.19[3]	100%

[1] All values exclude rainwater.

[2] All values above are rounded. As a result, the total values shown may not equal the sum of the individual source totals.

[3] Externally assured by ERM CVS.

Water discharge in areas of high to extremely high water risk, by region (million m³)— WRI Aqueduct Risk Tool output (2022)[1]	Fresh surface water	Salt or brackish surface water	Groundwater	Third-party water	Total[2]
North America	0.00	0.00	0.00	1.36	1.36
Europe, Middle East and Africa	0.00	0.00	0.00	0.37	0.37
Asia Pacific	0.00	0.00	0.00	0.01	0.01
Latin America	0.00	0.00	0.00	0.08	0.08
Total[1]	0.00	0.00	0.00	1.82	1.82

[1] All values exclude rainwater.

[2] All values above are rounded. As a result, the total values shown may not equal the sum of the individual source totals.

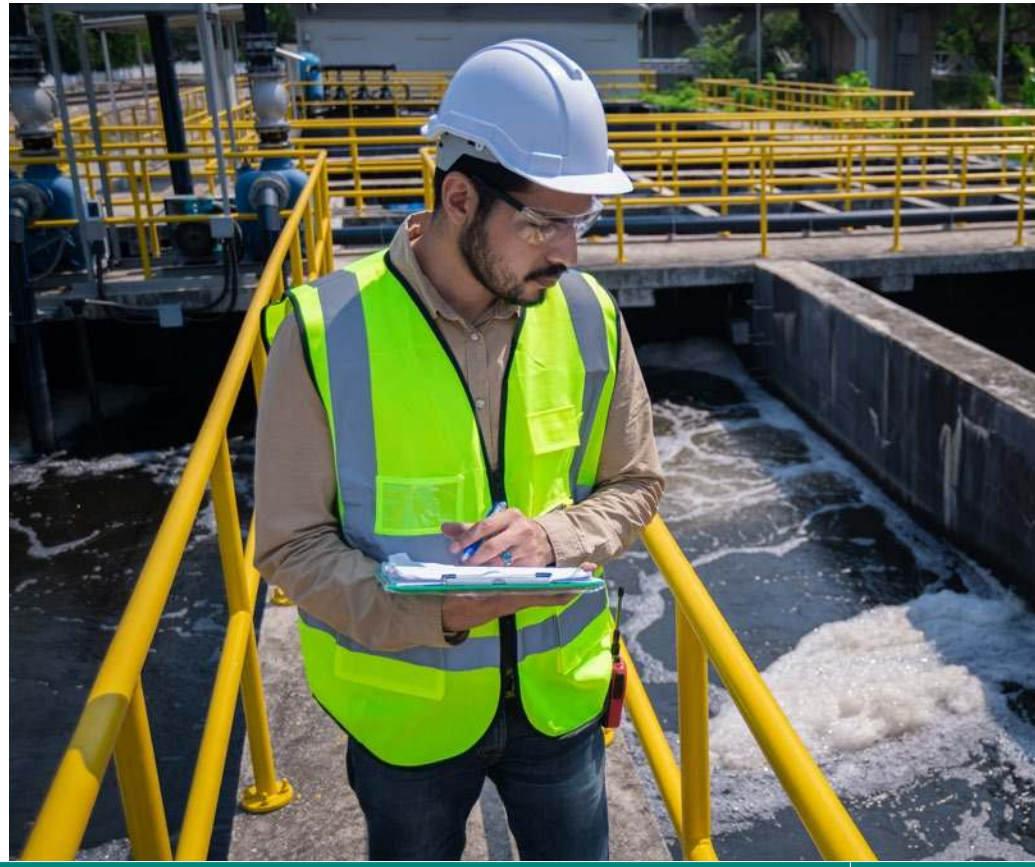
Water discharge in areas of high to extremely high water risk, by region (million m³)— after internal risk assessment methodology (2022)[1]	Fresh surface water	Salt or brackish surface water	Groundwater	Third-party water	Total[2]
North America	0.00	0.00	0.00	0.00	0.00
Europe, Middle East and Africa	0.00	0.00	0.00	0.00	0.00
Asia Pacific	0.00	0.02	0.00	0.34	0.35
Latin America	0.00	0.00	0.00	0.08	0.08
Total[1]	0.00	0.02	0.00	0.42	0.43

[1] All values exclude rainwater.

[2] All values above are rounded. As a result, the total values shown may not equal the sum of the individual source totals.

Wastewater from our facilities is managed and treated to meet regulatory standards and minimize environmental impacts prior to discharge. On-site wastewater treatment facilities are operated at many of our production and research facilities.

Where on-site treatment is not provided, wastewater is discharged to external wastewater treatment facilities that have the technology and capacity to treat our wastewater. As described in GRI 303-2 on **page 94**, many of our production facilities are equipped with advanced wastewater treatment technologies to ensure that our facilities meet both regulatory requirements and the internal standards required by our EQC Program.



Biodiversity

GRI 304-2 Significant impacts of activities, products, and services on biodiversity

We recognize that protecting biodiversity is important to the planet and our Company's growth. At present, we have not measured the impacts we have on biodiversity either directly or indirectly through our products. We do, however, have a long history of responsibly managing pharmaceuticals in the environment in an effort to prevent and reduce pollution in the areas in which we operate, protecting species and ecosystems from harm. Please see policies related to **Pharmaceuticals in the Environment** and **Water Stewardship** on our corporate website.

We are developing a strategy to better understand if the sourcing of certain inputs to our products potentially contribute to global deforestation. This assessment is in support of our **CDP Forest** response, which includes high-risk deforestation commodities such as timber, palm oil derivatives, soy, cattle by-products and rubber. The results of this assessment will be incorporated into our responsible sourcing strategy.

Each of our sites in Ireland has developed a biodiversity team to perform biodiversity assessments. These sites worked with external biodiversity professionals to identify areas that could be improved from a biodiversity perspective, with particular emphasis on pollinators such as wild bees and butterflies. As a result of our commitment to these actions, we are delighted to announce that all five of our Ireland sites are business members to the All-Ireland Pollinator Plan (AIPP).

The AIPP is run by the National Biodiversity Data Centre and aims to reverse the dramatic downward trend in the number of pollinators in Ireland over the past decade by supporting businesses, communities and individuals to take small actions to help Ireland's native pollinators. A number of actions have taken place at our Ireland sites to support AIPP, which include planting pollinator-friendly gardens, installing a bug hotel and bee hives, reducing cuttings, and restoring and/or protecting native ecosystems on site.

Animal Health and biodiversity

Our Animal Health business supports environmental sustainability by advancing the health of animals. Healthy animals use natural resources more productively. The business also supports biodiversity and conservation across both aquatic and terrestrial landscapes by:

- Monitoring numerous aquatic species by utilizing passive integrated transponder (PIT) tags
- Allowing accurate estimations of wild populations, survival rates and migration patterns
- Tracking invasive species by helping researchers assess how these animals distribute throughout the environment and interact with native flora and fauna
- Providing solutions as tools in recovery and conservation of aquatic species such as salmon, steelhead/rainbow trout, and freshwater fish populations
- Collecting and providing key information in research of sea turtles, salamanders, abalone, penguins and bats

*See our story on **biodiversity** on our corporate website for more information.*

GRI 304-3 Habitats protected or restored

Since 2016, as part of our UN CEO Water Mandate commitment, we have invested annually in habitat restoration and/or reforestation projects that improve water quality, restore biodiversity and remove carbon dioxide from the atmosphere. Working with organizations such as The Nature Conservancy and One Tree Planted, we have identified projects near our sites in which to invest. By investing in watershed management with these collective-action projects, we have also been able to integrate community mobilization by facilitating volunteer opportunities for our employees that live near our sites and for the communities in which they reside.

*For more information on our water-related projects, please see GRI 303 on **page 92**.*

Emissions

GRI 305 **Management approach**

Scientific data supports that climate change is occurring, and we are taking action to help reduce the economic and public health risks associated with a changing climate.

We have adopted a set of climate goals to help position our Company to succeed in an increasingly resource-constrained world. These goals were developed to align with the latest climate science and address the rising expectations of our customers, investors, external stakeholders and employees regarding the environmental impact of our operations and supply chain.

GHG emissions goals

Goal	Progress
Reduce our operational greenhouse gas (GHG) emissions (i.e., Scopes 1 & 2) 46% by 2030 from a 2019 baseline.	9% reduction in Scope 1 & 2 emissions from 2019 baseline.
Reduce our value chain (Scope 3) GHG emissions 30% by 2030 from a 2019 baseline.	6% increase in Scope 3 emissions from 2019 baseline.
Achieve carbon neutrality across our operations by 2025 (Scopes 1 & 2 emissions).	In progress. Any remaining emissions will be offset with high-quality offsets in 2025.

In March 2023, in alignment with the Paris Agreement on climate change and in accordance with our commitment to operating responsibly, we committed to the Science Based Target initiative (SBTi) to set a net-zero target for greenhouse gas emissions across our global operations (Scopes 1, 2 and 3).

We have committed to becoming carbon neutral across our operations (Scopes 1 & 2 GHG emissions) by 2025, to reduce our Scopes 1 & 2 GHG emissions 46 percent by 2030 from a 2019 baseline (including biogenic emissions and removals from bioenergy feedstocks), and to reduce our value chain (Scope 3 GHG emissions) 30 percent by 2030, also from a 2019 baseline. These reduction targets have been verified by the SBTi.

We seek to achieve carbon neutrality in our operations with ongoing innovation to increase energy efficiency, applying sustainable building standards and continuing to transition away from fossil fuel use. Remaining Scope 1 emissions will be balanced each year by investing in high-quality carbon offsets, including carbon removal offsets.

We continue to find ways to decrease energy demand and have increased the amount of renewable energy we purchase. Our procurement team is engaging our strategic suppliers in our efforts to reduce the environmental impacts within our supply chain. In our Business Partner Code of Conduct, we request that suppliers conserve energy and engage in activities aimed at reducing greenhouse gas emissions.

Renewable energy goal

Goal	Progress
Source 100% of our purchased electricity from renewable sources by 2025.	45% of purchased electricity from renewable sources in 2022.

We have committed to sourcing 100 percent of our purchased electricity from renewable energy by 2025. This target will help us reduce our Scope 2 emissions and meet our Scopes 1 & 2 reduction goal.

Governance

We ensure our ongoing commitment to these areas through thoughtful governance. The Environmental, Health and Safety (EHS) Council, which comprises top-level executives from throughout the Company, provides enterprise leadership and sponsorship for our environmental sustainability strategy. The EHS Council monitors progress towards our public targets, influences decisions for environmental sustainability strategy implementation, and also increases visibility and transparency internally to the business, Executive Team and the Board of Directors. Our internal Environmental Sustainability Implementation Steering Committee also comprises top-level executives from throughout the Company, oversees progress of initiatives at the enterprise level, and provides support and guidance on the implementation plans and resourcing of our environmental sustainability strategy globally. This steering committee is informed by leaders from the Environmental Sustainability Center of Excellence (CoE), Global Energy & Sustainability CoE and Energy Procurement CoE, who develop our goals in alignment with stakeholder expectations, track their progress, and develop and provide continuous improvement on plans to achieve and sustain our public commitments.

Each site is responsible for the management of its energy use. In many cases, we also partner with our third-party Integrated Facility Management (IFM) providers to manage energy use and work toward achieving the corporate goals.

In 2022, we conducted a climate policy alignment assessment of the trade associations referenced in GRI 2-23 on **page 42** by determining whether they had publicly disclosed formal positions on climate change and, if so, reviewing those positions in the context of our Company's own position on climate change.

*This assessment can be found on the **Sustainability Resources page** on our corporate website.*

Our Company is performing a high-level qualitative physical and transitional climate risk and opportunity scenario assessment aligned with the framework created by the Task Force on Climate-Related Financial Disclosures (TCFD).

*For more information regarding TCFD, please see GRI 201-2 on **page 52**.*

GRI 305-1	Direct GHG emissions (Scope 1)
GRI 305-2	Indirect GHG emissions (Scope 2)
GRI 305-3	Other indirect GHG emissions (Scope 3)
GRI 305-4	GHG emissions intensity
GRI 305-5	Reduction of GHG emissions

GHG Emissions (2022)

Scope 1:	712,400 MT CO_2e[1]
Scope 2 (market-based):	218,800 MT CO_2e[1]
Scope 3:	6,787,100 MT CO_2e[2]

Total GHG emissions (market-based):
7,718,300 MT CO_2e

Total GHGs (MT CO_2e)	2018	2019	2020	2021	**2022**
Scope1[1,3,4]	769,200	728,600	710,900	689,900	**712,400**
Scope 2 location-based[1,3,4]	402,400	387,700	370,700	378,100	**352,000**
Scope 2 market-based[1,3]	370,000	294,600	236,500	234,900	**218,800**
Total Scopes 1 & 2 GHGs (market-based)[1,3,4]	1,139,200	1,023,200	947,400	924,800	**931,200**
Scope 3 GHGs[2,3]	5,668,400	6,380,500	6,457,800	6,958,500	**6,787,100**
GHG intensity (Scopes 1 & 2—market-based)[5]	18.49	16.61	14.90	13.89	**13.69**

ERM CVS provided limited assurance of select 2022 greenhouse gas and water data included in this report and submitted to CDP. To view the ERM CVS limited assurance statement for our environmental data, please visit the **Sustainability Resources page** of our corporate website. The limited assurance engagement was performed in accordance with the International Standard on Assurance Engagements ISAE 3000.

[1] Externally assured by ERM CVS.

[2] Select data externally assured By ERM CVS. To view the ERM CVS limited assurance statement for our environmental data, please visit the **Sustainability Resources page** of our corporate website.

[3] In accordance with the World Resource Institute's Greenhouse Gas Protocol, prior-year data have been adjusted to add or remove facilities that have been acquired, sold or spun-off. Adjustments also reflect changes in methodology to ensure consistency from year to year, including Scope 2 emission factor updates [E-GRID (2022), IEA (2022), EU Residual (2022), UK Defra (2022) & Inventarios Corporativos (2022)] and Scope 1 & 3 emission factor updates [EPA Climate Leaders (2022)]. The World Resource Institute's Greenhouse Gas Protocol defines Scope 1 greenhouse gas (GHG) emissions as direct emissions from owned or controlled sources such as on-site fuel combustion and fleet vehicles. Scope 2 GHG emissions are indirect emissions from the generation of purchased energy consumed by the reporting company. Scope 3 GHG emissions include all other indirect emissions in a company's value chain.

[4] The operational control approach is used to account for GHG emissions for Company facilities globally. Only those facilities over which our Company has operational control are included in the GHG inventory.

[5] Total Scope 1 & Scope 2 market-based metric tons CO_2e per employee.

Scope 3 GHG details (MT CO_2e)	2018	2019	2020	2021	**2022**
Purchased goods and services[1]	4,295,500	4,827,900	5,050,900	5,465,800	**5,263,100**
Capital goods[1]	221,800	329,000	455,100	453,200	**423,900**
Fuel and energy-related activities not included in Scopes 1 & 2[2,11]	232,100	220,200	194,100	216,500	**230,700**
Upstream transportation and distribution[1]	242,600	240,000	232,800	237,800	**355,200**
Waste generated in operations (excluding recycled and composted waste)[3,4]	17,700	18,800	21,900	23,800	**24,900**
Employee business travel[5,6,11]	289,400	327,200	208,600	241,100	**270,800**
Employee commuting[7]	213,400	243,700	114,800	117,200	**119,000**
Downstream transportation and distribution[8]	113,200	124,800	136,000	134,800	**87,100**
Use of sold products[9,11]	600	600	600	700	**500**
End-of-life treatment of sold products[10]	42,100	48,300	43,000	47,600	**11,900**
Total[12]	5,668,400	6,380,500	6,457,800	6,958,500	**6,787,100**

[1] Based on third-party spend data and an economic input-output model performed by Climate Earth, Inc.

[2] Emission factors from Argonne National Laboratory's GREET Model were used in conjunction with primary fuel and energy-use data. Does not include purchased cooling water.

[3] Primary-waste data were used with the U.S. EPA's WARM Model.

[4] Including recycled and composted waste in these calculations would result in negative emissions in 2018 (-43,700 MT CO_2e), 2019 (-62,400 MT CO_2e), 2020 (-48,900 MT CO_2e), 2021 (-46,300 MT CO_2e) and 2022 (-57,900 MT CO_2e).

[5] Based on primary travel vendor data, employee-reimbursable mileage and UK Defra factors.

[6] Emissions are based on primary vendor data where available and economic input-output modeling performed by Climate Earth, Inc., using spend data.

[7] 2020-2022 reductions caused by shifts to remote and hybrid working models.

[8] Emissions were calculated using our "Upstream transportation and distribution" spend data as a worst-case estimate entered into the WRI Quantis tool. We assumed that all "downstream" material would first have been stored, transported and handled "upstream."

[9] Due to recent acquisitions, we are currently evaluating the applicability of additional products to this category. This category currently includes the impacts of our Animal Health products ENGEMYCIN® (oxytetracycline), NEO SPRAY CAF® (oxytetracyclinum), OXYTETRIN® LA (oxytetracycline) only.

[10] Calculated assuming that all primary, secondary and tertiary packaging purchased was disposed of by our customers. Packaging material data was used with the U.S. EPA's WARM Model.

[11] ERM CVS provided limited assurance of Scope 3 emissions comprised of World Resources Institute's Greenhouse Gas Protocol Scope 3 Categories 3, 11 and the primary activity data portion of Category 6 (76,582 MT CO_2e or 28 percent of the total category), which includes primary vendor and employee reimbursable data. The total reported for Category 6 includes non-primary travel vendor data emissions which were based on our 2022 third-party spend data and an Economic Input-Output Model performed by Climate Earth, Inc. 2021 reimbursable mileage data was used as a proxy for the 2022 calculations.

[12] May not add up to total due to rounding.

Reduction of GHG emissions

From 2021 to 2022, our combined year-over-year Scope 1 and market-based Scope 2 GHG emissions remained about the same. While we implemented several projects that reduced our GHG emissions, we also experienced capital expansion, which resulted in no net reduction in GHG emissions from the last year.

We have analyzed and reported our Scope 3 impacts using primary activity data and accepted emission factors in addition to an economic input-output model based on our third-party spend. In 2022, our Scope 3 GHG emissions decreased as compared to 2021. While performance was mixed across our reported categories, a decrease in our largest category, Purchased Goods and Services, led to an overall decrease from 2021.

Our analysis shows that our Scope 3 GHG emissions impacts are nearly seven times greater than our combined Scopes 1 & 2 emissions. We are working to reduce those impacts through activities such as reducing waste in our operations, creating more sustainable packaging, and changing the way we commute to work and travel for business. We are also engaging with our strategic suppliers to identify ways to reduce GHG emissions in our supply chain. These actions not only reduce our environmental impact, but also benefit the business by reducing costs.

We report our GHG emissions as required by regulations in certain countries and annually through CDP Climate. In 2022, CDP graded our disclosure as a "B" or a rating of "management," indicating that we are "taking coordinated action on climate issues."

*Our CDP Climate Change Questionnaire is available on **CDP's website**.*

For more information on our initiatives, policies and accomplishments, please see GRI 302 on **page 88**, and the following resources on our corporate website:

- **Corporate policy: Respect for Environmental Health and Safety**
- **Public policy position statement: Climate Change**
- **Business Partner Code of Conduct**

GRI 305-6 Ozone-depleting substances (ODS)

GRI 305-7 NOx, SOx and other emissions

We are committed to controlling air emissions from our facilities to reduce local, regional and global environmental impacts. Air emissions are generated by our manufacturing and research operations, as well as by burning fuel in on-site equipment and fleet vehicles. Our Air Management Standard requires our facilities to quantify and control air emissions to comply with both applicable regulations and emission standards. Where regulations do not mandate emission quantification, our facilities are required to use guidelines and tools associated with Air Management Standard to estimate emissions. These guidelines and tools were developed using U.S. Environmental Protection Agency (U.S. EPA) emission calculation methodologies.

Any increase in production can negatively impact our emissions trends. While there are efforts to minimize solvent use in production, solvents are needed for cleaning and disinfecting purposes. As we transform from manufacturing of pharmaceuticals to biopharmaceuticals, mandatory cleaning and disinfection protocols associated with biologics and vaccines are increasing solvent-based emissions. The Montreal Protocol mandates phase-out of refrigerants that are ozone-depleting substances (ODS) per schedules approved for individual countries. Our facilities strive to maintain compliance with applicable regulatory requirements that have been established in accordance with each country's commitments.

Our Air Center of Excellence (CoE) provides assistance as needed to our facilities to obtain appropriate environmental permits, and to quantify and control air emissions to comply with applicable regulations and emission standards.

Production and research emissions

Many of our pharmaceutical manufacturing processes, cleaning/disinfection operations and research laboratories require the use of solvents. Evaporation of solvents into the air is our primary source of volatile organic compound (VOC) emissions. In an effort to reduce VOCs, reductions in solvent usage has been incorporated as an element of our Green & Sustainable Science program.

Key elements of the program include designing efficient processes that use fewer and less-hazardous organic solvents, and using water-based methods for cleaning our process equipment where they are equally effective as solvent-based methods. To reduce emissions from processes where organic solvents are used, we use pollution-control technologies such as conservation vents, carbon filters, thermal oxidizers, condensers and scrubbers.

*For more information on this program, please see GRI 301 on **page 84**.*

Fossil fuel combustion emissions

Air emissions are also generated by burning fuel in our boilers and power-generation turbines (for heat and energy), and by other combustion processes such as thermal oxidizers (for treating air emissions) and incinerators (for destroying waste). Our fleet vehicles and aircraft also burn fuel and generate air emissions. These combustion processes result in emissions of carbon dioxide (CO_2), nitrogen oxides (NOx), sulfur oxides (SOx) and VOCs.

We strive to make our facilities more energy efficient through our energy-management programs and to improve the fuel efficiency of our fleet vehicles. Our company's actions to reduce our greenhouse gas emissions to meet our public climate commitments will also result in a reduction of NOx, SOx and VOC emissions.

The increase in NOx and SOx emissions from 2021 to 2022 is a result of the combination of multiple factors, including an increase in the use of jets compared to pre-pandemic levels, an increase in the combustion of diesel fuel at a couple of our facilities (addressing a power failure due to a hurricane and a natural gas curtailment during winter), more accurate emission-tracking methods and variations in energy needs at multiple facilities.

VOC emissions decreased from 2021 to 2022 due to variations in production, replacement of solvent-based cleaning with water-based cleaning at one of our facilities, and data collection improvements with the adoption of more accurate emission tracking methods. Emissions of ozone-depleting substances are the result of non-routine releases from temperature control and fire suppression systems and can vary from year to year.

Air pollutant emissions by type (MT)[1]	2018	2019	2020	2021	**2022**
Nitrogen oxides (NOx)	490	392	388	350	**358**
Sulfur oxides (SOx)	29	27	22	24	**29**
Volatile organic compounds (VOCs)	402	388	382	342	**331**
Ozone-depleting substances (ODS)	0.3	0.6	0.3	0.3	**0.7**

Note: Previously reported data have been restated per our methodology, which includes adding facilities that have been acquired and removing facilities that have been sold or spun-off.

[1] Data are estimated using conservative assumptions and factors, not measured or weighed.

Waste

GRI 306 **Management approach**

The proper management of waste from our facilities is important to the communities in which we operate and is a focus of our environmental permits and other regulatory requirements.

Our waste management standard requires our facilities to comply with applicable generation, management and disposal regulations and standards. To minimize our environmental footprint and align with the UN Sustainable Development Goals, we look for opportunities to avoid the use of hazardous materials, to reuse or recycle materials and to prevent the generation of waste. When prevention, reuse and recycling are not practical or feasible, we apply controls and treatment technologies to prevent human health impacts and minimize environmental impacts.

Governance

Waste management is overseen globally by our Waste and Dangerous Goods Center of Excellence (CoE). Each site is responsible for the management of its waste. In many cases, we partner with our third-party Integrated Facility Management (IFM) partners to manage site waste and work toward realizing the waste goals.

GRI 306-1 **Waste generation and significant waste-related impacts**

GRI 306-2 **Management of significant waste-related impacts**

Operational waste

The amount of waste we generate reflects the efficiency of our manufacturing processes.

Operational waste is primarily generated from the following activities:

- Manufacturing
- Packaging
- On-site wastewater treatment
- Research

Waste minimization begins with the evaluation of our product designs and manufacturing processes. Through our Green & Sustainable Science program (see GRI 301 on **page 84**), we design processes that use safer chemicals, consume less energy, use less water and other resources, and generate less waste. Our process development biologists, chemists and engineers have the expertise to create more sustainable ways to make our products.

We continuously strive to reduce the amount of operational waste we generate and to maximize the use of environmentally beneficial disposal methods such as recycling, composting and waste-to-energy. To ensure our waste is managed in an environmentally responsible manner, we use only approved waste disposal facilities. Approved facilities demonstrate that they have the systems, technologies and practices to manage our waste streams responsibly and in compliance with all applicable requirements. We routinely audit these facilities to verify the acceptability of their systems and practices.

Waste types are defined differently in various parts of the world. For this report, we have divided our operational waste into two categories:

- Hazardous waste: Highly regulated or high-risk waste streams that need to be neutralized, treated or destroyed to address a particular hazard such as toxicity, flammability, corrosivity, radioactivity, pharmaceutically active or infectious
- Non-hazardous waste: Includes all other operational waste

The amount of construction-project-related waste can vary significantly from year to year based on the number and size of projects. Therefore, our definition of operational waste does not include construction or demolition waste from construction projects.

Over the past few years, a number of countries in Asia have enacted legislation restricting the acceptance of solid waste from other countries. Historically, a large percentage of recyclable waste collected in the U.S. has been shipped to Asia for recycling, so this change had and continues to have the potential to affect the percentage of our non-hazardous waste sent for recycling. However, this change had minimal impact on our recycling rates

in the past year. The amount of our non-hazardous waste sent for recycling decreased by three percentage points from 2021 to 2022.

In 2022, two of the Company's largest sites sending non-hazardous waste to landfills implemented diversion strategies to reduce the volume of waste going to landfill by 60 percent. We also allocated approximately $142,000 to additional waste projects through the Sustainability Capital Fund. The majority of this funding supported the installation at one facility of a biodigester that uses bacteria to break down organic waste matter. The remainder was used to support water diversion awareness with AI-sorting technology.

Value chain waste

Potential waste-related impacts are also associated with upstream activities such as external manufacturing of active ingredients, the purchase of raw materials and goods, and the return of off-spec product. Similarly, the impacts downstream of the packaging and waste generated from the use of our products is estimated in our Scope 3 GHG emissions.

*For more information on our GHG emissions, please refer to section GRI 305 on **page 101**.*

While we may not be in full control of the waste generated in our value chain, we pursue various initiatives to reduce the impact through our product and material choices. Some of these waste reduction initiatives across our value chain include:

- Eliminating substances of concern from packaging
- Solvent recovery and beneficial reuse
- Packaging design efficiency
- Re-usable shippers (in product distribution)

According to our Business Partner Code of Conduct, partners shall operate in an environmentally responsible and efficient manner to minimize adverse impacts on the environment. Partners are encouraged to conserve natural resources, to avoid the use of hazardous materials where possible and to engage in activities that reuse and recycle.

*For more information on our environmental management with suppliers, please see GRI 308 on **page 112**.*

Waste management goals

Goal	Progress
By 2025, no more than 20% of our global operational waste will be sent to landfills and incinerators (without energy recovery).	16% of operational waste was sent to landfill and incinerators (without energy recovery).
By 2025, at least 50% of our sites will send zero waste to landfills.	49% of sites sent zero waste to landfill.

GRI 306-3	Waste generated
GRI 306-4	Waste diverted from disposal

GRI 306-5	Waste directed to disposal
SASB 250a.4	Amount of product accepted for takeback, reuse, or disposal

Global operational waste (% of total waste)[1,2]	2018	2019	2020	2021	**2022**
Incinerated (without energy recovery)	24%	19%	23%	28%	**12%**
Landfilled	9%	7%	5%	5%	**4%**
Total (2025 Goal <20%)	33%	26%	28%	33%	**16%**

[1] The initial waste treatment facility is defined as the generator of record for the waste generated from the treatment of an operational waste stream shipped from a company. Therefore, to be consistent with the definition for "generator of record," we do not track operational waste beyond the initial waste treatment facility.

[2] In 2022, new information specific to the technology used for the generation and use of energy at the disposal facility to which our largest hazardous waste stream is sent was identified. The waste directed to this disposal technology was previously classified as incineration without energy recovery, but with this updated information it has been reclassified as incineration with energy recovery as per our internal definitions. Only the 2022 reporting year reflects this reclassification. Reporting for the years prior to 2022 with this reclassification will be included in the 2023/2024 Impact Report.

Hazardous waste (MT)[1,2]	2018	2019	2020	2021	**2022**
Incinerated (without energy recovery)	17,639	14,025	16,649	22,086	**9,109**
Energy recovery	10,300	13,655	15,330	14,029	**28,964**
Recycled	6,827	8,034	8,685	9,824	**6,878**
Other	2,221	1,865	1,662	2,824	**2,814**
Reused	695	1,147	480	1,510	**683**
Landfilled	731	938	198	315	**92**
Composted	0	0	0	0	**0**
Total	38,413	39,674	43,004	50,588	**48,540**

[1] The initial waste treatment facility is defined as the generator of record for the waste generated from the treatment of an operational waste stream shipped from a company. Therefore, to be consistent with the definition for "generator of record," we do not track operational waste beyond the initial waste treatment facility.

[2] In 2022, new information specific to the technology used for the generation and use of energy at the disposal facility to which our largest hazardous waste stream is sent was identified. The waste directed to this disposal technology was previously classified as incineration without energy recovery, but with this updated information it has been reclassified as incineration with energy recovery as per our internal definitions. Only the 2022 reporting year reflects this reclassification. Reporting for the years prior to 2022 with this reclassification will be included in the 2023/2024 Impact Report.

Approximately 14 percent of our hazardous waste was sent offsite for recycling and was either returned to us for reuse or sold to other industries. This is a decrease from the 19 percent that was recycled Company-wide in 2021, and is attributed to reduced production at one of our manufacturing facilities that is in the process of being closed. Another 60 percent was burned to generate power, up from 28 percent in 2021. About 19 percent of the total hazardous waste generated was incinerated without energy recovery, down from 44 percent in 2021 due to a reclassification based on new information as explained in footnote 2 on the previous page. Less than one percent was sent to hazardous-waste landfills.

Non-hazardous waste (MT)	2018	2019	2020	2021	**2022**
Recycled	12,975	14,188	13,537	13,073	**13,668**
Energy recovery	9,273	10,030	8,280	7,066	**10,115**
Composted	4,798	4,843	4,892	5,872	**5,672**
Landfilled	5,684	4,603	4,061	3,702	**3,643**
Other	209	1,025	1,717	266	**121**
Reused	2,204	660	963	583	**693**
Incinerated (without energy recovery)	374	477	1,124	850	**881**
Total	35,517	35,826	34,574	31,412	**34,793**

[1]The initial waste treatment facility is defined as the generator of record for the waste generated from the treatment of an operational waste stream shipped from a company. Therefore, to be consistent with the definition for "generator of record," we do not track operational waste beyond the initial waste treatment facility.

In 2022, 16 percent of our non-hazardous waste was composted, a decrease from 19 percent in the previous year. Approximately 39 percent of our non-hazardous waste was sent offsite for recycling, a decrease from 42 percent in 2021. Another 29 percent was burned to generate power, up from 22 percent in 2021. A contributor to this increase included one of the Company's largest sites generating non-hazardous waste to landfill transitioning a portion of its waste from landfill to energy recovery. About 3 percent of the total non-hazardous waste generated was incinerated without energy recovery (unchanged from 2021), and 10 percent was sent to non-hazardous waste landfills, down from 12 percent in 2021.

Total waste (MT)[1,2]	2018	2019	2020	2021	**2022**
Recycled	19,802	22,222	22,222	22,897	**20,546**
Energy recovery	19,573	23,685	23,610	21,095	**39,079**
Composted	4,798	4,843	4,892	5,872	**5,672**
Landfilled	6,415	5,541	4,259	4,017	**3,735**
Other	2,430	2,890	3,379	3,090	**2,935**
Reused	2,899	1,807	1,443	2,093	**1,376**
Incinerated (without energy recovery)	18,013	14,512	17,773	22,936	**9,990**
Total	73,930	75,500	77,578	82,000	**83,333**

[1] The initial waste treatment facility is defined as the generator of record for the waste generated from the treatment of an operational waste stream shipped from a company. Therefore, to be consistent with the definition for "generator of record," we do not track operational waste beyond the initial waste treatment facility.

[2] In 2022, new information specific to the technology used for the generation and use of energy at the disposal facility to which our largest hazardous waste stream is sent was identified. The waste directed to this disposal technology was previously classified as incineration without energy recovery, but with this updated information it has been reclassified incineration with energy recovery as per our internal definitions. Only the 2022 reporting year reflects this reclassification in this Impact Report. Reporting for the years prior to 2022 with this reclassification will be included in the 2023/2024 Impact Report.

In 2022, we managed 83,333 metric tons of waste from our operations, a two percent increase from 2021. Of this total, 48,540 metric tons were hazardous waste.

Of the hazardous waste we generated in 2022, 75 percent was beneficially reused (reused, recycled, composted or sent for energy recovery), up from 50 percent in 2021 (see footnote 2 of the table above for explanation of these changes).

We beneficially reused 87 percent of the 34,793 metric tons of nonhazardous waste we generated in 2022. We are evaluating and refining the programs currently in place at our manufacturing, research and office sites to reduce waste generation and increase recycling.

Approximately 49 percent of our facilities sent zero operational waste to landfill in 2022, down from 52 percent in 2021. The decrease was due to additional sites coming into the network. Year over year, there was no net change in the number of sites that sent zero operational waste to landfill.

The overall percentage of waste sent to landfill decreased from five percent in 2021 to four percent in 2022. We continue to work to identify alternate methods of waste management that will reduce the amount of waste sent to incinerators (without energy recovery) and landfills.

We do not collect data on the amount of product accepted for takeback, reuse or disposal.

For additional information on this topic, please review the following documents located on our corporate website:

- **Corporate policy: Respect for Environmental Health and Safety**
- **Public policy position statement: Responsible Disposal of Medicines**
- **Sharps Management Plan-CalRecycle**

Supplier environmental assessment

GRI 308 **Management approach**

Environmental sustainability principles are integrated into each stage of our supplier management program. Our Global Supplier Management Group (GSMG) drives the program and maintains the associated standards and processes by which suppliers are identified, qualified and managed. The environmental sustainability program is an essential element of supplier management along with social responsibility, economic inclusion and supplier diversity (EI&SD).

*Please visit GRI 2-6 on **page 35**, GRI 204 on **page 77** and GRI 414 on **page 145** for additional information regarding our integrated approach with our suppliers.*

External Manufacturing

External manufacturers of active pharmaceutical ingredients and finished products are screened for environmental health and safety (EHS) compliance, in addition to quality, supply and technical competence requirements. The EHS screening and on-site assessment is led by GSMG and Global Safety and the Environment (GSE), and includes a survey covering such topics as regulatory compliance, fatalities and major incidents.

Based on the screening results and activities undertaken by the supplier, certain external manufacturers are subject to a more detailed on-site assessment conducted by a multidisciplinary team, which may include our Quality, GSE, Global Technical Operations and GSMG representatives. The external manufacturers with whom we contract are periodically reassessed using a risk-based approach; higher-risk external manufacturers are subject to more frequent on-site assessments. We expect that observations made during the EHS assessment process will be remediated by our external manufacturers, and we monitor and track corrective and preventative actions (CAPAs) through completion.

Since 2020, the EHS assessment schedule has been negatively impacted by the COVID-19 pandemic. Beginning in Q2 2022, EHS assessments have been primarily completed in person. However, some assessments were completely virtual or a combination thereof.

External manufacturing EHS assessments	2018	2019	2020	2021	**2022**
Prospective external manufacturers	65	43	50	42	**27**
Current external manufacturers	61	48	27	54	**51**
Total	126	91	77	96	**78**

Going forward

While introductory goals were established in 2017, our Company continues to work to improve how we partner with our third parties to drive improved environmental sustainability throughout our supply chain.

We are initiating collaborations with our value-chain partners to:

- Gather their Company-apportioned activity-based/actual emissions data
- Forecast future performance of emission reduction plans
- Realize actual emission reductions for planned projects

We have created an enterprise-wide decarbonization roadmap focusing on third parties supplying goods and services such as logistics, packaging, information technology, active pharmaceutical ingredients and site services.

Social

Employment

GRI 401 **Management approach**

We hire passionate people who believe in taking on the world's most pressing health issues. We seek to maximize each employee's potential and the contributions they bring each day to deliver on the Company's purpose.

Our focus is to enable every employee to continuously learn and grow, creating a greater connection to the organization and accelerating the development of all talent. We believe our employees are at the center of everything we do. Leading from this foundation fuels our efforts to ensure we are succeeding in attracting, developing, retaining and inspiring our employees.

To execute on these priorities and ensure success, we have enhanced our development program offerings while also remaining anchored in driving our culture transformation forward. We reinforce a culture that values how we work as much as what we achieve.

GRI 401-1	New employee hires and turnover
SASB 330a.2	**Voluntary and involuntary turnover rate for: executives and senior managers, midlevel managers, professionals and all others**

Turnover (global)	2018	2019	2020	2021	**2022**
Overall turnover rate[1]	11.8%	9.9%	8.5%	11.1%	**11.4%**
Voluntary turnover rate	6.8%	6.9%	6.0%	8.8%	**8.5%**

[1] Includes all types of turnover of regular employees. Regular employees are defined as employees who do not have a predetermined end date to employment.

Turnover by division (2022)	Overall turnover rate[1]	Voluntary turnover rate
Animal Health	**9.3%**	**6.8%**
Global Support Functions	**10.7%**	**8.7%**
Global Human Health	**16.3%**	**9.3%**
Manufacturing Division	**10.4%**	**8.8%**
Research Laboratories	**8.7%**	**7.7%**

Note: Global Support Functions include: Human Resources, Corporate Compliance, Finance, Legal, Strategy, BD and IT

[1] "Overall turnover rate" includes all types of turnover of regular employees. Regular employees are defined as employees who do not have a predetermined end date to employment.

Turnover distribution by gender (2022)	Female	Male
Overall	**48%**	**52%**

Notes: Data above includes all types of turnover of regular employees. Regular employees are defined as employees who do not have a predetermined end date to employment. To align with U.S. government reporting requirements, the data for gender diversity in this report uses the terms men and women. We recognize and embrace the gender spectrum and diversity in our employees, and have internally established voluntary Self-ID options for employees to self-report on their gender identity.

Employee hires by region	2018	2019	2020	2021	**2022**
Asia Pacific (excl. China 2020-2022)					
Number of hires	3,071	2,727	597	588	**870**
Hire rate[1]	24.4%	20.8%	8.9%	10.0%	**14.6%**
EEMEA[2]					
Number of hires	505	605	360	373	**295**
Hire rate[1]	16.7%	18.8%	10.7%	13.8%	**11.6%**
Latin America					
Number of hires	714	558	459	496	**441**
Hire rate[1]	13.1%	10.5%	8.4%	10.5%	**9.3%**
Europe and Canada (excl. Canada for year 2020, 2021 & 2022)					
Number of hires	2,495	2,624	1,754	1,709	**2,024**
Hire rate[1]	12.3%	12.3%	8.4%	9.5%	**10.5%**
Japan					
Number of hires	153	121	143	120	**137**
Hire rate[1]	4.3%	3.4%	4.4%	3.8%	**4.3%**
U.S.					
Number of hires	3,019	2,654	3,193	3,443	**3,625**
Hire rate[1]	12.4%	10.5%	11.9%	13.1%	**13.3%**

Note: Latin America figures include employees in Puerto Rico.

[1] Percentage of new hires in the total onboard head count; regular employees only. Regular employees are defined as employees who do not have a predetermined end date to employment.

[2] EEMEA (Eastern Europe, Middle East and Africa)

Employee hires by region (continued)	2018	2019	2020	2021	**2022**
China					
Number of hires	NR	NR	2,149	1,907	**1,391**
Hire rate[1]	NR	NR	29.5%	31.5%	**21.5%**
Canada					
Number of hires	NR	NR	50	73	**109**
Hire rate[1]	NR	NR	7.5%	12.8%	**18.4%**

NR: Not reported.

[1]Percentage of new hires in the total onboard head count; regular employees only. Regular employees are defined as employees who do not have a predetermined end date to employment.

Hiring, retaining and developing strong leadership is one of our Company's top goals. We know that diverse teams thrive and contribute to our Company's overall success. In 2022, 52 percent of all hires globally were female while in the U.S., 47 percent were from underrepresented ethnic groups. We provide our managers and external recruiting organizations with the tools they need in order to succeed in mitigating unconscious biases throughout the hiring process. We employ a targeted communication strategy with marketing, social media and alliances that reach broad and diverse pools of talent.

Despite lingering pandemic fears, 2022 continued to show significant hiring growth in many of our regions including the U.S., our largest-volume hiring market. We also saw hiring growth in Europe and Asia Pacific. This global growth is largely due to investments in sales, clinical trials, IT, and digital and analytics.

As a result of the global pandemic, China's 2022 hire rate decreased due to lockdowns and restrictions in the country. Our hiring strategy in the region continues to focus on securing digital, analytical and automation skill sets across all divisions, especially in Oncology and Vaccines in Global Human Health and in our R&D division.

Notably, we increased our efforts around creating a diverse workforce through our sourcing, branding and selection processes. We successfully collaborated with a number of external partners to attract diverse candidates across many different demographics.

Our Company has continued to invest in and partner with several diversity hiring programs in the U.S.

Our aim for 2023 is to increase our hiring commitments across programs. We will continue to promote early talent initiatives. Overall, we achieved success in identifying, sourcing and attracting critical talent in a post-pandemic environment.

*See GRI 405 on **page 134** for information on our diversity hiring programs.*

GRI 401-2 **Benefits provided to full-time employees**

SASB 330a.1 **Talent recruitment and retention efforts for R&D personnel**

We recognize that all our employees are vital to our purpose of improving and saving lives worldwide. One way we recognize the importance of our people is to provide a valuable suite of benefits, well-being programs and resources for every stage of life.

Our comprehensive benefits package is aligned to the Company's values and culture, designed to provide high-quality and cost-efficient programs that support the needs of our business and those of our diverse workforce with what they need when they need it.

We also have dedicated sourcing teams and a dedicated executive team that support R&D specifically, as well as global branding that calls attention to specific R&D opportunities. Our success is largely dependent on our continued ability to attract and retain highly qualified scientific, technical and management personnel, as well as personnel with expertise in clinical R&D, governmental regulation and commercialization.

We have strategically-located discovery centers in regions with active biomedical research communities in California and Massachusetts, as well as principal sites outside of the U.S., including the United Kingdom, Switzerland and China. These centers allow us to recruit talented local scientists and facilitate collaboration with local academic institutions and companies. These discovery sites complement and connect with the strong R&D capabilities and expertise based at our New Jersey and Pennsylvania sites.

*Learn more about our **compensation and benefits** on our corporate website.*

Our Well-being Report demonstrates the priority we place on employee well-being and our commitment to hold ourselves accountable to measure our progress, celebrate successes and constantly raise the bar for our employees and their families. Our well-being framework focuses on the physical, mental, financial and social well-being of all our employees, and our robust suite of benefits and resources targets each of these areas.

*For details, please see our **Well-being Report** on our corporate website.*

Employee volunteering

Each year, our employees around the world take an active role in giving back to their communities by donating volunteer hours to help improve health and well-being through a range of volunteer activities.

*See the **Philanthropy** page on our corporate website for examples and more information on our **volunteer programs**, such as our **Fellowship for Global Health** and **legal pro-bono program**.*

GRI 401-3 **Parental leave**

We offer our employees who become parents up to 12 weeks of paid time off following the birth or adoption of their child.

*For more information, please see our **Well-being Report**, as well as the **Compensation and Benefits page** on our corporate website.*

Occupational health and safety

GRI 403 Management approach

As a global health care company, we strive to provide a safe and healthy workplace. We seek to reduce environmental, health and safety (EHS) risks in order to eliminate work-related injuries, illnesses and unplanned events from all aspects of our operations through a comprehensive EHS program. We are committed to providing a safe and healthy workplace that complies with all applicable safety laws and regulations. In addition, we aim for EHS performance that is among the best in the pharmaceutical industry.

All employees, service providers and Company-managed contractors must follow the standards and requirements in our EHS management system. Compliance with these requirements is measured through site-audit processes and through peer reviews for construction.

Each year, we set targets and track leading and lagging safety metrics. These metrics include safety observations, near-miss incidents, peer safety reviews, Recordable Injury Rates (RIR), Lost Time Injury Rates (LTIR) and Days Away, Restricted or Transferred (DART) rates.

For consistency across the Company, and to enable us to compare our injury rates with those of other multinational companies, we use the U.S.-based OSHA recordkeeping criteria for recording and tracking work-related injuries and illnesses. We require all injuries, illnesses and incidents involving our employees to be reported and investigated to determine their cause. We also require corrective and preventative actions be taken to prevent recurrence.

*Please see GRI 403-9 and GRI 403-10 on **pages 126-129** for our performance on these metrics.*

GRI 403-1 Occupational health and safety management system

Our Company's EHS management system includes comprehensive programs focused on reducing risks, work-related injuries/illnesses and other safety incidents from our operations. We focus on safe facility design, process controls, operation and maintenance procedures, protection systems and emergency-response capabilities.

Our EHS Management System supports our Company's objectives by promoting a strong EHS culture through visible leadership, active employee engagement and a focus on proactive identification and elimination of hazards.

Our Employee Safety Committees demonstrate this EHS engagement in action. These Committees include workers and management in a partnership to proactively address EHS issues.

While we have reviewed the ISO 18001 Standard, we have not pursued certification because we believe that our current EHS management systems are robust and achieve our desired levels of EHS performance.

GRI 403-2 Hazard identification, risk assessment and incident investigation

We identify work-related hazards and assess risks on a routine and non-routine basis and apply the hierarchy of controls in order to eliminate hazards and minimize risks. We continually evaluate and work to improve our occupational health and safety management system.

Process safety

Our process safety program identifies, controls and manages risks associated with the manufacturing and handling of our human and animal health products. The program applies to operations that are subject to process safety regulations, and to our pilot plants, manufacturing operations and utility areas where process hazards may exist. In addition, we have implemented a structured, chemical-reaction-hazard review program for our research laboratories.

In the early stages of product development, we conduct chemical reaction and thermal testing of our intermediate materials and products to identify potential reactivity, fire and explosion hazards, and environmental risks. This testing continues throughout the life cycle of each product to ensure that we are aware of the process risks of each material and can properly manage these risks. Global process safety professionals work with operations and engineering personnel to conduct process hazard analyses to thoroughly evaluate our operations. These structured reviews take place at every stage from the initial start-up through the final process design. This ensures our facility design, equipment, operating controls and maintenance procedures are effective in identifying, evaluating, managing and mitigating process-related hazards.

Non-routine hazardous work

We have developed global safety standards to minimize the potential for serious incidents when working at heights, entering confined spaces and working on or near machinery, piping and electrical systems. This global effort is focused on creating a rigorous and safe approach to risk reduction when performing these non-routine, high-hazard work activities.

Capital projects construction safety

We have a strong construction safety program with a focus on zero harm to people, property and the environment. Our Global Engineering Solutions (GES) group oversees hundreds of contractors and thousands of skilled craft workers on our construction projects worldwide. Safety is integrated into all stages of our construction projects, beginning with the concept and design phases, and is carried through to Detailed Design, Construction and Commissioning/Qualification. In 2022, 10.5 million hours were spent in construction on GES Capital Project work.

Our construction safety program mandates pre-job planning, hazard assessments and daily safety checks. We also conduct peer reviews by bringing together in-house engineers, contractors, the EHS construction team and other partners to conduct thorough project safety evaluations and share best practices. In 2022, we completed 64 peer safety reviews on projects, covering 100 percent of our active projects that were chosen for peer safety reviews.

The construction industry continues to see a negative trend related to the availability of contractor and craft resources. The impacts of this trend require management of resource availability issues, varied levels of experience and safety competencies. GES continues to use a “hyper-care” program to ensure additional supervision and safety oversight of new contractors, high-risk work scope contractors and less-experienced contractors.

GES also uses a rigorous, third-party prequalification program—Highwire—to evaluate and score contractors and subcontractors. This tool allows the team to evaluate contractors’ safety programs, past safety performance, safety incident rates, experience modifier rate and training verification of craft, and reviews any regulatory citations prior to allowing them to bid on any projects.

Safety for non-Company personnel

All contractors working at our sites are required to follow a prequalification and EHS evaluation process as specified in our Company's Global Contractor Management Standard. They are assigned an internal “contractor liaison” to monitor EHS compliance, perform EHS inspections and evaluations and ensure they follow their safety compliance plans. Contractors are required to report and investigate all EHS incidents and near-miss events. They also work with site-based EHS contacts to identify and implement corrective and preventive actions, which are tracked to completion.

Integrated Facilities Management (IFM) partners are globally sourced companies that are responsible for supporting our Company for facility-related tasks. IFM partners are required to follow our Company's EHS standards and site-specific EHS procedures in order to monitor compliance activities associated with their scope of services and meet EHS- and sustainability-related performance objectives.

IFM partners are managed through a central governance team. The governance process includes dedicated resources to measure, monitor and evaluate IFM partners' EHS and sustainability performance, as well as adherence to Company requirements on an ongoing basis. IFM partners proactively follow a continuous improvement process whereby each year, in addition to our Company requirements, specific targets are set up and monitored at the governance level.

Motor vehicle safety

The purpose of the motor vehicle safety program is to promote a strong safety culture for our employees who operate vehicles during the conduct of Company business. The program is designed to reduce the number and severity of motor vehicle accidents and injuries along with a reduction in violations. Our global motor vehicle safety standard and adopted programs, such as predictive analytics assessments, allow us to develop employee-specific defensive driving action plans, and to promote safe driving skills and behaviors for our sales and marketing employees (who operate the majority of our business-use vehicles).

Emergency response

We prioritize the prevention of incidents through equipment and facility design, operational and maintenance procedures and employee training. However, in the event that unplanned incidents occur, we maintain emergency preparedness and response capabilities at our facilities. Emergency response programs help secure the safety and well-being of our employees and visitors, the protection of the environment and nearby communities, as well as protecting our physical assets. We also conduct pre-emergency planning for credible emergency scenarios such as process upsets, fires, spills, releases, severe weather and security-related incidents.

Site-specific emergency response procedures include incident reporting and management, personnel evacuation, and medical and incident response and control. We routinely conduct emergency response drills and train employees in job-specific and site-specific emergency response duties.

Many of our manufacturing plants have on-site, trained emergency response teams and mobile fire and rescue apparatus that can respond to fires, medical emergencies, technical rescues and spills/releases. Most of our emergency response teams interact directly with their local community-based emergency responders and, in some cases, assist off-site when requested.

Loss prevention

We proactively assess and manage the risks associated with fires and natural catastrophes (e.g., hurricanes, floods, windstorms and earthquakes) through our Loss Prevention Program. This program focuses on eliminating or reducing the impact of potential loss events through:

- Facility and process designs
- Inspection, prevention and maintenance procedures
- Fire suppression, detection and specialized protection systems
- Emergency response and business continuity programs

We engage globally-recognized, external loss prevention engineering service providers to routinely inspect and review designs and modifications of facilities. This posture assists us in maintaining a high standard of loss prevention that corresponds to the level of operational risk, monetary value and supply chain importance.

Industrial hygiene

The Industrial Hygiene (IH) program helps safeguard employee health throughout all stages of research and manufacturing. Our IH professionals identify chemical, physical and biological hazards, and assess exposures and control risks. Based on industry-leading best practices, we accomplish this through a hierarchy of controls. These include: Prevention; Substitution; Engineering; Administrative; and Personal Protective Equipment (PPE).

Our practice when designing new processes and facilities is to build safety into our designs organically by eliminating risks, substituting less hazardous processes or materials and installing effective engineering and operational controls. We also confirm the ongoing effectiveness of these controls after installation through a robust monitoring program.

We use a similar approach when addressing existing processes and facilities. Our priority is to eliminate hazardous materials and processes. When elimination is not possible, we use less hazardous substitutes and then evaluate potential engineering controls to mitigate the remaining risk. Where engineering controls are insufficient, or not feasible, we establish effective work practice controls, including those that may require selected types of PPE.

Biological safety

Our biological safety program aims to protect our employees, customers and communities by identifying, assessing and controlling biosafety and biosecurity risks. The biological safety program is designed to control biological exposure and support the research, development and manufacturing of vaccines and medicines for communicable and non-communicable diseases. Our program supports UN SDG 3, and aligns with the Global Health Security Agenda (GHSA), GHSA Biosafety and Biosecurity Action Package.

In 2022, our Company launched an updated engineering design standard that governs fit-for-purpose biological laboratory facility design to support our pipeline. This enabled our Company to design Biological Safety Level 2 (BSL-2) and BSL-3 laboratories for safe research and development of vaccines and therapeutics to combat endemic or emerging infectious

diseases like dengue, brucellosis and bovine botulism. In an effort to improve biosafety capabilities, our Biosafety Center of Excellence conducted a Biocontainment Engineering Workshop to increase the biosafety knowledge base of our engineers and biosafety professionals. The team also developed an engineering project-risk-assessment tool and integrated other biosafety tools into the existing Company global engineering project team roadmap to improve design decisions for new and renovated biological facilities.

We partner with our community of public and private sector biosafety professionals in order to help educate biorisk professionals globally, and develop guidelines that protect human and animal health and the environment. In 2022, we volunteered with American Biological Safety Association (ABSA) International to support ISO Technical Committee 212's Working Group 5 to develop the ISO 35001 Implementation Guide, and to draft a new ISO Biosafety Professional Competency Standard. We also supported the International Atomic Energy Agency (IAEA) Zodiac Project to improve biosafety in veterinary diagnostic laboratories globally, and presented on sustainable effluent decontamination at the International Veterinary Biosafety Workgroup.

In 2022, our biological safety professionals facilitated 293 biorisk assessments to support research and development and manufacturing activities across all Company divisions. By developing and leveraging an asset called Biorisk Assessment and Repository (BAR), we believe that we have set new biorisk management standards for the industry. BAR evaluates biosafety, bioethics and biosecurity risk associated with biological materials and establishes sustainable risk-control strategies that protect human health and the environment.

Ergonomics

We have implemented a program focused on the reduction of ergonomic risk in process, equipment design and the work environment. We identify ergonomic risk and exposure of tasks in all areas of the organization. Our ergonomic programs encourage employee participation in workplace assessments, risk identification and implementation of sustainable engineering controls. Where engineering controls are not feasible, administrative and behavioral controls are implemented including, but not limited to, job rotation, job hazard identification and body mechanics training. We also require an ergonomic design standards review for all new or renovated facilities and projects to maximize worker comfort and health and minimize ergonomics hazards and risk factors. In 2022, there was a 47 percent reduction in ergonomic lost time injuries (15 in 2021 vs 8 in 2022).

Our remote worker ergonomic assessment process and work-from-home furniture policy continues to prove successful in eliminating injuries and encouraging good working habits. This policy provides hybrid and remote workers with access to resources that guide proper home office workstation setup and identify appropriate furniture, equipment and solutions needed to maintain a healthy work-from-home environment. As a result of this program, there were no lost time, recordable or first aid ergonomic cases associated with work-from-home computer workstations in 2022.

GRI 403-3 Occupational health services

Occupational health principles apply to all employees and directly-supervised contingent workers. We promote compliance with both the letter and the spirit of applicable occupational health laws, Company policies and requirements. We prioritize continuous improvement and assess our improvements objectively through internal measurement and external benchmarking, incorporating best practices and participating in occupational health research where appropriate.

To meet the Company's objectives, we focus on seven key areas:

- Prevention and risk-minimization
- Quality assurance
- Global standards and communication
- Education and training
- Role of management
- Collaboration with EHS
- Global employee health governance

Prevention and risk minimization

The best way to maintain the occupational health of our employees is to reduce risk and prevent illnesses and injuries. Occupational Health Services collaborates closely with the EHS organization to identify and evaluate potential health risks to our employees in an effort to reduce adverse impacts. We take proactive steps to prevent occupational injury and illness through our Medical Surveillance program. This program evaluates new and existing workplace hazards and allows the teams to identify and implement procedures and clinical protocols to eliminate these hazards and prevent future occurrences. In the event of an occupational injury or illness, Occupational Health Services performs joint follow-up investigations with the EHS organization and conducts analyses to further refine our preventive efforts and reduce avoidable risks.

When employees are ill or injured at work or through personal circumstances, we support their recovery so they can return to work healthy to perform their jobs. When an employee experiences an occupational injury or illness, we promote and facilitate appropriate treatment and rehabilitation.

Quality assurance

Our Quality Assurance program ensures that both our occupational health staff and our external vendors for occupational health are compliant with our occupational health corporate policies, procedures and guidelines.

Global standards and communication

Our occupational health programs are not static, and we drive continuous improvement in their performance. We refine programs, policies and procedures based on evolving workplace hazards in the Company. We tie our occupational health performance to corporate and divisional goals and objectives, when applicable.

We adhere to and promote Company goals, programs, procedures and policies designed to provide a high level of respect for the health of our employees globally. We foster openness and respectful dialogue with our employees, anticipating and responding to concerns about our operations.

Education and training

Well-informed and trained employees provide the backbone for maintaining employee health in the workplace. We assist in providing appropriate education and training programs for our employees, so that they understand potential health hazards and necessary precautions related to their job duties. We also invest in our occupational health team's professional growth to foster business excellence in the conscientious execution of their responsibilities.

Role of management

Managers are responsible for implementing and adhering to both Company and local (country or regional) occupational health policies. They may also provide input into occupational health policy and strategies. Similarly, we expect division and business unit leaders to make certain that their teams provide input on occupational health strategies, policies and programs, as appropriate. Above all, leaders ensure that their organization provides adequate resources to support occupational health performance.

Collaboration with EHS

EHS provides input to Global Employee Occupational Health policy and strategies that promote the Company's occupational health program.

Activities include:

- Co-developing and reviewing occupational health programs, as applicable
- Assessing potential workplace health hazards (chemical, biological and physical)
- Preventing adverse health effects from hazards
- Identifying causal factors associated with injuries and illnesses
- Working with site health professionals to analyze and track the safety performance of the Company

Global employee health governance

Our executive vice president and chief human resources officer (EVP/chief HR officer) is the senior Company official who advises the Executive Team on occupational health strategies, policies and programs, and reports to the team on occupational health matters that impact employee health and human performance. Together, our EVP/chief HR officer, senior vice president of compensation and benefits, and vice president of global safety and the environment promote effective collaboration on occupational health and safety matters. Their mission is to achieve the Company's occupational goals by overseeing and sponsoring the program.

GRI 403-5 Worker training on occupational health and safety

EHS training is critical to build employee EHS competencies to improve compliance, reduce risks and drive continuous improvement. EHS professionals complete an assessment of the activities performed and identify relevant EHS topics in EHS training plans. These plans comply with internal and regulatory training requirements specific to each particular country and are reviewed periodically to ensure that they remain current.

EHS training program materials are available in both instructor-led and e-learning formats.

We have a global standard that defines the EHS training expectations for employees:

- Manager training covers specific management responsibilities with regard to EHS compliance
- EHS professional training is designed to expand technical expertise
- Employee training covers the specific information our employees need to perform their jobs, focusing on hazards they encounter on the job and any corresponding control measures

GRI 403-6 Promotion of worker health

Global Employee Health Services provides workers access to nonoccupational medical and health care services to address major non-work-related health risks. The team operates both globally and locally. Global Employee Health also provides occupational and health care services to employees such as:

- Medical clearances for job placement and evaluations to assess capability to perform a job task
- Regulatory assessments for potential health hazards and reproductive health hazards
- Consultations that prevent injury and illness, such as those related to travel and unique workplace hazards
- Treatment for employees with a work-related injury or illness

On-site Global Employee Health personnel support the Company's people through employee health services clinics located on many sites. All facilities provide occupational and preventive health services that work to keep employees healthy, on the job and functioning at optimal capacity. Global Employee Health supports many of the programs, including biometric screenings for employee personal health assessments, and vaccinations against flu and other viruses, including COVID-19.

Our most vital occupational health services relate to medical advice and consultation, medical evaluations, medical surveillance, care of occupational injuries and illnesses, identification and reporting of new potential hazards and adverse health effects, emergency medical response and—most importantly—prevention.

To develop and maintain awareness of all workplace health hazards, Global Employee Health Services maintains a close functional working relationship with site management, safety and industrial hygiene professionals. Global Employee Health Services are also responsible for maintaining employee health records in accordance with local regulatory requirements. Employee health is a Company priority, so we strive to continuously improve our programs globally and at each site. These efforts include communication of our global policies, procedures and protocols; administering regulatory and compliance audits; and providing critical oversight for our occupational health programs.

GRI 403-9 Work-related injuries

GRI 403-10 Work-related ill health

In 2022, our Lost Time Incident rate (LTIR) was 0.06, a 22 percent reduction from 2021. Our recordable incident rate (RIR) was 0.26, a 31 percent increase from 2021. There was one fatality in 2022 due to a motor vehicle accident.

In 2022, our top three types of recordable injuries were:

- 30% related to struck/caught
- 20% related to slips, trips and falls
- 18% related to ergonomics

We focus on the early identification of hazards through reporting and analysis, eliminating high-risk tasks, improving engineering controls, and performing coaching and training to our workforce to aid in identification and elimination of EHS risks.

In 2022, we are still reporting fewer miles driven than in pre-pandemic year 2019. While in 2021 there was an increase in collisions per million miles (CPMM), in 2022 there was a 25 percent decrease from 2021. Online defensive driving training for 2022 focused on common at-risk behaviors (e.g. distractions, speeding, safe following distances). Our motor vehicle safety program uses a risk-based approach for assigning online defensive driving training, where the lowest-risk drivers complete training annually and high-risk drivers complete training quarterly.

Construction

In 2022, Global Engineering Solutions (GES) received two safety excellence awards for First Place Best Safety Durham DS4 Project, and Honorable Mention Best Safety Durham Flash Project from the Construction Users Roundtable (CURT). CURT is a global organization that provides an international forum for the exchange of information and expertise to improve safety, productivity and competitive advantage for the construction industry.

In 2022, COVID-19 did not affect our construction safety performance. We had 10.5 million construction hours globally and achieved zero injuries on most of our capital construction projects. The construction RIR result was 0.50, and this was below the GES target KPI of 0.55. The construction DART rate was 0.21, and this was below the GES target KPI of 0.23. Lastly, construction projects had over 153,000 Tap Ins (safety observations) being reported in 2022.

Non-employees—Integrated Facility Management (IFM)

In 2022, our IFM partners had 3,646,747 work hours and 2,750,778 permanent contractor work hours. The IFM RIR result was 0.59 and the LTIR was 0.28.

Global safety performance (employees)[1]	2018	2019	2020	2021	**2022**
Workplace safety					
Recordable incident rate (RIR)	0.30	0.30	0.16	0.20	**0.26**
RIR percentage change	-9%	0%	-47%	25%	**31%**
Lost time incident rate (LTIR)	0.10	0.11	0.05	0.08	**0.06**
Fatalities[2]	2	0	0	0	**1**
Motor vehicle safety					
Collisions per million miles (CPMM)[3]	6.93	7.01	5.07	6.11	**4.58**

Note: Injury rates are subject to change over time as new cases are added, and case classifications change in accordance with our own requirements and applicable regulatory requirements.

[1] LTIR/RIR: Calculated per OSHA methodology.

[2] In 2018, one fatality was transportation-related, one high-risk work related. In 2022, the fatality was transportation-related.

[3] CPMM: Reflects both personal and business use of Company-owned or -leased vehicles.

Global safety performance (non-employees)	2018	2019	2020	2021	**2022**
Capital projects construction safety[1,2]					
RIR	0.73	0.42	0.60	0.28	**0.50**
DART[3]	0.28	0.15	0.24	0.11	**0.21**
Fatalities	0	0	0	0	**0**
Facility management contractor safety					
RIR	0.71	0.55	0.35	0.6	**0.59**
LTIR	0.47	0.42	0.26	0.27	**0.28**
Fatalities	0	0	0	0	**0**

Note: Injury rates are subject to change over time as new cases are added, and case classifications change in accordance with our own requirements and applicable regulatory requirements.

[1] LTIR/RIR: Calculated per OSHA methodology.

[2] Primarily reflects capital projects over $100,000 managed by our global engineering group.

[3] DART: days away, reassigned or transferred, calculated per OSHA 300 methodology.

	Lost Time		**Recordable**	
Injuries by business area (2022)	**Cases**	**% of total[1]**	**Cases**	**% of total[1]**
Manufacturing (MMD)	**17**	**33%**	**83**	**52%**
Animal Health including Animal Health Intelligence	**16**	**31%**	**22**	**14%**
Human Health (HH)	**8**	**16%**	**29**	**18%**
Research (MRL)	**6**	**12%**	**19**	**12%**
Facility Management	**3**	**6%**	**2**	**1%**
Global Support Functions (Legal, HR, IT, S&E et. al.)	**1**	**2%**	**4**	**3%**
Total	**51**	**100%**	**159**	**100%**

[1] May not total 100 percent due to rounding.

Injuries by causal factors (2022)	Lost Time		Recordable	
	Cases	% of total[1]	Cases	% of total[1]
Struck by/caught in	17	33%	47	30%
Slips/trips/falls	15	29%	32	20%
Ergonomic	8	16%	29	18%
Motor vehicle	3	6%	21	13%
Physical/environmental exposure	3	6%	8	5%
Chemical exposure	2	4%	5	3%
Other	2	4%	6	4%
Non-ergonomic	1	2%	6	4%
Biological exposure	0	0%	5	3%
Total	51	100%	159	100%

[1] May not total 100 percent due to rounding.

Training and education

GRI 404 Management approach

Our Global Learning and Development (GL&D) organization's primary focus is to enable a diverse and accessible environment in which all can learn and thrive. We accomplish this by collaborating with business partners across the Company to understand critical business challenges and to align and prioritize learning solutions to support addressing those challenges. We then design, develop and execute innovative learning experiences to strengthen our workforce and drive business impact.

GL&D ensures that all learning opportunities are developed to allow for diversity of thought and an enriched accessible learning experience. We identify learning needs of our global diverse employee population through extensive discovery of learner personas, requirements and environments. Our strategy allows us to anticipate, identify, prioritize, design, develop and implement learning solutions that provide growth and development across five moments of an employee's career.

These moments include:

- In-role growth
- Career acceleration
- Leader development
- Company and culture
- Mandatory training

GL&D understands employee skills and capabilities must support our Company's aspiration and purpose. As a result, we continuously evaluate our organizational capability needs and retool the learning culture and strategy to support our employees.

GRI 404-1 Average hours of employee training

Training and education[1]	2018	2019	2020	2021	**2022**
Total course completions for all learners (in millions)	4.4	5.3	7.2	6.3	**5.1**
Hours of training for all learners (in millions)[2]	2.2	2.7	3.6	3.2	**2.5**
Average course completions per learner	43	55	69	51	**42**

[1] "All learners" is defined as all active regular and part-time employees, as well as applicable contingent workers.

[2] Based on average of 30 minutes per course.

GRI 404-2 **Programs for upgrading employee skills and transition assistance programs**

Our current talent management practices provide performance management, leadership development, talent assessments, and succession planning. Global Talent Management designs and implements the enterprise-wide talent management and leadership strategy aligned to business strategy to retain and attract talent, support and develop a diverse workforce and create a strong succession pipeline. Talent practices are supported by a human capital management system, which enables managers and employees to keep track of priorities, development plans, performance ratings, career aspirations, job experiences, skills, language proficiency, certifications and education.

Managers and employees are encouraged to meet throughout the year to discuss progress and accomplishments against their priorities and actions to enable development. Emphasis is placed on creating a culture of ongoing coaching and future-focused feedback. At the end of the year, colleagues summarize their achievements and assess the impact they have had on the organization, their team and their own development.

Managers conduct annual performance reviews of employees at all levels (except those subject to collective bargaining agreements) to guide individual decisions relating to development, compensation and rewards. Feedback on employee performance includes how well employees demonstrate our aspirational culture. We seek to emphasize not just what an employee achieves, but also how they achieve. Managers gather feedback about their employees and write performance reviews providing holistic feedback on employees' accomplishments.

Transition assistance

Transition assistance programs may be provided to support employees who are exited as part of a workforce restructuring. Such benefits are subject to local plans, laws and country guidelines, but may include:

- Severance benefits, which may include severance pay based on employee level and service
- Outplacement job transition assistance
- Continued health and wellness benefits for a defined period of time

Talent development focus

We advance the learning and development of our global talent at all levels of the organization to support the advancement of our future leader pipeline along with the realization of our diversity and inclusion strategy.

Leadership development offerings

Business Leadership Program

This is a global, nomination-based program on advanced concepts in business and financial management and cross-functional leadership. Participants experience the language of finance through simulated experiences focused on developing and executing a global strategy through marketing, sales, manufacturing, supply chain and R&D across three different regions (North America, Europe and China) and managing the Company's balance sheet, income statement and cash flow.

Leadership Pathway

This program focuses on the director level. The purpose of this nomination-based offering is to develop individuals to be change makers who engender inclusion and trust, inspire experimentation, feedback and learning, and achieve aspirational business outcomes for today and tomorrow.

Rise

This program is an exclusive experiential program leveraging some of the best-in-class institutions from around the world and designed for our executive directors and associate vice presidents. Rise increases our talent pipeline and succession planning for vital roles with a focus on critical leadership capabilities.

General Management Acceleration Program

This program is an application-based, early-talent-development program sponsored by the Office of the CEO. The objective is to create a robust global acceleration program for internal and external talent, providing the right experiences and learning opportunities to help meet our future business demand. This two-year, cross-divisional and global rotational program enables participants to increase their business and financial acumen and develop critical strategic thinking abilities through targeted learning opportunities and networking with key leaders at our Company.

First Line Essentials

This program develops the core, common and critical capabilities needed by all people managers at our Company, regardless of country, region or division. It is designed to enhance the foundational skills and knowledge base that all people managers will need to effectively perform their responsibilities.

Merck Executive Transition Accelerator

This coaching program helps senior leaders successfully transition into new roles by defining business and professional priorities—in line with our purpose, ways of working and values—and supported by Deloitte, industry, business and leadership experts.

Affinity-based leadership development offerings

Women's Leadership Program

This global program is nomination-based and focused on enhancing women's capabilities to recognize and seize strategic career opportunities by developing critical capabilities and confidence while contributing to the core objectives of our Company. Areas of focus include: navigating the organization while maintaining an authentic leadership style; increasing cultural competence; influencing and storytelling; and advancing the ability to recognize and manage gender differences and subtle "micro-inequities" by leading through courageous action.

Diverse Leader Program (U.S. only)

This program is an interactive leadership journey designed to create a safe place where participants can hone their leadership skills while exploring what it means to be a person of color in a leadership role within the Company. This nomination-based program is open to mid-level managers of color in the U.S.

Merck Líderes Institute

This program is a six-month experience designed to accelerate the growth and development of Hispanic/Latino leaders. The program equips participants to drive their own careers and create personal and professional success by providing structured learning and consistent support from managers, sponsors, coaches and peers. Participants focus on exploring their identity and culture, their unique personal and workplace experiences, the obstacles to their career and personal development, and the strategies they can use to increase their contribution and personal growth.

Advancing Latino Leadership

This research-based virtual program offers a Latino-specific lens on leadership opportunities and challenges in the corporate sector. This program includes tailored modules designed to help participants develop self-awareness, self-empowerment and skill development. This program also includes follow-up discussions with small group work, ongoing meetings with participants' managers and a plan for extended learning beyond the end of the program. Designed around peer-to-peer interactions, the program provides strategies and tips for how, when and with whom to leverage networks in support of one's professional advancement.

Diverse Executive Coaching Circles

This program is designed for executive directors and associate vice presidents from underrepresented ethnic groups (UEGs). Participants gain valuable insights in various areas of career development, relationship management, strategic thinking and decision-making through the benefits of executive coaching. The intent is to support leaders as they ascend in the Company by connecting these leaders with advocates and sponsors to further define their career action plan.

FOCUS

This program explores the development of leadership capabilities with our mid-level Black professionals. FOCUS hones in on leadership and brand development, and building a peer network with whom employees can exchange perspectives, challenges and insights. Participants create a values-based leadership philosophy while exploring Black executive themes related to identity and success. Emphasis is placed on giving and receiving feedback, influence and peer coaching strategies that support proficiency in management and leadership competencies.

BOOST

The BOOST program is an application-based LGBTQ+ leadership program. The first cohort was run in December 2022 in Greensboro, NC. This two-month program is designed to provide a rigorous experience focused on building capabilities as well as enabling participants to apply their unique perspective and life experiences to their career. The program also provides aspiring leaders with skills to share their experiences to empower themselves and others while making our Company a premier place to work for those who identify as LGBTQ+.

Diverse Leader Acceleration Program

This program was designed to support the readiness and career growth of Black and Hispanic individual contributors and mid-level leaders to achieve positions at higher levels. This program develops leadership capabilities and improves business acumen to manage the diversity-related challenges in participants' development. There is an emphasis on empowering strong reporting relationships through manager education and reporting-pairs dialogues. This program seeks to create a community of support through cohort interaction and peer coaching. Participants also leverage the influence of leaders serving as mentors and sponsors.

Promotion metrics[1]	2019	2020	2021	**2022**
Men	47%	48%	47%	**45%**
Women	53%	52%	53%	**54%**

[1] Breakdown by gender of all regular employees promoted during the fiscal year. "Regular employees" are defined as employees who do not have a predetermined end date to employment. To align with U.S. government reporting requirements, the data for gender diversity in this report uses the terms men and women. We recognize and embrace the gender spectrum and diversity in our employees, and have internally established voluntary Self-ID options for employees to self-report on their gender identity. The totals in this report may not equal 100 percent due to rounding or employees who have identified as non-binary or unknown gender.

GRI 404-3 Percentage of employees receiving regular performance reviews

Performance reviews	2018	2019	2020	2021	**2022**
All employees[1]	94%	94%	95%	95%	**96%**

[1] "All employees" are defined as all active full- and part-time workers only.

Diversity and equal opportunity

GRI 405 **Management approach**

At our Company, we recognize the importance of embedding a culture of inclusion and belonging at every level of the organization. We look to have the diversity of our employees mirror the external world. This enables us to understand the needs of customers, health care providers and patients we serve, including those with different abilities. Ultimately, because of our diversity, equity and inclusion efforts, we strive to take responsibility and operate our business in a way that ensures fairness and equality of opportunity for all employees.

With our commitment to employee health paramount, we continue to focus on creating and implementing effective strategies and programs to protect employees, while furthering a safe and productive culture that embraces inclusion as a competitive advantage. We appreciate our employees for their determination and resilience, and their inventiveness, dedication and compassion deserve special note.

Global Diversity & Inclusion (GD&I) objectives

Our GD&I strategy is grounded in our commitment to a more globally diverse and more inclusive workforce for our employees. We are creating an environment of belonging, engagement, equity and empowerment so that we can ensure patients experience ultimate health outcomes. The GD&I strategy takes a holistic approach where everyone can contribute to our mission.

To achieve these objectives, we focus our efforts on the following:

- Our People: Strengthen the foundational elements of diversity
- Our Culture: Ensure accountability to drive an inclusive culture
- Our Business: Continue to leverage diversity and inclusion to ensure business value
- Our World: Transform the environment, culture and business landscape

Our enterprise-wide plan demonstrates our commitment to diversity and inclusion as a business priority. Leading to enhanced collaboration, innovation and agility, the plan aligns our business objectives for diversity and inclusion to drive long-term, sustainable business performance. Our objectives for diversity and equal opportunity also support the UN Sustainable Development Goals (SDGs) to advance gender equality, provide fulfilling work and economic growth, reduce inequalities within and among countries, and strengthen our global partnerships.

Our GD&I strategic framework focuses on the following priorities:

- Continue to build the diversity and inclusion capabilities of our global workforce
- Ensure accountability at all levels of the organization
- Integrate diversity and inclusion into our business practices to drive performance
- Work to influence the environment, culture and business landscape to help achieve a more inclusive and sustainable world

GD&I Ambassador teams

Our GD&I Center of Excellence (CoE) provides comprehensive and practical guidance and support for diversity and inclusion across all business practices and systems. The five GD&I Ambassador teams work to integrate diversity and inclusion into our business and people strategies.

The Global Disability Inclusion Strategy Council

Representatives from across the business comprise The Global Disability Inclusion Strategy Council that works to create and support a disability-inclusive culture. This Council offers guidance to honor the vital contributions of a disability-confident workforce, including universal design, digital accessibility, hiring of people with disabilities, communication and supplier diversity. It appreciates how full inclusion of people with disabilities increases creativity, innovation and productivity for employees, customers, external partners and suppliers.

The GD&I Extended Human Resources Leadership Team

This team of human resource colleagues from across the enterprise supports the global organization by facilitating the successful adoption and integration of diversity and inclusion capabilities into all practices, programs, policies and systems. A key outcome is to enable a diverse, equitable and inclusive culture—one that attracts, engages, develops, motivates and retains talent globally.

Employee Business Resource Group (EBRG) Executive Leadership Council

Supported in a myriad of ways by the EBRG Executive Leadership Council, Merck's 10 EBRGs represent almost 20,000 members worldwide. Embodying our commitment to different constituencies and enhancing communication and belonging, the EBRGs strengthen and diversify the global leadership pipeline, while providing culturally relevant insights and sensitivities that help drive our success.

Global Diversity, Equity & Inclusion (GDE&I) Business Consortium

A diverse group of internal stakeholders representing major groups within Merck comprise this Consortium. Drawn together to improve both Company and individual performance, the Consortium integrates diversity, equity and inclusion principles and strategies into our business processes and objectives. This creates a competitive business advantage and we believe drives greater shareholder value. Derived from key business functions, Consortium members develop holistic and inclusive approaches to eliminate barriers and obstacles many patients and customers encounter in their pursuit of optimal health outcomes.

DE&I Divisional/Regional Council Steering Committee

Chairpersons of the senior level DE&I Councils across the divisions and regions comprise this committee, which works to ensure alignment with our enterprise-wide DE&I strategy and initiatives as well as collaboration and alignment across councils.

Governance and commitments

Diversity and inclusion are a strategic business lever for performance and are endorsed at the highest levels of the organization. Diversity and inclusion are so important to our Company that they serve as a key dimension to our sustainability goals and our Ways of Working. Additionally, our Board of Directors has a clearly stated Diversity Policy that recognizes that maintaining a truly diverse membership with regards to educational and professional background, gender, race, age, sexual orientation, ethnic and national background, and other differentiating personal characteristics promotes inclusiveness. This enhances the Board's deliberations and contributes to the Board's overall effectiveness to better represent the long-term interests of the Company and its shareholders.

Our CEO further reinforces our commitment to GD&I. Viewing GD&I as a strategic business imperative, he advocates for diversity and inclusion through the following commitments:

- Approving intentional efforts to ensure equality of opportunity
- Driving accountability through meetings with his Executive Team of direct reports, our senior leaders, and engaging employees in Company-wide events to review key strategic initiatives centered on GD&I
- Conferring with our Chief Human Resources Officer and Chief Diversity Officer on innovation opportunities and business solutions

Pay equity

We have had a longstanding commitment to fair and equitable pay for all employees doing similar work. This commitment is consistent with our core values of integrity, fairness and treating all people with dignity and respect. Having the right culture, systems and practices for talent recruitment and development are critical in driving our ability to compete in global markets where talent is increasingly scarce and diverse. Diversity, equity and inclusion are among our ethical and strategic imperatives.

Pay equity is a critical principle at our Company. We maintain a Pay Equity Council that is deeply engaged in our pay equity initiatives. The Pay Equity Council is jointly led by our vice president of Diversity and Inclusion and senior vice president of Global Rewards & HR Operations. Among its members are leaders within our GD&I, Compensation and Benefits, Talent Acquisition and Employment Legal organizations.

Pay equity is a topic that is rightly receiving a great deal of attention. While many other organizations have only recently begun to explore how to pay their employees equitably, providing fair and equitable pay has been one of the pillars of our compensation philosophy for many years.

Our efforts toward pay equity include:

- Establishing clear and transparent pay practices and policies to ensure that we are paying our employees equitably across all genders, races and ethnicities
- Basing compensation on job-related factors such as the nature of the job, work location, and employees' relative skills and work experience
- Training our people managers on our diversity, equity and inclusion policies to ensure that decisions regarding employees, including those related to compensation, are based on legitimate job-related criteria and not personal characteristics such as gender, race or ethnicity
- Affirming our commitment to fair and equitable pay by encouraging dialogue between people managers and employees to address pay-related questions and concerns

In 2022, as part of our commitment to increase transparency and visibility into our pay equity efforts, we conducted several education sessions, equipped our leaders with pay equity resources and engaged with employees around the globe.

With the support of external experts and legal partners, we have continued to conduct annual pay equity studies in the U.S. and abroad. The pay equity studies take into account job-related factors as described above, and allow us to identify whether any adjustments to compensation would be sensible to ensure that we continue to pay our employees equitably. Where appropriate, based on the determinations of our pay equity studies, we make base salary adjustments to maintain pay equity across gender, race and ethnicity.

In 2022, our pay equity study achieved nearly worldwide coverage, encompassing approximately 90 percent of our global employee population, or nearly 60,000 employees. In the U.S., our study showed that we have achieved greater than 99 percent pay equity for female and male employees, and that we have achieved greater than 99 percent pay equity for non-white (including Black, Hispanic and Asian employees) and white employees. Globally, targeted base-pay adjustments were rarely necessary. We remain committed to ensuring that pay equity is maintained for all employees.

Our continuing focus on pay equity furthers our goal of being the employer of choice for workers of diverse backgrounds, and it supports our efforts to attract and retain the best talent and reward performance consistent with our Leadership Standards. These are clear business imperatives for our Company, and we remain firmly committed to them.

*See our **Diversity & Equity page** on our corporate website for more information on our commitments to pay equity and gender equality.*

Leadership development

As part of our strategy to drive business results and advance our purpose, we remain committed to leadership development to support equity for our employees across all dimensions of diversity, including those you can see and those you cannot. We continue to develop and offer leadership programs to promote equality and publicly report on our progress to achieve gender equality.

*See GRI 404 on **page 130** for more information on our leadership programs to promote equality.*

Building a more inclusive workplace and a culture of belonging

A major priority at our Company is to ensure our employees feel a sense of belonging. We promote programs for people managers that support inclusion and that our leaders use to share their perspectives. Our Pulse surveys allow us to measure our employees' perceptions on inclusion and other critical workforce issues. The Pulse surveys are just one of the avenues we use to directly engage employees and remain accountable to their needs. They also allow us to be responsive to employee feedback on workforce issues and to integrate their input into decision-making. We are proud of the fact that across an average of our 2022 surveys, 81 percent of our employees stated that they feel a sense of belonging at our Company. Also, 87 percent of our employees felt their people leader actively supported diversity and inclusion in their work group.

Related to our focus on inclusion is our commitment to a decade-long practice of understanding, measuring and acting to sustain high employee engagement. We maintain a practice of listening deeply to our employees. This is critical to our own decision-making, and influences leaders across the organization. Many of our EBRGs offer listening forums to colleagues to foster authentic and courageous conversations in an emotionally safe environment.

Going forward, we are publicly committed to maintaining or exceeding our current employee engagement index score through 2025, as measured through Pulse surveys, which are conducted multiple times a year.

Employee retention, recognition and people leader capability

The past year reflects our ability to continually attract and retain highly qualified people, strengthen our competitiveness and mitigate employee turnover. We have held ourselves accountable to actions designed to provide equality of opportunity and have increased our diverse representation. Last year, we also shared our goals for improving diverse representation in senior management, including women and people of Black/African American and Latino/Hispanic descent.

We aim to create more opportunities for underrepresented groups by evaluating our hiring processes to determine where we can remove barriers. This includes training our people managers on strategies to mitigate unconscious bias in the candidate selection, hiring and recognition process.

In addition to our enterprise-wide, unconscious-bias education (first introduced to the organization in 2014), we have developed a Learning Journey framework focused on critical capabilities, behavioral expectations and targeted learning assets to continue to drive our strategic focus and investment in building a diverse, equitable and inclusive work environment for all our employees.

Allyship

In 2022, we continued to evolve our global allyship effort, with senior sponsorship from the chief diversity officer and the chief of staff to the chairman and CEO. This included the launch of the Ally Resource Center, an internal library of over 125 resources featuring active allyship and content from each of the 10 EBRGs. Our inaugural allyship webcast drew nearly 800 attendees from over 40 countries.

Gender-sensitive recruitment and retention

We recognize that talent acquisition is pivotal in sourcing, attracting diverse talent and supporting hiring people managers, and in eliminating unconscious bias in the selection process.

Talent Acquisition uses a cutting-edge technology platform to scan the language used in job postings and to highlight suggested language changes that ensure our job descriptions are gender neutral and inclusive. This is in addition to a careful review of job postings to ensure there is no biased language.

Opportunities for people with disabilities

We encourage a culture of transparency, and align with external organizations that share our vision for full disability inclusion to foster a culture of inclusion and belonging that supports people with disabilities.

The Valuable 500

In 2022, we became one of 75 companies to participate in a new mentoring program, Generation Valuable. This program pairs an employee with a disability with an executive for a mentorship.

Disability inclusion in our supply chain

In 2022, we joined the Disability:IN Procure Access Initiative, a business-to-business initiative facilitated by Disability:IN and their Digital Accessibility Program.

Digital accessibility

In 2021, we implemented a global digital accessibility policy, seeking to ensure equal access across the Company digital landscape—for the internal workforce as well as external patients and consumers and, in 2022, implemented the 5-year digital accessibility roadmap.

Universal design

Designing for accessibility, usability and inclusion in the built environment goes beyond the Americans with Disabilities Act. We created a universal design standard for our facilities around the globe, in order to make a difference in the lives of our employees and guests. This approach is especially critical for a workplace centered around science and invention, and our mission to save and improve lives.

A culture of employee well-being

To succeed, we prioritize the health, well-being and safety of our employees. We are committed to continuing the special emphasis we placed on our employees' well-being during the pandemic, including reinforcing a collaborative culture and ways of working that drive long-term success.

*Please see our **Well-being Report** on our corporate website to see how we support employee well-being in the U.S. and around the globe.*

Expanding our pipeline of diverse talent

In the past year, we have continued outreach to Historically Black Colleges and Universities (HBCUs) by partnering with several organizations, including the College Diversity Network and the National Urban League, to focus on building deep partnerships with colleges, students, faculty and alumni of HBCUs. We also focus on barriers that may limit the employee candidate pool, including the geographic location of open positions and job prerequisites of prior pharmaceutical experience. To broaden our access to diverse talent, we post some positions with an option to work virtually, offer relocation services and carefully consider whether prior pharmaceutical experience is required.

We leverage key partnerships such as:

- Ascend
- Best Buddies
- Disability: IN
- Executive Leadership Council (ELC)
- INROADS College Links
- Lesbians Who Tech
- National Action Council for Minorities in Engineering (NACME)
- National Urban League
- Out & Equal
- Women of Color in Pharma (WOCIP)

Skills-First

Skills-First is a paradigm shift in how our Company attracts, develops and advances talent with an increased focus on skills instead of a four-year degree or credentials for appropriate roles. This approach creates equitable access to meaningful career opportunities for a broader pool of diverse candidates. It also helps to fuel innovation within our Company by bringing in new ideas and perspectives. In 2022 alone, our Company posted 900 roles not requiring a four-year college degree. Key partnerships helping to accelerate our Skills-First transformation include OneTen and Year Up, among others.

OneTen Initiative

OneTen is a coalition of CEOs and leading companies helping to close the opportunity gap for Black talent in America and to ignite potential for generations to come. Under the leadership of our CEO and Chairman Rob Davis, we have made progress towards our commitment to OneTen's mission of hiring, promoting, and advancing one million Black individuals who do not have four-year college degrees into family-sustaining careers over 10 years. In 2022, we posted approximately 900 job roles without a bachelor's degree requirement. We also launched our first Skills-First apprenticeship program with apprentices in digital marketing, data analytics, and information technology. Consistent with our commitment to diversity, equity and inclusion, our Company is determined to be a role model within OneTen and adopt a Skills-First talent approach within appropriate business areas.

*To learn more, please visit the **story** on our corporate website.*

Year Up

We are among the 250 corporations partnering with the innovative organization Year Up. This nonprofit seeks to ensure equitable access to economic opportunity, education and justice for all young adults. They accomplish this by closing the job market opportunity gap for economically-disadvantaged youth by offering six months each of intensive training and corporate internship in either information technology, financial operations, sales and customer support, business operations, or software development and support at major corporations. In 2022, the Company provided approximately 90 student internships to candidates sourced by Year Up, with plans for continued growth and expansion of this partnership in the future.

Minorities in Agriculture, Natural Resources and Related Sciences (MANRRS)

Our Animal Health Division partners with MANRRS to support the identification of diverse talent from the agricultural sciences and related fields and to expose them to the variety of career paths available in the animal health industry in addition to the veterinary field. The growing areas of connected technology and other smart data products and services for animal health and well-being—where Merck Animal Health is a global leader—are examples of exciting career paths that are available to today's talent.

Merck Animal Health Veterinary Scholarship Program

Our scholarship program offers grants to all outstanding veterinary students to further their education as they pursue careers in animal medicine. In 2022, over $1.2 million in scholarships were awarded to 311 students from 70 different countries.

NextGen Network global reverse mentoring program

We are seeing the impact and value of having multiple generations in the workplace. In 2018, the NextGen Network created a global reverse mentoring program called GEN2GEN. The success of the program is evidenced by program participation across 58 countries. GEN2GEN empowers generational change uniquely by offering co-mentoring partnerships where our younger generations advise our more-tenured generations.

Extending our GD&I commitment beyond our employees

Our work in equity does not stop at the doors of our Company. It continues outside our employee base and into communities all over the world, including communities that have historically been underserved or underfunded. We engage with partners to advance the efforts of our global diversity and inclusion commitments and to support underserved communities all over the globe.

CEO Action for Diversity & Inclusion

Five years ago, we signed a pledge to join the CEO Action for Diversity & Inclusion. This commitment extends beyond our employees to supporting businesses around the world by making a difference in global economic inclusion. We continue to work with this vital organization to share best practices and identify new opportunities to foster diversity, equity and inclusion.

Economic inclusion and supplier diversity

In 2022, 14 percent of our total procurement spend went to minority-, women-, veteran-, LGBTQ+- and disability-owned business enterprises.

It is important to provide definitions and context for diverse suppliers. Diverse suppliers are businesses that are 51 percent managed, controlled and operated by a person or persons of the following categories:

- Minority: Black, Hispanic, Asian and Native American
- Women
- LGBTQ+
- Veteran, service-disabled veteran
- Disability-owned business

*For more information on our supplier diversity program, please see GRI 204 on **page 77**.*

*Learn more about our commitment to **diversity in clinical trials** on our corporate website.*

GRI 405-1 Diversity of Governance bodies and employees

Gender and ethnicity	2018	2019	2020	2021	**2022**
Women in the workforce	49%	49%	50%	50%	**50%**
Women on the Board[1]	33%	46%	46%	43%	**46%**
Women in executive roles[2]	20%	20%	33%	33%	**23%**
Women on the senior management team[3]	27%	30%	31%	36%	**34%**
Women in management roles[4]	41%	42%	42%	44%	**45%**
Members of underrepresented ethnic groups on the Board[1]	17%	23%	31%	21%	**15%**
Members of underrepresented ethnic groups in executive roles (U.S.)[2]	30%	40%	25%	42%	**39%**
Members of underrepresented ethnic groups on the senior management team (U.S.)[3]	19%	21%	20%	25%	**28%**
Members of underrepresented ethnic groups in the workforce (U.S.)	28%	29%	30%	32%	**34%**
Members of underrepresented ethnic groups in management roles (U.S.)[4]	22%	23%	25%	26%	**27%**
New hires that were female	51%	51%	50%	53%	**52%**
Promotions that were female	52%	53%	52%	53%	**54%**
New hires that were members of underrepresented ethnic groups (U.S.)	36%	35%	40%	46%	**47%**
Promotions that were members of underrepresented ethnic groups (U.S.)	28%	30%	32%	34%	**37%**

Note: We have publicly disclosed EEO-1 information since 1999. Our 2022 data is available on the **Sustainability Resources page** of our corporate website. To align with U.S. government reporting requirements, the data for gender diversity in this report uses the terms men and women. We recognize and embrace the gender spectrum and diversity in our employees, and have internally established voluntary Self-ID options for employees to self-report on their gender identity.

[1] Data for Board members are derived from our proxy statements filed the following year.

[2] "Executive" is defined as the Company's executive team listed on our corporate website.

[3] "Senior management team" is defined as vice presidents and above who are not on the executive team.

[4] "Management role" is defined as all other managers with at least one direct report.

Underrepresented ethnic group (UEG) representation, by ethnicity (U.S.) (2022)	Total	Black/African American	Latino/ Hispanic	Asian	All other
Board[1]	15%	15%	0%	0%	0%
Executives[2]	39%	23%	0%	15%	0%
Senior management[3]	28%	6%	8%	13%	0%
All managers[4]	27%	5%	6%	14%	2%
All employees	34%	9%	6%	17%	2%
New hires	47%	12%	9%	23%	3%
Promotions	37%	9%	6%	19%	3%

Note: We have publicly disclosed EEO-1 information since 1999. Our 2022 data is available on the **Sustainability Resources page** of our corporate website. To align with U.S. government reporting requirements, the data for gender diversity in this report uses the terms men and women. We recognize and embrace the gender spectrum and diversity in our employees, and have internally established voluntary Self-ID options for employees to self-report on their gender identity.

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[4] "Management role" is defined as all other managers with at least one direct report.

Human rights assessment

GRI 412 **Management approach**

As stated in our **Human Rights Public Policy Statement**, we strive to avoid causing or contributing to adverse human rights impacts through our own activities and seek to prevent or mitigate adverse impacts that are directly linked to our operations and products.

We have put in place appropriate policies, processes, training and monitoring systems to address key human rights issues. Support and respect for the protection of human rights is embedded and reflected in our operational policies and procedures, as summarized in the table below.

	Policies / standards											Governance
Human rights issue	Human Rights Public Policy	Human Resources Policy	Labor & Human Rights Policy	Health & Safety Policy	Procurement & Supplier Relations Policy	Business Partner Code of Conduct	Information Management & Protection Policy	Privacy & Data Protection Policy	Reporting & Responding to Misconduct Policy	Prevention of Violence in Workplace Standard	Possession of Firearms Standard	**Lead function**
Health and safety	×	×	×	×								Global Safety & Environment
Forced labor and human trafficking	×		×									Human Resources
Discrimination and harassment	×	×	×									Human Resources
Child labor	×		×									Human Resources
Freedom of association	×		×									Human Resources
Working hours	×		×									Human Resources
Privacy	×						×	×				Global Privacy Office
Security		×								×	×	Global Security
Access to grievance mechanisms	×	×	×	×	×	×	×		×	×	×	Office of Ethics
Suppliers and business partners			×		×	×						Global Supplier Management

Remedy

As part of our efforts to protect against business-related human rights abuses, we have established a grievance mechanism that allows employees and workers to report concerns in a confidential manner without fear of retaliation. This grievance mechanism, and associated reporting channels, are fundamental to ensuring that employees and workers have access to an effective remedy whenever human rights impacts occur.

*For more information on mechanisms for raising concerns, please see GRI 2-26 on **pages 44-45**.*

We expect our suppliers to encourage all workers to report concerns or suspected illegal activities without threat of reprisal, intimidation or harassment, and to investigate and take corrective action if needed. In addition, we expect our suppliers to provide workers with information on how to confidentially report concerns and ensure that reporting workers are protected from retaliation.

Governance

Our oversight and monitoring of business-related human rights risks is supported by relevant internal functions and business units, including Human Resources; Global Safety & Environment; Global Supplier Management; Supply Chain Management; Ethics & Compliance; Global Security; Global Privacy Office, Information Risk Management; Enterprise Risk Management; and the Office of Social Business Innovation.

GRI 412-1 Operations that have been subjected to human rights reviews

We perform supplier labor and human rights audits (using independent third-party service providers) at select direct material suppliers' facilities located in countries that are known to present an increased risk of human rights abuses.

*For more information, please see GRI 414 on **page 145**.*

GRI 412-2 Employee training on human rights policies and procedures

Business-related human rights issues are embedded within our internal training programs to help maintain employee awareness and understanding of our Company's expectations. Examples of human-rights-related topics covered by existing training programs include health and safety; privacy and data protection; harassment and discrimination; and diversity and inclusion; as well as training that explains how to confidentially report concerns, emphasizing the importance of speaking up. Completion of assigned training is closely monitored and reported.

GRI 412-3 Investment agreements and contracts that include human rights clauses or underwent screening

Our Global Supplier Management Group (GSMG) function oversees contract development and execution activities associated with the sourcing and selection of our suppliers of goods and services. Through our standard contracts and agreements, we seek a written commitment from suppliers to respect and abide by the principles set forth in our Business Partner Code of Conduct (BPCC). Our BPCC states that business partners are expected to uphold the human rights of workers, treat workers with dignity, respect the protection of internationally proclaimed human rights and ensure that they are not complicit in human rights abuses.

*For more information on our social assessments for suppliers, please visit GRI 414 on **page 145**.*

Supplier social assessment

GRI 414 **Management approach**

Supplier due diligence assessment for labor practices and human rights

We respect human rights and support transparency in our supply chain. We are committed to upholding the Pharmaceutical Supply Chain Initiative (PSCI) Principles and we require our suppliers to operate in compliance with all applicable laws. We have a formal program led by our Global Supplier Management Group (GSMG) to evaluate the risks for labor and human rights (LHR) in our supply chain. We have a Conflict Minerals due diligence program and complete the associated **annual reporting**.

Our policies

Our policies serve as our standards of conduct for engaging with stakeholders. They are founded on our Code of Conduct (Our Values & Standards) and are used to navigate and guide our decisions. They help us identify, address and mitigate risks.

*For information on our policies, please visit our **Policies & Positions** and **Sustainability Resources** pages on our corporate website.*

Human rights and labor risks

We recognize that companies with supply chains that extend into high-risk countries potentially face greater LHR risks. Our Company can be exposed to these risks through our supply chain, as some of our third-party suppliers and service providers operate in higher-risk countries.

To help manage and address potential risks associated with third-party business relationships, GSMG has an established cross-functional, third-party risk management committee and program. LHR risks are considered as part of our third-party risk management activities. We also recognize that potential risks may exist beyond Tier 2 suppliers.

We continue work to detect and address the risks in our supply chain through:

Supplier selection

Selecting suppliers that are socially responsible and who share our commitments to ethics and integrity. We strive to obtain the services, goods, active ingredients, components, finished goods or other products in a way that is lawful and fair.

Expectations

Setting and communicating our expectations of suppliers, including those related to child labor, forced labor and human trafficking. We use our Business Partner Code of Conduct to communicate our expectations. It has been translated for all countries in which we operate.

Supply chain mapping

Mapping our supply chain to identify which of our suppliers operate in countries that are known to present a significant risk of LHR issues. We use this information to help us decide upon the level of due diligence that may be necessary.

Due diligence

Conducting appropriate supplier due diligence to help determine the level of risk presented by suppliers, including potential new (prospective) suppliers as well as our existing suppliers. Our supplier due diligence process for LHR targets direct materials suppliers, including external manufacturing suppliers and contract manufacturing organizations.

A self-assessment questionnaire is used to gather information on freely chosen employment, child labor, employment practices, employee disclosures, fair treatment, wages, benefits and working hours. Suppliers' responses are used to judge whether that supplier has programs and/or procedures in place to address potential risks for labor and human rights, including modern slavery and human trafficking. The information gathered as part of due diligence is used to determine the acceptability of suppliers' local practices. Results are then applied by GSMG to inform our supplier selection and risk management processes.

Contracts

Seeking written commitment from suppliers to respect the principles set forth in our Business Partner Code of Conduct through our contracts/agreements. Our contract templates contain a Business Partner Code of Conduct compliance clause that includes provisions related to modern slavery.

Auditing

Performing LHR audits at select supplier facilities to verify their conformance with our expectations (as stated in our Business Partner Code of Conduct), and working with them to address identified nonconformances. We use independent third-party audit firms to perform announced LHR audits at suppliers' facilities. When preparing our audit schedule, we consider the industry risk, the category of materials supplied, the country in which the supplier operates and results of past due diligence.

Remedial actions

Tracking and reporting on the closure of remedial actions taken by suppliers to address identified nonconformances (gaps/concerns) revealed by supplier LHR auditing.

Monitoring

Assigning relationship managers from within GSMG to oversee and monitor the performance of key suppliers. We continue to hold suppliers accountable for meeting their contractual obligations.

Governance

Using our Third-Party Risk Committee to help govern and oversee the management of risks associated with third-party relationships. This committee is chaired by our senior vice president for Global Procurement. The role of our Third-Party Risk Committee (and associated Third-Party Risk Team) is to assist senior leadership by providing independent and objective oversight, monitoring and reporting in relation to the risks presented by third parties.

Engagement

Engaging and seeking input from relevant stakeholders, including GSMG, Ethics & Compliance, Legal, Global Safety and Environment and Office of Social Business Innovation.

Collaboration

Working with PSCI to develop training, tools and maturity models, and share knowledge across our industry and with our suppliers.

Training

As part of onboarding, training on our Company's Business Partner Code of Conduct, third-party risk management, and mitigating modern slavery risks in supply chains is provided to sourcing professionals that have responsibility for supplier selection, oversight and monitoring.

Next steps

We will continue working on our efforts to identify, assess and address LHR risks within our operations and supply chains.

These efforts will include:

- Investigating all reported concerns promptly
- Conducting supplier labor and human rights due diligence to identify and address risks
- Auditing select suppliers to verify conformance with standards for LHR
- Holding suppliers accountable for addressing nonconformances revealed by LHR audits
- Participating in the activities/initiatives of PSCI's Human Rights and Labor Sub-Committee

GRI 414-1 New suppliers screened using social criteria

*Please see GRI 2-6 on **page 35** for information on our supply chain risks and associated KPIs.*

Public policy

GRI 415 Management approach

Our Company's Political Contributions Committee engages in the political process—at both the federal and state levels—to educate policymakers, lawmakers and candidates on policy issues critical to our industry and our Company's core purpose to invent new medicines and vaccines to save lives. The Center for Political Accountability, at the Zicklin Center for Business Ethics Research at the Wharton School of the University of Pennsylvania, has recognized our Company as a "Trendsetter" for the last six years in their annual CPA-Zicklin Index of Corporate Political Disclosure and Accountability report.

We continue to make bipartisan contributions that are carefully considered on a case-by-case basis. In establishing our political giving priorities, our contributions committee considers various factors to prioritize candidates who support policies that enhance innovation and patient access to health care. We certainly do not agree with every position that every recipient of PAC support takes on every important social and business issue.

GRI 415-1 Political contributions

We spent a total of $989,900 in U.S. corporate political contributions in 2022. A large portion of these funds were used to support the campaigns of 410 candidates in 21 states plus the District of Columbia. The party breakdown of the contributions for individual candidates was 49.76 percent Democratic, 49.76 percent Republican, and 0.49 percent Independent. Republicans held a majority in 61 chambers, Democrats held the majority in 37 chambers and in one chamber power is divided equally between the parties.

Support was also provided under this program to state legislative leadership committees, industry-affiliated political action committees, and several national organizations representing state elected officials. Examples of these groups include the Republican Governors Association and the Democratic Governors Association, as well as PhRMA expenditures in California that are derived from Merck's dues to this association.

Our Company representatives involved in state-government-affairs activities made the recommendations for specific contributions based on the budget and priorities approved by the Political Contributions Committee. Outside legal counsel conducted a thorough review of all proposed contributions to ensure that they were permitted under state law. Corporate political contributions were then approved by U.S. Legal after outside legal counsel review and approval.

In addition to these contributions, in 2022 we also provided corporate contributions to candidates or political parties in Australia and Japan. These contributions were reviewed and approved in accordance with all relevant internal policies and in compliance with the electoral funding and disclosure laws of their respective countries.

*Information on all of our contributions can be found on the **Transparency Disclosures page** of our corporate website.*

Customer health and safety

GRI 416 **Management approach**

Our quality strategy is focused on maintaining sustained quality and compliance excellence through focused digital technologies, effective oversight and risk mitigation, engaged and empowered colleagues and communities, and a mature Quality Management posture. Our quality strategy is a key enabler to ensuring patient safety and the overall quality and continuous supply of our products.

We operate in a highly complex and ever-changing regulatory landscape driven by many different factors, including novel scientific discoveries and technological advancements. Specifically, we are leveraging new technological advancements such as integrated IT tools, artificial intelligence (AI) and streamlined digital platforms to further enhance how we manufacture high-quality products. We apply and adhere to a strict set of quality standards, and have policies and procedures in place to define, measure, control and sustain product quality excellence. Our Global Quality organization is responsible for establishing the standards to ensure that our Company's products are manufactured, tested, released and distributed in compliance with regulatory requirements.

We continuously strive to enhance these standards in order to ensure ongoing compliance with current Good Manufacturing Practices (cGMPs). We provide appropriate, ongoing training on cGMPs for our employees so they are prepared to perform their duties effectively. Our quality system not only ensures that all applicable employees are trained, but also monitors the effectiveness of the training provided.

Our medicines and vaccines are widely tested before they are approved for marketing. This testing is governed by a comprehensive regulatory scheme and by our research policies. We assess the safety of our products in rigorous nonclinical and clinical trials prior to seeking regulatory approval. Following approval of our drugs, vaccines or devices our Company continues to monitor their safety profiles.

Product recalls	2018	2019	2020	2021	**2022[3]**
Global number of product recalls[1]	11	7	16	15	**5**
Number of product recalls exclusively outside of the U.S.	9	6	14	13	**2**
Global number of units subject to recall[2]	1,726,354	106,694	5,895,375	1,839,656	**109,473**

[1] Periods following June 2021 exclude products included in spin-off to Organon & Co.

[2] "Units subject to recall" is defined as units within scope of a recall that are outside of company control.

[3] All 2022 recalls were voluntarily initiated.

Animal Health

Research and development

The Animal Health vice presidents of R&D (Pharmaceuticals/Biologicals) hold joint responsibility for the benefit-risk determination for our Animal Health pipeline and marketed Veterinary Medicinal Products (VMPs), and oversee all Animal Health clinical programs.

We test our investigative animal health pharmaceuticals and vaccines vigorously for safety, quality and efficacy before submitting them for approval, which can be obtained only after thorough review by independent regulatory authorities.

This testing and refining of a product can take years to complete. When all of the required testing is completed and found to be satisfactory by the appropriate government regulatory agency, the product is approved to be sold. Once a product is on the market, we follow all applicable pharmacovigilance rules and findings are assessed and reported to regulatory authorities.

Regulatory affairs

A consistent, science-based regulatory environment is one of the key conditions necessary for innovation and for providing our customers with high-quality products. We support global harmonization of the regulatory process for veterinary medicines through our global trade association, HealthforAnimals, which is recognized as an observer organization. This allows HealthforAnimals to offer input and provide perspectives in meetings with international standards-setting bodies, including:

- International Cooperation on Harmonisation of Technical Requirements for Registration of Veterinary Medicinal Products (VICH)
- Codex Alimentarius

*For more information, please visit the **Ethical Treatment of Animals page** on our corporate website.*

Quality

All of our pharmaceuticals and vaccines must be tested for product quality as well as for their safety and efficacy in treated animals. Our submissions to regulatory agencies also include rigorous human food safety testing for those products used in food-producing animals, in addition to user safety and environmental safety assessments.

Pharmacovigilance

Our Animal Health Global Pharmacovigilance (GPV) team manages a global system for the collection, review and reporting of adverse event (AE) reports received by our Company worldwide, and for the continuous assessment of product safety. GPV leads all safety monitoring and signal management activities for the Animal Health VMP portfolio from the time of initial product approval through the end of the product life cycle.

*For more information, please visit the **Ethical Treatment of Animals page** on our corporate website.*

GRI 416-2	Incidents of non-compliance concerning the health and safety impacts of products and services
SASB 250a.1	Products listed in the FDA's MedWatch Safety Alerts for Human Medical Products database
SASB 250a.2	Fatalities associated with products as reported in the FDA Adverse Event Reporting System
SASB 250a.3	Recalls issued, and total units recalled
SASB 260a.1	Methods and technologies used to maintain traceability of products throughout the supply chain and prevent counterfeiting
SASB 260a.2	Process for alerting customers and business partners of potential or known risks associated with counterfeit products

Counterfeit products

We invest in an industry-leading, rigorous and intelligence-led product integrity strategy that is solely focused on protecting patients from the harm associated with counterfeit and diverted medicines. Our Global Security Group oversees our global product integrity strategy and leads its execution. The strategy seeks to protect our patients and our Company's reputation from the negative impacts of counterfeit medicines using a three-pronged strategy focused on:

1. Securing the supply chain
2. Investigations and enforcement
3. Raising public and stakeholder awareness

In 2022, we continued our commitment to increasing our focus in this area and have strategically enhanced our ability to make a long-term impact on patient safety through various education campaigns. We are committed to cooperating with relevant government agencies, other pharmaceutical manufacturers, wholesalers, distributors, health professionals, consumer groups and key related organizations in fighting the problem of counterfeit pharmaceutical products, and in educating the public about the risks of counterfeit products and how to protect against them.

This effort includes a multi-pronged approach to communicating the threat that counterfeit medicines pose and to mitigating this threat as effectively as possible while recognizing that it cannot be entirely eliminated.

Appropriate collaboration and information-sharing in order to raise public and stakeholder awareness of the issue and risks are a crucial focus of our product integrity program. Through active partnerships with other pharmaceutical companies, and with organizations focused on security, patient safety and public health, we provide effective advocacy on high-priority anti-counterfeiting policy initiatives.

These collaborative efforts support the production of reports, white papers and data-circulation initiatives, as well as promote the intelligence sharing necessary to combat threats from counterfeit medicines.

The anti-counterfeiting data below details the number of new suspected and substantiated counterfeit events in 2022 and for the previous four years. It reflects the current status of each event for all years presented as of February 2023.

Throughout 2022, Global Security addressed 2,102 product integrity events in 90 countries, involving counterfeit, diversion, supply chain security, tampering and brand security (non-Merck, unapproved generic product). Approximately 20 percent of these events have been proactively investigated by Global Security to identify new or emerging product integrity threats, or to further characterize and mitigate known threats.

We enable meaningful enforcement actions as a key strategic priority, and in 2022 our product integrity activity led to 166 arrests and the seizure of more than 11,009 units of counterfeit or illicit versions of our products. There were 65 prosecutions resulting from product integrity investigations in 2022.

Anti-counterfeiting[1]	2018	2019	2020	2021	**2022**
Investigations of suspected counterfeit products[2]	269	560	555	935	**691**
Substantiated cases of counterfeit products	231	214	75	112	**196**

[1] Prior-year data have been adjusted to reflect the current status of each event as of March 2023.

[2] Evidence from ongoing investigations of suspected counterfeit products can result in recategorization.

Another crucial aspect of investigations is the forensic analysis of questionable products. This forensic testing is aimed at concluding whether a questionable product is counterfeit, diverted or otherwise illicit. Counterfeit products are characterized to gain further intelligence and understanding of the counterfeiters and the threats to public health. We also have forensic detection devices in the field to analyze and detect counterfeits in regions around the world.

As counterfeiters improve their skills and techniques, our forensic scientists have pioneered the use of several analytical tools for the detection and characterization of counterfeit medicines and continue to explore new analytical tools that would increase their forensic testing capabilities. Lab findings are shared with regulatory and/or law-enforcement agencies and may be used to support subsequent enforcement actions and legal proceedings.

There were 771 unique questioned samples received as evidence and prepared for forensic testing in relation to active events in 2022. As part of our proactive awareness program, throughout 2022 Global Security trained approximately 1,734 law-enforcement personnel in more than 44 countries regarding the patient safety risks associated with counterfeit and diverted medication. Global Security also launched an internal training program on the Counterfeit, Diversion and Tampering (CDT) reporting process in late 2017. To date, more than 96,000 employees and contractors have completed this training globally.

Supply chain security and serialization

Our proactive focus on managing supply chain security risk is based on our careful implementation and management of strict policies and procedures designed to protect the legitimate distribution of our products. We require customers to purchase our products directly from our Company or from authorized distributors listed publicly on our corporate website.

We maintain our commitment to ensure compliance with established Company policies, standards and procedures throughout the supply chain by identifying vulnerabilities and threats to the supply network. Resources are positioned globally to monitor and manage our security programs and investigate incidents when they occur. As a certified Importer under the Customs Trade Partnership Against Terrorism (CTPAT) Program, we are validated by U.S. Customs and Border Protection as an elite Tier 3 Member recognized as implementing best practices in supply chain security. This adds an important layer to the security of our products and materials imported to the U.S.

Serialization—adding a 2D barcode with a unique identification number on each package that goes to market—is one of the tools we are investing in to secure our supply chain and prevent or detect counterfeiting. A serial number on individual packages may enable anyone along the supply chain—from a distributor to a pharmacist to a patient—to scan the code and verify it as a serial number corresponding to a genuine product of our Company. Serialization can add a robust layer to our product security platform. When associated with a regulatory mandate that specifies effective implementation and reporting to a national database, this method of product tracking can become a more meaningful product security tool.

Many jurisdictions around the world are requiring serialization on pharmaceutical packages or are considering such mandates. However, each country's regulations are different, which makes it very challenging for our packaging sites and distribution networks to meet these diverse and intricate requirements, with additional complexity as reporting requirements are phased in.

We launched the Global Product Serialization Initiative in 2012, with the goal of meeting these varying requirements in a robust, standardized and effective way based upon GS-1 standards.

Through these efforts, we are currently in compliance with applicable regulatory requirements related to serialization. We are also working with industry associations and regulatory authorities to better understand potential new requirements and to advocate for simple, standardized and common-sense regulations that can be effective at protecting against counterfeit medicines.

In addition to our compliance with regulatory requirements related to serialization, we are also exploring opportunities to deploy voluntary serialization and secondary verification technologies to further enhance the security and traceability of our products. These multifactor verification systems would be enabled by blockchain nodes and applications that allow for secure and immutable product tracing that could be accessed by all supply chain partners and end users. We are currently running several proof-of-concept and pilot studies involving these emerging technologies, as well as participating in active industry associations, such as PharmaLedger, to further develop and apply these digital solutions.

Clinical trial site monitoring, design, conduct and oversight

We have a longstanding commitment to sharing the results of our clinical trials, regardless of their outcome, in a timely manner. If a clinical trial of a marketed product is terminated early for safety reasons, we promptly disclose medically important information to regulatory authorities and the public, update the status on **ClinicalTrials.gov** within 30 days and submit a manuscript to a journal (or post a summary online) within 12 months after the last patient's last visit occurs. If the trial was terminated for efficacy reasons, the results will be disclosed within 12 months after the last patient's last visit occurs.

Summaries of terminated trials will provide information about patient disposition, safety and adverse experiences, as well as an explanation as to why the trial was terminated early. We comply with all applicable laws and regulations associated with the registration of clinical trials in publicly accessible registries and subsequent posting of the results from these trials. We have put in place the processes necessary for compliance with the Food and Drug Administration Amendments Act of 2007 and the EU Clinical Trials Regulation No 536/2014 (EU-CTR), including those related to clinical trial registration and posting results.

For those who analyze, report or publish the results of clinical trials, a clinical trial registry also provides information on trials in progress and the ability to track such trials over the course of development. Company-sponsored and -conducted clinical trials involving patients assigned treatment with investigational and marketed products are registered at trial initiation on **ClinicalTrials.gov**, **EUclinicaltrials.eu** and **ENCePP.eu**.

In accordance with our **public policy position statement on clinical trial ethics**, all investigational studies in human subjects are conducted in a manner consistent with applicable laws, regulations and guidelines for the protection of human subjects, including those issued by the International Council for Harmonisation: Good Clinical Practice (ICH-GCP). However, individual country regulations and guidelines should remain the primary determinant of specific requirements for the conduct of medical research. In all regions, we have a commitment, where appropriate, to the study of diverse patient populations, including underrepresented groups, women and children. As a result, we strive to obtain information among diverse

populations, ensuring a thorough evaluation of the safety and efficacy of our medicines and vaccines. These efforts allow us to seek regulatory approvals throughout the world and thereby offer our medicines globally to patients who need them.

When appropriate, an internal Data-Monitoring Committee (DMC) of our research laboratories' senior managers reviews unblinded data from ongoing trials in a pre-specified, scientifically acceptable manner. The goals of the DMC are to protect the safety of trial participants and to assess whether the risk/benefit profile is favorable. The DMC's recommendations are communicated internally to relevant scientists and can be distributed externally to clinical investigators, review boards or regulatory agencies, as appropriate.

*Please visit the **U.S. Food & Drug Administration's (FDA) MedWatch** website for more information on product safety alerts. You may visit the **FDA's Adverse Event Reporting System (FAERS)** website for up-to-date information on fatalities associated with product use.*

*For more information on our approach to clinical trials, please visit the **Clinical Trials page** on our corporate website.*

GCP/Pharmacovigilance (PV) inspections	2018	2019	2020	2021	**2022**
GCP/PV inspections by regulatory agencies of the Company or clinical trial investigators that led to significant fines, penalties, warning letters or product seizures	0	0	0	0	**0**

Marketing and labeling

GRI 417 **Management approach**

Our chief medical officer is responsible for the benefit-risk determination of our Human Health pipeline and marketed products. The chief medical officer provides medical oversight for all clinical programs, supervises the development and implementation of medical policies (including those related to data transparency and the sharing of clinical data), and has responsibility for the design, execution and implementation of pre-registration expanded access ("compassionate use") programs.

Our chief safety officer is responsible for determining the Human Health product-risk profile, and for overseeing the safety of our Human Health products. Our Global Clinical Safety and Pharmacovigilance function, led by the chief safety officer, manages a global system for the collection, review and reporting of adverse events (AEs), and for the continuous assessment of product safety.

The Animal Health vice presidents in R&D (Pharmaceuticals/Biologicals) hold joint responsibility for the benefit-risk determination for our Animal Health pipeline and marketed veterinary medicinal products, (VMPs) and oversee all Animal Health clinical programs.

Clinical safety and risk management

The Clinical Safety and Risk Management organization leads the Risk Management Safety Team for all Human Health candidates and products, from the beginning of Phase 2b through the end of the product life cycle. Clinical Safety and Risk Management is responsible for the development of proactive clinical safety risk-management strategies, including the Risk Management Plan, which is a regulatory requirement in many countries for marketed drugs and vaccines.

Veterinary medicinal product safety and risk management

The Animal Health Global Pharmacovigilance Team manages a global system for the collection, review and reporting of AEs, and for the continuous assessment of product safety. Global Pharmacovigilance leads all safety monitoring and signal management activities for the Animal Health VMP portfolio, from the time of initial product approval through the end of the product life cycle.

GRI 417-1 **Requirements for product and service information and labeling**

SASB 270a.2 **Code of ethics governing promotion of off-label use of products**

Consistent with applicable FDA regulations, the labels in our product packaging contain information about adverse reactions and other potential risks that are either serious or otherwise clinically significant. We include contact details in our product packaging and on our corporate website for patients, human and animal caregivers, farmers and producers, and human and animal health professionals to report AEs in the U.S. Outside the U.S., AEs are reported in accordance with any additional local country laws and practices.

There are occasions when our Company, in consultation with regulatory authorities, may determine that it is important to communicate new or updated information promptly to health care providers involved in prescribing or dispensing a drug or in caring for patients who receive a drug. In these situations, we work with regulatory authorities to communicate this information to health care professionals in a timely manner so that they can inform patients through appropriate mechanisms.

Product label reviews

The ongoing oversight and monitoring of our product labels are a major focus of our safety efforts. Our label review teams monitor information on our products and work with our product Risk Management Safety Teams to develop or update product labeling. We regularly communicate relevant information to regulatory authorities worldwide.

Health literacy

Health literacy is essential to our overall strategy. We incorporate health literacy into all aspects of a product's development and life cycle, from clinical testing to labeling and packaging to patient education. In 2020, we founded a worldwide community of practice for health literacy, with membership from eight different nations and various corporate divisions.

This community of practice was established to assist in identifying and organizing health literacy advocates with the goal of training and educating colleagues more broadly, both through formalized, concerted efforts and through incidental collaboration in the course of daily work.

In the fourth quarter of 2021, the community of practice launched an internal health literacy dictionary with more than 1,000 words, and established an internal health literacy portal for the exchange of materials and best practices.

We are dedicated to increasing people's health literacy in the U.S. and around the world. As part of this commitment, our health literacy team has developed a novel method to enhance the patient labeling process for new compounds.

The purpose of this is to validate comprehension across all the different consumer categories, with a particular emphasis on those who have lower levels of health literacy. To date, 10 of our medicines have FDA-authorized patient labels that were produced with input from patients whose health literacy skills ranged from low to high. Employees who create and assess patient labeling for novel compounds have been required to undergo training in health literacy methods for patient labels since 2021.

Customer privacy

GRI 418 **Management approach**

Information about our Company, products and people is one of our most valuable assets. We are committed to the ethical use, management, and protection of information.

Our commitment applies not only to our Company's information but also to the information entrusted to us by others. Our tools, processes and procedures ensure that we appropriately collect, use and safeguard information throughout its life cycle to ensure integrity of information and to prevent unauthorized access and disclosure. We have developed and continue to improve upon a comprehensive, global, state-of-the-art information security and cyber resiliency program.

Over the past 20 years, we have developed and continually improved a comprehensive global privacy program that promotes organizational accountability for privacy, data governance, and data protection across our business and with our collaborative partners and suppliers. We were the first in the world to obtain regulatory approval in the EU for Binding Corporate Rules (BCRs), based in part on our existing Asia Pacific Economic Cooperation (APEC) Cross-Border Privacy Rules (CBPRs) certified program.

This achievement demonstrates that organizations can rely on common internal standards and processes to govern international data transfers across both the EU and APEC regions to simplify their ability to address the growing regulatory challenges in this area.

Our holistic approach to privacy has its origins in biomedical research ethics and the protection of participants in the research studies that we sponsor and conduct. We have adapted human subject research ethics standards for risk-benefit analysis, transparency, anonymization, coding, and prior review to other activities and processes involving data about people.

Global Privacy Program

Regulators around the world are increasingly adopting regulations similar to, or modeled on, the EU General Data Protection Regulation (GDPR). We are well positioned in that our global privacy program is based on the GDPR. Our global privacy program is also intended to be flexible and adaptable to be compliant to new laws and regulations that take effect in the jurisdictions where we conduct business. Examples include the California Consumer Privacy Act (CCPA) and the California Privacy Rights Act (CPRA); the Consumer Data Protection Act (CDPA) in Virginia; the Privacy Act (ColPA) in Colorado; the Consumer Privacy Act (CPA) in Utah; the Personal Data Privacy and Online Monitoring Act (PDPOMA) in Connecticut; and major revisions to the Data Protection Acts in China, Canada, and Indonesia.

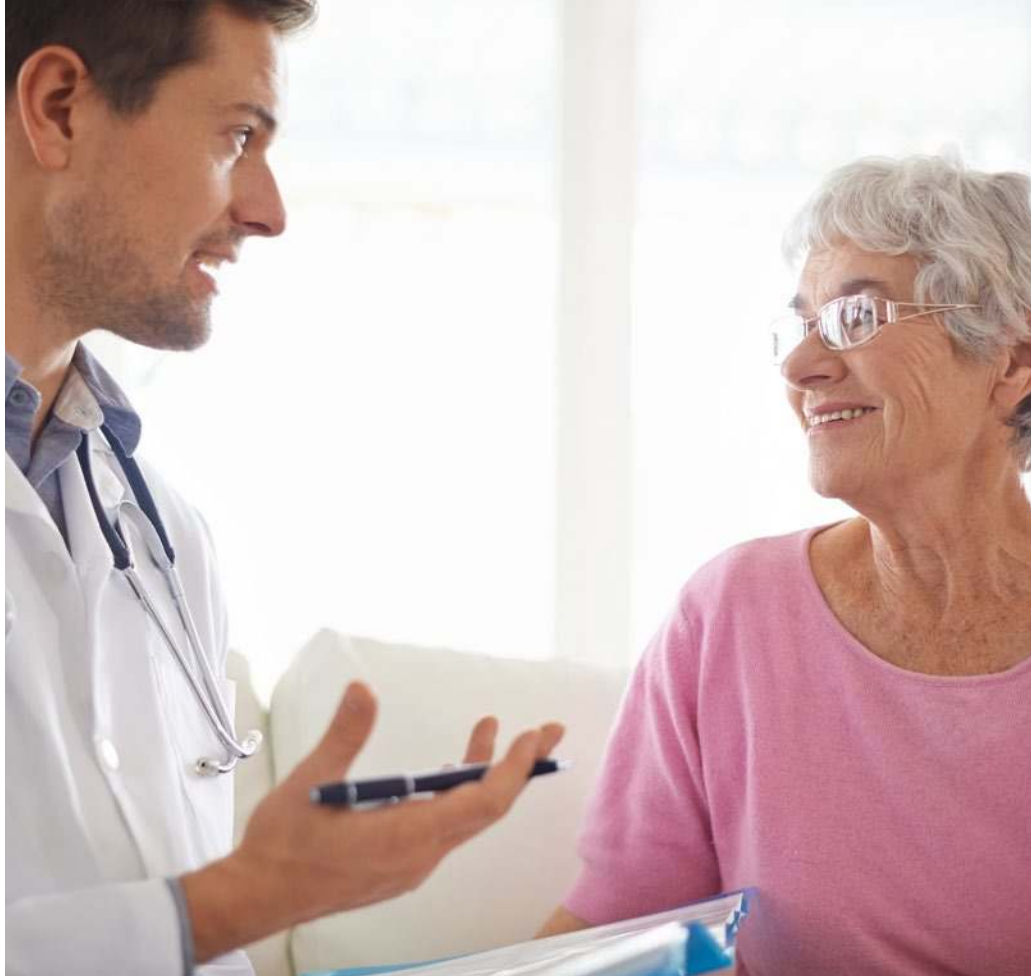
In addition, there is increased regulatory scrutiny and interest in companies that seek to collect and monetize personal information without full transparency and permission from data subjects. We anticipate that regulators will continue to increase requirements in these areas and levy fines. We believe that we are well positioned for these changes due to the deployment of a comprehensive, closed-loop privacy program and our active engagement with regulators around the world.

The Global Privacy Office reports to our chief ethics and compliance officer who reports directly to our chief executive officer. Oversight of our global privacy program is conducted within the Privacy and Data Protection Board (PDPB). This is a cross-functional governance board that connects to our Company's Corporate Compliance Committee. The PDPB meets quarterly.

We are increasingly reliant on third-party partners and service providers to assist us in our global operations. Just as we need to pay close attention to privacy and data protection, so do the third parties that comprise our supply chain. Our Company employs a robust third-party due diligence process to ensure that we only do business with reputable third parties who share our values and standards.

Our approach is one of accountability and transparency. The heart of this program is a leveraged, world-class Global Privacy Program that manifests itself throughout the world as a network of over 250 Privacy Stewards. Program maturity is measured through a combination of annual privacy self-assessments at the entity and organization level, and by comprehensive privacy audits conducted by internal audit.

We also provide annual mandatory cybersecurity training to communicate and reinforce the guidelines in the Information Security Standards Handbook and our commitment to a strong cybersecurity culture. We have established a systematic approach for ensuring employees can understand and comply with Company policies. We developed a robust cybersecurity training and awareness program that frequently and consistently delivers both compulsory and voluntary learning opportunities designed to encourage employees to make security-aware decisions regarding our Company's information security risks. Topics include, but are not limited to, information protection, identity, email, browsing and mobile security. Employees are also expected to maintain an up-to-date record of their qualifications that details relevant cybersecurity work experience, skills, certifications and internal, industry or vendor-provided training they receive.



GRI 418-1 Substantiated complaints regarding breaches of privacy or losses of personal data

We have a well-established process by which privacy incidents can be reported to the Global Privacy Office and be investigated. The first step of this process is to verify the facts reported and to substantiate the concern. In 2022, we received 217 substantiated privacy concerns, which marks a 49 percent reduction compared to the previous year. This reduction was mainly due to consistent network traffic monitoring and increased privacy and cybersecurity awareness efforts. Four out of 217 incidents were deemed to be reportable to data protection authorities and/or data subjects.

Global Privacy Program	2018	2019	2020	2021	**2022**
Number of concerns regarding privacy practices, breaches of privacy and losses of personal data that were substantiated[1,2,3,4,5]	315	29[2]	250[3]	425[3,4]	**217[5]**
Number of privacy breaches requiring notification by our Company to individuals or government authorities	2	2	0	3	**4**

[1] Privacy concerns reported here include all concerns about our privacy practices reported to our Company's Privacy Office and substantiated or verified. Verified concerns are investigated as part of the Company's Incident Management Process which includes a determination of whether regulatory or data subject notification is required.

[2] Change in reporting criteria to exclude non-privacy, quality-related issues from the data.

[3] Increased sensitivity of network traffic monitors contributed to increased number in 2020 and 2021.

[4] The number of substantiated incidents reported for 2021 has been decreased by one to correct a previous misclassification.

[5] Consistent network traffic monitoring and increased privacy and cybersecurity awareness efforts resulted in reduced number of privacy incidents in 2022.

Global Reporting Initiative (GRI)

The **GRI Standards** represent global best practices for reporting publicly on a range of economic, environmental and social impacts. The table below summarizes where responses to the GRI disclosures can be found throughout this report.

General Disclosures

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Management Approach	Explanation of the material topic, its boundary, how the topic is managed, and mechanisms for evaluating the effectiveness of the company's strategy	**Pages 92-93**
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303-2	Water discharge-related impacts	**Pages 94-95**
303-3	Water withdrawal	**Pages 95-97**
303-4	Water discharge	**Pages 98-99**
GRI 304 Biodiversity (2016)		
304-2	Significant impacts of activities, products, and services on biodiversity	**Page 100**
304-3	Habitats protected or restored	**Page 100**

GRI 305 Emissions (2016)

Management Approach	Explanation of the material topic, its boundary, how the topic is managed, and mechanisms for evaluating the effectiveness of the company's strategy	**Pages 101-102**
305-1	Direct GHG emissions (Scope 1)	**Pages 103-105**
305-2	Indirect GHG emissions (Scope 2)	**Pages 103-105**
305-3	Other indirect GHG emissions (Scope 3)	**Pages 103-105**
305-4	GHG emissions intensity	**Pages 103-105**
305-5	Reduction of GHG emissions	**Pages 103-105**
305-6	Ozone-depleting substances (ODS)	**Pages 105-106**
305-7	NOx, SOx and other emissions	**Pages 105-106**

GRI 306 Waste (2020)

Management Approach	Explanation of the material topic, its boundary, how the topic is managed, and mechanisms for evaluating the effectiveness of the company's strategy	**Page 107**
306-1	Waste generation and significant waste-related impacts	**Pages 107-108**
306-2	Management of significant waste-related impacts	**Pages 107-108**
306-3	Waste generated	**Pages 109-112**
306-4	Waste diverted from disposal	**Pages 109-112**
306-5	Waste directed to disposal	**Pages 109-112**

GRI 308 Supplier Environmental Assessment (2016)

Management Approach	Explanation of the material topic, its boundary, how the topic is managed, and mechanisms for evaluating the effectiveness of the company's strategy	**Pages 112-113**

Social

GRI 401 Employment (2016)

Management Approach	Explanation of the material topic, its boundary, how the topic is managed, and mechanisms for evaluating the effectiveness of the company's strategy	**Page 114**
401-1	New employee hires and turnover	**Pages 115-117**
401-2	Benefits provided to full-time employees	**Page 118**
401-3	Parental leave	**Page 118**

GRI 403 Occupational Health & Safety (2018)

Management Approach	Explanation of the material topic, its boundary, how the topic is managed, and mechanisms for evaluating the effectiveness of the company's strategy	**Page 119**
403-1	Occupational health and safety management system	**Page 119**
403-2	Hazard identification, risk assessment, and incident investigation	**Pages 119-123**
403-3	Occupational health services	**Pages 123-125**
403-5	Worker training on occupational health and safety	**Page 125**
403-6	Promotion of worker health	**Pages 125-126**
403-9	Work-related injuries	**Pages 126-129**
403-10	Work-related ill health	**Pages 126-129**

GRI 404 Training & Education (2016)

Management Approach	Explanation of the material topic, its boundary, how the topic is managed, and mechanisms for evaluating the effectiveness of the company's strategy	**Page 130**
404-1	Average hours of employee training	**Page 130**

404-2	Programs for upgrading employee skills and transition assistance programs	**Pages 131-133**
404-3	Percentage of employees receiving regular performance reviews	**Page 133**

GRI 405 Diversity & Equal Opportunity (2016)

Management Approach	Explanation of the material topic, its boundary, how the topic is managed, and mechanisms for evaluating the effectiveness of the company's strategy	**Pages 134-140**
405-1	Diversity of governance bodies and employees	**Pages 141-142**

GRI 412 Human Rights Assessment (2016)

Management Approach	Explanation of the material topic, its boundary, how the topic is managed, and mechanisms for evaluating the effectiveness of the company's strategy	**Pages 143-144**
412-1	Operations that have been subject to human rights reviews	**Page 144**
412-2	Employee training on human rights policies and procedures	**Page 144**
412-3	Investment agreements and contracts that include human rights clauses or underwent screening	**Page 144**

GRI 414 Supplier Social Assessment (2016)

Management Approach	Explanation of the material topic, its boundary, how the topic is managed, and mechanisms for evaluating the effectiveness of the company's strategy	**Pages 145-146**
414-1	New suppliers screened using social criteria	**Page 147**

GRI 415 Public Policy (2016)

Management Approach	Explanation of the material topic, its boundary, how the topic is managed, and mechanisms for evaluating the effectiveness of the company's strategy	**Page 147**
415-1	Political contributions	**Page 147**

GRI 416 Customer Health & Safety (2016)

Management Approach	Explanation of the material topic, its boundary, how the topic is managed, and mechanisms for evaluating the effectiveness of the company's strategy	**Pages 148-149**
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	**Pages 150-153**

GRI 417 Marketing & Labeling (2016)

Management Approach	Explanation of the material topic, its boundary, how the topic is managed, and mechanisms for evaluating the effectiveness of the company's strategy	**Page 154**
417-1	Requirements for product and service information and labeling	**Pages 154-155**

GRI 418 Customer Privacy (2016)

Management Approach	Explanation of the material topic, its boundary, how the topic is managed, and mechanisms for evaluating the effectiveness of the company's strategy	**Pages 156-157**
418-1	Substantiated complaints regarding breaches of customer privacy and losses of customer data	**Page 157**

Sustainability Accounting Standards Board (SASB)

SASB is an independent standards-setting organization dedicated to improving the effectiveness and comparability of corporate disclosure on ESG factors. The table below summarizes how our existing reporting aligns with the recommended metrics for the Biotechnology & Pharmaceuticals Standard within the Health Care sector, and where this information can be found in this report.

Safety of clinical trial participants		
210a.1	Discussion, by world region, of management process for ensuring quality and patient safety during clinical trials	**Pages 57**, **148-153**, **Clinical trials**
210a.2	Number of FDA Sponsor Inspections related to clinical trial management and pharmacovigilance that resulted in: Voluntary Action Indicated (VAI) and Official Action Indicated (OAI)	None.
210a.3	Total amount of monetary losses as a result of legal proceedings associated with clinical trials in developing countries	Not reported.
Access to medicines		
240a.1	Description of actions and initiatives to promote access to health care products for priority diseases and in priority countries as defined by the Access to Medicine Index	**Pages 54-76**
240a.2	List of products on the WHO List of Prequalified Medicinal Products as part of its Prequalification of Medicines Programme (PQP)	**Pages 54-76**

Affordability and pricing

240b.1	Number of settlements of Abbreviated New Drug Application (ANDA) litigation that involved payments and/or provisions to delay bringing an authorized generic product to market for a defined time period	Information regarding Abbreviated New Drug Application (ANDA) litigation can be found in our **2022 Form 10-K**, on pages 26 and 108.
240b.2	Percentage change in: average list price and average net price across U.S. product portfolio compared to previous year	**Pages 54-76**
240b.3	Percentage change in: list price and net price of product with largest increase compared to previous year	**Pages 54-76**

Drug safety

250a.1	List of products listed in the Food and Drug Administration's (FDA) MedWatch Safety Alerts for Human Medical Products database	**Pages 150-153** **FAERS MedWatch**
250a.2	Number of fatalities associated with products as reported in the FDA Adverse Event Reporting System	**Pages 150-153** **FAERS MedWatch**
250a.3	Number of recalls issued, and total units recalled	**Pages 150-153** **FAERS MedWatch**
250a.4	Total amount of product accepted for takeback, reuse, or disposal	**Pages 109-112**
250a.5	Number of FDA enforcement actions taken in response to violations of current Good Manufacturing Practices (cGMP), by type	Please visit the **FDA website** for more information.

Counterfeit drugs

260a.1	Description of methods and technologies used to maintain traceability of products throughout the supply chain and prevent counterfeiting	**Pages 150-153**
260a.2	Discussion of process for alerting customers and business partners of potential or known risks associated with counterfeit products	**Pages 150-153**
260a.3	Number of actions that led to raids, seizure, arrests, and/or filing of criminal charges related to counterfeit products	**Pages 150-152**

Ethical marketing

270a.1	Total amount of monetary losses as a result of legal proceedings associated with false marketing claims	Not reported.
270a.2	Description of code of ethics governing promotion of off-label use of products	**Pages 154-155**

Employee recruitment, development and retention

330a.1	Discussion of talent recruitment and retention efforts for scientists and research and development personnel	**Page 118**
330a.2	Voluntary and involuntary turnover rate for: executives/senior managers, mid-level managers, professionals, and all others	The segmentation of turnover data we provide in this report more clearly reflects how our business operates than segmentation by employee category.

Supply chain management

430a.1	Percentage of entity's facilities and Tier I suppliers' facilities participating in the Rx-360 International Pharmaceutical Supply Chain Consortium audit program or equivalent third-party audit programs for integrity of supply chain and ingredients	Our Human Health and Animal Health divisions both use the Rx-360 audit program as a resource for purchasing audit reports in the event that suppliers refuse audits, but we do not currently publish this percentage.

Business ethics

510a.1	Total amount of monetary losses as a result of legal proceedings associated with corruption and bribery	Not reported.
510a.2	Description of code of ethics governing interactions with health care professionals	**Pages 42-44** **Code of Conduct & Compliance**

Activity metrics

000.A	Number of patients treated	**Pages 14**, **54-76**
000.B	Number of drugs in portfolio, and in research and development (Phases 1-3)	**Pipeline**

UN Global Compact (UNGC)

The UNGC is a strategic initiative that helps companies align their business activities and strategies with ten universally recognized principles in the areas of human rights, labor standards, environmental protection and the fight against corruption. The table below summarizes how our existing reporting aligns with these disclosures and where the information can be found in this report. Our Communication on Progress will be available on the **UN Global Compact website**.

Human rights		
1	Businesses should support and respect the protection of internationally proclaimed human rights	**Pages 143-144**
2	Businesses should make sure that they are not complicit in human rights abuses	**Pages 112-113**, **143-147**
Labor		
3	Businesses should uphold the freedom of association and the effective recognition of the rights to collective bargaining	**Pages 143-144**
4	Businesses should support the elimination of all forms of forced and compulsory labor	**Pages 143-144**
5	Businesses should support the effective abolition of child labor	**Pages 143-144**
6	Businesses should support the elimination of discrimination in respect of employment and occupation	**Pages 134-142**, **143-147**
Environment		
7	Businesses should support a precautionary approach to environmental challenges	**Pages 84-87**, **92-99**, **107-112**
8	Businesses should undertake initiatives to promote greater environmental responsibility	**Pages 84-87**
9	Businesses should encourage the development and diffusion of environmentally friendly technologies	**Pages 84-87**, **92-99**
Anti-corruption		
10	Businesses should work against corruption in all its forms, including extortion and bribery	**Pages 44-45**, **81-83**, **145-147**

UN Sustainable Development Goals (SDGs)

The SDGs are a set of 17 global goals whose aim is to end poverty, fight inequality and injustice, and tackle climate change by 2030. The table below summarizes how our reporting aligns with the SDGs and where this information can be found in this report. More information on our priorities can also be found on page 9.

Goal		Description	Response
SDG 1:	No Poverty	End poverty in all its forms everywhere	Pages 54-76, 83
SDG 2:	Zero Hunger	End hunger, achieve food security and improved nutrition and promote sustainable agriculture	Merck Animal Health
SDG 3:	Good Health & Well-being	Ensure healthy lives and promote well-being for all at all ages	Pages 54-76, 119-129
SDG 4:	Quality Education	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	Pages 130-133
SDG 5:	Gender Equality	Achieve gender equality and empower all women and girls	Pages 114-118, 130-142, 145-147
SDG 6:	Clean Water & Sanitation	Ensure availability and sustainable management of water and sanitation for all	Pages 92-99, 109-112
SDG 7:	Affordable & Clean Energy	Ensure access to affordable, reliable, sustainable and modern energy for all	Pages 88-91
SDG 8:	Decent Work & Economic Growth	Promote sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all	Pages 34-39, 47-49, 51-53, 88-91, 114-129, 130-142, 145-147
SDG 9:	Industry, Innovation & Infrastructure	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	Pages 51-76
SDG 10:	Reduced Inequalities	Reduce inequality within and among countries	Pages 34-39, 88-91, 101-105
SDG 11:	Cities & Communities	Make cities and human settlements inclusive, safe, resilient and sustainable	Not applicable
SDG 12:	Responsible Consumption & Production	Ensure sustainable consumption and production patterns	Pages 84-112, 154-155

SDG 13: Climate Action	Take urgent action to combat climate change and its impacts	**Pages 52-53**, **88-91**, **101-107**
SDG 14: Life Below Water	Conserve and sustainably use the oceans, seas and marine resources for sustainable development	**Pages 43**, **92-100**
SDG 15: Life on Land	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	**Pages 92-112**
SDG 16: Peace, Justice & Strong Institutions	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	**Pages 40-41**, **44-45**, **82-83**, **92-100**, **145-147**, **148-149**
SDG 17: Partnerships for the Goals	Strengthen the means of implementation and revitalize the global partnership for sustainable development	**Pages 42-43**, **47-49**, **83**

Culture of Health for Business (COH4B)

The Culture of Health for Business (COH4B) is a framework for companies to disclose their impact on health of employees, families and communities, as well as brand and financial performance, that lead to both positive and negative business outcomes. The table below summarizes how our reporting aligns with the recommended metrics for the Biotechnology & Pharmaceuticals Standard within the Health Care sector and where this information can be found in this report.

Strategic		
Health culture	Promoting an organizational culture of health	**Pages 118-129**, **COVID-19**
Responsible corporate political activity	Activity that shapes public policy or public opinion	**Pages 46-47**, **147**, **Transparency Disclosures**
Responsible marketing practices	Commitments to responsible marketing	**Pages 154-155**
Policies & Benefits		
Health promotion and wellness	Providing health promotion and wellness programs	**Pages 114-129**
Paid family and medical leave	Allowing employees to earn pay while away attending to illness, a family member or newborn	**Pages 114-129**
Health insurance	Providing employer-based health insurance	**Pages 114-129**
Equality, diversity and impartiality	Managing inequality, discrimination and diversity, including disability	**Pages 114-118**, **134-144**
Financial literacy	Providing financial literacy resources	**Pages 114-118**
Workforce & Operations		
Work time	Managing working hours, schedules and schedule control	**Pages 114-118**
Job security	Managing job insecurity	**Pages 114-118**

Pay practices	Managing wage policies, minimum wages, wage satisfaction	**Pages 114-118**, **Compensation and benefits**
Occupational health and safety	Mandatory and voluntary occupational health and safety	**Pages 119-129**
Physical environment	Managing air quality, lighting, green buildings, health promotion attempts through the built environment	**Pages 84-113**
Community		
Community environmental impacts	Managing the environmental impacts of company operations on communities	**Pages 84-113**, **CDP Water Security**, **CDP Climate Change**
Social capital and cohesion	Encouraging links, shared values and understanding	**Pages 23-26**, **114-118**
Community involvement	Investments in programs to benefit communities, including disaster response and recovery	**Pages 54-76**, **114-118**, **Philanthropy**, **Impact Investing**, **Medical Outreach Program**

Stakeholder Capitalism Metrics

At the 2020 Annual Meeting in Davos, 120 of the world's largest companies supported efforts to develop a core set of common metrics and disclosures for their investors and other stakeholders. Below is our alignment against the Core metrics from this framework developed by the World Economic Forum, as well as select disclosures from the Expanded metrics. Merck currently is not a signatory to the Stakeholder Capitalism Metrics.

Principles of Governance

Governing Purpose	
Setting purpose (Core)	Overview (**pages 6-11**)
Purpose-led management (Expanded)	Overview (**pages 6-11**)
Quality of Governing Body	
Governance body composition (Core)	**Pages 40-42**
Progress against strategic milestones (Expanded)	Access to health care and medicine (**pages 54-76**) Equity and affordability (**pages 64-76**) Product safety and quality (**pages 54-76**, **77-82**, **148-155**, **Clinical trials page**) Public health risks (**pages 54-76**) Employee diversity and inclusion (**pages 134-142**) Employee health and safety (**pages 119-129**) Talent management (**pages 39**, **47-49**, **114-142**) Climate change risks and management (**pages 52-53**, **88-91**, **101-106**) Ethical corporate behavior (**pages 44-45**, **81-82**, **154-155**, **Code of Conduct & Compliance**) Privacy and data security (**pages 156-157**)
Remuneration (Expanded)	**Page 42**

Stakeholder Engagement	
Material issues impacting stakeholders (Core)	Pages 49-50
Ethical Behavior	
Anti-corruption (Core)	Pages 81-82
Protected ethics advice and reporting mechanisms (Core)	Pages 44-45
Alignment of strategy and policies to lobbying (Expanded)	Pages 147
Risk and Opportunity Oversight	
Integrating risk and opportunity into business process (Core)	Pages 40-41, 49-50

Planet

Climate Change	
Greenhouse gas (GHG) emissions (Core)	Pages 103-105
Paris-aligned GHG emissions targets (Expanded)	Pages 101-106
TCFD implementation (Core)	Pages 52-53
Nature Loss	
Land use and ecological sensitivity (Core)	Page 100
Freshwater Availability	
Water consumption and withdrawal in water-stressed areas (Core)	Pages 92-99
Impact of freshwater consumption and withdrawal (Expanded)	CDP Water Security
Air Pollution	
Air pollution (Expanded)	Pages 105-106

People

Dignity and Equality	
Diversity and inclusion (Core)	Pages 141-142
Pay equality (Core)	Page 136
Wage level (Core)	Not reported
Risk for incidents of child, forced or compulsory labor (Core)	Pages 143-144
Human rights review, grievance impact and modern slavery (Expanded)	Pages 143-144
Freedom of association and collective bargaining at risk (Expanded)	Pages 49-50, 145-147
Health and Well-being	
Health and safety (Core)	Pages 125-129
Employee well-being (Expanded)	Pages 119-129
Skills for the Future	
Training provided (Core)	Pages 130-133

Prosperity

Employment and Wealth Generation	
Absolute number and rate of employment (Core)	Pages 114-118
Infrastructure investments and services supported (Expanded)	Pages 54-76
Economic contribution (Core)	Pages 51-53 2022 Form 10-K
Financial investment contribution (Core)	2022 Form 10-K
Significant indirect economic impacts (Expanded)	Pages 54-76

Innovation for Better Products and Services	
Total R&D expenses (Core)	**2022 Form 10-K** (page 54)
Community and Social Vitality	
Total tax paid (Core)	**Page 83**
Additional tax remitted (Expanded)	**Page 83**

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Forward-looking statement

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Risks and uncertainties include but are not limited to, general industry conditions and competition; general economic factors, including interest rate and currency exchange rate fluctuations; the impact of the global outbreak of novel coronavirus disease (COVID-19); the impact of pharmaceutical industry regulation and health care legislation in the United States and internationally; global trends toward health care cost containment; technological advances, new products and patents attained by competitors; challenges inherent in new product development, including obtaining regulatory approval; the Company's ability to accurately predict future market conditions; manufacturing difficulties or delays; financial instability of international economies and sovereign risk; dependence on the effectiveness of the Company's patents and other protections for innovative products; and the exposure to litigation, including patent litigation, and/or regulatory actions.

The Company undertakes no obligation to publicly update any forward-looking statement, whether as a result of new information, future events or otherwise. Additional factors that could cause results to differ materially from those described in the forward-looking statements can be found in the Company's Annual Report on Form 10-K for the year ended December 31, 2022 and the Company's other filings with the Securities and Exchange Commission (SEC) available at the SEC's Internet site (**www.sec.gov**).

No duty to update

The information contained in this publication was current as of the date presented. The Company assumes no duty to update the information to reflect subsequent developments. Consequently, the Company will not update the information contained in this publication and investors should not rely upon the information as current or accurate after the presentation date.

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