



# 2016 Sustainability report



## To our stakeholders,

As I reflect on the transformation of BD in recent years, I am reminded how we can adapt to a changing landscape while delivering on the expectations of our many stakeholders and making positive contributions to society. We are moving forward with a renewed focus and purpose: *Advancing the world of health*.

We are the new BD — a company that develops innovations for better discovery, better diagnostics and better delivery of care. Across all three of these areas, we are helping to increase access to healthcare, enhance outcomes, reduce costs and improve healthcare safety. And we do this in most major healthcare settings and systems around the globe, all while keeping sustainability top of mind. We are also looking to the UN Sustainable Development Goals and evaluating how BD can mobilize and contribute to their achievement, through our product and service offerings, as well as collaborative efforts across various sectors.

While our accomplishments in fiscal 2016 were significant, we know that **HOW** we accomplish goals at BD is just as important as **WHAT** we accomplish. We continue to enhance our corporate culture of not just meeting our commitments, but also doing it in the right way. One full year after announcing our 2020 Sustainability goals we are already making notable progress across our four focus areas:

### Innovation

Throughout fiscal 2016, we launched about 20 significant new products and solutions that are helping our customers deliver enhanced outcomes with greater safety and efficiency. We have over 40,000 associates in 50 countries tackling complex global health issues like patient and healthcare worker safety, diabetes, healthcare associated infections, medication management, maternal and newborn health, antimicrobial resistance, TB and cancer, to name a few. Other leading companies operate in some of these areas, but what makes BD unique is the breadth and depth of our expertise and partnerships that we have, enabling the discovery, diagnostics and delivery of care worldwide. And we are investing in new advances through the digital health technologies of the future, with a commitment to effectively manage the rapidly changing landscape of product security and patient data privacy.

### Access

We remain focused on expanding access to state-of-the-art medical technologies, increasing healthcare system capacity and collaborating across the public, private and nonprofit sectors to catalyze new technologies and solutions. Now in its eighth year, the BD-PEPFAR Labs for Life partnership is strengthening laboratories across India, Uganda, Mozambique, Ethiopia and Kenya. And in 2016, BD completed our collaborative program with the U.S. Agency for International Development (USAID) in Indonesia to support their national reference laboratory systems.

### Efficiency

Global GHG emission trajectory is expected to increase the frequency and intensity of some extreme weather events. Along with increasing temperatures, these factors will bring about a

range of health risks and impacts. In alignment with our purpose of *Advancing the world of health*, we are taking action to reduce GHG emissions across our value chain. In 2016, we exceeded our Greenhouse Gas Emissions goal by achieving a 58 percent reduction from our 2008 levels, while simultaneously increasing manufacturing production over this timeframe. And our use of renewable energy is now 43 percent of our total energy use globally, which is well on our way to achieving our 2020 goal of 50 percent. We also continue to make good progress against our water, waste and product sustainability goals.

### Empowerment

Today's BD is very different from the company founded 120 years ago in the US. We are more inclusive and diverse, yet have more work to do. In 2016, we set goals for improving inclusion and diversity, enhanced our Associate Resource Groups (ARGs) and equipped and educated our leaders to focus on inclusion and diversity as a critical element of our success. In addition, we are proudly celebrating the BD Volunteer Service Trip program, which has been in place more than a decade, and has deployed more than 150 associates from 68 BD sites to serve as volunteers, working on the ground in partnership with nonprofit organizations to help address global health issues.

Our focus on enabling better discovery, better diagnostics and better delivery led to a record year of financial performance in fiscal 2016. Revenues reached nearly \$12.5 billion, and we delivered strong EPS growth. Our results this year continue to highlight our consistent performance and the benefit of our diverse portfolio. We also believe that aligning our relevant Environmental, Social and Governance (ESG) factors with our capabilities will help BD continue to generate differentiated results for all of our stakeholders, from shareholders to society.

How we do business has not gone unnoticed. In fact, BD was one of only 10 companies to make Fortune magazine's list of companies that Change the World two years in a row—an accomplishment of which everyone at BD is extremely proud. Fiscal 2016 was a breakout year for BD, but we believe this is just the beginning of an even bigger and better story. I would like to thank our more than 40,000 associates for their dedication to pursuing our purpose in order to make a positive difference for the world. We are fortunate to share this journey with you—our stakeholders—and we look forward to what lies ahead.



Sincerely,

A handwritten signature in black ink that reads "Vincent A. Forlenza". The signature is written in a cursive, flowing style.

Vincent A. Forlenza  
Chairman, Chief Executive Officer  
and President

We believe BD has  
a powerful opportunity  
to keep *advancing*  
*the world of health*  
and deliver significant  
value to customers,  
patients and  
shareholders around  
the world.

## About this report

This report provides an update of our global environmental, social and governance (ESG) performance against our 2020 goals, during our fiscal year 2016 (*October 1, 2015, to September 30, 2016*) for BD and our subsidiaries, unless otherwise stated.

We report annually on our sustainability performance. Our last report, which provided an update on our performance for fiscal year 2015, was published in September 2016.

This report contains standard disclosures from the GRI Sustainability Reporting Guidelines. A list of the Standard Disclosures and their location in this report can be found at the end of this report.

Reporting and performance data includes information on our owned and operated facilities. We continually work to ensure that reporting on key sustainability performance indicators is as accurate and robust as possible.

In addition to providing an update to our performance against the 2020 sustainability goals, this report also includes details about key ESG factors relevant to our business.

We seek feedback from stakeholders each year, which informs our selection of content for sustainability reporting. Contact information can be found at the end of this report.

Our previous sustainability report is available at [bd.com/sustainability](http://bd.com/sustainability)



BD Corporate headquarters, Franklin Lakes, NJ.

## About BD

BD is a global medical technology company that is *advancing the world of health* by improving medical discovery, diagnostics and the delivery of care. BD leads in patient and healthcare worker safety and the technologies that enable medical research and clinical laboratories. The company provides innovative solutions that help advance medical research and genomics, enhance the diagnosis of infectious disease and cancer, improve medication management, promote infection prevention, equip surgical and interventional procedures and support the management of diabetes. The company partners with

organizations around the world to address some of the most challenging global health issues.

BD has more than 40,000 associates across 50 countries who work in close collaboration with customers and partners to help enhance outcomes, lower healthcare delivery costs, increase efficiencies, improve healthcare safety and expand access to health.

Further details about BD can be found in our [2016 10-K filing](#).

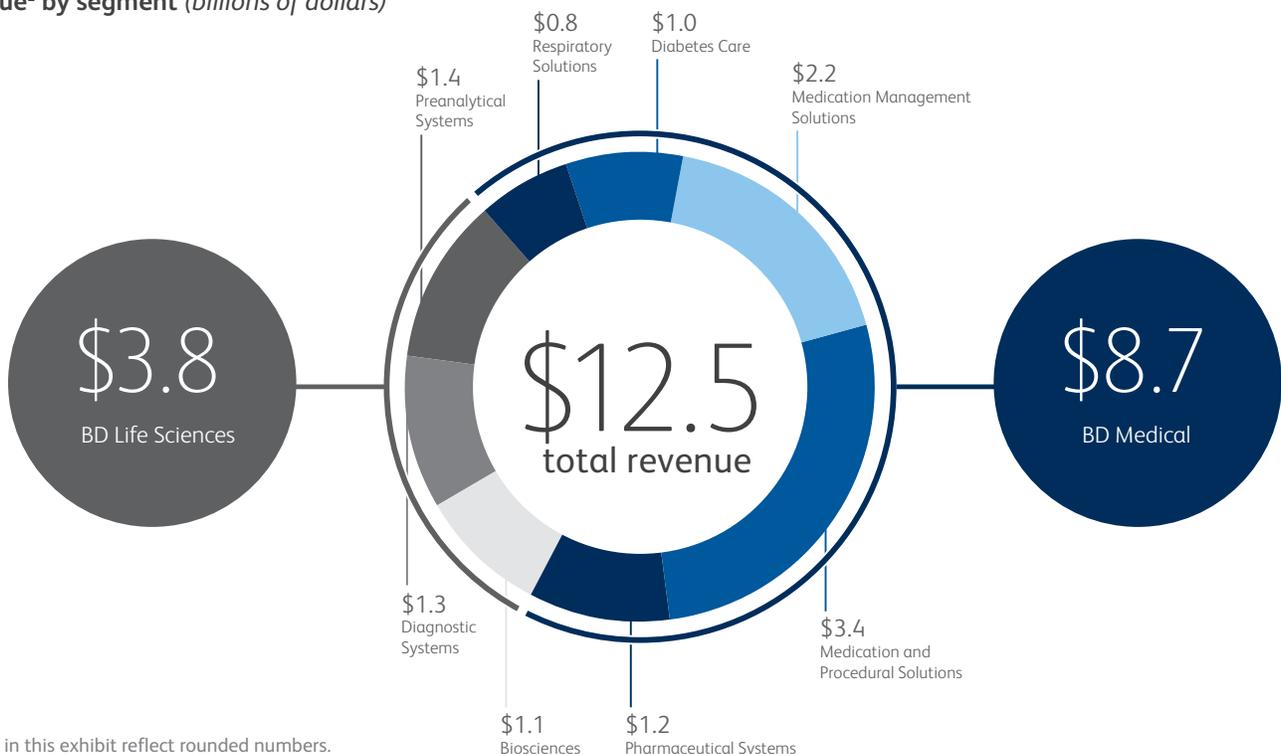
## Company structure

BD—structured to serve customers with unique solutions

Revenue<sup>1</sup> by region (billions of dollars)



Revenue<sup>2</sup> by segment (billions of dollars)



<sup>1</sup> Values in this exhibit reflect rounded numbers.

<sup>2</sup> Values in this exhibit reflect rounded numbers.

## Value chain profile

BD has more than 1,000 core suppliers that provide key materials, including plastics, glass, metals, textiles, paper products, agricultural products, electronic and mechanical sub-assemblies, and various biological, chemical and petrochemical products.

Our more than 50,000 products are manufactured and sold worldwide. They are marketed in the United States and internationally through independent distribution channels and directly to end-users by BD and independent sales representatives.

### Customers served

	BD Medical	BD Life Sciences
Hospitals	•	•
Clinics	•	•
Laboratories		•
Physicians' office practices	•	•
Consumers and retail pharmacies	•	
Government agencies	•	
Academic and government institutions		•
Public health agencies		•
Non-profit public health agencies	•	
Blood banks		•
Pharmaceutical companies	•	•
Biotechnology companies		•
Healthcare workers	•	•



Solar panels installation at our Bawal, India facility.

## Our sustainability strategy

Fiscal year 2016 marked our first full year as a new BD driven by our purpose: *Advancing the world of health*. Our sustainability strategy is centered upon our company purpose and is integrally tied to our business strategy.

We utilize a defined process to evaluate and prioritize the Environmental, Social and Governance (ESG) factors most relevant to our business and stakeholders. Through this process we have defined four areas of focus that provide the framework for our 2020 Sustainability goals:

- **Innovation** – How we contribute to more sustainable healthcare systems by improving outcomes, reducing system costs and protecting patients and healthcare workers
- **Access** – How we support health system leapfrogging in emerging and developing economies, and to reach vulnerable populations globally

## Sustainability governance

Our sustainability strategy is governed by the Management Committee, which maintains a dialogue with our stakeholders, businesses and associates about issues relevant to each group and monitors performance related to our 2020 sustainability goals.

The Office of Global Sustainability coordinates our ESG and Sustainability Reporting as well as stakeholder engagement activities relevant to our sustainability strategy. This Office reports directly to the EVP & Chief Integrated Supply Chain Officer and engages directly with the executive leadership team.

- **Efficiency** – How we work across our value chain to minimize environmental impact and create positive social impact
- **Empowerment** – How we advance our purpose-driven culture through workforce and community engagements

In 2016, and as a result of our completion of the CareFusion acquisition, we reevaluated our 2020 Goal framework to test its relevance against our new, and larger, company in terms of product portfolio, footprint and associate base. While we identified areas to strengthen how we interconnect the four pillars of our 2020 Goals, we validated that our 2020 Goals remain centered upon the core of our business strategy and most relevant ESG factors.

To further enable our progress, we remain focused on shared value creation, meaning how we address unmet societal needs through business models and initiatives that also contribute to the commercial success of BD.

Our Board of Directors — as a Board or through its Committees — also oversees several sustainability-related issues, including:

- Community relations
- Employment practices
- Environment, health and safety
- Ethics and enterprise compliance

In addition, the Corporate Governance and Nominating Committee oversees matters that involve the Company's image, reputation and our standing as a responsible corporate citizen.

## Stakeholder engagement

Because of our global reach and the nature of our work, we serve and rely on a wide range of stakeholders. Engaging with them—through a variety of channels across many parts of our organization—is critical to how we apply the principle of shared value and therefore essential to our business success. Often we work collaboratively with stakeholders who share our objectives and in the process we gain a deep understanding of their work. We listen to our stakeholders' views and suggestions and use that feedback to improve our products, services and business practices.

### Our stakeholders:

- **Customers:** Our customers are at the center of everything that we do. In a fast-changing environment, it is vital for BD to understand what our customers value most in order to develop solutions that will best meet their needs. We create a deep understanding of the healthcare market and customers through a fact-based approach across regions, and strategically engage with customers to develop and deploy our products and solutions.
- **Shareholders:** Our focus on shareholders is to ensure that the combination of our business and geographic diversity, our balanced capital allocation and our drive for efficiency, provides a long-term pathway toward sustainable profit growth that returns capital to shareholders. We engage with shareholders in a variety of forms, including quarterly calls, in-person meetings and engagement on specific topics that range from our long-term growth and innovation strategy to how we integrate ESG factors into our business.
- **BD associates:** We will only be able to achieve our strategy through the capabilities and dedication of our over 40,000 associates globally. We engage and develop our associates through a variety of engagement mechanisms including internal social networks, townhall meetings, leadership and mentoring programs and associate resource groups.
- **Business partners:** Our suppliers, distributors and other partners in the supply chain help us effectively serve our customers. We engage with them through a variety of strategic programs, including through relationship managers within our Integrated Supply Chain function.
- **Communities:** At the country level, our General Managers engage with a variety of community stakeholders to understand the health system's priorities and align our capabilities to them. In communities where we have manufacturing operations, we often develop relationships with teaching institutions to help develop the skill sets we require in our operations. And, our associates engage in community-organized volunteer efforts to support local programs.
- **Governments and policy makers:** We engage governments and policy makers through various ways, primarily through our public policy teams. We engage at the agency and legislative levels in many countries to enhance our understanding of the priorities of governments. From these engagements, we seek ways to deploy our capabilities, products and solutions to help support and achieve national health objectives. We also share our expertise and global experience in key focus areas.
- **International agencies:** We engage with UN agencies such as the World Health Organization (WHO), UNICEF, the joint United Nations Programme on HIV & AIDS (UNAIDS) and other international and intergovernmental organizations through collaborations that aim to address pressing global health needs. We routinely pursue these types of collaborations as an integral part of our business model in countries throughout the world.
- **Non-governmental organizations (NGOs):** In many cases, NGOs and relief organizations are strategic partners in helping us meet unmet health needs. We engage with them through in-person meetings, collaborative initiatives and site visits to strengthen how we serve those in need.

# 2020 sustainability goals

In July 2015, BD launched new sustainability goals for 2020. The goals reflect a broader and more integrated agenda than previous years, recognizing four strategic areas where BD will focus its efforts and reporting:

## Innovation

**Innovate** key healthcare processes such as medication management and lab automation

**Develop** innovations and informatics to enable disease management across the care continuum

**Enable** the transition from research into clinical practice

**Provide** solutions that improve healthcare worker and patient safety

## Access

**Develop** low-cost innovations to address leading causes of mortality and morbidity

**Collaborate** on health system strengthening with leading agencies and NGOs

**Further expand** BD manufacturing, product array and employment in emerging countries

## Efficiency

**Reduce** greenhouse gas (GHG) emissions and increase climate resilience throughout operations and value chain

**Minimize** our environmental footprint and conserve natural resources

**Establish** supplier responsibility evaluation methodology

**Eliminate** priority materials of concern in specified product categories

**Improve** life cycle impacts of products

## Empowerment

**Increase** the diversity of our workforce, particularly in leadership roles

**Achieve** best-in-class associate safety performance

**Partner** with nonprofits to address unmet needs locally and globally

**Drive** social impact and associate engagement through volunteer programs

The sustainability strategy addresses the wide range of challenges in our industry while helping to make a difference on relevant issues that affect society and the planet. In addition to an ongoing focus on improving environmental performance, our sustainability strategy takes a broader view of the company's role in addressing global societal issues and reflects our most relevant ESG factors.

The following sections of this report describe the management approach to achieving these goals and provide an overview of our performance against these goals over the past year.



# How we do business

## Ethics and compliance

BD is committed to a strong ethics and compliance culture. We do not tolerate actions or behaviors that are inconsistent with the BD Values or violate the BD Code of Conduct or applicable laws and regulations. All BD associates are responsible for reinforcing our ethics and compliance culture and sustaining our reputation as a company dedicated to quality and integrity.

BD has always held itself to the highest standards of business conduct. At a minimum, we remain committed to ethical operations and compliance with laws and regulations.

Our commitment extends beyond compliance with the law to include a firm belief that the best way to be a great company and to deliver value to our customers, associates, shareholders and communities is to be fair, honest and ethical in our business practices and personal behavior at work. Acting with integrity is critical to our success and reputation. The Management

Committee and BD leaders set the tone and elevate our focus on cultivating a strong culture of ethics and integrity.

The BD Values further strengthen our culture of ethics and compliance and guide how we hold ourselves accountable to our shareholders and stakeholders.

- We do what is right
- We anticipate and address the challenges of patients and customers globally
- We innovate and improve continuously
- We respect, collaborate, challenge and care about each other
- We take personal responsibility

These values are cascaded through all levels of the organization.

## Code of conduct and training

The Code of Conduct defines and clarifies our expectations for legal and ethical behavior on the part of every associate—an obligation that is a condition of continued employment. It provides information and guidance about situations that BD associates may encounter in their day-to-day business dealings. It is available in English and 20 other languages. The key elements of the Code of Conduct are:

- The basics (*BD Core Values, expectations of associates and people managers, and voicing questions and concerns*)
- Conflicts of interest
- Integrity within the Company
- Integrity in dealing with others

All BD associates are trained on the Code, either through online or in-person courses tailored to their job role and / or region, and are asked to review and certify to the Code annually. BD provides new associates with a copy of the Code and an introductory presentation on ethics and compliance.

Annual training on the Code of Conduct is part of our overall ethics and compliance training program, called “Doing What is Right” and emphasizes the importance of speaking up and seeking guidance. This online training program, which started in 2006, is provided when associates are hired, and annually thereafter, tailored to their job role and / or region. Some topics include:

- Global anti-corruption and bribery
- Global information security
- Privacy and data protection
- Financial integrity and fraud
- Global competition
- Professional conduct and preventing harassment
- Ethical decision making
- Ethics and values

Our Code of Conduct is available at

[www.bd.com/investors/corporate\\_governance/](http://www.bd.com/investors/corporate_governance/)

## Anti-bribery and anti-corruption

The anti-bribery and anti-corruption program helps us to keep associates pointed in the right direction. In support of the program, the Commercial Compliance function provides compliance resources to regional and local country management to enhance their anti-corruption and compliance business practices. This includes incorporating compliance requirements into existing business practices and advising local

management on anti-corruption compliance-related issues.

In addition, the Distributor Excellence team enhances the ability to drive compliance in our distributor networks on a local basis, resulting in stronger business relationships while upholding our reputation.

The anti-bribery and anti-corruption program is advanced by fostering collaboration with business leaders to deliver consistent and clear policies and approval processes—along with enhanced third-party due diligence procedures—to help provide assurance that BD is “winning business the right way.” Through our program, we now have a virtual community among our regions through our Compliance Champions program that shares best practices, goes through scenario-based training and

## Reporting ethics concerns

BD associates have an obligation to report any suspected ethics violations. They can be reported in a number of ways, including the BD Ethics HELPLINE, a 24 / 7 confidential telephone helpline, or use web-based reporting available to all BD associates worldwide, and operated independently, where associates can make a report in their native language. The helpline provides translation services as needed. Associates can also report ethics violations to their supervisor, management, Human Resources or directly to the Ethics Office. Regardless of the outcome,

## Interactions with healthcare professionals

BD complies with all applicable laws, regulations and industry codes that govern the interactions of medical technology companies and healthcare professionals in the many countries in which we do business. To help ensure compliance, BD has adopted various industry codes, including the Advanced Medical Technology Association (*AdvaMed*) Code of Ethics in the U.S.

## Human rights

At BD, we are committed to operating in a way that respects the human rights of all associates, as well as the people in our supply chains and the communities in which we operate. Our human rights policy recognizes that while governments have the primary responsibility to protect human rights, our activities have the potential to impact the human rights of individuals affected by our business. In all of our operations:

- We provide a safe and healthy workplace for our associates.
- We do not use child labor.
- We do not use forced, prison, indentured, bonded or involuntary labor.
- We prohibit discrimination in our hiring and employment practices.
- We prohibit physical abuse and harassment of associates, as well as the threat of either.
- We support the freedom of association and the rights of workers and employers to bargain collectively.

leverages experiences and materials such as the global “Rules of the Road” policy standard that is adapted locally.

Joint training with distributors is a core component of the anti-bribery and anti-corruption program. These sessions combine required anti-corruption training with information about our overall strategy, progress updates for each business segment and new products. We also communicate with each of our distributors to better understand their needs and topics for future gatherings.

associates are never penalized for bringing such matters to the Company’s attention in good faith.

In FY16, the Ethics Office received more than 350 contacts from associates worldwide seeking guidance or reporting concerns. BD takes all contacts seriously, investigates concerns and takes action as appropriate. Depending on the findings, corrective action may be taken, including discipline up to and including termination of employment.

and MedTech Europe Code of Ethics. BD associates receive information and training about these codes in a number of ways, including periodic communications and online and in-person trainings at conferences and meetings. Associates can access detailed information about all applicable industry codes through our intranet.

We believe that all people should be treated with dignity and respect and we are committed to conducting our business in a manner consistent with this principle. We comply with applicable employment and human rights laws and regulations wherever we have operations; we expect our suppliers to do the same.

To that end, BD maintains several policies that reflect our Core Values, which BD associates are expected to follow in all aspects of business, including dealings with suppliers, customers and other stakeholders. These include:

- **BD Code of Conduct**, which includes a section outlining our policy on human rights
- **BD Expectations for Suppliers**, our code of conduct designed for our thousands of suppliers

BD strives to continuously improve its programs to ensure compliance with applicable laws and high ethical standards to meet the expectations of our customers, shareholders, associates, communities and other stakeholders.

# Corporate governance

## Governance principles

Our Corporate Governance Principles outline how we hold ourselves accountable to shareholders and stakeholders. These principles address the operation of our board and its committees; strategic and succession planning; director

qualifications, independence, compensation and equity ownership; and the ability of shareholders and others to communicate directly with Board members.

## Board composition

BD is governed by a Board of Directors consisting of 13 members, 12 of whom are independent. Our Board members have a variety of backgrounds, which reflects our continuing efforts to achieve a diversity of viewpoint, experience and knowledge, as well as ethnicity and gender. Our Board is comprised of four female directors and nine male directors, two of whom are African American.

There are five standing Board committees:

- Audit
- Compensation and Management Development
- Corporate Governance and Nominating
- Executive
- Science, Marketing, Innovation and Technology

A charter for each committee outlines its mission, the qualifications required for membership and its members' duties. See more about our Board of Directors on [the Corporate Governance website](#).

## Executive compensation

Our goal is to provide an executive compensation program that best serves the long-term interests of our shareholders. We believe that attracting and retaining superior talent and rewarding performance is key to delivering long-term

shareholder returns, and that a competitive compensation program is critical to that end. Further details of executive compensation can be found in [our proxy statements](#).

# Participation in the political process

BD engages in public policy advocacy through ongoing, constructive and transparent interactions with government officials, policymakers and stakeholder groups. Our participation in the political process, including lobbying and the BD PAC program, is governed with Board and Management Committee

oversight. All advocacy activities are directed toward advancing the Company's purpose of *advancing the world of health*, without regard to the personal political affiliations or views of any individual BD associates at any level across the organization.

## Public policy advocacy

We employ public policy professionals who work closely with our country and business leaders to make constructive contributions to policy discussions relevant to the Company and to the communities in which we operate. We leverage our diverse expertise, global reach and collaborations with healthcare professionals, patients and others to advance sound public policy.

In areas in which BD has deep experience, the Company develops public policy positions that guide our advocacy efforts worldwide. We currently have a range of Global Public Policy

Positions, which are available at [www.bd.com/investors/corporate\\_governance/policy-positions.aspx](http://www.bd.com/investors/corporate_governance/policy-positions.aspx)

We also engage in policy dialogue to advance regulatory and reimbursement frameworks that ensure the safety and efficacy of medical technologies, while also enabling timely patient access to them. We promote sensible tax policies that enhance competitiveness and innovation, support policies and programs that advance biomedical research and seek to expand access to care for all people.

## Political contributions

The Company prohibits the use of corporate funds and assets to support U.S. federal or state candidates, political parties, ballot measures or referendum campaigns. Exceptions to this policy require approval by the CEO, General Counsel and a designated member of the Board of Directors Corporate Nominating and

Governance Committee. To date, no exceptions have been sought or approved.

Certain conditions must also be met for any political contributions outside of the U.S.

## Political Action Committee: BD PAC

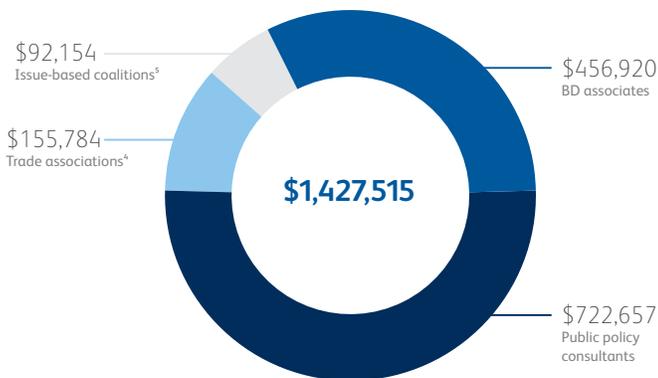
As permitted under U.S. law, the Company operates a political action committee. The BD PAC is a mechanism to enable eligible U.S. associates to voluntarily support candidates for elected office who share our perspectives and approaches to public policy issues. BD has not authorized the establishment of any political action committees operating on the state or local level.

Contributions to the BD PAC are entirely voluntary and are governed by the BD PAC By-Laws. BD provides administrative support to the PAC, as permitted under federal law.

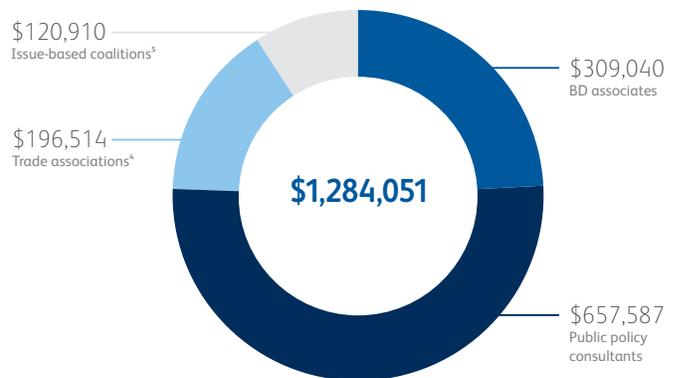
Annual reporting of itemized PAC contributions, and any other corporate contributions that may be made, is available at: [http://www.bd.com/investors/corporate\\_governance/](http://www.bd.com/investors/corporate_governance/)

## U.S. Lobbying expenditures

2015<sup>3</sup>



2016<sup>3</sup>



Further details about the participation of BD in the political process, including oversight, accountability and transparency of this process, including reporting of violations, can be found in the document Our Participation in the Political Process at:

[http://www.bd.com/investors/corporate\\_governance/policy-positions.aspx](http://www.bd.com/investors/corporate_governance/policy-positions.aspx)

<sup>3</sup> Data represents calendar years

<sup>4</sup> Trade associations: AdvaMed, Healthcare Institute of New Jersey, California Life Sciences Association, North Carolina Biosciences Organization

<sup>5</sup> Issue-based coalitions: Diagnostic Test Working Group, Medical Device Competitiveness Coalition, Physicians Fee Schedule Pathology Payment Coalition, United for Medical Research



# Innovation

## Healthcare safety, outcomes and cost

### Introduction

BD is on the forefront of helping healthcare systems balance four key priorities: increasing access, improving outcomes, mitigating healthcare system cost pressures and protecting patients and healthcare workers. A sustainable innovation system needs investment, discipline and leadership to succeed.

Innovation requires diligence and partnering, and our capabilities span ideation through market development. Along this continuum, we can increase our impact through selective partnerships.

We think a broad definition of the term “innovation” is the best way to advance healthcare. Whether it is technology, processes, systems partnerships or any dimension of business, we pioneer new, relevant ways to address healthcare’s most pressing problems. Our technologies and execution capabilities allow BD to make a profound impact on the quality of care.

### R&D investments

BD is a company that develops innovations for better discovery, better diagnostics and better delivery. Innovation and new product development are key to advancing in these areas. In FY16, BD launched 20 significant new products and solutions that are helping our customers deliver enhanced outcomes with greater safety and efficiency. BD conducts the majority of its R&D activities in North America. Outside North America, BD conducts R&D activities in China, France, India, Ireland and Singapore. BD also collaborates with certain universities, medical centers and other entities on R&D programs and retains individual consultants and partners to support its efforts in specialized fields.

The medical device tax (*an element of the U.S. Affordable Care Act*) was suspended in 2016 and BD reinvested the funds back into various programs, including R&D.

Our innovations enable research insights inside and outside the body’s cells, transform the infections disease lab of the future and manage medication across a wide care continuum.

Driving growth through innovation is one of the pillars of the Company’s strategy and an essential component for delivering sustainable healthcare, driving profitable growth and fulfilling our mission of *advancing the world of health* through better outcomes for patients and customers. Over the last several years, we have accelerated our strategy to evolve from a product-focused to a customer-focused provider of healthcare solutions, becoming a bigger, better and bolder BD.

R&D expense (USD, millions)	FY11	FY12	FY13	FY14	FY15	FY16
	470	472	494	550	632	828

## External recognition

BD was named to the [CNBC IQ100 Index](#) in 2016, a first-of-its-kind rules-based index of large-cap companies that derive substantial revenue growth through the use of protected, proprietary technology.

The companies in the index are weighted according to each one's ability to invest in, develop, control and deploy intellectual property to achieve strategic advantage over competitors.

## BD Innovation Lab at Singularity University

In FY16, BD established a unique collaborative relationship with [Singularity University](#) (SU), a California benefit corporation that empowers leaders to leverage exponentially growing technologies to tackle the world's greatest challenges. Amplifying its long legacy of pioneering novel solutions to address global healthcare challenges, BD is leveraging SU's expertise, innovation space, curriculum and mentoring to create its own 'startup garage' in Silicon Valley.

At this Silicon Valley-based Innovation Lab, small teams of BD associates from across the world work together with SU faculty, staff and partners to explore and test big ideas that are designed around breakthrough digital technologies, BD corporate and business unit strategies, and key healthcare trends.

Along with our SU entrepreneur-in-residence, the internal teams work as lean startups on short-term, virtual projects to build prototypes, develop early-stage business plans, collect initial user feedback and quickly iterate in collaboration with the corporate technology and innovation center in Research Triangle Park, NC, to determine relevance for further incubation within BD.

Companies with the highest weighting maintain this type of advantage across multiple industries.

In 2016 BD was also named a Thomson Reuters Top 100 Global Innovator.<sup>6</sup> The Thomson Reuters 2015 Top 100 Global Innovators methodology uses patent information to measure innovation, along with metrics to assess the quality of innovation (*patent grant success rates*), global reach (*breadth of filing*), and patent influence as evidenced by citations.

In 2016, three key projects were initiated at the Innovation Lab that exemplify the application of exponential technologies and bold thinking to solve significant problems. These projects explore the use of real time data gathering for home-based disease management, predictive analysis on patient behavior and compliance after hospital discharge and new visualization tools for high-parameter cell analysis.

BD also continues to leverage its Innovation Lab to bring together the best and brightest from our global talent pool to conduct cutting-edge workshops that fuel and expedite innovative ideas. These annual events attract BD leaders representing R&D, business development, strategy and marketing, from multiple business units and corporate functions, and enable BD leadership to address key healthcare needs by exploring exponential solutions. While each workshop generates hundreds of ideas, the first two workshops produced approximately six concepts that will move on to further development.

<sup>6</sup> Now the Clarivate Analytics Top 100 Global Innovator <http://stateofinnovation.com/>

## BD Accelerator Program and innovation partnerships

BD proudly partners with leading national and international organizations that share our commitment to fostering innovation that transforms healthcare, improving the lives of patients and the clinicians who care for them. These include:



**IBM Alpha Zone Accelerator** is a 20-week program that helps startups to build leading solutions for the enterprise market. Through this partnership, BD and IBM jointly select startups that are focused on improving healthcare delivery and decision making via the use of IBM's cloud and cognitive computing tools, like IBM Watson. BD offers selected startups (*aligned with strategic growth priorities*) professional mentorship, a grant of up to \$25,000 and access to internal subject matter experts and external key opinion leaders.



Israel's **Innovation Authority Global Enterprise R&D Collaboration Program**. Many breakthrough technologies developed in Israel are originated by small startups. While startups are usually very creative and highly efficient in conducting R&D, commercialization of new products remains a challenge due to limited resources. Large multinational corporations (*MNCs*) have a strong advantage in commercialization, manufacturing and marketing of new products, globally. Startups and MNCs benefit from collaboration by sharing risk. To encourage these partnerships in Israel, the Innovation Authority (*formerly the Office of the Chief Scientist*) has established a dedicated Global Enterprise R&D Collaboration Program, and BD has been a member for three years.



**MedTech Innovator** is the medtech industry's nonprofit global competition and accelerator program for medical device, digital health and diagnostic startups. Its mission is to improve the lives of patients by accelerating the growth of companies that are working to transform the healthcare system. Large U.S. organizations participate as application reviewers and judges, giving critical feedback on topics like healthcare economics, customer requirements, integration issues and more.



**PULSE@MassChallenge**, a digital health lab backed by the Commonwealth of Massachusetts, connects entrepreneurs to experts, institutions and resources, with no equity taken. Through a mutual matchmaking process, corporate and institutional champions have the opportunity to actively collaborate with startups to accelerate innovation and transform healthcare.



The **Global Center for Medical Innovation (GCMi)** is a nonprofit, comprehensive medical device innovation center located in Atlanta, dedicated to accelerating development, building businesses and improving health. Industry partners use the accelerator as a sandbox for high potential companies to mature in a measured, milestone driven, high-touch manner.

## Creative partnerships drive innovation

Through our innovation partnerships, BD convenes communities of entrepreneurs and innovators across the globe, looking for exciting technologies, interesting business models and emerging opportunities to address healthcare challenges. By tapping into the ingenuity and agility of these global networks of external talent and by leveraging new product and technology investments, BD is creating shared value for its customers, their patients and BD shareholders.

Some of the earliest successes of this work include the identification and development of key opportunities that are strategically aligned to key areas of BD business growth, including:

- **Sight Diagnostics**, who specialize in utilizing computer vision to automate blood diagnostics. BD is now the exclusive distributor of Sight Diagnostic's malaria testing platform in India.
- **MedAware**, an algorithm-rich startup and the developer of a machine-learning enabled software solution that identifies and eliminates a wide range of prescription errors. BD is incubating this opportunity within its MedMined™ business via a BIRD Foundation grant.
- BD has also exclusively licensed a new product that combines the clinical benefits of vacuum-assisted biopsy with the reliability of core needle devices.

### 2020 goal

**Innovate** key healthcare processes such as medication management and lab automation

## Medication management

According to the U.S. Food and Drug Administration (FDA), 1.3 million patient injuries occur annually in the U.S. due to medication errors, which costs the health system \$21 billion<sup>7</sup>. These medication errors represent one-third of all medical errors.

Our Medication Management Solutions (MMS) business is focused on providing solutions to help hospitals and health systems, globally, improve the safety and reduce the cost of medication management across the continuum of care. Through best-in-category products—supported by an integrated IT platform and enhanced by expert services—we provide the broadest offering of medication management solutions to our customers from medication preparation and storage in the pharmacy, to administration at the bedside. BD MMS works with health systems to look at their entire medication management process to improve their practices, processes and effective adoption of technology to support optimal care and improved outcomes. BDs Alaris™ infusion technologies and Pyxis™ medication and supply dispensing technologies can help reduce costs, improve care coordination and streamline medication use. These solutions also integrate data from our devices to help with customer efforts to protect medication types at all points of care.

During 2016, BD introduced new products that support medication management in the healthcare setting, helping to reduce costs and improve patient safety.

- **BD™ U-500 Insulin syringe**

The BD U-500 Insulin Syringe is the first and only insulin syringe developed for patients taking Humulin® R U-500 insulin. Humulin R U-500 insulin is indicated for patients with diabetes requiring more than 200 units of insulin per day. Compared to syringes made for U-100 insulin, the new BD U-500 insulin syringe is designed to make it easier for patients and healthcare providers to draw the correct dose of U-500 insulin by reducing steps that can result in dosing errors. Without a dedicated U-500 insulin syringe, people with diabetes and healthcare providers are required to take additional steps to manually convert U-500 insulin doses to the appropriate dose or volume when using a traditional U-100 insulin syringe or tuberculin (*volumetric*) syringe.



<sup>7</sup> U.S. Food and Drug Administration (FDA). October, 2016. Medication Error Reports. Retrieved from: <http://www.fda.gov/Drugs/DrugSafety/MedicationErrors/ucm080629.htm>

## Lab automation and efficiency

Increasing efficiency of the laboratory helps to reduce healthcare system costs, by improving productivity and helping to deliver faster and more accurate diagnostic results. The improved accuracy and reliability of the result lead to improved clinical outcomes for patients. During 2016, BD introduced several new products that contribute to lab efficiency.



- **BD MAX™ CT / GC / TV assay**

The BD MAX CT / GC / TV assay helps healthcare providers improve patient management and care by providing the ability to detect for three of the most common sexually transmitted infections—*Chlamydia trachomatis* (CT), *Neisseria gonorrhoeae* (GC) and *Trichomonas vaginalis* (TV)—from a single specimen, in just one test. Trichomoniasis is considered the most common curable sexually transmitted disease, with an estimated 3.7 million cases in the United States. Of these cases, only about 30% of people infected develop any symptoms of trichomoniasis.<sup>8</sup> Specimen collection options are flexible. Once samples are loaded onto the BD MAX system, results are ready in less than three hours, and all reagents are ready-to-use and can be stored at room temperature.

- **BD MAX™ vaginal panel**

This panel is the first multiplex, real-time polymerase chain reaction (PCR) assay authorized by FDA for the diagnosis of both vaginitis and vaginosis in women that exhibit symptoms of vaginal infections. This assay will provide laboratories and clinicians the ability to use a single test to detect microorganisms responsible for bacterial vaginosis (BV), candidiasis (CA) and trichomoniasis vaginalis (TV), which are the most common infectious causes of vaginitis.<sup>8,9</sup> The BD MAX vaginal panel has a unique algorithm that determines the ratio of healthy versus unhealthy bacteria, improving BV diagnosis.

Vaginal infections are one of the most common infections affecting women's health, with up to 75 percent of women experiencing at least one case of vaginitis (CA, TV) or vaginosis (BV) in their lifetime.<sup>8,9,10</sup> The BD MAX vaginal panel has the potential to help clinicians improve patient management and help laboratories increase workflow efficiency.

- **BD MAX™ extended enteric bacterial panel**

Globally, there are approximately 1.7 billion cases of diarrhea annually. Children less than 5 years of age are particularly at risk, causing around 760,000 deaths each year.<sup>11</sup>

The BD MAX extended enteric bacterial panel is the latest offering in the suite of BD MAX enteric assays, which aid in the diagnosis of acute gastroenteritis, inflammation of the gastrointestinal tract. This panel joins the BD MAX enteric bacterial panel, the BD MAX enteric parasite panel and the Diagenode™ enteric virus panel for BD MAX, enabling individualized testing to be performed based on a patient's symptoms and health history. With the availability of the BD MAX extended enteric bacterial panel, the majority of pathogens causing acute gastroenteritis<sup>12</sup> can be detected rapidly and accurately.

In the laboratory, the BD MAX system decreases time-to-result and improves laboratory efficiency by performing the sample extraction, amplification and detection on a single panel.

- **BD Totalys™ system**

A new, automated cervical cancer screening system, the BD Totalys system helps to reduce the potential for human error and increases lab workflow efficiency. The fully integrated and modular system connects directly to laboratory information systems, providing a balance of automation and flexibility to help meet the needs of medium and high throughput cervical cancer screening labs by reducing technician hands-on time and repetitive motion, and improving usability, user safety, overall process quality and functionality.

<sup>8</sup> Hainer BL, Gibson MV. Vaginitis: diagnosis and treatment. *A Fam Phys*. 2011; 83: 807–815.

<sup>9</sup> Centers for Disease Control and Prevention. <http://www.cdc.gov/std/trichomonas/stdfact-trichomoniasis.htm>. Accessed September 20, 2016

<sup>10</sup> Sherrard J, Donders G, White D. 2. Editor: Jensen JS. 2011 European (IUSTI/WHO) Guideline on the Management of Vaginal Discharge

<sup>11</sup> WHO Fact Sheet, April 2013

<sup>12</sup> ECDC Annual Epidemiological Report, 2014

- **BD Barricor™ tubes**

According to the *American Journal of Clinical Pathology*, with 60 to 70 percent of the required information on a patient's chart coming from laboratory test results, there is a high demand for rapid test turnaround time among clinicians.<sup>13</sup> BD Barricor tubes deliver on that need by providing a faster time-to-result for patients. With no clotting time required and a reduction in centrifugation time of up to 7 minutes, an overall saving in turnaround time of 37 minutes is possible. This next-generation blood separation technology is designed to enhance sample quality, improve laboratory efficiency and reduce laboratory turnaround time



- **BD Kiestra™ lab automation**

BD Kiestra lab automation solutions are transforming microbiology sample analysis with novel image acquisition software for clinical microbiology laboratories. The new BD Kiestra Optis™ technology is our most advanced diagnostic imaging technology, optimizing sample-to-result outcomes and revealing details that before could only be seen with a microscope. This technology provides the foundation for future imaging applications designed to assist in the diagnosis of infectious diseases. BD is also developing a suite of applications that will leverage the BD Kiestra Optis technology. These applications will help improve laboratory efficiency and impact patient management and care by releasing results earlier, automatically.

## 2020 goal

### Develop innovations and informatics to enable disease management across the care continuum

Technology is advancing capabilities for how clinicians and patients manage disease across the care continuum. We work closely with healthcare systems to improve safety, costs and outcomes. BD continued to advance our product capabilities in this area during 2016.

- **BD Veritor™ Plus system**

The new wireless BD Veritor Plus system provides healthcare providers and laboratorians in physician offices, clinics, hospitals and integrated delivery networks (IDNs) with objective, lab-quality immunoassay test results within minutes. This rapid and accurate solution streamlines the point-of-care (POC) diagnostic workflow and enables providers to quickly review patient results to assist in determining the appropriate treatment in a single consultation. The system can help detect influenza A and B, respiratory syncytial virus (RSV) and group A strep while the patient is still on site, which enables faster decision making for earlier intervention.

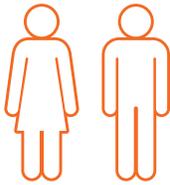
The new BD Veritor Plus system also offers the BD Cloud Connectivity Solution—a technology that allows users to wirelessly transfer test data securely to an electronic medical record (EMR) or a laboratory information system (LIS) to enable data access across an entire IDN. This can help to reduce potential errors associated with manual documentation and streamlines POC testing workflow to enable physicians to more easily access test results and use the information to determine next steps in patient care.



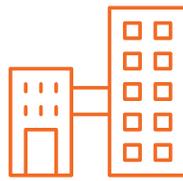
<sup>13</sup> Holland, L.L., Smith, L.L., & Blick, K.E. (2005). Reducing laboratory turnaround time outliers can reduce emergency patient length of stay. *American Journal of Clinical Pathology*, 124, 672-674.

## Product security and privacy

Product security and data privacy matters to our customers and patients, as well as BD. Data breaches can amount to a significant cost:<sup>14</sup>



Average per capita cost of a data breach is **\$221 in the U.S.** and **\$213 in Germany.**



Average total cost to an individual company is **\$7.01 million in the U.S.** and **\$5.01 million in Germany.**



Average **global cost** of a healthcare data breach **per lost / stolen record is \$355.**

Cybersecurity is a rapidly evolving area that can challenge the confidentiality, integrity and availability of technology and impact those who manage or use this technology. In the case of healthcare, hospital operations and patient care rely on technology. As a medical technology company, BD is proactively addressing these known security issues in the products we develop, considering how the products are managed and used by customers, as well as collaborating with stakeholders across the healthcare and security industry to address new or emerging threats. Security is a necessary component of our commitment to being a trusted partner for customers, and building quality products that are safe and effective.

BD is committed to providing secure products to our customers given the important benefits they provide to patient health. We value the confidentiality, integrity and availability of all protected health and personally identifiable information. BD has implemented administrative, technical and physical safeguards, to reasonably protect against security incidents or privacy breaches involving a BD product. However, as systems evolve, vulnerabilities may be identified and we consider our customers to be a partner in this process. Across BD we continuously strive to improve security and privacy by design, in use and through partnership throughout the product life cycle. More information on BD Product Security and Privacy can be found at [www.bd.com/productsecurity](http://www.bd.com/productsecurity)

### 2020 goal

#### Enable the transition from research into clinical practice

The ability for healthcare providers to advance their understanding of disease states and then quickly and accurately diagnose and treat patients is critical to reducing overall system costs and improving patient outcomes. In 2016, BD introduced the following products to aid researchers and clinicians:

- **BD FACSCelesta™ system, BD Horizon Brilliant™ reagents and BD OptiBuild™ reagents**

Uniquely designed to leverage the broad BD Horizon Brilliant reagent portfolio, the new BD FACSCelesta system offers simultaneous measurement of up to 14 different single-cell characteristics.

The BD FACSCelesta is the latest advancement in the BD cell analyzer portfolio, enabling consistency of results and seamless transfer of applications between BD platforms with 14 parameters in a three-laser benchtop system. When combined with the patented technology of BD Horizon Brilliant polymer dyes, the BD FACSCelesta system enables

greater resolution of previously unobserved cell populations and provides researchers with more fluorophore choices when using multicolor flow cytometry.

In order to fully take advantage of the suite of BD Horizon Brilliant dyes, researchers require diverse antibody options for their area of biological interest. BD OptiBuild reagents significantly expand the selection that researchers can utilize by rapidly introducing thousands of antibody options on new dyes, allowing for improved experimental design.

<sup>14</sup> 2016 Cost of Data Breach Study: Global Analysis. Benchmark research sponsored by IBM, Independently conducted by Ponemon Institute LLC. June 2016

- **BD FACSMelody™ cell sorter**

As a leader in cell analysis and sorting, BD seeks to advance scientific discovery by providing expedient, high-performance cell isolation and sorting tools to a wide spectrum of researchers. In 2016, BD expanded its portfolio of easy-to-use cell sorters with the introduction of the BD FACSMelody cell sorter. Built for benchtop use, the new BD FACSMelody cell sorter uses automation to simplify the entire operational process and provides excellent sensitivity, resolution and sort purity.

The BD FACSMelody cell sorter features high sensitivity to identify and isolate target cells for up to nine colors, extending the multicolor capability (*compared to similar cell sorters*) that is essential for identification of dim or rare subpopulations.

- **BD CLiC™ LP system**

The BD CLiC system enables genomic research by providing cost-effective next-generation sequencing (NGS) library preparation with limited operator intervention. BD CLiC is the first high-throughput, NGS system to consolidate the entire NGS library preparation workflow process into a single instrument, and has been demonstrated to significantly reduce the labor time of laboratory technicians, compared to traditional methods. The system's "walkaway" automation capability, from purified DNA sample to sequence-ready barcoded libraries, can help reduce the risk of human error.

- **BD FACSymphony™ cell analyzer**

The BD FACSymphony system concept was the result of an ongoing collaboration between BD and the National Institute of Allergy and Infectious Diseases (NIAID) at the National Institutes of Health (NIH) to co-create innovative new technologies that perform high-content, high-throughput measurements on individual cells.

The BD FACSymphony system is a novel cell analyzer that enables the simultaneous measurement of up to 50 different characteristics of a single cell. Following two years of benchtop development, NIH has begun using the BD FACSymphony system to enable ongoing sophisticated research at NIAID's Vaccine Research Center (VRC) to accelerate discovery and continue developing its understanding of the immune system.

- **BD FACSLyric™ cell analyzer**

Launched in Europe in 2016, the BD FACSLyric clinical cell analyzer is a new, high-performance system designed to support both routine clinical analysis and clinical research. An integrated solution that combines instrument, software, reagents and services, the BD FACSLyric system provides clinicians and scientists with accurate, reliable and repeatable results regardless of the test complexity or operator experience level.

It offers users the ability to easily standardize their assays over time and across multiple instruments with the Universal Setup and Assay Portability feature, which enables researchers to share best practices with other researchers at the same institution or around the globe. In addition to its ease of use and exceptional consistency of results, the new flow cytometer is compatible with the BD FACSLink™ system that enables bi-directional connectivity with the customer's Laboratory Information System (LIS) for the transfer of results.



**Provide solutions that improve healthcare and patient safety**

Hospitals and clinics pose an inherently risky environment because of the high percentage of patients with communicable diseases. With the increase in antimicrobial resistance, the need for infection prevention and control in the healthcare environment is paramount, in addition to protecting healthcare workers from needlestick injuries and exposure to hazardous drugs. Our longstanding commitment to protecting healthcare workers and patients continued in 2016, with the introduction of these new products:

- **BD ChloroShield™ IV dressing**

BD ChloroShield IV is a thin, transparent vascular dressing featuring BeneHold™ adhesive technology formulated with CHG (*chlorhexidine gluconate*) that provides sustained antimicrobial activity against skin flora for up to 7 days. Designed to enhance patient care, the dressing stays in place, secures the vascular access device and is easy to remove. Hydrophilic polymers ensure moisture and other fluids are wicked away from skin and absorbed by the dressing, keeping the site dry and protected from external contaminants. In 2016, the Infusion Nurses Society released guidelines recommending the use of CHG dressings.<sup>15</sup> The CHG preserves the dressing from microbial growth, making them well-suited for catheter insertion sites.



- **BD UltraTouch™ push button blood collection set**

With U.S. reimbursement levels tied to patient satisfaction and the rise of online patient reviews, clinicians are seeking ways to improve vital, high-touch procedures by reducing patient pain and improving their ability to access difficult veins. The BD Vacutainer® UltraTouch push button blood collection set (PBBCS) employs patented PentaPoint™ Comfort 5-bevel needle technology. Studies have shown that this design helps enhance the patient experience by reducing the chance of a painful injection. Its flatter, thinner surface penetrates the skin with significantly greater ease. Additionally, by providing the ability to use smaller gauge needles, the BD UltraTouch PBBCS also aims to help clinicians access veins more successfully, which is especially valuable in oncology, geriatric and pediatric patient populations that often have difficult or fragile veins.



## Product quality and safety

As BD continues to introduce innovative technologies, our robust quality and regulatory management ensures we deliver to the highest standards to the millions of people who use our products each day. Our Quality Policy guides us to consistently provide superior products and services worldwide, achieved through customer focus, continuous improvement and maintaining an effective quality system. From our suppliers, we expect superior levels of service, quality, cost effectiveness and innovation. Finally, compliance with existing and emerging regulations is the foundation of what we do.

### Quality management and training

Quality management plays a key role in our success by “making quality certain.” We are driven by our vision of an organization where transactions are correct the first time, where efficient and effective processes drive our competitiveness and where Quality associates can successfully demonstrate the intent and spirit of the [Quality Policy](#).

Our quality systems help ensure compliance with applicable global regulations and establish standards for product design, manufacturing and distribution. Prior to marketing or selling most of our products, we must secure approval from the U.S. Food and Drug Administration (FDA) and counterpart regulatory agencies outside of the United States. Once a product is introduced, these agencies periodically review our quality

systems, product performance and promotional materials. We regularly analyze our own quality processes and specifications to ensure efficiency and effectiveness.

Beginning at orientation, associates are trained on the quality and regulatory requirements for the medical device industry. All employees receive the required training to effectively perform their roles and responsibilities. In addition to procedural and on the job training, BD provides supplemental training through its Quality Academy on topics that include but are not limited to education on creating and maintaining quality management systems that comply with global standards and regulations.

### ISO 13485 certification

The majority of BD manufacturing facilities are certified to ISO 13485, a set of quality management system requirements for designing and manufacturing medical devices (*exceptions would include sites that only carry out research*). BD is also

rolling out ISO 13485 certification across our distribution network, inclusive of facilities in Asia, Europe, Latin America and North America.



## Supplier management and audits

In addition to designing quality into our products, it is essential to implement best-in-class supplier quality programs.

The Global Procurement function partners with the Quality function to ensure that we clearly define the impact suppliers of materials and services can have on BD products and put the appropriate controls in place when selecting, approving and maintaining our suppliers.

As part of integration activities following the acquisition of CareFusion, BD is currently bringing together two legacy quality systems, ensuring that we have a standardized approach and continue to improve supplier quality management.

Our supplier management program oversees the quality and safety practices of our more than 2,000 core suppliers that provide key materials and services. Our program focuses on four areas:

- **Performance management** comprises the procedures that govern how BD identifies, classifies and assesses the qualifications of our suppliers, and manages our relationship with each of them.
- **Supplier continuous improvement programs** employ our operational excellence methodologies (*Lean and Six Sigma*),

## Regulatory compliance

The Regulatory Affairs and Compliance program at BD encompasses all product-related regulatory processes, from product concept through to obsolescence.

The Global Regulatory Affairs Monitoring Initiative (GRAMI), a system that links all of our worldwide regulatory associates, is set up to allow the global regulatory team members to monitor changes in regulations, requirements and regulatory agency policies that could affect BD operations and products. The GRAMI team is comprised of BD regulatory professionals with expertise in worldwide regulatory policy areas including compliance, product registrations, labeling standards and other areas of pre- and post-approval regulatory requirements. When changes are identified, they are communicated to individuals in relevant business units, functions and manufacturing sites who are part of the GRAMI notifications

with specific vendors to define, plan and execute projects that bring significant improvements in performance, savings and overall value to BD.

- **Supplier engagement** is central to our ability to identify and partner with suppliers capable of bringing innovation and new technology to the market.
- **Supply base risk management** quantifies and mitigates risks posed to our supply chain, such as business discontinuity, financial liquidity, price fluctuations and pandemics.

In addition, quality systems assessments (*QSAs*) are conducted for key suppliers, determined by both a fixed frequency and the quality history of the supplier's site. QSAs ensure that the facilities manufacturing materials or components we procure have quality systems in place to ensure the final product will consistently comply with our specifications and adhere to all regulatory requirements.

In 2016, 444 supplier assessments were conducted; 356 were on-site audits and 88 were supplier self-assessment surveys. If a supplier is unable to meet any of our quality standards, we will work with them to investigate and resolve the issue.

Learn more about our [Procurement Strategy](#)

system. In addition, BD regulatory leaders in various regions engage in meaningful dialogue with their regulators and trade associations to seek better understanding, alignment and improvements in regulatory requirements and processes that affect BD as well as the regulated medical technology industry.

The Compliance and Quality Review board, a cross-functional team of Corporate Officers from the Regulatory, Quality and Operations functions, meets monthly to assess and respond to relevant regulatory and quality trends.

During our fiscal year 2016, BD had no significant findings of non-compliance with regulations or voluntary codes regarding the design, labeling or manufacturing of our products.

For information about legal proceedings regarding the marketing and advertising of our products, please see our [2016 10-K](#)

## Antimicrobial resistance

Antimicrobials—drugs that kill infectious bacteria, viruses, parasites and fungi—are a mainstay of modern medicine. Their discovery has revolutionized healthcare. However, decades of outmoded prescribing practices as well as their use in the food supply have driven a rise in organisms that are resistant to these life-saving drugs.

Antimicrobial resistance (AMR) is among the most serious public health challenges facing society. AMR is what occurs when bacteria, fungi and other infectious microorganisms become resistant to treatment with antibiotics, antifungals or other antimicrobial medications. It is an outcome of overuse and inappropriate uses of antimicrobials in human healthcare and livestock production and of the presence of residual antimicrobials in agriculture and water. Decades ago, shortly after the discovery and initial use of antimicrobials, resistant bacteria were identified, but cases were rare and frequently alternative, effective drugs were available. Today, drug-resistant organisms are common and widespread, and the pace of new antimicrobial development to replace ineffective treatment has been slow. As a result, approximately 700,000 people die every year<sup>16</sup> because they have been infected with a drug-resistant pathogen. The annual figure is projected to grow to 10 million deaths by 2050, making AMR<sup>17</sup> among the leading causes of death, greater than cancer.

The healthcare environment itself has become a source point for the spread of antimicrobial resistance. Improvements in clinical and laboratory practices, combined with effective deployment and use of medical technology, can help to ensure antimicrobials are utilized appropriately, reducing risk to patients and lowering costs associated with resistance.

Over the past two years, global mobilization to address AMR has stepped up considerably. The United Kingdom took the lead among nations by commissioning the Review on Antimicrobial Resistance (*AMR Review*), chaired by Lord Jim O'Neill. The AMR Review published numerous informational papers that were disseminated to governments and key stakeholders worldwide. This work culminated in the United Nations devoting a full day in September 2016 to AMR during the annual General Assembly meeting in New York, the highest level UN meeting of the year. Speaking at the meeting, UN Secretary-General Ban Ki-moon

said that AMR poses “a fundamental, long-term threat to human health, sustainable food production and development.”

Prior to this meeting, BD co-hosted a breakfast event on AMR at the United Nations. Partners for this event included UNAIDS, the UN Special Envoy's Office for the 2030 Goals and for Malaria, the UN Special Envoy's Office for TB, the UK-based Review on Antimicrobial Resistance and the Mission of the United Kingdom to the United Nations.

In September 2016, BD launched a Global Public Policy Position on controlling AMR. BD supports policy objectives that are aligned with best practices to control antimicrobial resistance:

- Raise awareness and advance prescribing and treatment guidelines
- Prevent the spread of infections
- Ensure accurate diagnosis and treatment of patients
- Monitor antimicrobial use and resistance

BD is strategically positioned to play an active role in this global challenge, and can contribute in three specific areas:

- Infection prevention and control in the healthcare environment
- Diagnostic testing to support accurate diagnosis and effective treatment decisions
- Surveillance and reporting on resistance and appropriate use of antimicrobials

Our capabilities in infection prevention and control can help to prevent the incidence and spread of resistant infections in healthcare facilities, and our capabilities in diagnostic testing and surveillance and reporting can help to advance antibiotic stewardship (*the appropriate prescribing, use and tracking of antimicrobials*).

Halting and reversing this massive challenge will require the combined resources and efforts of both public and private sectors. AMR has no single solution and the challenges cannot be solved without multiple players working collectively on a common AMR agenda.

<sup>16</sup> Review on AMR, Antimicrobial resistance: Tackling a crisis for the health and wealth of nations, 2014.

<sup>17</sup> Review on AMR, Tackling drug-resistant infections globally: Final report and recommendations, 2016.

## AMR product spotlight: infection prevention

### ChloroPrep™ patient preoperative skin preparation products

Systematic infection prevention and control procedures help to reduce the incidence of healthcare acquired infections (HAIs) and the spread of antimicrobial-resistant organisms. Comprehensive product and service offerings from BD help clinicians improve patient outcomes through the standardization of care and adherence to best practices.

## AMR product spotlight: diagnostics

### BD Phoenix™ M50 ID / AST System

The global healthcare community is facing an unprecedented challenge with the spread of multiple drug-resistant organisms, and today's clinical microbiology laboratories are under increasing pressure to provide fast and accurate bacterial Identification and Antimicrobial Susceptibility Testing (ID / AST) results to influence clinical decisions and outcomes.

In 2016, BD expanded its efforts to combat antimicrobial resistance by introducing its next generation diagnostic instrument for the rapid identification of bacteria and detection of antimicrobial resistance.

The new BD Phoenix M50 ID / AST system helps deliver the same rapid, accurate and cost-effectiveness within a smaller footprint. The system is highly reliable and requires no preventative

BD ChloroPrep patient preoperative skin preparation is a rapid-acting, persistent and broad-spectrum antiseptic for a wide range of procedures. The 2% CHG and 70% IPA formulation acts fast and keeps fighting bacteria for at least 48 hours.<sup>18</sup>

maintenance, thanks to innovative materials and engineering techniques employed during its development. The system offers multiple languages, facilitating even broader adoption in laboratories around the world.



## AMR product spotlight: surveillance

### MedMined™

MedMined solutions offers various modular offerings including MedMined surveillance advisor infection prevention and antimicrobial use (AU) module for public health reporting.

MedMined surveillance advisor provides automated infection surveillance and data mining proven to help hospitals identify and reduce healthcare associated infections (HAIs) and antimicrobial resistance. With its patented algorithm supporting the early detection of patterns of emerging pathogens, the infection prevention team is empowered to efficiently focus resources on developing trends in HAIs and multiple drug-resistant organisms.

Antimicrobial use data from MedMined surveillance advisor is used to monitor hospital protocol effectiveness, assess the consequences of antimicrobial misuse and to facilitate regional and national utilization benchmarks for hospitals and health systems.

The combined surveillance package of alerts, reports, training and consulting services allows for more time to be spent on clinical intervention and patient care.

The MedMined AU module meets the U.S. Centers for Disease Control National Healthcare Safety Network (CDC-NHSN CDA) transmission requirements for participants in NHSN's Antimicrobial Use (AU) program. Data submitted through MedMined services to NHSN enables facilities to report and analyze antimicrobial use as part of their antimicrobial stewardship efforts. The MedMined AU module complements other antimicrobial use reporting available within MedMined Surveillance Advisor to provide greater insights into physician prescribing patterns.

Visibility to antimicrobial usage enables cross-institution comparisons. Clinicians can use the reported data to monitor antibiotic prescribing and resistance patterns. Data submission to NHSN through MedMined services enables facilities to have transparency of antibiotic use to aid in reducing unnecessary use of antimicrobials and related costs.

<sup>18</sup> Hibbard, J. Analysis comparing the antimicrobial activity and safety of current antiseptics: a review. *J Infusion Nursing*. 2005;28(3):194–207.

We believe delivering impactful innovative solutions requires unsurpassed customer and patient centricity with fact-based discipline and rigor.

This will enable BD to realize its 2030 vision of becoming an industry leader, innovating to improve healthcare quality and cost outcomes.



## Access

# Healthcare in resource-limited populations

### Introduction

BD believes in the vision of a world free of disease and needless suffering. We think healthcare is so fundamental it can create more productive, educated and equitable societies.

BD Global Health works to align activities, priorities and development efforts around the world's leading public health needs. We drive access to existing BD solutions and develop and deploy innovations to address priority health needs in areas aligned with the UN Sustainable Development Goals (SDGs).

The business model for emerging markets encourages our country leaders to understand the health system priorities in their country and engage with key opinion leaders responsible for health policies and practices. This enables BD to engage at earlier stages in the healthcare decision-making process and adapt our strategic plans for product array, manufacturing and talent accordingly.

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### 2020 goal

**Develop low-cost innovations to address leading causes of mortality and morbidity**

### The AIDS Epidemic



**Progress** has been made **since 2000** to fight the AIDS epidemic. While **millions of lives have been saved**, in **2015** around **5,700 new HIV infections** of adults and children occurred each day and approximately **66%** of these new infections were in **sub-Saharan Africa**<sup>19</sup>.

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### In 2015<sup>19</sup>



**2.1 million** new HIV infections  
**150,000** new HIV infections  
among children



**36.7M** people  
living with HIV



**1.1M** AIDS-  
related deaths

<sup>19</sup> Taken from "AIDS by the Numbers. AIDS is not over, but it can be". UNAIDS (2016)  
[http://www.unaids.org/sites/default/files/media\\_asset/AIDS-by-the-numbers-2016\\_en.pdf](http://www.unaids.org/sites/default/files/media_asset/AIDS-by-the-numbers-2016_en.pdf)

## BD FACSPresto™ near-patient CD4 counter expands access across healthcare settings

The BD FACSPresto near-patient CD4 counter provides absolute and percentage results of CD4 T lymphocytes and hemoglobin (*Hb*) concentration in whole blood samples. CD4 remains critically important as an indicator of HIV & AIDS patient's immune status for clinical management and in providing a threshold to initiate prophylaxis for opportunistic infection. The BD FACSPresto system can be easily transported and operate off a rechargeable battery, enabling patients even in remote settings to receive CD4 testing.

In 2015, BD began a partnership with the Clinton Health Access Initiative (CHAI), UNITAID and the Ministries of Health in countries in sub-Saharan Africa to deliver a new CD4 access solution by expanding and optimizing CD4 networks to effectively meet aggressive new HIV testing targets.

CHAI, supported by UNITAID and BD, identified an opportunity to strengthen access to testing nationwide through total CD4 solutions. BD FACSPresto near patient CD4 counter, added to the BD FACSCount™ and FACSCalibur™ product lines provide a complete suite of CD4 testing solutions, servicing the needs of health centers up to large district hospitals, depending on patient volumes and accessibility. The ability to select from a variety of platforms to optimally fit any testing need is expected to increase efficiency and decrease waste.

This business model will provide cost savings for countries, particularly when considering the cost per delivered result, and allow the flexibility in device placement necessary to meet changing patient demands.





over 10 million women in developing countries are affected by serious pregnancy-related medical complications.



2.7 million neonatal deaths each year



2.6 million stillbirths each year



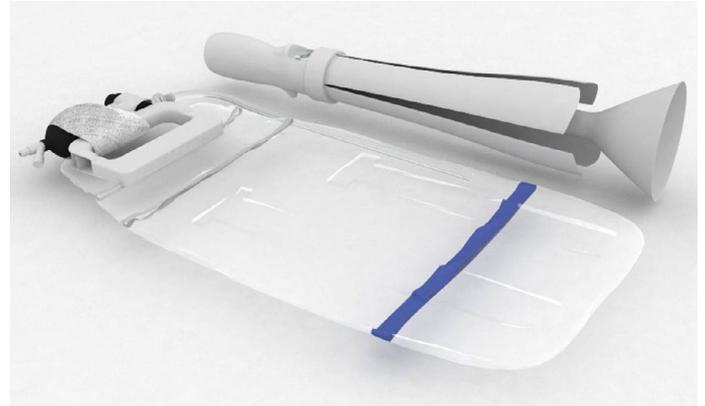
>300,000 maternal deaths each year

### BD Odon Device™ for assisted childbirth

As part of its commitment to reduce maternal and newborn mortality, BD is developing the BD Odon Device in collaboration with partners including Saving Lives at Birth: A Grand Challenge for Development.

24% of neonatal mortality and 46% of stillbirths occur during labor and delivery. The BD Odon Device is an innovative new obstetrical instrument for assisting with deliveries during difficult labor. Using our core competencies in medical device design, quality systems, process design and large scale manufacturing, the BD Odon Device will be introduced in countries with high maternal and neonatal mortality rates (as determined by the WHO) at an affordable price.

The project continues to progress towards an anticipated launch in FY19. A series of preclinical, simulation and human factors studies have been completed and clinical studies are planned to begin in 2017.



### Supporting the eradication of malaria: G6PD deficiency point-of-care testing

In 2016 PATH ([www.path.org](http://www.path.org)) and their partner GSK announced a collaboration with BD to develop a new rapid diagnostic test to support clinical care of malaria patients.

This test aims to support efforts to eliminate *Plasmodium vivax* malaria, a disease that puts 2.85 billion people at risk worldwide, mainly in Southeast Asia and Latin America, with 2-3 million confirmed cases globally. *P. vivax* is especially difficult to eliminate because the parasite can lie dormant in the liver and cause relapsing illness. Relapse prevention using a class of drugs known as 8-aminoquinolines is the only means to kill the liver form of the parasite. 8-aminoquinoline drugs can cause

serious side effects in patients with severe glucose-6-phosphate dehydrogenase (*G6PD*) deficiency, a hereditary condition in humans that commonly occurs in places where malaria is found. It is therefore necessary to test patients for G6PD deficiency before administering treatment with an 8-aminoquinoline. However, current diagnostic tests for G6PD deficiency lack simplicity to support scaling up.

The BD point-of-care test in development measures levels of G6PD enzyme activity and hemoglobin in a small sample of blood. The test is expected to become commercially available in 2019.

**Collaborate on health system strengthening with leading agencies and NGOs**



**BD-PEPFAR public-private partnership, Labs for Life**

BD continues to play an important role in the care continuum for HIV treatment through our BD-PEPFAR (*The U.S. President's Emergency Plan for AIDS Relief program*) Labs for Life partnership. The partnership supports lab strengthening and phlebotomy training programs in countries severely affected by HIV/AIDS and tuberculosis (TB).

Now in the eighth year of the BD-PEPFAR Labs for Life partnership, BD Global Health is strengthening laboratories across India, Uganda, Mozambique, Ethiopia and Kenya. BD Global Health Fellows—BD associates—spend three weeks mentoring laboratories on the ground.

**BD supports 41 labs in 5 countries in sub-Saharan Africa and India**



**Country highlights**

**BD support in India**



**6.42 million**  
specimens per year



**20 labs**



**13,000**  
patient beds

**BD support in Kenya**



**69 BD Global Health**  
field assignments



**10 labs**



**1,652**  
patient beds

BD mentors support 10 laboratories in Kenya. We are proud to say at the end of 2016 one of the Labs for Life mentored laboratories, Kikuyu Hospital in Kenya, received ISO accreditation.



In 2014, BD began collaboration with the U.S. Agency for International Development (USAID) Indonesia to support and strengthen Indonesia's national reference laboratory systems in an ongoing effort to prevent and control infectious disease outbreaks globally. Modeled after the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) and our Labs for Life program, the partnership supports Indonesia's National Tuberculosis Program (NTP), with the aim to improve and expand quality-assured laboratory services. In particular, the collaboration will emphasize the early detection and confirmation of TB cases, as well as monitoring and treatment services.

The partnership concluded in December 2016, with the following outcomes:

- Good Laboratory Practices for TB Culture and Drug Susceptibility Testing (DST) have been introduced at ten sites across the country and training has been conducted for its implementation.

## CDC



In 2016, BD entered into two new collaborations with the CDC in Cambodia and in the country of Georgia to address the transmission of disease in medical settings.

In Cambodia, a recent outbreak of HIV/AIDS in the Roku district was a result of unsafe injection practices. In Georgia, the prevalence of hepatitis C (*estimated to be 7%*) prompted the government of Georgia to designate the disease as the country's top health priority. Unsafe injection and blood safety practices contribute to Georgia's infection burden. As part of the partnerships, BD is providing training on injection safety, as well as safer phlebotomy and infusion practices, for both countries.

- BD has helped establish criteria, approach, training and monitoring teams to expand and monitor Safe Working Practice (SWP) and Quality Assurance for TB Labs.
- 50 technicians in 10 laboratories have been trained on liquid culture and drug susceptibility testing (DST).
- An equivalent national monitoring program has been established. Now, one laboratory, the National Reference Laboratory (NRL) Surabaya, is in charge of the National TB External Quality Assurance (EQA) Program, where previously, the laboratories in Indonesia had to engage in a certification body outside the country. Seven laboratories are certified and three are in process under the External Quality Assurance program.
- A Train-the-Trainer program was conducted at NRL Surabaya to support the laboratory technicians who will be spearheading future training for the TB Liquid and Culture network laboratories.

## Further expand BD manufacturing, product array and employment in emerging countries

In the period FY11 through FY15, BD saw emerging market revenue growth of over \$500 million. We expect this revenue growth to continue as we pursue growth opportunities in emerging markets, which include the following geographic regions: Eastern Europe, the Middle East, Africa, Latin America and certain countries within Asia Pacific. BD is primarily focused on countries whose healthcare systems are expanding, in particular, China and India.

### • Building on our investment In China

Since establishing representative offices in China in 1994, the country has been the focus of increased investment by BD, with three manufacturing facilities in Suzhou, Jiangsu Province, making products ranging from catheters and insulin pen needles to rapid diagnostic products for influenza and viral infections. Nearly 3,000 employees contribute to management, production and sales.

In FY16, BD opened a new Research and Development (R&D) Center in Suzhou. Its core mission includes strategic innovation and new product development, optimization of the product portfolio and support for local registration of new products. The R&D Center will be where research, experiments, and application of research results in production will be carried out.

The Suzhou R&D Center joins a similar BD facility in Shanghai, focused on identifying the needs of local healthcare professionals and patients.

### • BD Health Pioneers

BD Health Pioneers Program, launched by BD in Turkey, aims to introduce and raise awareness about best practices in the healthcare industry in Turkey through nonprofit training, workshops and award programs.

The program reached over 48,000 healthcare workers in 2016 and approximately 70,000 healthcare workers in the last four years through best practice training.

BD Health Pioneers teams are made up of associates (*some of who are trained healthcare professionals*) from BD in Turkey, who provide training on a wide range of healthcare worker and patient safety related issues such as:

- Healthcare acquired infections
- Needlestick and sharps injuries
- Blood exposures
- Blood culture collection
- Principles of flow cytometry
- Stem cell and data analysis
- Blood collection in the preanalytical phase
- Injection techniques and diabetes management

BD Health Pioneers aims to be the leading solution partner to address the important challenges in the healthcare sector through value added theoretical and practical training, targeting current and future healthcare professionals.

We believe BD can  
best address the  
world's leading health  
problems through  
unique public-private  
partnerships

This will enable BD to realize its 2030 vision of a demonstrable increase in lives saved and sustainable access to quality health services.



# Efficiency

## Environmentally sound products and resilient operations

### Introduction

BD aims to set the pace for improving healthcare everywhere we do business. We accept the accountabilities inherent in leadership, especially in reducing the impact on the environment across our value chain. We also believe partnerships inspire ideas and breakthroughs. This ability to partner more closely with suppliers, customers and peers helps us address some of the world's most pressing environmental issues more broadly than we could on our own.

### Status of performance against 2020 efficiency goals

Our environmental performance has a direct and indirect impact on human health. Climate change and population growth are placing great demands on natural resources and presenting new challenges to our business and operations. In FY16 we continued to improve our performance across all our 2020 efficiency goals.

#### Emissions



**2020 goal**  
Reduce Scope 1 & 2 GHG emissions **by 50%**  
**Current status FY16**  
Reduced **by 58%**

**2020 goal**  
Reduce VOC and HAPs emissions **by 65%**  
**Current status FY16**  
Reduced **by 48%**

**2020 goal**  
Reduce ozone depleting substance emissions **by 95%**  
**Current status FY16**  
Reduced **by 40%**

#### Energy



**2020 goal**  
Increase use of renewable energy **to 50% of total energy**  
**Current status FY16**  
**43% of total energy**



**2020 goal**  
Reduce energy consumption **by 40%**  
**Current status FY16**  
Reduced **by 26%**

#### Waste



**2020 goal**  
Reduce total waste **by 50%**  
**Current status FY16**  
Reduced **by 24%**

**2020 goal**  
Increase recycling rate **to over 70%**  
**Current status FY16**  
Increased **to 68%**

**2020 goal**  
Reduce hazardous waste **by more than 60%**  
**Current status FY16**  
Reduced **by 51%**

#### Landfill diversion



**2020 goal**  
Increase diversion rate **to over 85%**  
**Current status FY16**  
Increased **to 79%**

#### Water consumption



**2020 goal**  
Reduce water consumption **by 40%**  
**Current status FY16**  
Reduced **by 34%**

## Reducing our environmental footprint in manufacturing

In the past two years, we have taken advantage of numerous large scale opportunities, where significant progress could be made toward our Greenhouse Gas (GHG) emissions and environmental footprint reduction goals.

As a result of our acquisition of CareFusion in 2015, we have integrated their legacy manufacturing locations into

our sustainable operations programs. Although the overall footprint of the CareFusion network was smaller than the legacy BD network, we have identified numerous opportunities to reduce footprint and contribute to meeting our 2020 efficiency goals.

### 2020 goal

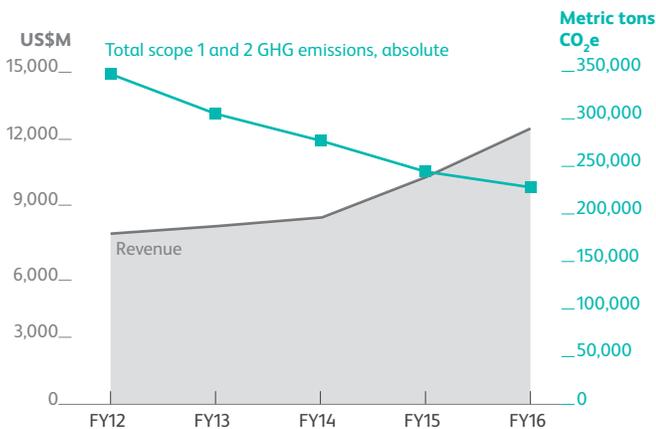
#### Reduce greenhouse gas emissions throughout value chain

##### Energy and greenhouse gas emissions:

In FY16, BD continued to exceed its 2020 goal for the reduction of Scope 1 and 2 GHG emissions. A strong focus on energy efficiency coupled with the deployment of cost-effective

renewable energy strategies have led to a lower overall GHG emission footprint, while continuing revenue growth.

#### Decoupling growth from environmental footprint



##### Climate resilience

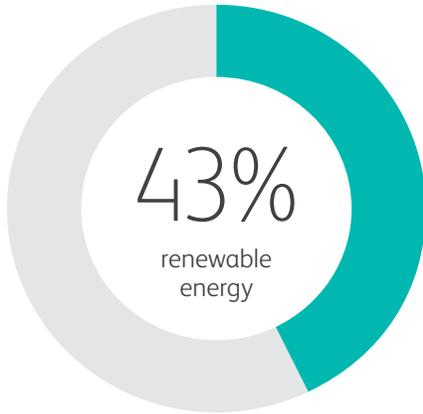
Strong focus on energy efficiency coupled with deployment of cost-effective renewable energy strategies have led to lower overall footprint while continuing revenue growth.

Data tables of our performance can be found at the back of this report. Further information about our programs to reduce GHG emissions can be found in our responses to the Carbon Disclosure Project (CDP). BD has reported to the CDP since its inception in 2003.

Our performance in reducing greenhouse gas emissions is a result of our renewable energy program, coupled with conservation efforts. We have increased the use of onsite renewables, through the installation of solar photovoltaic systems in locations such as Bawal, India and Four Oaks, NC, U.S. In addition, we have active projects underway in Canaan, CT, Franklin Lakes, NJ, U.S, Cayey, Puerto Rico, and Suzhou, China. Additional opportunities are being explored at our facilities in California and Maryland, U.S.

In FY16, we purchased additional Renewable Energy Credits (RECs) for our Diagnostic Systems and Biosciences businesses, and are increasing inclusion of green power in our global utility mix through managed energy procurement services.

## Renewable energy use

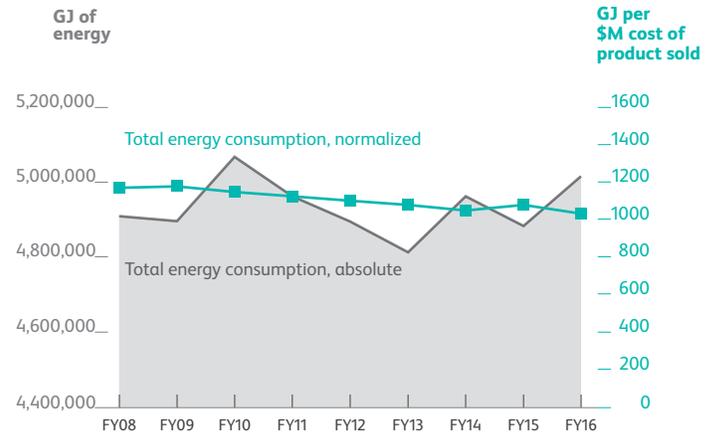


Our energy conservation efforts are focused on improving the efficiency of compressed air, process heating and cooling, HVAC and lighting across the manufacturing network. Over the past two years, we completed energy audits at all of our European sites impacted by the Energy Efficiency Directive.<sup>20</sup> Numerous opportunities were identified and are being evaluated for inclusion in our site’s energy road maps.

We are also focused on climate resilience planning at our facilities, which includes evaluation of the feasibility of onsite generation such as combined heat and power (CHP), fuel cells,

## Energy consumption

### Energy consumption (absolute and normalized)



and onsite solar. We have installed CHP plants at three facilities in Fraga, Spain, Heidelberg, Germany, and Cuautitlán, Mexico, and we are assessing the feasibility of installing CHP plants at six additional locations. BD has also recently upgraded the fuel cell installation at our San Jose, CA, facility, in order to increase output and improve efficiency.

We recognize that efforts to reduce our carbon footprint must continue. In FY17, BD will establish baseline scope 3 emissions, which is the first step in identifying where our efforts should be focused within our value chain.



On-site fuel cells at our San Jose, CA, U.S. facility.

<sup>20</sup> Directive 2012 / 27 / EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency.

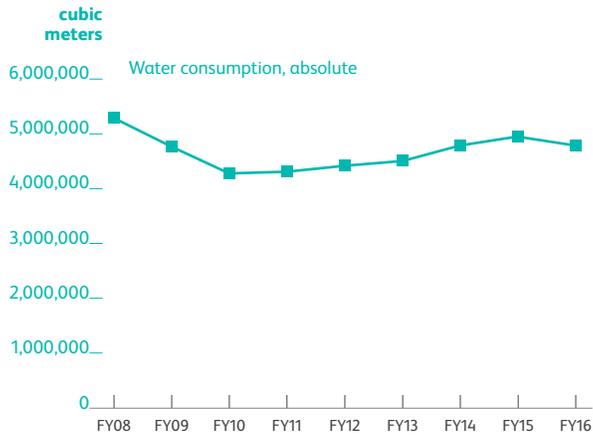
**Minimize environmental footprint in manufacturing**

**Water**

Water is an essential resource for our manufacturing process and many of our products. We recognize we have a responsibility to use water effectively—particularly in areas of the world where water scarcity is an issue—and have made water conservation

an essential part of all BD operations. We have identified two major projects to be completed in FY17, which will save a total of 80 million gallons per year.

**Water consumption**

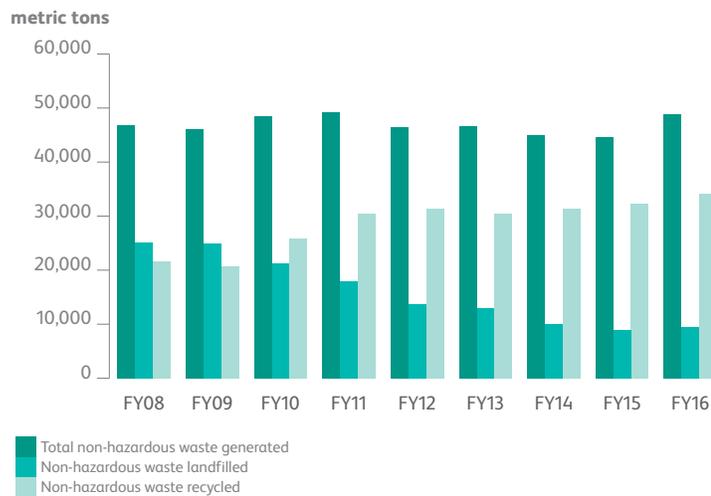


Our approach to water conservation across our manufacturing network puts specific emphasis on elimination of single pass cooling and process improvements for reverse osmosis and water for injection systems.

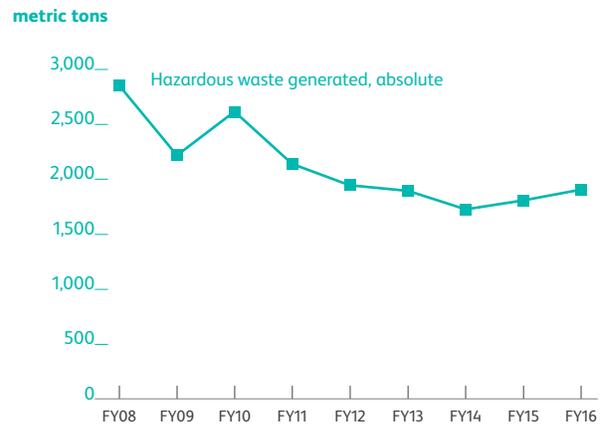
**Waste**

BD facilities generate several types of non-hazardous and hazardous waste, depending on the nature of manufacturing operations.

**Non-hazardous waste generated**



**Hazardous waste generated**



During 2016, we expanded existing waste and recycling programs to facilities that joined BD as part of the CareFusion acquisition. Our waste collection vendors are working with facilities to identify and implement opportunities to increase recycling and landfill diversion rates of waste materials.

Across all of our sites, we use Lean and Six Sigma methodology to improve process efficiency and reduce defects, resulting in less waste generated. And, we are increasing shipping efficiency through packaging optimization and supply chain network optimization.

## Footprint reduction strategy

In order to achieve our 2020 efficiency goals, we are deploying a systematic approach to identify opportunities and ensure we have a diverse portfolio of projects. This approach includes integrating sustainability considerations into network architecture reviews, comprehensive site and utility master planning, continuous improvement programs and enhancing capital reviews to ensure alignment with sustainability targets. Regular reviews are carried out with operations leadership in each business unit, to report progress within their manufacturing portfolio.

We will continue to leverage our sustainability capital fund for stand-alone sustainability projects. In 2016, we deployed \$5 million in capital from the fund for projects that included; HVAC replacements, chiller plant upgrades, compressed air plant upgrades, LED lighting upgrades, and the purchase of new recycling equipment. In addition, the sustainability capital fund matched traditional capital funding for a new combined heat and power (CHP) plant at our Cuautitlán, Mexico, facility. This CHP installation resulted in the site's ability to idle six gas fired

## Environmental management systems

To ensure continuous improvement of environmental performance at a facility level, BD is implementing ISO 14001-certified environmental management systems at our manufacturing sites around the world. Currently, 26 BD sites have ISO 14001-certified environmental management systems; most of these sites are manufacturing locations. Seven additional facilities are pursuing certification via a pilot project to test an 'umbrella certification' approach, with expected certification in late FY17. Based on the results of the pilot project, our approach to ISO 14001 certification will be to register sites in a "group" certificate, which involves using a standardized approach for policies, procedures and processes at all the sites included in the certificate. This brings more harmonization, resource efficiency and a common platform for interaction, sharing and teamwork among the sites globally. Our plan is to continue ISO 14001-certification of remaining BD manufacturing plants over the coming years.

boilers, significantly reducing GHG emissions and utility costs in addition to improving the reliability of the electrical system. We plan to increase the amount in the sustainability capital fund incrementally year on year.

While there has been a significant focus on utility projects for energy and water, there are numerous opportunities for waste reduction within our operations. In addition to waste minimization and recycling projects, there are opportunities available in our supply chain, particularly in the supply of raw materials, to reduce overall waste generation.

In the coming years, we will need to adjust our focus and approach to further enhance the resilience of our operations to climate impacts. We will continuously evaluate new onsite energy technologies and mechanisms to indirectly purchase renewable energy, implementing those that offer favorable returns and energy risk mitigation to our sites. Our REC purchase strategy will continue and adjust as we implement onsite options.

The ISO 50001 energy management standard provides a framework of requirements to measure and use data for better understanding of energy use, set objectives for energy use reduction and continually improve energy management. Many BD facilities have a strong focus on energy management and reduction and are pursuing many aspects of a responsible energy management program. Our facilities in Fraga, Spain, and Tatabanya, Hungary, have implemented energy management systems, which are certified to ISO 50001; three additional facilities are currently pursuing this certification.

## Approach to climate change

Global GHG emission trajectory is expected to increase the frequency and intensity of some extreme weather events.<sup>21</sup> Along with increasing temperatures, these factors will bring about a range of health risks and impacts.<sup>22</sup> In alignment with our purpose of *advancing the world of health*, we are taking action to reduce GHG emissions across our value chain.

Climate change risks and opportunities are identified by our Office of Global Sustainability (OGS). The process for identifying risks and opportunities involves stakeholder engagement with our internal technical experts, customers, shareholders, BD associates, business partners (*i.e., suppliers*), communities, governments, international agencies and nongovernmental organizations. Climate change risks are evaluated by the OGS and strategies are implemented to mitigate and manage those risks. For example, emissions and water scarcity were identified as risks to the company as a part of the stakeholder engagement process, and our 2020 Sustainability Goals were implemented in order to mitigate these risks.

The key component of our long-term strategy is to provide solutions to the healthcare sector, which is a significant emitter of greenhouse gases. We recognize that we can help our customers reduce their environmental footprints by reducing emissions associated with BD products and services.

### 2020 goal

#### Drive supplier responsibility evaluation methodology

The foundation of the BD supplier responsibility strategy is the expectation that suppliers take responsibility for their own social and environmental impacts. We expect thousands of suppliers to review and acknowledge the BD Expectations for Suppliers (EFS) and in FY16 our terms and conditions for the U.S. and E.U. were revised to direct suppliers to read and comply with the [EFS](#).

The EFS has also been incorporated into the ongoing Supplier Relationship Management training for our sourcing professionals that was launched in FY16.

At the end of FY16 we began a review of the EFS to ensure it is sufficient to meet the needs of the changing Supply Chain landscape and to provide clarity to certain areas that were identified for improvement through multiple activities with our suppliers, including audits.

This means reducing our own operational impact as well as understanding the life cycle impact of our products. We believe that partnership with stakeholders across our value chain is essential and BD continues to be a proud member of the Coalition for Sustainable Pharmaceuticals and Medical Devices (CSPM) and the [Healthcare Plastics Recycling Council](#) (HPRC). BD is also a U.S. Environmental Protection Agency (EPA) [Green Power Partner](#) and a U.S. EPA [SmartWay® Transport Partner](#). Additionally, 23 of our sites are participating in the U.S. Environmental Protection Agency's (EPA) ENERGY STAR Challenge for Industry, with 14 of those sites achieving the [ENERGY STAR Challenge for Industry](#) goal of a 10% or greater improvement in energy efficiency within five years or less. In 2016, BD also joined the U.S. Department of Energy [Better Plants Program](#).

Further information about our climate change strategy and programs to reduce GHG emissions can be found in our responses to the [Carbon Disclosure Project](#) (CDP). BD has reported to the CDP since its inception in 2003.

In 2016, the focus of our supplier responsibility program was on risk. We are integrating reputational risk model ratings into the Enterprise Supplier Risk Management process, assessing Direct Suppliers. An initial set of risks were identified and mitigation plans are in progress. We will continue to refine our risk model and adjust our top risks accordingly.

We are also expanding functionality by utilizing an external reputation risk tool. The tool will allow us to identify location and sector-specific risk across all of our tens of thousands of suppliers. We expect the tool to be available for all sourcing associates during FY17, advancing the visibility of reputational risk so that it can be incorporated into sourcing strategies and supplier management.

<sup>21</sup> Climate and Health Country profiles – 2015. A Global overview. World Health Organization and United Nations Framework Convention on Climate change. (2015)

<sup>22</sup> *ibid*

## Supply Chain transparency

Our Conflict Minerals policy and California Transparency in Supply Chains Act disclosure are available at [www.bd.com/sustainability/downloads.aspx](http://www.bd.com/sustainability/downloads.aspx)

## Supplier Diversity program

Supplier Diversity encompasses more than simply tracking spend or 'doing the right thing.' Being committed to supplier diversity entails developing and implementing strategies that ensure our supply base aligns with the diverse customers and communities we serve, as well as the diverse markets we seek.

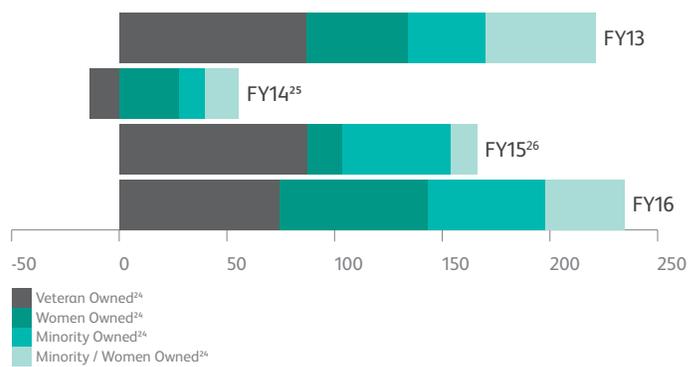
Following the acquisition of CareFusion in FY15, a full cleanse of our U.S. supplier base was carried out in FY16, verifying with accuracy the appropriate designations each supplier holds. This confirmed that overall spend with diverse suppliers had increased by 45% by the end of FY16.

Our approach to supplier diversity is multifaceted. Through the BD Supplier Diversity program, we not only set goals year after year to increase spend with small and large diverse-owned businesses (23% of eligible U.S. spend in FY17), but we also help to drive spend increases by striving to develop lasting partnerships with our existing diverse supplier base. Supplier development is an important part of our strategy.

The Supplier Diversity program is also aligned with Inclusion and Diversity programs, such as the Associate Resource Groups (ARGs). The Supplier Diversity team's participation in the ARGs assists in developing the connection between Supplier Diversity and the communities that we serve.

We stay apprised of the latest insights and trends from both supplier and peer perspectives through membership with Diversity Alliance for Science (DA4S), the National Minority

### Supplier Diversity year-on-year increases<sup>23</sup>



Supplier Development Council (NMSDC), as well as The Conference Board Supplier Diversity Leadership Council, helping further define our approach to supplier diversity.

We are increasing our focus between now and 2020 on several initiatives, including but not limited to the expansion of our supplier development effort, emphasis on opportunities for LGBT, disabled and Native American-owned businesses, as well as the development of the Tier-2 program.

<sup>23</sup> Data shows percentage year-on-year increases, in the U.S. only. FY13 and FY14 excludes CareFusion.

<sup>24</sup> Includes both large and small businesses.

<sup>25</sup> Due to criteria introduced by the Veterans Administration, many previously considered veteran-owned businesses no longer qualified.

<sup>26</sup> The sharp increase in spend in FY15 was due to the acquisition of CareFusion and inclusion of their data. CareFusion tracked supplier diversity designations in a different manner to BD. A full cleanse of our U.S. supplier base was carried out in FY16, verifying with accuracy the appropriate designations each supplier holds.

## Eliminate priority materials of concern

Over recent years, legislation covering the disclosure and / or restriction of materials of concern<sup>27</sup> (MOC) has expanded. BD stakeholders are increasingly enquiring about the presence of MOC and in some cases customers will make purchasing decisions using environmental and human health criteria, including the presence of MOC. It is therefore imperative that BD has the relevant information to carefully consider the potential impact of materials we use in our products and packaging, in order to assure compliance and meet customer requirements.

The Global Product Stewardship team is in place to monitor changing global environmental regulations affecting our product portfolio, and provide governance over compliance activities carried out by our business units.

Our Global Product Stewardship team handles overall chemicals management and maintains the BD Materials of Concern (MOC) Priority list, which is updated periodically to reflect changing regulatory and customer requirements. In addition, BD requests that suppliers inform us of the presence and amount of these substances in their materials; this information is maintained in a database.

To monitor the changing landscape around MOCs among customers, regulatory bodies and advocacy groups, BD established a Chemical Review Board in 2013. Led by our Director of Global Product Stewardship, the board has representation from R&D for each of our business units and functional expertise from toxicology and procurement. This group is equipped to evaluate the impact of potential MOC restrictions on our product portfolio, provide guidance to R&D within the Company and leverage material expertise across the organization to accelerate our work to eliminate priority MOCs.

BD has committed to eliminate priority materials of concern\* in each of the following product categories:

**Devices:** PVC and phthalates

**Instruments:** Phthalates, brominated flame retardants (BFRs) and heavy metals

**Packaging:** PVC and expanded polystyrene

\* intentionally added

In 2016, we completed product changes that bring impacted *in vitro* diagnostic devices into compliance with the EU RoHS Directive.<sup>28</sup> Projects are on-going to ensure impacted products meet the requirements of the latest round of substance restrictions under RoHS, introduced in 2015.<sup>29</sup>

### Chemical Footprint Project

BD actively engages in dialogue with our customers and advocacy groups to understand their position on the use of safer chemicals, for consideration in our work to eliminate priority materials of concern.

In 2016, this engagement included responding to the **Chemical Footprint Project**. The mission of the Chemical Footprint Project is to transform global chemical use by measuring and disclosing data on business progress to safer chemicals. It provides a tool for benchmarking companies as they select safer alternatives and reduce their use of chemicals of high concern. The results of the survey have identified areas of focus for BD, including strengthening policies and procedures, as well as improving measurement and reporting.

### Product highlight: BD Pegasus Plus™

BD Pegasus Plus is a closed IV catheter with features for preventing needlestick injuries. It was launched in the Chinese market in February 2016. The new product contains extension tubing made from polyurethane, replacing DEHP-plasticized PVC that was used in the previous version of the product.



<sup>27</sup> BD defines materials of concern as chemicals or substances that stakeholders – such as customers, healthcare purchasing organizations and regulators – have identified as having the potential to cause long-term or chronic indirect effects on humans or the environment.

<sup>28</sup> Directive 2011 / 65 / EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

<sup>29</sup> Commission Delegated Directive (EU) 2015 / 863 of 31 March 2015 amending Annex II to Directive 2011 / 65 / EU of the European Parliament and of the Council as regards the list of restricted substances

## Improve life cycle impacts of current and future products

Each broad product family of medical devices and instrument systems has specific regulatory and customer requirements and differing levels of impact across their life cycle states. We are working to reduce the environmental impact of our product portfolio through various strategies.

Our Global Product Stewardship function provides expertise and guidance to our business units. A number of guidance documents are available to product design teams, and the Global Product Stewardship group is working with internal stakeholders to embed product stewardship criteria in our product development processes. This will result in our business units making informed decisions on the materials they select as well as a broader set of environmental considerations,

### Product highlight: 10 mL BD™ Slip tip and 10 mL BD Luer-Lok™ packaging modification

In 2016, BD completed modification of the packaging for our 10 mL BD Slip tip and 10 mL BD Luer-Lok products. As a result of this packaging change, we expect to reduce the amount of corrugated cardboard introduced into the market place by as much as 450,000 pounds annually in the United States and an

### Home sharps disposal

For nearly 90 years, our culture of innovation and continuous improvement has enhanced the patient experience to enable better diabetes therapy and outcomes. BD pen needles and insulin syringes are designed with technology to support early initiation and adherence to injectable therapies, helping diabetes patients live healthier lives. Diabetes is associated with the largest amount of sharps generated in the home. An estimated 9 million people in the U.S. use sharps at home, resulting in more than 3 million disposable needles and syringes and 900 million lancets each year (FDA 2011).

Studies demonstrate the need for patients to be taught safe disposal practices from the start of treatment and to reinforce these practices throughout their treatment in order to avoid incorrect disposal.

depending on the type of product and use in our product portfolio, as well as understanding and minimizing the life cycle impacts of the product design. It will also provide a framework to ensure there is consistent decision making on material selection as well as other life cycle considerations across all of our business units.

The activities we undertake as part of our membership in the [Coalition for Sustainable Pharmaceuticals and Medical Devices](#) (CSPM) and the [Healthcare Plastics Recycling Council](#) (HPRC) also support these efforts. The Global Product Stewardship group continues to monitor the external landscape to provide support and guidance for our increasingly complex product portfolio.

additional 50,000 pounds in Canada. This represents a 9.3% decrease in the overall packaging weight and a 17.1% decrease in the footprint of the package size (*on a per-shelf-carton comparison*).

BD has a shared responsibility with its customers and patients to support efforts in improving proper management of used sharps. We are engaging across the value chain to discuss issues related to the disposal of home sharps products and identify solutions. This includes working with stakeholders, such as our pharmaceutical customers and retail partners, to increase education on correct disposal of home sharps products.

### [BD™ Home Sharps Container](#)

### [BD Safe-Clip™ Device](#)



BD offers a number of sharps products, including hypodermic needles and syringes, infusion sets, anesthesia and pharmaceutical drug delivery systems and diabetes care products. BD has produced many of these products for most of its history and is a pioneer and leader in developing products that protect healthcare workers from needlestick injuries and exposure to bloodborne pathogens. The Global Public Policy Position on Preventing Sharps Injuries and Other Blood Exposures can be found at [bd.com/investors/corporate\\_governance/policy-positions.aspx](http://bd.com/investors/corporate_governance/policy-positions.aspx)

We believe the health of the planet is linked to the major health challenges facing the world's population and that BD has a responsibility to reduce negative environmental impacts, using innovative approaches across its value chain.

This will enable BD to realize its 2030 vision of becoming a leader in overall environmental performance and achieving carbon and waste neutral status.



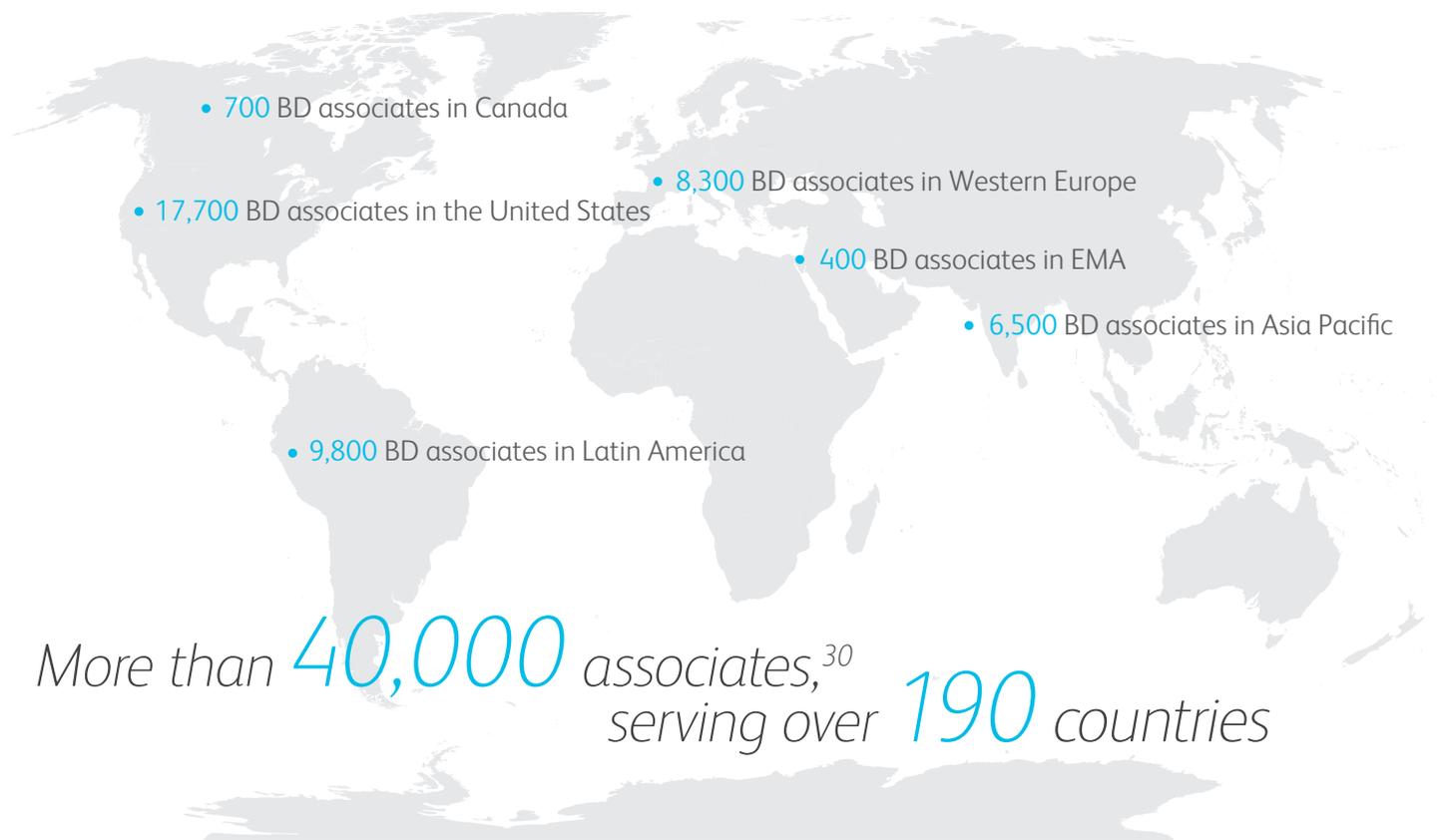
## Empowerment

Positive workforce and community impacts

### Introduction

We profoundly respect that what we do is for the good of people. That's why BD associates work with humanity and kindness across cultures, regions and relationships. It is the behavior that is necessary to be responsible global citizens. It is what it means to care.

### Associate profile



<sup>30</sup> Data excludes associates that were part of the Respiratory business, which was divested on October 3, 2016.

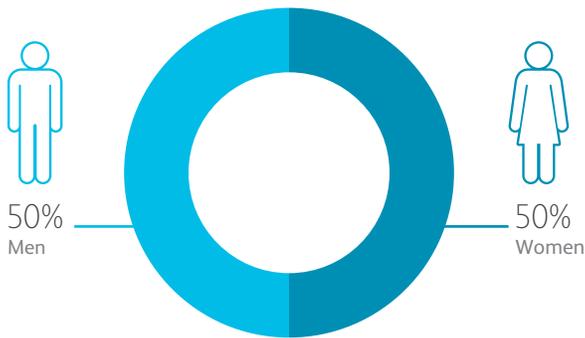
**Increase the diversity of our workplace, particularly in leadership roles**

Inclusion and diversity are extremely important to BD and a driver of our future success in understanding patient and customer needs, creating innovative solutions that address those needs and leading to a more creative and collaborative workforce that is more attractive to associates and candidates.

Like others, we also believe inclusive and diverse organizations enhance business performance and strengthen the BD brand and reputation.<sup>31</sup>

Today's BD is very different from the company founded 119 years ago in the U.S. We are more inclusive and diverse and there is still more work to do. While women make up 50% of our global workforce, our female representation lags behind our peers and benchmark companies at the highest (*top three*) levels of the organization. The number of executives at BD (*top three levels*) who identify as people of color is slightly lower than our peer and benchmark companies as well.

**Worldwide associates by gender**



**Gender breakdown of the board of directors and in the top 2 levels in the organization<sup>32</sup>**



<sup>31</sup> 2015 PwC 18th Annual Global CEO Survey.

<sup>32</sup> Information as of October 1, 2016.

<sup>33</sup> Includes Vincent A. Forlenza, Chairman of the Board, CEO and President.

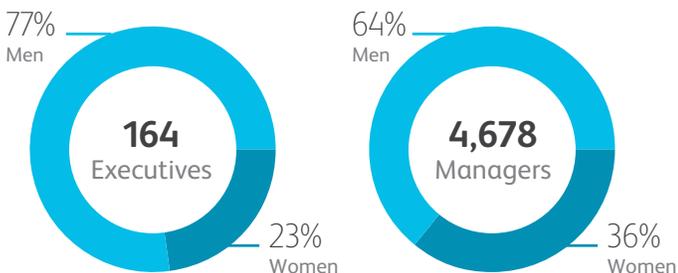
The following graphs show associate diversity across gender, age and ethnicity for U.S. associates only. The total number of associates in reporting scope is 18,482<sup>34</sup> and data covers reporting time period FY16 (unless otherwise noted).

As part of integration activities following the acquisition of CareFusion, BD is implementing a new single HR IT system to manage associate data; this will improve our ability to collect demographic data (as permitted by law). It is expected that BD will be able to publish additional demographic data in future reports.

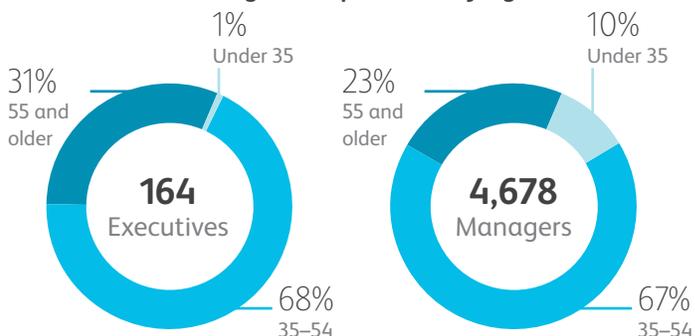
## Executive and management positions

For the following graphs, the total number of associates in executive and management positions is 4,842<sup>35</sup>

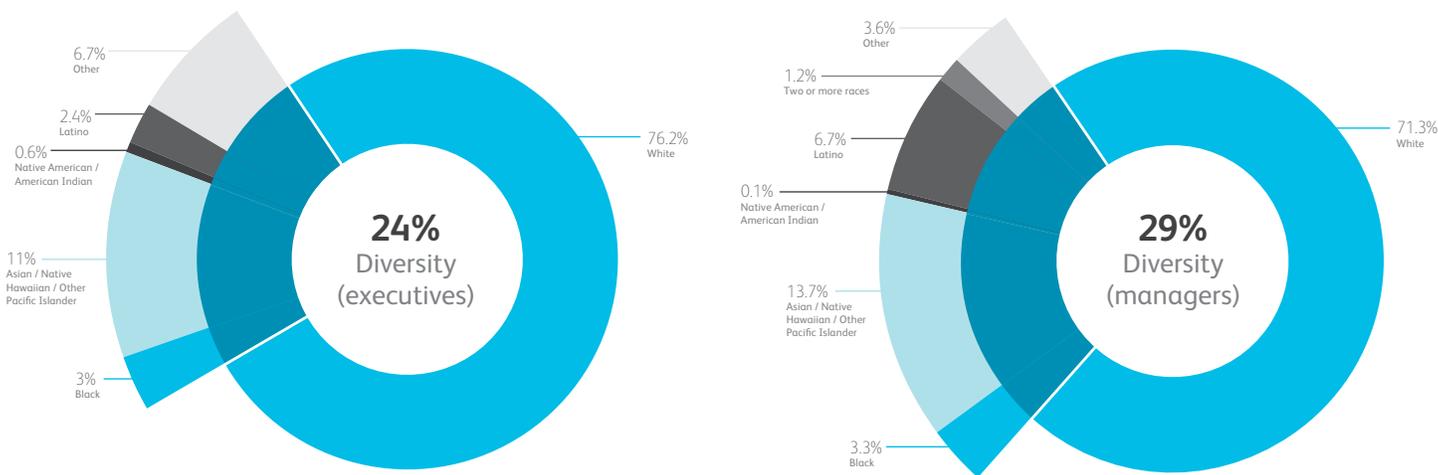
### Executive and management positions by gender



### Executive and management positions by age



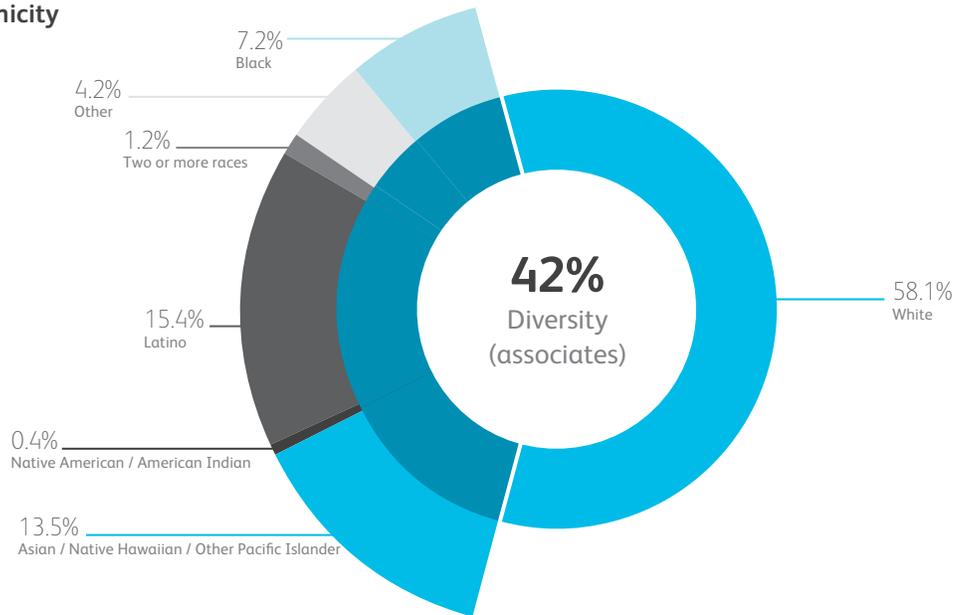
### Executive and management positions by ethnicity



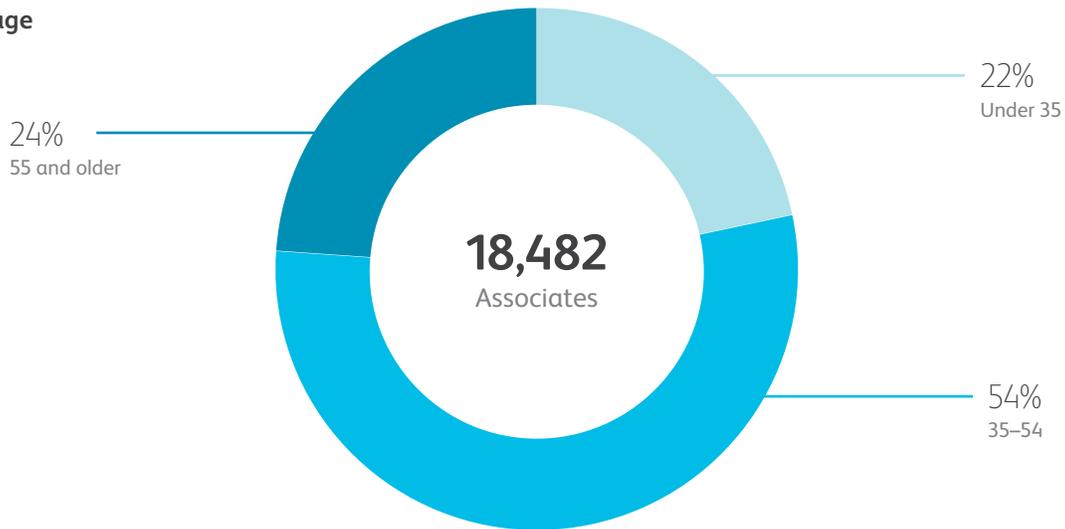
<sup>34</sup> U.S. workforce including Alaska and Hawaii, but excluding Puerto Rico or any other U.S. territories. Workforce includes all associates, both management and non-management. Under this scope, approximately 59% of the associates are men, 41% are women. Data includes associates that were part of the Respiratory business, which was divested on October 3 2016.

<sup>35</sup> The reporting scope is U.S. including Alaska and Hawaii, but excluding Puerto Rico or any other U.S. territories. Data includes associates that were part of the Respiratory business, which was divested on October 3 2016. BD defines Executives as those in VP, SVP, or EVP roles; Management positions are defined as those in Manager, Director, or equivalent roles.

### Associates by ethnicity



### Associates by age



### New hires



### Total turnover (voluntary and involuntary)<sup>36</sup>



<sup>36</sup> By turnovers, we mean the associates in the workforce who were with the Company on the last day of the previous financial year (September 30, 2015) but no longer with the Company in the reporting time period.

To promote inclusion and diversity and help attract and retain top talent, BD has established (*to date*) six employee-led, executive-sponsored Associate Resource Groups (ARGs):

- African-Americans at BD
- Hispanic Organization for Leadership and Advancement
- Lesbian, Gay, Bisexual, Transgender Associates and Allies
- North American Shared Service Center ARG
- Veteran Employee and Troop Support
- Women's Initiative Network

## 2020 goal

### Achieve best-in-class associate safety performance

The Corporate EHS function works to reduce the environmental impact of our operations and improve the engagement of our associates in safe behavior on and off the job. Over the last year, many of these efforts have centered on harmonizing EHS programs and expectations across BD and sites that joined BD as part of the CareFusion acquisition. We remain committed to our internal EHS management system, known as the Performance Verification Program (PVP) and have expanded its reach to sites with Europe, Asia and South Latin America.

The Corporate EHS function is a Center of Excellence within the Global Operations group, resulting in a more effective connection with the manufacturing sector. Each Center of Excellence is charged with contributing to our Manufacturing Excellence approach known as the Vital Few: Safety, Quality, Delivery and Cost.

### Occupational injury and illness rates, per 200,000 hours worked (IIR)<sup>37</sup>

	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16
Occupational injury and illness rates, per 200,000 hours worked (IIR) <sup>37</sup>	1.4	1.2	1.1	1.0	1.0	0.9	1.1	0.9	0.7

All functional, regional and business leaders have established inclusion and diversity goals that align to the Company's three year objectives, and by 2020, BD is committed to:

- Increasing employee inclusion index scores by 10 percentage points, as measured by Perceptyx
- Increasing global gender diversity among corporate executives by **40%** and all other management and leadership by **25%**
- Strengthening ethnic and race representation among U.S. management and leadership by **10%**
- Driving relevant, non-gender-based diversity objectives for countries outside the U.S.

We will communicate our progress in subsequent reports.

There has been an enhanced focus on safety across the Company that include the following highlights:

- A new Corporate Safety Policy issued by the CEO
- A Safety Steering Team of Company, Regional and Functional leaders to guide the Company in achieving our safety goals
- New functional teams to identify and address EHS concerns associated with traditionally underserved associate populations such as our Field Service Engineers, Fleet operators, office and R&D associates and construction contractors
- Cross-business teams of safety representatives and plant managers who meet to share best practices and accelerate safety improvements.

<sup>37</sup> IIR = (number of injuries and illnesses x 200,000)/ Employee hours worked. FY16 Data includes CareFusion. Data for previous years excludes CareFusion. Data includes associates that were part of the Respiratory business, which was divested on October 3, 2016.

## Social investing

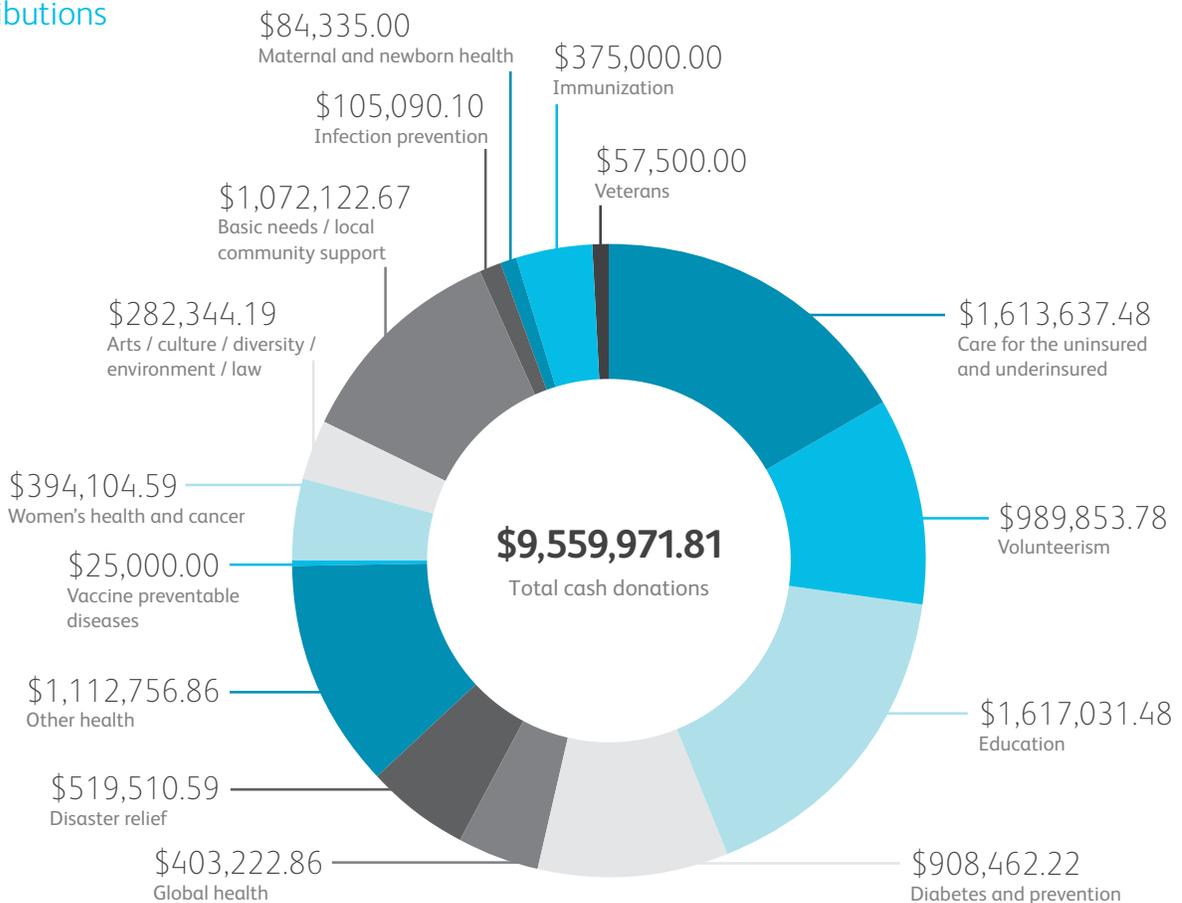
*Advancing the world of health* is our corporate purpose and the inspiration behind our global enterprise. It is a call to action that resounds with BD associates around the world. By giving our time, our talent and our resources through philanthropic and charitable efforts, we seek to improve global health standards and access to healthcare for all communities. Since the Company was founded over 110 years ago, BD has actively donated cash, product and expertise to nonprofit and educational organizations in North America and throughout the world.

Our award-winning charitable initiatives, corporate giving programs and nonprofit partnerships have continually made positive impacts on global health standards. We focus our philanthropy outreach and community relations programs in areas where BD can initiate the greatest impact supporting international immunization campaigns, promoting healthcare worker safety, raising awareness of pandemic diseases, providing disaster relief and much more.

## FY16 charitable giving summary



## Cash contributions



In FY16, charitable giving totaled more than \$18 million. Cash contributions were made to a variety of areas aligned with BD businesses, such as diabetes, cancer and infection prevention, as well as other programs that help in *advancing the world of health*. Contributions come from multiple sources, including contributions made by BD locations around the world and cash contributions via our gift matching program.

The data above includes contributions made on behalf of our directors and executive officers, who are personally involved with numerous organizations, serving as board members or in other capacities. The 2016 annual report detailing these charitable contributions can be accessed via the Corporate Governance section at [http://www.bd.com/investors/corporate\\_governance/](http://www.bd.com/investors/corporate_governance/)

2020 goal

**Partner with nonprofits to address unmet needs locally and globally**

**Building healthy communities**

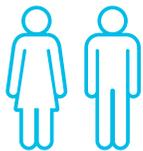
The BD Helping Build Healthy Communities<sup>SM</sup> initiative, ([www.directrelief.org/bdhhbc](http://www.directrelief.org/bdhhbc)) funded by BD and implemented together with Direct Relief and the National Association of Community Health Centers (NACHC), provides awards to community health centers to support innovative approaches to the delivery of primary and preventive healthcare to underserved and vulnerable populations related to the prevention and treatment of diabetes, cervical cancer and HIV. The initiative includes a commitment by BD of \$2.6 million in cash and \$6 million in product, for community health centers and clinics nationwide.

In 2016, ten health centers from across the United States each received a \$100,000 Innovation in Care Award. Details of the Award winners from 2016, as well as previous years, can be found [here](#).

**BD Helping Build Healthy Communities key facts:**



Since 2003, **26** health centers in **13** states received **\$2.6 million** in award funding through the BD Helping Build Healthy Communities initiative.



The initiative has impacted **35,818 patients**.



Throughout the U.S., more than **24 million people** in medically underserved areas receive healthcare at **1 of over 9,000** community health center sites. **More than 92%** of patients seen at health centers earn an income of less than **200% of the federal poverty level**.

Since 2013, BD has provided **Direct Relief** with more than **21 million insulin syringes** and **3,200 pen needles** (valued at over **\$6 million**).

These items have been distributed to **780** community health centers, free clinics and community clinics, in **49 states and Puerto Rico** through more than **2,110 shipments**.



## CAP Foundation

The College of American Pathologists Foundation champions patient-centered and humanitarian roles for pathologists. The Foundation strives to connect people, especially those in need, to the specialized, life-saving skills of pathologists. See, Test & Treat® is the CAP Foundation's flagship program, which offers free cervical and breast cancer screening, with same day results, to women in need. Volunteer pathologists partner with a clinical care team to provide screening and test results to women. Additionally, attendees and their families receive health-focused education.

In 2016, BD supported a program at Charles Drew Health Center in Omaha, Nebraska. With a \$50,000 grant from BD, the program offered same-day results, education and plans

for follow-up care with interpreters available for six languages. Beyond providing additional funding, BD also provided in-kind supplies to perform Pap tests for cervical cancer.

Across the country, providers like CDHC care for 23 million people who otherwise have no access to care.

BD recognizes that these providers operate with limited resources, and we support their ability to use innovative models of care—like See, Test & Treat—to bring high-quality preventive care to the most vulnerable people in the U.S.

Information about the See, Test & Treat program can be found on CAP Foundation's website <http://foundation.cap.org/>

## Together for Girls

The U.S. Centers for Disease Control and Prevention currently estimates that one billion children a year are exposed to some form of violence. Emotional, physical and sexual violence, along with neglect, are all proven to have potentially devastating effects to children.

Children who experience violence are often trapped in a vicious cycle. They suffer immediately and into the future and are more likely to be victimized again later in life or to hurt others, such as their partners or children. These consequences directly impacts society's ability to achieve the Sustainable Development Goals.



*Girls who experience sexual violence are three times more likely to be HIV positive as an adult and are less likely to go to school, which affects their prospects of earning an income. They are also three times more likely to have an unintended pregnancy and girls under 15 who have experienced sexual violence are five times more likely to die in childbirth.*

Violence, however, is not inevitable. It can be prevented and children who do experience violence can recover and go on to lead healthy, productive lives.

Launched at the Clinton Global Initiative in 2009, with a small secretariat established in 2011, the Together for Girls (TfG) partnership brings together the world's preeminent public health agencies, governments and the private sector in a shared commitment to end violence against children with a particular focus on sexual violence and girls.

BD has been a partner to TfG from the outset. In 2014, BD provided a three-year grant to TfG to support staff and day-to-day management costs for the secretariat. The Company's leadership in addressing violence against children demonstrates how the private sector can take on such an essential yet sensitive health issue.

Further information about Together for Girls can be found at [www.togetherforgirls.org](http://www.togetherforgirls.org)

## BD U.S. Fund for UNICEF Maternal and Neonatal Tetanus (MNT) Elimination Campaign

At the 1990 World Summit for Children, the elimination of tetanus was designated a goal for UNICEF. Each year it is estimated that 248,000 infants and 30,000-50,000 women will die from the disease. Five doses of the tetanus vaccine will provide full immunization for life.

As part of a 5-year commitment, to date BD has provided \$9.8 million in cash and product and other in-kind support to this campaign, including 55 million safe injection devices.

Total commitment to MNT initiative totals:

- \$6 million in cash
  - Includes renewed commitment of \$1 million over 5 years (FY15–FY19)
- \$3.8 million in product donations
  - Includes 55 million units of BD SoloShot™ and BD Uniject™ auto-disable syringes

BD has helped with various achievements throughout our partnership with the U.S. Fund for UNICEF:



Neonatal tetanus deaths, as a proportion of all neonatal deaths, have been **reduced from 7% in 2000 to around 1% in 2008.**

Estimated annual neonatal tetanus deaths have been reduced from around **200,000 in 2000 to 34,000 in 2015.**



More than **145 million women in 53 countries** have been protected against tetanus with 2+ doses of the tetanus vaccines through campaigns.

Globally **41 out of 59 priority countries** have been officially validated for MNT elimination. Currently, **18 countries are still at risk for MNT.** In addition, all of Ethiopia except the Somali Region, the Punjab province in Pakistan and 16 out of 17 provinces of the Philippines have been validated.



Further details of the campaign can be found at [www.unicef.org/health/index\\_43509.html](http://www.unicef.org/health/index_43509.html)

### Children and Mother Partnerships (CHAMPS) Initiative

BD has long partnered with the Catholic Medical Mission Board (CMMB) to support health-related initiatives and strengthen health systems. In 2015, CMMB launched the Children and Mother Partnerships (CHAMPS), a holistic program model designed to change the lives of more than one million women, children and their families worldwide improving access to:

- Quality healthcare
- Nutrition
- Water and sanitation
- Economic development
- Greater gender equality

Our 2-year commitment to CMMB will support CHAMPS initiatives in Mwanzi District, Zambia. By working with various stakeholders, including the government, local hospital and the traditional leadership structures, CMMB hopes to:

- Improve knowledge, attitudes and practices around key public health issues
- Revitalize neighborhood health committees, with training for health professionals and local citizens
- Improve access to healthcare services

Further details of the CHAMPS initiative can be found at <http://cmmb.org/programs/champs/>

## MAP International

MAP International ([www.map.org](http://www.map.org)) is a global Christian health and relief organization that partners with people living in conditions of poverty to save lives and develop healthier families and communities. MAP provides essential medicines to 10 million people annually and works directly with communities to build their capacity to overcome diseases and promote health to create real hope and lasting change.

In 2016, BD provided a grant to support one of MAP's projects in Bolivia aimed at creating transformational change to enable children to thrive. The ongoing project is focused on

working with local families and communities to improve the key determinants of early brain architecture development. Highlights of the project include a nutrition program that aims to strengthen the nutritional habits of children by incorporating omega 3, vegetables, fruits, cereals and proteins into their regular diet. The nutrition program hosts nutritional fairs that provide an opportunity for children to prepare different dishes using the vegetables they have grown in a local kitchen garden as well as a daily nutrition program that provides meals to more than 150 children.

### 2020 goal

#### Drive social impact and associate engagement through volunteer programs

Numerous engagement opportunities are available to BD associates, from disaster relief efforts, payroll deductions and gift matching, to on- and off-site volunteer activities. Associates are also entitled to 16 hours of paid time off to volunteer every year, allowing associates to make a difference in their communities. Examples of associate volunteer engagement activities include:

- In 2016 our India Development Center (IDC), along with the HCL Foundation, adopted the government school at Sholinganallur, Chennai, for a community service event. Most of the students of this school come from an underprivileged background and the school lacked the basic needs required for its students, such as physical training, good infrastructure,

medical help and career guidance.

Over one day, around 300 IDC associates and 11 BD leaders gathered at the school and engaged in activities such as medical camp, blackboard painting, wall painting, mentoring, ground cleaning, and gardening.

- Since 2013 BD associates in San Diego, CA, have participated in Padres Pedal the Cause, an annual cycling event that raises money for cancer research in San Diego. BD associates have raised over \$300,000 since 2013 and in 2016 fielded a team of over 100 riders and 27 volunteers for the event itself. This year BD was among a group of sponsors that enabled Padres Pedal the Cause to achieve its goal of 100% of all operational costs being underwritten, allowing 100% of all donations to go directly to life-saving cancer research.

## Volunteer Service Trip (VST)

In its eleventh year, the VST program sends teams of BD associates to developing countries to help local health systems through training, education, laboratory services and construction projects. The program is designed to enable BD to share the Company's collective knowledge while also providing associates with a unique opportunity to pursue the Company purpose of *advancing the world of health*.

### Peru

Working with **Direct Relief**, in October 2016, BD completed the final year of a 3-year commitment in Peru. Sixteen BD volunteers traveled to Cusco for 19 days to implement solutions and provide recommendations in 10 project areas. The volunteers were specialists in information technology and electronic medical

records; business development and marketing; laboratory LEAN Six Sigma and QC; communications, multimedia and website development; logistics and administration.

In addition, the BD volunteers participated in 3 outreach campaigns in which 460 women were screened for cervical cancer and over 1,200 individuals vaccinated against HPV.

Direct Relief will continue to partner with BD to assist in the provision of the BD SurePath™ liquid cytology medical consumables to CerviCusco, a cervical cancer prevention and treatment clinic located in Cusco, intended to screen up to 75,000 Peruvian women over several years.

## \$250,000 awarded

Product donated



**9,600** BD SurePath™ tests and the corresponding consumables and reagents



**288** 7-liter BD sharps collectors



**62,700** 0.5-mL BD syringes and needles

## Haiti

When a massive earthquake struck Haiti in 2010, Heart to Heart International was determined to provide its traditionally strong response of material aid. However, based on their recognition of the need for long-term support, they also committed an ongoing presence in a nation for the first time through the establishment of Heart to Heart Haiti. In seeking a partner, they turned to longtime partner BD and our VST model.

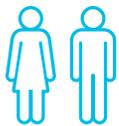
The Haiti VSTs were designed to provide support (*monetary and volunteer hours*) for moving the people of Haiti from survivability to sustainability. In the final year (*five years*) of the WHO Laboratory Standards training project, VST trainers led a “train the trainer” effort, ensuring continued and sustainable quality in the delivery of laboratory services in Haiti. Those completing the training can not only implement the best practices in their laboratories, but also teach and mentor other laboratorians.

The community health worker program met with similar success, expanding from a one-week, single-site training to a fully

functioning, tiered educational network that operates within the Southeast sector of Haiti 365 days a year. These advances are developing a network of experts in Haiti committed to working together to improve community health.

In the spring of 2016, BD completed the sixth year of our partnership with **Heart to Heart International**, working to create sustainable access to quality healthcare in Haiti.

The successful Heart to Heart International and BD partnership continues to provide vital educational opportunities for Haitian lab technologists and community health workers in Haiti. As a result of this work, these professionals are passing on their knowledge to peers and community members in a supported, coordinated manner to create centers of excellence improving the overall health of the nation. From this partnership, a Haiti Chapter of the Clinical Laboratory Managers Association (CLMA) was created to ensure the continuation of laboratory education and improvement.



**55 BD volunteers**

deployed over a 5-year period



**215 health workers**

trained on community health issues



**240 lab managers**

trained on WHO standards



**24** standard operating procedural manuals written



**2** clinical laboratories built and outfitted

### Henry P. Becton Volunteer Impact Awards

The Henry P. Becton Volunteer Impact Program honors the late BD Director Henry P. Becton Sr.'s lifelong commitment to community and legacy of community service. The program recognizes the outstanding efforts of BD associates and retirees by making financial contributions in the winners' names to the organizations for which they volunteer. In FY16 BD made Volunteer Impact Award grants to 33 nonprofit organizations representing eight countries. Organizations receiving grants included

- Vida Y Familia De Mexicali, Mexico, which provides comprehensive care to pregnant women and their children
- Fondation Sourdine in Canada, which supports École Oraliste de Québec Pour Enfants Malentendants ou Sourds (*The Quebec School for Children who are Hard of Hearing or Deaf*)
- RoboCap in Poland, which sponsors free computer science and robotics workshops for children in hospitals, schools, orphanages and wherever parents cannot afford to pay

- Diabetes Ireland, which serves people with diabetes by providing a patient-support helpline, educational materials, a Sweetpea Kidz Club for children with diabetes, financial services and advocacy
- The British Paralympic Association, which supports disabled athletes
- The American Red Cross

We believe  
employment at  
BD isn't just work,  
it's an opportunity to  
make a real difference  
in the lives of others  
around the world.

This will enable BD to realize its 2030 vision of becoming the employer of choice for people seeking careers that advance global sustainability.

# Awards, recognitions and affiliations

## 2016

### Corporate Recognition

Center for Political Accountability — 2016 CPA-Zicklin Index on Corporate Political Disclosure and Accountability

Dow Jones Sustainability North America Index since 2005

*FORTUNE* — Change the World List 2016

FTSE4Good Index since 2003

### Innovation

2015 Thomson Reuters Top 100 Global Innovators

### Efficiency

Practice Greenhealth — Champion for Change Environmental Excellence

U.S. EPA Green Power Partner

U.S. EPA SmartWay® Transport Partner

### Empowerment

Australia Workplace Gender Equality Agency — Employer of Choice for Gender Equality

CEO Cancer Gold Standard™ Accreditation

Top Employers Africa 2016 — Top Employers Institute

Work-Life Seal of Distinction — WorldatWorks's Alliance for Work-Life Progress®

MEMBER OF  
**Dow Jones  
Sustainability Indices**  
In Collaboration with RobecoSAM



FTSE4Good



2015 THOMSON REUTERS  
**TOP 100**  
GLOBAL INNOVATORS



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## Global Reporting Initiative (GRI) G4 Index

This index provides information on our application of the Global Reporting Initiative (GRI) G4 Guidelines in the 2016 Sustainability report and other company related documents. BD utilized the G4 framework as guidance and is not rigidly reporting against it. Therefore, please note that this report discloses on the following G4 indicators to varying extents:

Standard disclosure	Location	Degree of disclosure
General standard disclosures		
Strategy and analysis		
G4-1	CEO Letter	Full
G4-2	CEO Letter, Our sustainability strategy, Efficiency: Status of performance against 2020 efficiency goals	Partial
Organizational profile		
G4-3	About BD	Full
G4-4	About BD, 10-K, "Products" page on website	Full
G4-5	10-K	Full
G4-6	10-K	Full
G4-7	10-K	Full
G4-8	About BD, Value chain profile, 10-K	Full
G4-9	About BD, Value chain profile, 10-K	Full
G4-10	Empowerment	Partial
G4-12	Value chain profile, 10-K	Full
G4-13	10-K	Full
G4-14	Innovation	Partial
G4-15	Efficiency	Full
G4-16	Efficiency	Full
Identified material aspects and boundaries		
G4-17	About this report, 10-K	Full
G4-18	Our sustainability strategy	Partial
G4-19	Our sustainability strategy	Partial
G4-20	About this report	Partial
G4-21	Innovation, Access, Efficiency, Empowerment	Partial
Stakeholder engagement		
G4-24	Stakeholder engagement	Full
G4-25	Stakeholder engagement	Partial
G4-26	Stakeholder engagement	Partial
Report profile		
G4-28	About this report	Full
G4-29	2020 Sustainability goals	Full
G4-30	About this report	Full
G4-31	Appendix ( <i>last page</i> )	Full
G4-32	GRI G4 Content Index	Full

Standard disclosure	Location	Degree of disclosure
General standard disclosures		
Governance		
G4-34	Sustainability governance, Corporate governance, 10-K	Full
G4-36	Sustainability governance, Corporate governance	Full
G4-37	Sustainability governance	Partial
G4-38	Corporate governance, Empowerment, 10-K	Partial
G4-39	Empowerment	Partial
Ethics and integrity		
G4-56	How we do business	Full
G4-57	How we do business	Partial
G4-58	How we do business	Partial

Standard disclosure	Disclosure title	Location	Degree of disclosure
Specific standard disclosures			
Category: Economic			
Aspect: Economic performance			
G4-EC1	Direct economic value generated and distributed	Company structure, 10-K, Empowerment: Social investing	Partial
G4-EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change	Efficiency: Approach to climate change	Partial
Aspect: Indirect economic impacts			
G4-EC7	Development and impact of infrastructure investments and services supported	Access	Partial
G4-EC8	Significant indirect economic impacts, including the extent of impacts	Innovation, Access	Partial
Aspect: Procurement practices			
G4-DMA	Generic disclosures on management approach	Innovation: Supplier management and audits	Partial
Category: Environmental			
Aspect: Materials			
G4-DMA	Generic disclosures on management approach	Efficiency	Partial
Aspect: Energy			
G4-DMA	Generic disclosures on management approach	Efficiency	Partial
G4-EN3	BD also discloses information about energy consumption to the Carbon Disclosure Project (CDP)	Partial	Partial
G4-EN6	Energy consumption within the organization	Efficiency, Appendix: Efficiency data tables	Partial
Aspect: Water			
G4-DMA	Generic disclosures on management approach	Efficiency	Partial
G4-EN8	Total water withdrawal by source	Efficiency, Appendix: Efficiency data tables	Partial
Aspect: Emissions			
G4-DMA	Generic disclosures on management approach	Efficiency: Approach to climate change, Efficiency: Footprint reduction strategy BD also discloses information about Greenhouse gas emissions to the Carbon Disclosure Project (CDP)	Partial
G4-EN15	Direct greenhouse gas (GHG) emissions ( <i>Scope 1</i> )	Efficiency, Appendix: Efficiency data tables	Partial
G4-EN16	Energy indirect greenhouse gas (GHG) emissions ( <i>Scope 2</i> )	Efficiency, Appendix: Efficiency data tables	Partial
G4-EN17	Other indirect greenhouse gas (GHG) emissions ( <i>Scope 3</i> )	Efficiency, Appendix: Efficiency data tables	Partial
G4-EN19	Reduction of greenhouse gas (GHG) emissions	Efficiency, Appendix: Efficiency data tables	Partial
G4-EN20	Emissions of ozone-depleting substances (ODS)	Appendix: Efficiency data tables	Partial
G4-EN21	NOX, SOX, and other significant air emissions	Appendix: Efficiency data tables	Partial
Aspect: Effluents and waste			
G4-DMA	Generic disclosures on management approach	Efficiency	Partial
G4-EN22	Total water discharge by quality and destination	Appendix: Efficiency data tables	Partial
G4-EN23	Total weight of waste by type and disposal method	Efficiency, Appendix: Efficiency data tables	Partial

Standard disclosure	Disclosure title	Location	Degree of disclosure
Specific standard disclosures			
Aspect: Products and services			
G4-DMA	Generic disclosures on management approach	Efficiency	Partial
G4-EN27	Extent of impact mitigation of environmental impacts of products and services	Efficiency	Partial
Aspect: Supplier environmental assessment			
G4-DMA	Generic disclosures on management approach	Innovation: Supplier management and audits, Efficiency	Full
G4-EN32	Percentage of new suppliers that were screened using environmental criteria	Efficiency	Partial
Category: Social			
Sub-category: Labor practices and decent work			
Aspect: Employment			
G4-DMA	Generic disclosures on management approach	Empowerment	Partial
G4-LA1	Total number and rates of new employee hires and employee turnover by age group, gender and region	Empowerment	Partial
Aspect: Occupational health and safety			
G4-DMA	Generic disclosures on management approach	Empowerment	Full
G4-LA5	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs	Empowerment	Partial
G4-LA6	Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender	Empowerment	Partial
Aspect: Diversity and equal opportunity			
G4-DMA	Generic disclosures on management approach	Empowerment	Partial
G4-LA12	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity	Empowerment	Full
Aspect: Supplier assessment for labor practices			
G4-DMA	Generic disclosures on management approach	Efficiency, Human rights	Partial
Sub-category: Human rights			
Aspect: Supplier human rights assessment			
G4-DMA	Generic disclosures on management approach	Efficiency, Human rights	Partial

Standard disclosure	Disclosure title	Location	Degree of disclosure
Specific standard disclosures			
Sub-category: Society			
Aspect: Local communities			
G4-DMA	Generic disclosures on management approach	Empowerment: Social investing	Partial
G4-S01	Percentage of operations with implemented local community engagement, impact assessments, and development programs	Empowerment	Partial
Aspect: Anti-corruption			
G4-DMA	Generic disclosures on management approach	How we do business	Partial
G4-S03	Total number and percentage of operations assessed for risks related to corruption and the significant risks identified	10-K	Partial
G4-S04	Communication and training on anti-corruption policies and procedures	How we do business	Partial
Aspect: Public policy			
G4-DMA	Generic disclosures on management approach	Corporate governance: Public policy advocacy	Partial
G4-S06	Total value of political contributions by country and recipient/beneficiary	Corporate governance: Public policy advocacy	Full
Aspect: Supplier assessment for impacts on society			
G4-DMA	Generic disclosures on management approach	Efficiency, Human rights	Partial
Sub-category: Product responsibility			
Aspect: Customer health and safety			
G4-DMA	Generic disclosures on management approach	Innovation: Product security and privacy, Innovation: Product quality and safety	Full
Aspect: Product and service labeling			
G4-DMA	Generic disclosures on management approach	Innovation: Regulatory compliance	Partial
G4-PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes	Innovation: Regulatory compliance	Full
Aspect: Customer privacy			
G4-DMA	Generic disclosures on management approach	Innovation: Product security and privacy	Partial

We believe BD is at the very beginning of an amazing journey where we can have a profound impact on our customers and the millions of patients they serve around the world.

# Appendix:

## Efficiency data tables

Measurement and UOM	FY08 baseline	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16
<b>Total greenhouse gas emissions</b>									
Scope 1 absolute ( <i>metric tons CO<sub>2</sub>e</i> )	81,430	81,914	82,670	76,566	74,077	71,888	67,618	66,753	66,301
Scope 1 normalized ( <i>metric tons CO<sub>2</sub>e per \$M COPS</i> )	17	17	16	14	13	13	11	12	10
Scope 2 absolute ( <i>metric tons CO<sub>2</sub>e</i> )	458,771	421,798	349,231	327,913	273,017	233,468	209,464	177,759	161,855
Scope 2 normalized ( <i>metric tons CO<sub>2</sub>e per \$M COPS</i> )	97	89	68	62	49	41	35	32	25
Total absolute ( <i>metric tons CO<sub>2</sub>e</i> )	540,201	503,713	431,901	404,479	347,093	305,356	277,082	244,512	228,156
Total normalized ( <i>metric tons CO<sub>2</sub>e per \$M COPS</i> )	114	106	85	76	63	54	46	44	35

2020 Goal: **reduce Scope 1 & 2 GHG emissions by 50% (normalized to COPS)**. Current status: **reduced by 58%**

Data represents Scope 1 (*direct*) and Scope 2 (*indirect from electricity*) energy sources.

### Scope 3 greenhouse gas emissions (absolute)<sup>1</sup>

Fuel- and energy-related activities from global operations ( <i>metric tons CO<sub>2</sub>e</i> )						38,005	37,926	38,015	39,222
Upstream transportation and distribution ( <i>metric tons CO<sub>2</sub>e</i> ) <sup>2</sup>								550	—
Waste generated in global operations ( <i>metric tons CO<sub>2</sub>e</i> )						8,730	7,272	7,170	9,489
Global business travel ( <i>metric tons CO<sub>2</sub>e</i> )					35,191	40,497	68,415	67,799	71,893
Downstream transportation and distribution ( <i>metric tons CO<sub>2</sub>e</i> ) <sup>2, 3</sup>					11,552	14,374	9,469	28,309	—

2020 Goal: **establish Scope 3 GHG emission baselines for categories applicable to BD and initiate climate resilience planning for BD facilities.**

Current status: **an external consultancy has been engaged to quantify Scope 3 GHG emissions across all 15 categories.**

<sup>1</sup> Data for CareFusion is included in 2015 and 2016 data only.

<sup>2</sup> 2016 data unavailable at time of publication.

<sup>3</sup> 2012 / 2013 / 2014: Represents U.S. operations only; 2015 represents global operations and multi-mode transportation.

Measurement and UOM	FY08 baseline	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16
<b>Total energy consumption</b>									
Scope 1 absolute (GJ)	1,629,774	1,649,699	1,666,203	1,550,555	1,516,237	1,396,671	1,412,255	1,385,213	1,385,144
Scope 1 normalized (GJ per \$M COPS)	343	348	326	291	274	248	232	248	231
Scope 2 absolute (GJ)	3,326,358	3,301,528	3,389,993	3,435,869	3,413,476	3,474,181	3,526,934	3,503,797	3,616,861
Scope 2 normalized (GJ per \$M COPS)	700	697	663	645	618	616	580	627	557
Total absolute (GJ)	4,956,131	4,951,228	5,056,196	4,986,424	4,929,713	4,870,852	4,939,189	4,889,011	5,002,005
Total normalized (GJ per \$M COPS)	1,043	1,045	989	936	892	863	813	875	770

2020 Goal: **reduce energy consumption by 40% (normalized by COPS)**. Current status: **reduced by 26%**

Data represents Scope 1 (direct) and Scope 2 (indirect from electricity) energy sources. There was a significant decrease in absolute consumption in FY16; this was due to implementation of a number of large conservation projects and an increase in REC and green power purchases.

#### Renewable energy (RECs, green power)

Volume of renewable energy (GJ)	124,362	294,888	752,176	935,030	1,238,761	1,502,569	1,619,874	1,892,822	2,158,493
Total volume of energy (GJ) – all sources	4,956,131	4,951,228	5,056,196	4,986,424	4,929,713	4,870,852	4,939,189	4,889,011	5,002,005
% renewable – total energy	3%	6%	15%	19%	25%	31%	33%	39%	43%

2020 Goal: **increase renewable energy consumption by 50% of total energy (absolute)**. Current status: **increased by 43%**

Data represents Scope 1 (direct) and Scope 2 (indirect from electricity) energy sources. Includes purchase of renewable energy credits (RECs) and onsite generation.

#### Water consumption

Absolute (cubic meters)	5,287,262	4,765,618	4,278,288	4,308,943	4,417,079	4,504,981	4,786,623	4,949,253	4,793,834
Normalized (cubic meters per \$M COPS)	1,113	1,005	837	809	799	799	787	886	738

2020 Goal: **reduce water consumption by 40% (normalized by COPS)**. Current status: **reduced by 34%**

#### Waste water discharge

Absolute (cubic meters)	4,016,374	3,689,095	3,075,543	3,104,408	3,231,634	369,537	3,709,490	3,616,103	3,459,570
Normalized (cubic meters per \$M COPS)	845	778	602	583	585	597	610	647	533
% discharge	76%	77%	72%	72%	73%	75%	77%	73%	72%

#### Total non-hazardous waste generated

Absolute (metric tons)	46,872	46,040	48,553	49,239	46,402	46,717	45,051	44,627	48,900
Normalized (metric tons per \$M COPS)	9.90	9.70	9.50	9.20	8.40	8.30	7.40	8.00	7.50

2020 Goal: **reduce total waste by 50% (normalized by COPS)**. Current status: **reduced by 24%**

#### Non-hazardous waste landfilled

Absolute (metric tons)	25,106	24,996	21,189	17,990	13,754	12,911	9,969	8,994	9,398
Normalized (metric tons per \$M COPS)	5.28	5.27	4.14	3.38	2.49	2.29	1.64	1.61	1.45
% landfilled	48%	51%	42%	34%	28%	27%	21%	20%	19%
% diversion	51%	49%	57%	63%	70%	72%	76%	78%	79%

2020 Goal: **increase diversion rate by over 85% (absolute as % of total non-hazardous waste)**. Current status: **increased by 79%**

Measurement and UOM	FY08 baseline	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16
<b>Non-hazardous waste incinerated</b>									
Absolute ( <i>metric tons</i> )	5,096	3,226	3,228	3,198	2,998	4,156	4,231	3,550	5,887
Normalized ( <i>metric tons per \$M COPS</i> )	1.07	0.68	0.63	0.60	0.54	0.74	0.70	0.64	0.91
% incinerated	10%	7%	6%	6%	6%	9%	9%	8%	12%
<b>Non-hazardous waste recycled</b>									
Absolute ( <i>metric tons</i> )	21,624	20,677	25,788	30,362	31,409	30,377	31,445	32,341	34,052
Normalized ( <i>metric tons per \$M COPS</i> )	4.55	4.36	5.04	5.70	5.68	5.38	5.17	5.79	5.25
% recycled	42.00%	43.00%	51.00%	57.00%	64.00%	63.00%	67.00%	70.00%	68.00%
2020 Goal: <b>increase recycling rate by over 70% (absolute as % of total non-hazardous waste)</b> . Current status: <b>increased by 68%</b>									
<b>Hazardous waste generation</b>									
Absolute ( <i>metric tons</i> )	2,853	2,219	2,617	2,141	1,947	1,896	1,728	1,808	1,907
Normalized ( <i>metric tons per \$M COPS</i> )	0.60	0.47	0.51	0.40	0.35	0.34	0.28	0.32	0.29
2020 Goal: <b>reduce hazardous waste by more than 60% (normalized by COPS)</b> . Current status: <b>reduced by 51%</b>									
<b>VOC emissions</b>									
Absolute ( <i>metric tons</i> )	197	138	116	107	132	123	140	137	138
Normalized ( <i>metric tons / USD</i> )	0.041	0.029	0.023	0.020	0.024	0.022	0.023	0.024	0.021
<b>HAP emissions</b>									
Absolute ( <i>metric tons</i> )	15	13	23	24	18	18	14	13	14
Normalized ( <i>metric tons / USD</i> )	0.0032	0.0028	0.0044	0.0044	0.0032	0.0031	0.0023	0.0023	0.0021
<b>VOC + HAP emissions</b>									
Absolute ( <i>metric tons</i> )	212.1	151	138.1	130.7	150.2	140.7	153.8	149.3	151.4
Normalized ( <i>metric tons / USD</i> )	0.045	0.032	0.027	0.025	0.027	0.025	0.025	0.027	0.023
2020 Goal: <b>reduce VOC and HAP emissions by 65% (normalized by COPS)</b> . Current status: <b>reduced by 48%</b>									
There was a significant decrease in normalized emissions in FY16; this was due to implementation of a number of conservation projects.									
<b>Ozone-depleting substances emissions</b>									
Absolute ( <i>metric tons</i> )	322	274	249	254	235	236	228	218	195
Normalized ( <i>metric tons / USD</i> )	0.068	0.058	0.049	0.048	0.043	0.042	0.038	0.039	0.030
2020 Goal: <b>reduce ozone-depleting substance emissions by 95% (normalized by COPS)</b> . Current status: <b>reduced by 40%</b>									
2020 Goal: <b>100% elimination of use of HCFC141b in manufacturing</b> . Current status: <b>While a number of our facilities have completed conversion plans and eliminated the use of HCFC, we are continuing to implement conversion plans at remaining facilities and expect to complete all conversions as scheduled.</b>									

To find out more about sustainability at BD or to provide feedback on our reporting, please contact [BD\\_Sustainability\\_Office@bd.com](mailto:BD_Sustainability_Office@bd.com)

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