2017 Corporate Responsibility Report

Putting smart to work for
our company and the world

IBM

About this report
IBM's annual Corporate Responsibility Report is published during the second quarter of the subsequent calendar year. This report covers our performance in 2017 and some notable activities during the first half of 2018.

In selecting the content for inclusion in our 2017 report, we have used the Global Reporting Initiative (GRI) reporting principles of materiality, sustainability context, stakeholder inclusiveness, and completeness. A GRI report utilizing the GRI G4 Sustainability Reporting Guidelines, as well as additional details about IBM's corporate responsibility activities and performance, can be found at our corporate responsibility website.

Unless otherwise noted, the data in this report covers our global operations. Information about our business and financial performance is provided in our 2017 Annual Report. IBM did not employ an external agency or organization to audit the 2017 Corporate Responsibility Report.

As we continue to transform IBM into a cognitive solutions and cloud platform company, we regularly review our strategy and approach to corporate responsibility. This ongoing analysis helps us to identify and prioritize the issues of relevance to our business and our stakeholders.

Chairman's letter

More than at any time in recent history, governments, businesses and individuals are examining how companies operate. They are voicing concern over how personal data is being handled and protected, the potential misuse of technology platforms, and the impact of automation and AI on jobs. They are also examining the diversity and inclusion practices of these companies.

The world, in other words, is deeply in need of organizations that act responsibly. At IBM, for more than a century, we have sought to earn and keep the trust of our clients, partners, employees and with the people in the many thousands of communities where we live and work. Indeed, that trust is why governments around the world choose us to run systems and services that serve their citizens. It also is why 95 percent of Fortune 500 companies rely on IBM to handle their data.

In this report, you will read about our Corporate Responsibility efforts to reform education, protect the environment and advance new models for inclusion and diversity. Yet, crucially, you will also read about an area where there is increasing need for corporate responsibility — our advocacy for trust and transparency in the technology industry — and beyond.

Indeed, as we continue to change the way the world works, we have turned our decades of experience into a formal set of guidelines: IBM's Principles of Trust and Transparency.

These principles make clear how IBM has earned our reputation as a responsible steward of data, and they provide a guidebook for how all companies can do the same — how they can design and deploy new technologies in a way that advances the march of societal progress.

Our Principles state:

The Purpose of AI is to Augment Human Intelligence:
We believe the real value in AI lies in its ability to augment — not replace — human expertise. That belief is reflected in the technologies we build and bring to market. We recognize that AI will change every job in some way. That is why we have been investing in training IBM employees in new, in-demand skills and advocating for new approaches to skills education, including the P-TECH educational model.

Data and Insights Belong to Their Creator:
Trust in the promise of the digital economy can only be earned through responsible and transparent data practices. IBM is dedicated to the protection of our clients' data and to harnessing its power to expand prosperity and opportunity. We firmly believe that a client's data and the unique insights derived from that data belong to that client.

New Technology, including AI Systems, Must Be Transparent and Explainable:
Society will only trust a technology that can be understood. Technology companies must be clear about who trains their AI systems, what data was used in that training and, most importantly, what went into the algorithm's recommendations. IBM also believes that while bias can never be fully eliminated, and our work to eliminate it will never be complete, we and all companies advancing AI have an obligation to address it proactively.

IBM's Principles are a reflection of a new era, one where technology increasingly influences every aspect of society, from how government services are delivered, how we shop and entertain ourselves, to how children learn and physicians treat patients. We invite all companies, not just tech companies, to adopt these principles for their own use.

This is not a new endeavor for IBM. From our company's start, IBM has adopted policies that promote inclusion and treat people with dignity and respect.

That legacy continues today — from our commitment to genetics privacy and LGBTQ equality for our employees to advocating for public policies that reflect our values. For example, in 2017, we took positions against the revocation of DACA and against a discriminatory "bathroom bill" in Texas. We also reaffirmed our support for U.S. participation in the Paris Agreement on climate change.

IBM is consistently recognized as a corporate responsibility leader — from the *Just 100* and *Fortune Change the World* to the *100 Best*

Corporate Citizens. I am proud to say that in 2018 IBM was once again honored to receive the Catalyst Award for leadership in building a diverse and inclusive workplace — the only tech company honored in the past 20 years and the only company ever to have won the award four times.

We believe that IBM's policies, practices and programs offer compelling evidence for optimism: As more companies begin to adopt similar approaches, a new era of global prosperity and progress becomes possible.

Ginni Rometty

Ginni Rometty
Chairman, President and
Chief Executive Officer, IBM

Our approach to corporate responsibility

High standards are smart business

IBM pursues the highest standards of corporate responsibility as we work with clients and suppliers, support and empower employees, govern our company and connect to communities.

IBM's core values are embedded in all our corporate responsibility policies, practices and programs.

IBM pursues the highest standards of corporate responsibility as we work with clients and suppliers, support and empower employees, govern our company and connect to communities. Our definition of corporate responsibility reflects our expansive footprint and spans environmental responsibility; social responsibility to our workforce, clients and business partners; innovation to address critical societal needs; and a culture of ethics and integrity—guided by a rigorous system of corporate governance—that promotes transparency on a global basis.

Responsibility for our economic, environmental and societal performance, as well as compliance with laws, regulations and the corporate policies that govern our operations and practices worldwide, begins with our CEO and includes the IBM Board of Directors and its committees that regularly review performance and compliance.

A Corporate Responsibility Executive Steering Committee provides leadership and direction across our corporate responsibility activities. Chaired by the vice president of IBM Corporate Citizenship, the committee includes members from human resources, employee well-being, corporate governance, environmental affairs, research, investor relations, governmental programs and supply chain.

IBM's core values are embedded in all our corporate responsibility policies, practices and programs. These are:

– Dedication to every client's success

– Innovation that matters, for our company and for the world

– Trust and personal responsibility in all relationships

We approach corporate responsibility as we do any engagement, by applying our talent and technology to develop innovative solutions for key societal issues. We follow these principles in our corporate citizenship efforts:

– We work closely with the public and private sectors, including local, regional and national governments, nonprofit organizations, universities, research organizations and school systems.

– We apply our best talents and technologies to help craft innovative solutions and then bring them to scale. We concentrate on fewer, more comprehensive programs that can help address issues that no single entity can manage alone.

– We endeavor to effect widespread, measurable and sustainable change. To maximize the impact of our investments, we plan for the longevity and sustainability of our solutions by working to make them scalable and transferable.

Stakeholder engagement

Engaging and collaborating with stakeholders from a cross section of communities, governments, investors and the social sector is integral to our business strategy. Public/private collaborations are essential to overcoming societal challenges that are too big for any single public entity or industry sector to manage. Below is a small sample of the collaborations we engage in our corporate responsibility efforts.

IBM is a founding member of the Responsible Business Alliance (RBA)—formerly the Electronic Industry Citizenship Coalition (EICC)—a nonprofit industry group which enables companies to support continuous improvement in the social, environmental and ethical responsibility of their supply chains. IBM requires its direct suppliers of goods and services to adhere to the RBA Code of Conduct, which contains provisions for labor, health and safety, environmental, ethics and management systems.

We complement our environmental management strategies by engaging with stakeholders from governments, nongovernmental organizations (NGOs), business partners, clients, universities, investors and other interested parties. As a member of the U.S. Water Partnership, for example, IBM helps to unite and mobilize the expertise, resources and ingenuity in the U.S. to help address global water challenges, with a special focus on developing countries where needs are greatest.

IBM is a founding member of IMPACT 2030, a business-led coalition that convenes leaders from corporations, the United Nations (U.N.), civil society, academia and philanthropic organizations from around the world, uniting their corporate volunteering efforts to help address the U.N. Development Agenda through collaboration.

Engagement is integral to all our corporate citizenship activities. For example, IBM works with educators and other key stakeholders globally to help create innovative models and technologies that can better prepare people to engage meaningfully in 21st-century opportunities.

– P-TECH™ is the groundbreaking education model IBM created in 2011 with the New York City Department of Education and The City University of New York, to help provide young people the skills and credentials needed for 21st-century jobs. In 2018, P-TECH will reach nearly 120 schools in four countries to help more than 75,000 students build new-collar skills.

– Teacher Advisor With Watson is an AI-powered tool featuring Open Education Resources. Teachers have informed its development at every stage so that it can help improve their effectiveness in teaching math. It launched publicly in September 2017 and registered over 10,000 users from all 50 United States in its first seven months.

– Teachers TryScience, a global initiative developed in collaboration with the New York Hall of Science and teachengineering.org, now includes more than 500 lessons and pedagogical strategies in 21 languages, designed to help teachers strengthen their instruction in STEM (science, technology, engineering and math).

– In 2017, the IBM University Relations program launched the "Digital—Nation Africa" initiative to build digital skills for a 21st-century workforce in Africa. More than 60 organizations have joined IBM to collaborate in the enablement of this program.

– IBM's Veteran Employment Accelerator Impact Grant program helped hundreds of vets train for data analyst certification throughout 2017.

Corporate sponsors such as American Express, Citigroup, JPMorgan Chase and USAA are essential to the program, working with IBM to place these highly skilled vets in roles in their companies.

Performance summary and awards

Corporate Service Corps team in Peru, 2017

Performance summary

IBM measures many aspects of our corporate responsibility efforts every year. Below are data and key performance indicators (KPIs) for various parts of the business.

KPI denotes Key Performance Indicator.

Employees

Learning

We continue to empower IBMers with personalized learning. Your Learning, a digital platform powered by Watson, integrates formal, informal and social learning sources and customizes content for each learner. Users can access training anytime and in their preferred format, gaining control and continuously developing their skills in a faster and more efficient way.

	2013	2014	2015	2016	2017
Investments worldwide ($M) KPI	525	482	484	498	425
Total hours worldwide (M)	40	25.8	25	26.7	23.7
Hours per employee KPI	82	62.5	58.3	56	59

Volunteering

IBM supports employees and retirees in skills-based volunteering in their communities worldwide. Since 2003, our volunteering enablement initiative has logged over 20 million hours of service.

	2013	2014	2015	2016	2017
Worldwide retiree/ employee hours (K)	1,496	1,532	1,195	1,248	1,205

Global illness/injury rate

	2013	2014	2015	2016	2017
Total per 100 employees	0.30	0.42	0.33	0.30	0.25

Giving

IBM reports global corporate contributions by issue, geography and type of grant. The type of our giving—services, technology (including software) and cash—is what distinguishes IBM. We work collaboratively to transform approaches to societal challenges through innovative solutions that can achieve measurable outcomes.

Giving by issue reflects our goal to maintain education as our primary focus, although we maintain investments in human services, culture, health and the environment. We also remain flexible to address new initiatives and meet extraordinary external conditions such as disaster relief and recovery. The geographic distribution of our contributions reflects how IBM operates—in a global, fully integrated fashion. Some contributions are given on a globally competitive basis, so geographical distribution may vary due to the number and quality of applications. We do not set goals for percentage change in contributions year-to-year, nor for giving by geography or type of contribution. We focus on increasing the quality of our work with organizations on projects that use innovative solutions and can have significant, measurable impact on key social issues. Future contributions will reflect our goal of increasing their effectiveness.

Global corporate contributions by type ($M) KPI

	2013	2014	2015	2016	2017
Technology	100.2	104.4	109.5	171.7	261.1
Services	66.3	69.2	60.0	44.3	34.8
Cash	41.4	36.8	35.5	41.8	36.6
Totals ($M)	**207.9**	**210.4**	**205.0**	**257.8**	**332.5**

Global corporate contributions by issue ($M) KPI

	2013	2014	2015	2016	2017
Education	147.1	149.2	154.8	208.4	291.7
Human services	17.3	20.1	18.6	15.9	15.2
Health	3.5	3.7	3.6	5.2	9.8
Culture	3.0	3.6	3.4	4.0	4.0
Environment	5.0	3.1	0.6	3.5	2.7
Other	32.0	30.7	23.9	20.8	9.1
Totals ($M)	**207.9**	**210.4**	**205.0**	**257.8**	**332.5**

Global corporate contributions by geography ($M) KPI

	2013	2014	2015	2016	2017
North America	83.5	84.7	65.4	99.2	132.2
Asia Pacific	37.5	40.3	42.6	39.3	52.1
Europe, Middle East, Africa	65.7	64.8	82.2	104.2	118.3
Latin America	21.2	20.6	14.8	15.1	29.9
Totals ($M)	**207.9**	**210.4**	**205.0**	**257.8**	**332.5**

Supply chain

Global supplier spending was $24.8 billion in 2017, increased slightly from 2016 and distributed among categories and regions as shown below. See the supply chain section of this report for details on our spending and programs including supply chain social responsibility, industry collaboration, supplier diversity and more.

Supplier spending by category	2013	2014	2015	2016	2017
Services and general procurement (%)	67	71	79	82	81
Production procurement (%)	30	26	18	15	17
Logistics procurement (%)	3	3	3	3	2
Services and general procurement ($B)	22.1	21.6	20.3	20.3	20.0
Production procurement ($B)	9.7	7.8	4.7	3.8	4.2
Logistics procurement ($B)	1.0	0.9	0.8	0.6	0.6
Totals ($B)	**32.8**	**30.3**	**25.8**	**24.7**	**24.8**

Supplier spending by location	2013	2014	2015	2016	2017
North America (%)	36	37	42	43	43
Asia Pacific (%)	35	33	31	29	30
Europe, Middle East, Africa (%)	21	23	22	23	22
Latin America (%)	8	7	5	5	5
North America ($B)	11.8	11.2	10.8	10.6	10.6
Asia Pacific ($B)	11.4	9.9	8.0	7.3	7.5
Europe, Middle East, Africa ($B)	7.0	6.9	5.8	5.6	5.5
Latin America ($B)	2.6	2.3	1.2	1.2	1.2
Totals ($B)	**32.8**	**30.3**	**25.8**	**24.7**	**24.8**

First-tier spending KPI	2013	2014	2015	2016	2017
Total US ($B)	10.2	9.8	9.3	9.7	9.9
Diverse US ($B)	1.9	1.5	1.3	1.3	1.4
Diverse non-US ($M)	917	883	718	744	657

Environment

IBM maintains goals covering the range of its environmental programs including climate protection, energy and water conservation, pollution prevention, waste management and product stewardship. These goals and our performance against them are discussed in the environment section of this report.

Energy conservation
IBM again surpassed its goal by attaining a 4.2 percent savings from energy conservation projects

in 2017. Our goal is to achieve annual savings equal to 3.5 percent of IBM's total energy use in IBM-managed space.

Energy conservation KPI	2013	2014	2015	2016	2017
As % of total energy use	6.7	6.7	6.3	5.3	4.2

Renewable electricity procurement
IBM's renewable electricity procurement goal is to purchase 20 percent of our electricity consumption at IBM-managed space from renewable sources by 2020, over and above the quantity of renewable energy provided as part of the mix of electricity that we purchase from the grid. In 2017, IBM contracted with its utility suppliers to purchase approximately 779,000 megawatt-hours of renewable electricity, representing 22.9 percent of our global electricity consumption and once again exceeding our goal.

Renewable electricity procurement KPI	2013	2014	2015	2016	2017
As % of total electricity purchases	11.8	14.2	16.2	21.5	22.9

CO_2 emissions reduction
Our third-generation CO_2 emissions reduction goal is to reduce CO_2 emissions associated with energy consumption at IBM-managed locations 35 percent by year-end 2020, against base year 2005 and adjusted for acquisitions and divestitures. In 2017,

IBM once again exceeded this goal having reduced its operational CO_2 emissions by 42.9 percent against the 2005 baseline.

CO₂ emissions reduction KPI	2013	2014	2015	2016	2017
As % of 2005 baseline CO_2 emissions	24.7	27.7	28.7	38.1	42.9

Water conservation

IBM made further reductions in annual water withdrawals at 45 data centers and other large locations in water-stressed regions. The 2.9 percent reduction in 2017 again achieved our goal, established in 2016, of year-to-year reductions at these locations each year.

Water conservation KPI	2016	2017
% annual reduction in water withdrawals at data centers and other large IBM locations in water-stressed regions	6.6	2.9

Nonhazardous waste recycling

Our goal is to send an average of 75 percent (by weight) of the nonhazardous waste generated at locations managed by IBM to be recycled. In 2017, we recovered and sent 87.8 percent of our nonhazardous waste to be recycled.

Nonhazardous waste recycling KPI	2013	2014	2015	2016	2017
% by weight sent for recycling of total generated*	86.0	85.9	85.2	86.3	87.8

* Excludes sanitary wastewater transported to publicly owned treatment systems

Product energy efficiency KPI

IBM's product energy efficiency goal is to improve the computing power delivered for each kilowatt-hour of electricity used for each new generation of servers. In 2017, IBM released its POWER9™-based Power Systems™ Accelerated Compute (AC922) server for high-performance computing analytics and artificial intelligence. When compared to comparable IBM POWER8® products, IBM POWER9-based servers have Server Efficiency Rating Tool (SERT) weighted geomean active efficiency scores up to three times higher—which represents three times the performance or work delivered without any increase in power use. The SERT was created by the Standard Performance Evaluation Corporation (SPEC). IBM also introduced its next-generation mainframe, the IBM z14™ server, in 2017. On average, the IBM z14 server delivers 23 percent or more work per kilowatt depending on the choice of components and cooling method.

ENERGY STAR certified products KPI

IBM has a goal to qualify its new server and storage products to the U.S. Environmental Protection Agency's (EPA) ENERGY STAR program criteria where practical, and where criteria have been developed for the specific server or storage product type. In 2017, IBM certified select configurations of the IBM Storwize® V7000 storage product to Version 1 of the ENERGY STAR data center storage requirements. None of the server products IBM released during 2017 were subject to ENERGY STAR criteria.

As of May 2018, IBM had five Power Systems servers and seven storage products certified to the ENERGY STAR requirements. The Power Systems servers meet the EPA's requirements for power-supply efficiency, idle power limits or power management capability, and SPEC SERT metric data reporting. The storage products meet requirements for power-supply efficiency and reporting of the Storage Networking Industry Association Emerald Power Efficiency Measurement Specification results.

Product end-of-life management

IBM's goal is to reuse or recycle end-of-life IT products such that the amount of product waste sent by IBM's product end-of-life management (PELM) operations to landfills or incineration for treatment does not exceed a combined 3 percent (by weight) of the total amount processed. In 2017, IBM's PELM operations sent only 0.7 percent of the total processed to landfill or incineration facilities for treatment.

Product end-of-life management KPI	2013	2014	2015	2016	2017
% by weight of total processed sent by IBM's PELM operations to landfill or incineration for treatment	0.3	0.5	0.7	0.6	0.7

Awards and recognition

Every year, publications, advocacy groups, governments and nongovernmental organizations around the world rate and recognize IBM for our corporate responsibility efforts. We are proud to share highlights of our recognition from 2017 and early 2018.

- *Barron's*—World's Most Respected Companies
- Boston Consulting Group—The 50 Most Innovative Companies
- *Forbes*—The Just 100
- *Forbes*—World's Most Valuable Brands
- *Fortune*—Change the World
- *Fortune*—Most Admired Companies
- *Fortune*—The Most Powerful Women, Ginni Rometty
- Interbrand—Best Global Brands

Corporate responsibility

- American Chamber of Commerce in Thailand—2017 Excellence in CSR Projects Award
- CONCAMIN—Ethics and Values Award for 14th consecutive year
- *Chief Executive* magazine—2017 Corporate Citizenship Award
- *Corporate Knights*—2017 Top Foreign Corporate Citizens (Canada)
- *CR Magazine*—100 Best Corporate Citizens
- Dow Jones Sustainability Index, North America
- EcoVadis—Gold-level CSR rating
- Education Commission of the States—2017 Corporate Award (for Teacher Advisor and P-TECH)
- *Fast Company*—2017 Innovation by Design Awards
- *Global Views Magazine*—2017 Corporate Social Responsibility Award
- National Institute for Transforming India—Best Practice in the private sector (Teachers TryScience)
- Points of Light—The Civic 50, most community-minded companies in the U.S.
- Project Management Institute Educational Foundation—2017 Community Advancement Through Project Management Award

Environment

- Center for Climate and Energy Solutions and The Climate Registry, in partnership with Bloomberg Philanthropies—Six-time Climate Leadership Award winner, 2018 winner in the Excellence in Greenhouse Gas Management, Goal Achievement category
- City of Austin, Texas—Austin Green Business Leaders Program, Platinum level for IBM's Austin facility
- Clean Energy Ministerial—2017 Energy Management Insight Award
- Colorado Department of Public Health and Environment— Gold Leader in the Environmental Leadership Program, for IBM's Boulder facility
- Hong Kong Environmental Campaign Committee—Class of Excellence Wastewi$e Label

- Mexico's Federal Environmental Protection Agency (PROFEPA)— Clean Industry Recertification
- Philippines' Department of Energy—Outstanding Award in the 2017 Don Emilio Abello Energy Efficiency Awards (fourth consecutive year)
- Smart Energy Decisions—Innovation Award in the Customer Project awards category for Energy Data Management

Supply chain

- Business Equity Network—Inaugural Eminence Award for our work with LGBT suppliers
- European Diversity Awards—Supplier Diversity Program of the Year Award
- Manufacturing Leaders—Sustainable Manufacturing Award
- National Minority Supplier Development Council—Global Link Award for Best International Program in the world
- Omnikal—Omni50 award, Top 50 U.S. organizations for multicultural business opportunities
- Procurement Leaders—Risk Mitigation and Transforming External Partnerships Awards, World Procurement Awards 2017
- Women's Business Enterprise National Council—Top Corporation, Platinum Level (14th consecutive year as "top corporation")

HR/diversity

- American Heart Association—Gold Designation, Workplace Health Achievement
- American Indian Science and Engineering Society—Top 50 Workplaces for Native American STEM Professionals
- AnitaB.org—2017 Top Companies for Women Technologists Momentum Award
- Catalyst—2018 Catalyst Award (fourth time)
- European Excellence in HR—Leadership Development Award
- *Forbes Japan*—Women Award 2017

- Government of India—National Award, Best Employer for People with Disabilities
- Human Rights Campaign Foundation—Best Places to Work for LGBT Equality (15th consecutive year)
- IABC Gold Quill Awards—Excellence Award in human resources and benefits communications, Merit Award in internal communications
- Military Friendly—2018 Employer of the Year
- Mogul—Top 100 Innovators in Diversity & Inclusion in 2017
- National Association of Female Executives—Top 10 Company for Female Executives (10th consecutive year)
- NatWest British LGBT Awards—Top 10 Employer
- U.S. Business Leadership Network—Employer of the Year for People with Disabilities
- *Working Mother*—Best Companies for Multicultural Women
- *Working Mother*—100 Best Companies
- *Working Mother India*—Top 10 Employers
- Workplace Pride Foundation—World's Most LGBT-Inclusive Company

For more on our diversity and inclusion awards in 2017 visit the IBM Jobs blog.

Citizenship

Bringing smart to life

We combine the greatest strengths of our company and its people — technology, expertise and energy — to develop innovative programs focused on challenges facing communities where we live and work.

P-TECH graduates
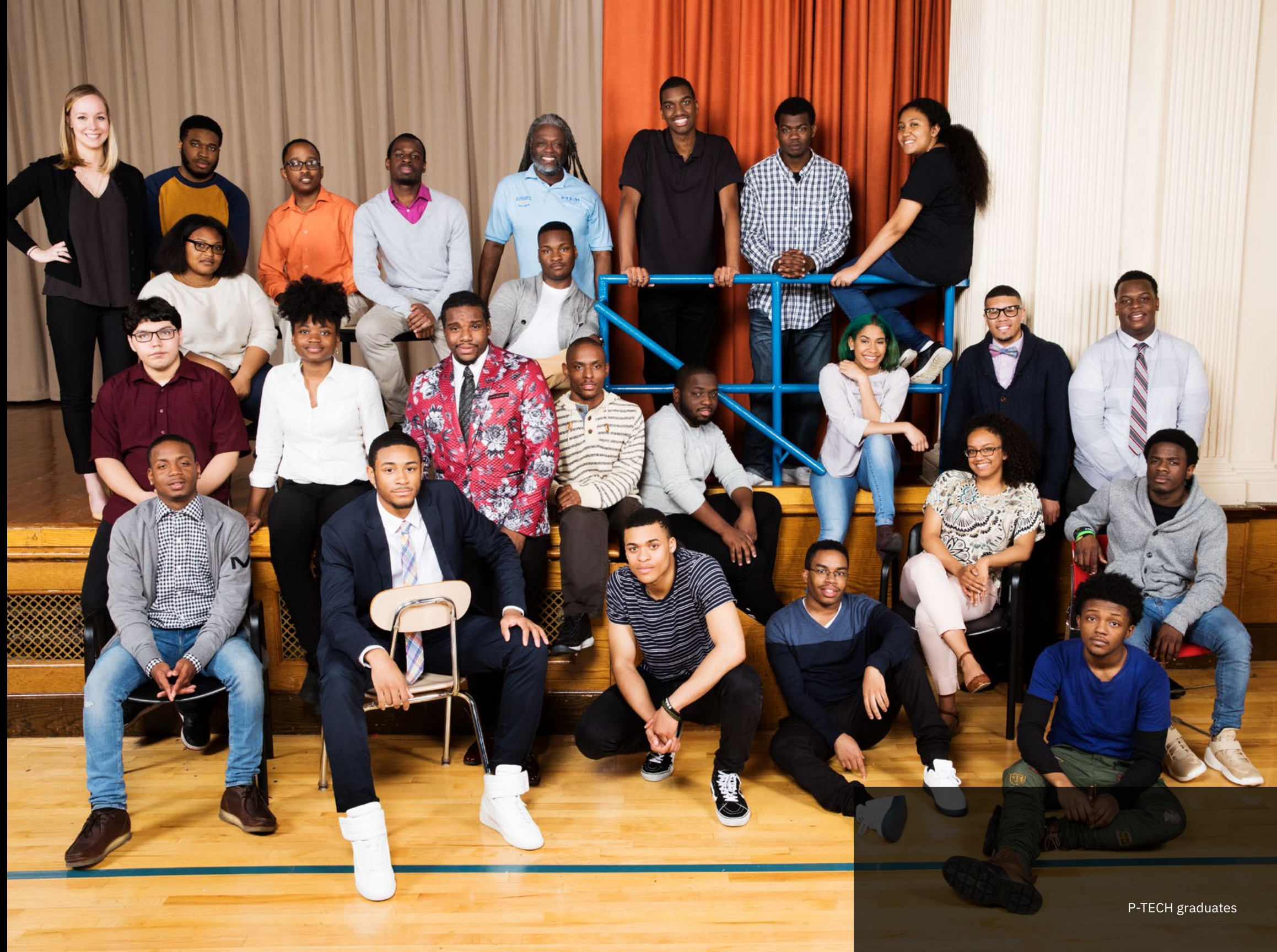
Education and skills

P-TECH education model

The P-TECH school model is a groundbreaking public education reform initiative designed to address both education and workforce development issues. Extending high school to six years, students can graduate with a high school diploma, a no-cost associate degree aligned to industry needs, and workplace experiences, including mentorship and internships. P-TECH (or Pathways in Technology Early College High School) helps to strengthen regional economies with a workforce more prepared for new-collar jobs and provides current, relevant technical and professional education opportunities to young people from primarily disadvantaged backgrounds.

The first P-TECH school opened in Brooklyn, New York, in September 2011, as a collaboration among IBM, the New York City Department of Education, the City University of New York and the New York City College of Technology ("City Tech"). In 2017, there were 90 P-TECH schools in the U.S. across seven states (New York, Illinois, Connecticut, Maryland, Colorado, Rhode Island and Texas), as well as Australia and Morocco. In 2018, P-TECH will be in nearly 120 schools with over 500 corporate sponsors, and is on track to prepare more than 75,000 students for new-collar jobs. IBM serves as the lead sponsor for eight schools, while providing leadership across the entire network. In 2017:

– P-TECH completed its first full six-year cycle, with the first cohort graduating from P-TECH Brooklyn at a rate more than four times the on-time national community college graduation rate. Students earned associate degrees in computer information systems or electromechanical engineering technology in six years or less. The vast majority of graduates have gone on to further education in a four-year institution. At the end of 2017, the first two schools, in Brooklyn and Chicago, had a combined 98 graduates—many are the first in their families to earn college degrees, and 15 now work at IBM.

– Throughout the network of schools, students are demonstrating significant success. Students at the Sarah E. Goode STEM Academy in Chicago, Illinois are achieving a 90 percent pass rate in college courses. At 16 P-TECH schools in New York state, 85 percent of students earned college credits and one-third completed two or more college courses before year four of the model. At Excelsior Academy in New York, more than one-third of the first class is on track to graduate two years early, while at Norwalk Early College Academy in Connecticut, 18 percent are on track to graduate two years early.

– New York launched six new P-TECH schools for a total of 37 statewide, while Maryland opened three and Rhode Island two.

– The seven new schools that broke ground in Australia last year are now fully launched, bringing the total to nine, including one in Ballarat where IBM serves as lead industry sponsor. IBM is also lead sponsor for one of two schools that opened in Morocco. Taiwan committed to replicating the model, planning its first three schools for 2018.

Teacher Advisor With Watson

Teacher Advisor With Watson is a free online resource to help teachers plan and deliver lessons aligned to 21st-century standards and establish foundational knowledge in young students. Following a pilot deployment, it launched publicly in September 2017 and registered over 10,000 users from all 50 United States in its first seven months.

IBM Watson's cognitive abilities enable the system to interact with teachers, understand their needs and recommend resources from among 4,000 lessons, activities, strategies and standards details available online. UnboundEd, a nonprofit organization devoted to teacher support and quality instructional practice, selects and reviews all content for quality and alignment with current standards. Initial content supports elementary-school math for students ages 5–11, with plans to add middle-school math (ages 12–14) in August 2018.

The 2017 launch followed a multi-year development in collaboration with education leaders, subject-matter experts in instructional pedagogy and

teacher professional development—and of course, teachers. We asked about challenges in elementary classrooms, and heard consistently about time pressures: U.S. teachers average nine hours weekly outside of school time planning their work, according to a study by the Bill and Melinda Gates Foundation. We also heard about struggles to find quality and aligned resources that help build students' under-standing of elementary math. Teacher Advisor is designed to help address both challenges. Asked to search for a concept, resource or student need, Watson leverages its ability to understand natural language to help locate targeted, quality content faster. "It allows teachers to quickly get their hands on exactly what they need," said Regan Lonien, who teaches fourth grade in Minnesota.

The Christensen Institute, a nonprofit think tank exploring disruptive innovation in education, wrote: "AI's capabilities arguably limit it from performing many of the intensely human aspects of teaching. AI does have the potential, however, to complement teachers in new ways that could radically free up their time... The AI technology in Teacher Advisor allows teachers to search for resources and create lesson plans in a fraction of the time it would take them to do it alone."

The Education Commission of the States cited Teacher Advisor and P-TECH when presenting its 2017 Corporate Award to IBM, honoring our sustained commitment to improving U.S. public education.

Although developed for U.S. educators and available only in English, Teacher Advisor is open for anyone to use at teacheradvisor.org.

Teachers TryScience

IBM's global initiative to strengthen teacher instruction by providing free, quality STEM lessons and instructional resources grew to serve 28,000 registered users with 617 lessons and pedagogic resources in 21 languages. The Teachers TryScience website received 216,756 visitors from 210 countries in 2017.

Educators across Asia Pacific embedded Teachers TryScience resources into teacher training and curriculum throughout 2017.

– The Australian Museum Research Institute launched education resources on the Teachers TryScience website to complement a citizen science project called FrogID, which involves the entire country in a frog count and identification of frog species.

– In Malaysia, the Ministry of Science, Technology and Innovation announced plans to use the website to train 4,400 special-needs educators across the country over two years.

– The National Institution for Transforming India recognized Teachers TryScience as a "best practice" in the private sector. The site's resources

have reached 1.7 million students in India since 2013 with lesson plans customized for local regions.

Additional workshops and events in Hong Kong, Korea, Malaysia, Thailand and Vietnam extended STEM teaching to new regions and schools.

The American Chamber of Commerce in Thailand recognized IBM Thailand with an Excellence in CSR Projects Award for its Teachers TryScience teacher professional development project in collaboration with the Kenan Foundation.

University relations

IBM continues to introduce initiatives and challenges to engage and inspire many of the world's most promising undergraduate and graduate students to build much-needed IT skills. In today's knowledge-based economy, enabling digital competence and nurturing innovation will help better position academia, private and public entities for success.

Bringing digital skills to Africa
In 2017, IBM launched the "Digital—Nation Africa" (DNA) initiative to build digital skills for a 21st-century workforce in Africa. The initiative provides a cloud-based learning platform designed to provide free skills development programs for millions among Africa's youth, enabling digital competence and nurturing innovation in Africa. The platform includes Watson artificial intelligence, which communicates

Corporate Service Corps sent 30 IBM teams worldwide in 2017 on immersive, socially impactful projects.

with the user to build a profile, gives an overview of the current job market and suggests multiple learning paths. Over 60 organizations have joined IBM to collaborate in the enablement of this program.

Delivering more assets to academia
The IBM Academic Initiative showed significant growth in 2017 after the first full year of our new academic channel, OnTheHub.com/IBM. Through the channel, validated faculty and students get access to IBM cloud, as well as powerful software and learning resources. Over 57,000 academic orders from 4,481 institutions in 114 countries more than tripled IBM's reach from the previous program. Students embraced the program, ordering 65 percent of all assets delivered on topics including data and analytics, Internet of Things, cloud and security. IBM.onthehub.com continues to expand, adding topics including blockchain and quantum computing.

Refreshed IBM Ph.D. Fellowship awards program
We updated our global Ph.D. Fellowship awards program to focus on artificial intelligence, blockchain, security and quantum computing. Since the program's creation in 1951, it has introduced thousands of graduate students—more than 700 over the past decade—to new technologies and their impact on industries and societies through these strong industry-university collaborations. Covering two academic years, the fellowship award includes financial support, guidance from an IBM mentor and encouragement to intern at IBM at least

once while completing their studies. The program encourages nominations of women and minorities, supporting IBM's long-standing commitment to workforce diversity.

Veterans employment initiative

IBM's Veterans Employment Accelerator Impact Grant program provides software training, certification and job placement assistance to hundreds of veterans pursuing careers as data analysts. Through a comprehensive grant of our Kenexa® software, we have empowered Corporate America Supports You (CASY) to place thousands of veterans in jobs in the last four years.

"Our relationship with IBM has been very impactful, to us as an organization and to our military and veteran communities," said CASY founder and CEO Daniel Kloeppel. "Every day we work with military, veterans, and their spouses to place them into good paying, career-type jobs. Leveraging IBM technology, we've now assisted well over 100,000 individuals in job preparation while having placed over 35,000 directly into jobs. BrassRing® technology sits at the core of what we do as an organization and we could not track the details of these placements and our program success without it."

In 2017, IBM experts conducted over 30 veteran training sessions in the United States, United Kingdom and Canada, and certified over 500 veterans in IBM's i2® Analyst's Notebook® software.

We negotiated with the human resources departments of six key corporate sponsors and now have a fully functioning model pipeline for employment for veterans in the fast-growing field of cybersecurity, where there is a shortage of data analysts. "This relationship has expanded over the years and we now work directly with the IBM Corporate Citizenship team to provide cybersecurity training and certification in IBM's i2 and QRadar® technologies," says Kloeppel. "These trainings have impacted hundreds of active duty service members and veterans and our collaboration has now placed more than 150 individuals directly into cybersecurity jobs—some at IBM."

Community resiliency

Corporate Service Corps

Corporate Service Corps (CSC) has provided pro bono consulting teams to communities worldwide since 2008. Inspired by the Peace Corps, CSC offers IBMers an immersive experience designed to benefit communities, enrich its participants culturally and professionally, and support IBM's global leadership development.

The program deploys teams of 12–15 to work with governmental, not-for-profit and social organizations, healthcare providers and other civic leaders to help address high-priority issues in education, health, economic development and community resiliency.

The teams—consultants, researchers, marketers and other domain experts—work on projects to upgrade educational technology, assess ways to improve water quality, and much more. Many IBMers call these experiences life-changing. In 2017, CSC sent 404 IBMers from 50 countries on 30 engagements that included 122 distinct projects. Projects from our 2017 engagements included:

– In Argentina, we helped the Food Bank of Jujuy develop a system to coordinate food donations and distribution, supported by a plan to promote the solution's adoption, with a goal of increasing the organization's capacity.

– In China, we created a plan for Dongfang Huimin Microfinancing, which makes loans to women farmers, to deliver loans faster and without increased costs by increasing their use of IT and digital financing tools.

– In Peru, we collaborated with local organizations to develop a system for coordinating volunteers assisting long-term recovery work after floods left hundreds of thousands homeless. (Watch a video about this engagement.)

The Yale School of Management, the University of Ghana Business School and EGADE Business School developed a case study in 2017 examining CSC. It was subsequently part of the Aspen Institute's 2017 Business & Society International MBA Case Competition, involving over 1,000 students, and will

be used by the 29 leading business schools in the Global Network for Advanced Management. Also in 2017, *Chief Executive* magazine named CSC the "best community and economic development initiative" in its annual Corporate Citizenship Awards. In its first decade, CSC has sent nearly 4,000 IBMers in 320-plus teams to work on more than 1,300 individual projects in 40 countries.

Smarter Cities Challenge

For seven years, the IBM Smarter Cities Challenge® (SCC) program has combined IBM talent and technology to tackle urban challenges. A flagship IBM program since 2010, SCC is coming to an end as our citizenship portfolio evolves and, in some instances, carries forward projects that began with SCC and are now flourishing—such as P-TECH.

In 2017, SCC deployed IBM teams to five cities on four continents. Each city collaborated with our cross-industry experts to focus on issues related to social equity, economic development, emergency management or the environment.

In Busan, South Korea, an SCC team holistically addressed organizational, technological, process and human resource considerations as they helped devise prevention and remediation strategies for natural disasters. Working with city leadership, IBMers recommended expanding the scope of disaster management systems to include cognitive and predictive analytics capabilities, embedding

blockchain into a collaborative platform for use by all stakeholders including citizens, and upgrading existing sensor infrastructure to support video analysis and an Internet of Things (IoT) platform.

"What I confirmed during my SCC experience in Busan is that technology alone is not what makes us essential to clients," said IBM's Frédéric Bauchot, CTO of our solutions center for energy/utilities clients. "The combination of technology with industry expertise is what ultimately helps us to achieve economic, societal and organizational advances."

In San Jose, California, our team helped to support affordable housing initiatives by working with the city's housing department to make recommendations on new web applications and a centralized rent registry to be used by landlords, tenants and city staff to help residents search and apply for affordable housing. Additionally, the team guided the city on how to protect and analyze the data they will be collecting.

"The SCC team's recommendations showed us what is possible and offered additional considerations as we move forward with this project," said San Jose Mayor Sam Liccardo. "For example, recommendations such as improving housing department communications and designing solutions with privacy in mind were based on many in-depth interviews and workshops with stakeholders that provided valuable insights."

Watch a video about our Impact Grant to DeliverFund.

SCC also deployed teams in 2017 to:

– Yamagata City, Japan, to establish a data-driven plan to increase international tourism.

– Palermo, Italy, to foster innovative solutions for social inclusion through technology and sustainable partnerships.

– Abuja, Nigeria, to develop collaborative tools to create new revenue streams and strengthen investor partnerships.

In SCC's seven years, more than 800 high-perform-ing IBMers collaborated with leaders in 138 cities on actionable solutions to urban challenges in engagements valued at $69 million. In turn, IBMers have applied their SCC experience to their work with business clients.

"My experience taught me to do my job in a com-pletely new way, opening my eyes, ears and mind," said Nancy Greco, who works on cognitive IoT solutions at IBM Research. "Now I work hard to make my designs relevant in all environments — even those with limited resources, like electricity."

We've delivered over 2,600 Impact Grants since 2012, and 422 in 2017.

Impact Grants

IBM Impact Grants deliver pro bono consulting and integrated software solutions — with particular emphasis on cloud, mobile, analytics and cognitive — to not-for-profit and educational organizations. Since the program's launch in 2012, we've delivered more than 2,600 grants with a combined market value of $85 million. In 2017, we delivered 422 in 28 countries valued at $14 million.

– A grant of IBM i2 Analyst's Notebook software is helping DeliverFund, a U.S. not-for-profit, use cyber-intelligence to fight human trafficking by identifying and tracking networks through their online activity.

– In Colombia, two analytics grants to Corporacion Makaia Asesoria Internacional are helping develop an open-data air quality initiative in Medellín. The first assessed what data should be collected, while the second analyzed data from sensors at six city locations.

– In New Zealand, an analytics grant helped Youthline optimize its data collection and management. The NGO is combating a high level of youth suicide and wanted to identify which of its programs have the greatest impact.

– In Turkey, we delivered a technology roadmap grant to the country's only NGO focused on teacher development. Teachers Academy Foundation is using our recommendations to enhance their online services to 125,000 teachers.

Also in 2017, the Project Management Institute Education Foundation presented its "Community Advancement through Project Management" award to IBM and our not-for-profit collaborator in Japan, Entrepreneurial Training for Innovative Communities. The award recognized Impact Grant project man-agement workshops delivered in Japan following the devastating Tōhoku earthquake and tsunami in 2011.

With Independent Sector and the IBM Institute for Business Value, we published a first-of-its-kind study about NGOs' adoption of big data and data analytics. Leap before you lag assessed 60-plus analytics Impact Grant projects as part of this study. Accompanying the paper is an online interactive tool NGOs can use to assess their analytics maturity.

We worked with the U.S. Chamber of Commerce Foundation leadership team on two Impact Grants assessing online social sentiment, and drew on

those results to co-publish The CSR Effect: Social Media Sentiment and the Impact on Brands. The report demonstrates how promoting organizations' CSR activities through social media has a positive effect on their brands.

SafetyNet

IBM SafetyNet helps address two distinct challenges not-for-profit organizations face: delivering high-quality services and documenting results to support continued funding. As a cloud-based data manage-ment solution, SafetyNet helps social service providers aggregate and quickly analyze client data, pinpoint and address possible gaps in services, and innovate to support clients better. SafetyNet also simplifies compliance and reporting requirements—often prerequisites for funding—freeing staff to focus on serving clients.

Grant recipients receive access to the SafetyNet application as well as training and consulting ser-vices. "Using SafetyNet, Riis Settlement was able to complete a detailed mapping analysis of all of our program and participants," said Christopher Hanway, executive director of Jacob A. Riis Neighborhood Settlement, an initial grantee. "This analysis is already beginning to show results in how we target programs and interventions based on the individual and collective needs of the individuals and families we serve. That is a cornerstone of good care and SafetyNet is making it possible."

In 2017, SafetyNet grants were awarded to four not-for-profit organizations that deliver critical programs and services to vulnerable citizens—United Way California Capital Region (Sacramento), Aspiranet (which provides children and family services throughout California), and two in New York City: Grand Street Settlement and the Chinese-American Planning Council (CPC).

"SafetyNet has streamlined our system of tracking each client's progression through our workforce training programs," said Wayne Ho, CPC's executive director. "Data aggregated through the SafetyNet application has helped us identify programmatic trends, patterns and pain points. We are thankful for IBM because SafetyNet has been a valuable tool in supporting our reporting practices and decision-making processes, as well as gauging the efficacy of our services and impact within our community."

SafetyNet has 10 grantees serving over 350,000 clients through over 200 programs, supporting issues such as community health, workforce development, children and youth, seniors, families and immigration.

Natural disasters and humanitarian crises

Since 2001, IBM has responded to more than 70 disasters around the globe. We reach out to com-munities in times of need, integrating advanced

technologies with expertise to help affected areas and individuals regroup, rebuild and recover. In 2017, IBM committed nearly $4.8 million for Impact Grants focused on disaster, the majority for recovery efforts following Hurricanes Harvey, Irma and Maria, and earthquakes in Mexico.

Atlantic hurricanes
The 2017 Atlantic hurricane season was the costliest in U.S. history, devastating communities in states along the Gulf of Mexico and on islands across the Caribbean. The widespread loss of lives, homes, businesses, infrastructure and more, represents a historic and continuing tragedy. IBM delivered Impact Grants directly supporting recov-ery and resiliency following Hurricanes Harvey, Irma and Maria, and mobilized volunteers and charitable donations to help affected communities in Texas, Florida and Puerto Rico. The comprehensive and ongoing program includes:

– Consulting for the American Red Cross, including business process and IT expertise to optimize shelter and volunteer management, and use of The Weather Company® platforms for American Red Cross advertising that resulted in hundreds of thousands of dollars in donations in the imme-diate aftermath of the storms.

– Blockchain prototyping and design thinking for the OneStar Foundation in Austin, Texas to explore how blockchain can be used to store and

Watch a video Voices of IBM Volunteers.

process data and claims, helping manage allocation and disbursement of recovery payments efficiently.

– AI/machine learning technology and expertise for United Way Worldwide to develop chatbots to alleviate disaster-related strains on call centers.

– Situational awareness and weather modeling for the Texas A&M University System to mitigate threats to and failures in power distribution systems when disasters strike.

"When we asked corporations to help, IBM was right there, bringing to Houston a team of consultants who worked for more than two weeks with our operations staff to optimize our data integration and reporting," said American Red Cross President and CEO Gail McGovern. "The American Red Cross is deeply grateful for IBM's expertise and for our impactful partnership."

Peru flooding and mudslides
In the spring of 2017, torrential rain flooded large swaths of South America. The resulting mudslides in Peru killed over 100 people while destroying 14,000 homes and leaving 150,000 people homeless. IBM volunteers came together from across Peru to plan and design tools to aid response efforts.

Through an IBM Impact Grant, our consultants developed a chatbot using Watson Conversation Services. In the first month following the mudslides,

the chatbot responded to over 3,600 public inquiries across 16 topics. As a result, government and local organizations could more quickly and efficiently answer an influx of disaster-related questions, freeing critical staff to handle other tasks.

"The IBM Watson Chatbot enabled us to communicate in real time with citizens through our platform," said Abel Aguilar, secretary of social communication of the Presidency of the Council of Ministers of Peru. "This was key to being able to respond to the large number of inquiries and requests for assistance to victims during the emergency."

The Ministry of Defense of Peru honored IBM's "outstanding participation and willingness to collaborate in the care of the population affected by the emergency caused by the El Niño coastal phenomenon."

2015 Chennai flood
IBM's two-year commitment to help India recover from the catastrophic 2015 floods in Chennai, India, is now complete. Over the course of the grant, the IBM Intelligent Operations Center for Emergency Management provided state and local government agencies with innovative capabilities to integrate, visualize and communicate the status of emergency conditions and operations, demonstrating the power of analytics and cloud technology for crisis management.

IBM Volunteers

IBM Volunteers is our expanded, refreshed and renamed initiative to support our employees' and retirees' volunteer efforts. Launched in 2003 as On Demand Community®, the program has recorded over 20 million hours of service in 80 countries, including 1.2 million hours in 2017.

The program is designed to help IBMers apply their professional and technical skills in their communities, but is open to everyone. Its new website offers free resources—most available in multiple languages—that anyone can use to plan and conduct a wide range of volunteer activities. It also connects IBMers with other service-minded colleagues and helps them find opportunities to help local organizations.

The January 2018 relaunch also introduced SkillsBuild™, an initiative with the goal of reaching 1 million students every year for the next five years with engaging, hands-on activities that introduce 21st-century skills and technologies: coding, AI, robotics and more. The SkillsBuild educational resources are available at no charge to anyone.

IBM Community Grants
IBMers who report their community service through IBM Volunteers can apply for IBM Community Grants to benefit the schools and community organizations where they volunteer. IBM awarded 2,800 cash grants worth a combined $3.8 million in 2017.

Watch a video about IBM Health Corps in Africa.

Volunteer Excellence Awards

The IBM Volunteer Excellence Award recognizes exceptional service to communities by IBMers, individually or in teams. Our 12 recipients for 2017 developed technical solutions for not-for-profit organizations, created a program to help elderly people use new technology, and promoted STEM skills to thousands of students worldwide.

– Michal Chorev motivates girls in Israel to study computer science. In 2015, she co-founded a nationwide initiative that each year delivers workshops on app development to more than 2,000 ninth-grade girls from 70 schools, led by 200 female technical professionals.

– Simon Christiansen recruited a volunteer team to develop a system for a social services organization in Denmark that pairs adult mentors with disadvantaged children. The solution, which tracks and manages volunteers' work, is now being implemented at another not-for-profit agency.

– After an IBM Impact Grant devised a social media strategy for the Malaysian Mental Health Association (MMHA), three IBMers volunteered to implement the plan. Social media has helped MMHA dramatically improve its engagement with at-risk young people and exceed its fundraising goal by 20 percent.

Read about all the 2017 honorees and other IBMers' volunteer efforts at stories of service.

Health

IBM Health Corps

IBM Health Corps is a social impact program through which IBM works with health organizations to address urgent public health needs around the world. We nurture new ideas and use technology to expand access to health services and help improve health systems and population outcomes. IBM experts work on-site for three weeks to help empower and equip health organizations to reduce health disparities and deliver lasting change. Launched in 2016, the program has eight projects to date.

Improving cancer care in sub-Saharan Africa

The cancer burden in sub-Saharan Africa is significant and projected to increase from 447,700 cancer deaths in 2012 to 984,000 annually by 2030. IBM is working with the American Cancer Society (ACS) and the Clinton Health Access Initiative (CHAI) to support their efforts to improve cancer care in the region, where late diagnosis and limited access to treatment leads to poor patient outcomes. "This is one of the most remarkably conceived, planned, and executed public health initiatives we've ever observed—and it's just the beginning," said Dr. Richard Wender, ACS chief cancer control officer. Activity in 2017 included:

– IBM Health Corps, ACS and CHAI convened experts at the American Society of Clinical Oncology annual meeting in May to share early results of the triad's joint work through a session on Transforming the African Oncology Market.

– ChemoQuant, an online chemotherapy forecasting and budgeting tool developed by IBM Health Corps in conjunction with ACS and CHAI, helps to increase access to life-saving cancer treatment in Africa. In June, ACS and CHAI announced groundbreaking market access agreements with pharmaceutical manufacturers Pfizer Inc. and Cipla Inc. to set competitive prices on 16 essential cancer medications, including chemotherapies, in Ethiopia, Nigeria, Kenya, Uganda, Rwanda and Tanzania. ChemoQuant will help the countries quantify their medicine needs, and plan budgets and procurement.

– IBM Health Corps and ACS worked with the National Comprehensive Cancer Network (NCCN) to create Cancer Guidelines Navigator—a digital tool to help NCCN standardize and raise the quality of cancer treatment. Demonstrated at the AORTIC Cancer Conference in November, Cancer Guidelines Navigator allows oncologists easy and efficient access to the newly created NCCN Harmonized Guidelines for sub-Saharan Africa. The guidelines will highlight treatments that could provide more resource-efficient impact, and detailed decision-making criteria that can support clinicians who may lack sub-specialty training.

about the Smash Childhood Cancer project.

Other 2017 projects

With Gorgas Memorial Institute for Health Studies in Panama, we developed a mobile disease surveillance system to connect public health investigators with epidemiologists and policy makers. Visualization of field data facilitates rapid decisions for infectious disease control across Panama. The project received *Fast Company*'s 2017 Innovation by Design Awards honorable mention in the social good category. Winners were selected from more than 2,500 international submissions across 13 categories.

We also joined Duke Health in Durham, North Carolina, to design a solution for sharing and mapping community health information among dozens of local clinics and agencies. Our team devised a technical strategy for the system to facilitate greater collaboration on community health.

IBM Health Corps' work received the following additional recognition in 2017:

— *The New York Times* named the work to help improve cancer care for patients in Africa as a top 10 development in science and medicine for 2017.

— Global Views magazine 2017 Corporate Social Responsibility Award in the public welfare category for the IBM Health Corps project with Taiwan Centers of Disease Control to help fight dengue fever.

World Community Grid

World Community Grid® enables anyone to donate unused computing power to advance scientific research related to health and sustainability. The initiative provides computing resources free of charge to researchers and since 2004, 750,000 participants have donated 1.6 million years of processing power from their computers and Android devices. In 2017, World Community Grid launched two research efforts.

The Microbiome Immunity Project is undertaking the most comprehensive study of bacteria to date of the human microbiome to help scientists better understand how to treat and cure autoimmune disease. The team includes researchers from the Broad Institute of MIT and Harvard, the University of California San Diego, and the Flatiron Institute at Simons Foundation. "Without World Community Grid, we wouldn't have even contemplated this project," said Rob Knight, Ph.D., director of the Center for Microbiome Innovation at UC San Diego.

Smash Childhood Cancer seeks better treatments for a number of common childhood cancers and involves researchers from Japan, Hong Kong and the United States. "Crowdsourcing computer processing power will save us years of experiments," said Ching Lau, M.D., Ph.D., director of the Hematology-Oncology Center at the Connecticut Children's Medical Center. "It is bringing us that much closer to finding the right drug for each type of cancer."

World Community Grid volunteers have supported 29 projects since its inception, including research into renewable energy, water quality and treatments for cancer, HIV/AIDS and tropical diseases. In doing so, they have enabled important scientific advances in water purification, childhood cancer treatment and solar energy.

Learn more and join at worldcommunitygrid.org.

Environment

Environmental sustainability
is smarter for all

We apply innovative technology and deep
expertise to minimize the environmental
impact of our business and develop smarter
solutions for a more sustainable world.

Plastic Bank's recycling work uses IBM technology.

At IBM, we have seen first-hand what can be achieved with a sustained focus on the environment.

Commitment to environmental leadership

A decades-old commitment to environmental leadership is an impressive legacy. And, at IBM, we are very proud of our past accomplishments. But we also take pride in sustaining this legacy, and we are always looking to enhance what IBM began half a century ago with the issuance of our first corporate directive regarding pollution control. Thomas J. Watson, Jr. was the CEO at the time, and his vision for the future of the business and its relationship to the environment remains our guidepost.

Today, we have a new Watson — a set of cognitive applications helping clients achieve remarkable outcomes and accelerating discovery using innovative, unique data connections. We have come a long way in this journey and we embrace the future with great anticipation for creating solutions and technologies to improve the environment and our quality of life.

In our own operations, we have seen first-hand what can be achieved with a sustained focus on the environment. That focus has driven impressive and quantifiable results across all our business intersections with the environment. Our complete 2017 IBM and the Environment Report is published separately and available online at IBM and the

Environment. This section previews the full report with selected highlights from our environmental programs and 2017 performance.

Environmental management system

IBM implements its environmental, energy and chemical management programs through a global environmental management system (EMS) that drives the implementation of corporate directives which govern IBM's conduct and operations worldwide. Our corporate environmental policy provides the strategic framework for our EMS and calls for environmental leadership in all of the company's business activities.

In 1997, IBM became the first major multinational company to earn a single global registration of its EMS to the International Organization for Standardization (ISO) 14001 standard. We achieved this credential within just one year of the original standard being published in 1996.

IBM's single global ISO 14001 EMS accreditation includes its manufacturing and chemical-using research locations as well as several IBM organizations at the individual country level. In addition, several business functions such as product design and development, procurement and supply chain, and Global Asset Recovery Services have also been

certified to ISO 14001. We have sustained this ISO 14001 certification for 20 years, and in 2017, we completed an update to our global EMS to successfully transition our certification to the 2015 edition of the standard.

IBM's global EMS also conforms to the ISO 50001 standard on energy management systems. We achieved a corporate-level registration to the ISO 50001 standard in 2012, within one year of the issuance of the standard. IBM currently has 16 entities worldwide certified to the ISO 50001 standard under its corporate registration.

Audits and compliance
IBM reviews its environmental performance against both external and internal requirements, and takes prompt action if issues are identified. In 2017, IBM received 73 governmental agency inspections at facilities worldwide with no resulting fines or penalties. IBM locations reported eight accidental releases of substances to the environment related to IBM operations through our Environmental Incident Reporting System — five releases to air, two releases to land and one release to water. The root causes were investigated for all releases and corrective actions were taken as appropriate. None of the releases were of a duration or concentration sufficient to cause long-term environmental impact.

Energy conservation and climate protection

In 1973, IBM began its formal energy conservation program and in 2000 set its first carbon dioxide (CO_2) emissions reduction goal, when we helped the World Wildlife Fund create its Climate Savers program. In 2007, IBM published its position on climate change: IBM recognizes that climate change is a serious concern that warrants meaningful action on a global basis to stabilize the atmospheric concentration of greenhouse gases (GHGs). We believe that all sectors of society and the economy, as well as governments worldwide, must participate in solutions to climate change. IBM continues to be a leader in addressing climate change through our energy conservation and climate protection programs.

Conserving energy
IBM's energy consumption is the predominant source of CO_2 emissions attributed to its operations. In 2017, IBM's energy conservation projects across the company delivered annual savings equal to 4.2 percent of our total energy use at IBM-managed locations, surpassing the corporate goal of 3.5 percent. IBM-managed locations are places where IBM is responsible for procuring energy and managing facilities infrastructure and operations.

These projects, numbering more than 2,000 and implemented at over 500 global locations, avoided the consumption of 173,000 megawatt-hours
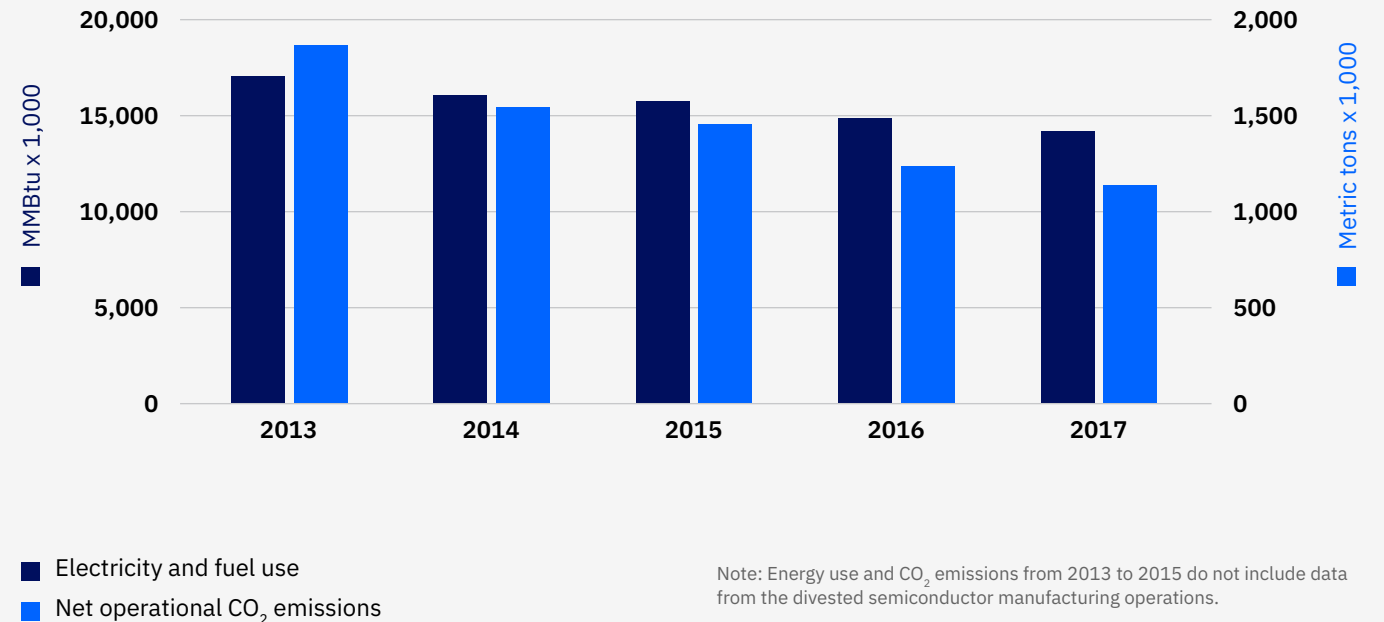
(MWh) of energy, an associated 64,000 metric tons of CO_2 emissions, and saved $16.1 million in expense. These strong results were due to our continued, across-the-board focus on energy demand reduction; efficiency; and the implementation of standardized, global energy conservation strategies at our facilities.

Conservation and efficiency savings are increasingly enabled by automated, analytics-based systems that optimize data center and building operations. For example, these systems are used to increase utilization of servers and storage equipment, reducing IT hardware requirements. They are also used to improve data center cooling efficiency and to track and correct building system anomalies in near real time to optimize building energy use continuously. Collectively, these analytics-based systems reduced or avoided more than 105,000 MWh of energy consumption and saved $9 million—61 percent of IBM's total energy conservation savings during 2017. From 1990 through 2017, IBM conserved 7.4 million MWh of electricity, avoiding 4.4 million metric tons of CO_2 emissions and saving $616 million.
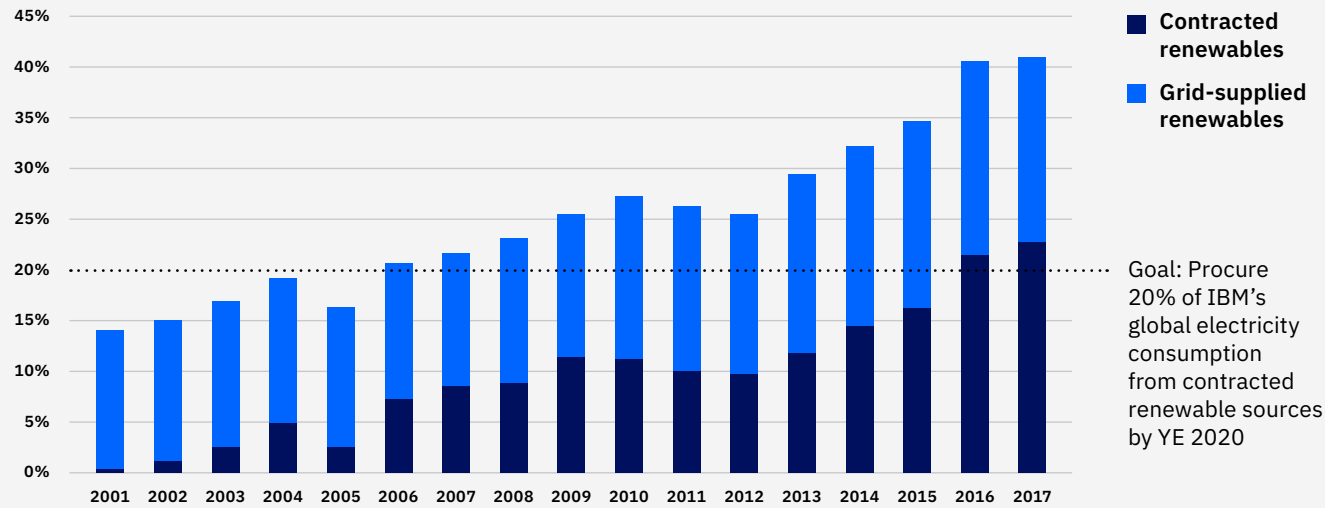
Renewable electricity
In 2017, IBM contracted with its utility suppliers to purchase approximately 779,000 MWh of renewable electricity, representing 22.9 percent of our global electricity consumption at IBM-managed locations. These purchases exceeded IBM's goal to procure 20 percent of its electricity consumption

Energy use and net operational CO_2 emissions associated with IBM-managed locations

- ■ Electricity and fuel use
- ■ Net operational CO_2 emissions

Note: Energy use and CO_2 emissions from 2013 to 2015 do not include data from the divested semiconductor manufacturing operations.
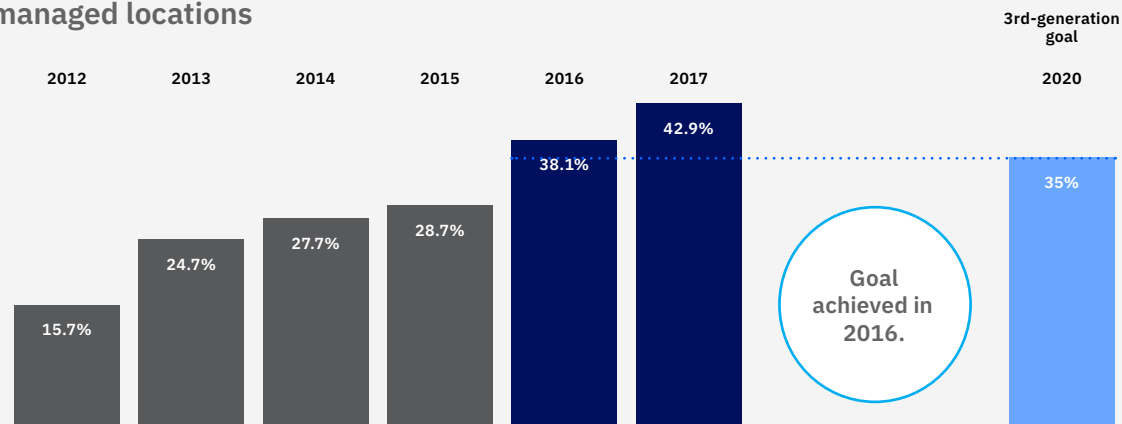
From 1990 through 2017, IBM conserved 7.4 million megawatt-hours of electricity.

Use of renewable electricity as a percent of global electricity consumption at IBM-managed locations

- Contracted renewables
- Grid-supplied renewables

Goal: Procure 20% of IBM's global electricity consumption from contracted renewable sources by YE 2020

Operational CO$_2$ emissions reduction against 2005 baseline at IBM-managed locations

3rd-generation goal

2012	2013	2014	2015	2016	2017		2020
15.7%	24.7%	27.7%	28.7%	38.1%	42.9%	Goal achieved in 2016.	35%

generated from renewable sources by 2020, over and above the quantity of renewable electricity provided as part of the mix of electricity that we purchase from the grid. IBM avoided 275,000 metric tons of CO$_2$ emissions through these contracted purchases.

Including the renewable electricity that was part of IBM's purchases of electricity from the grid, 41.4 percent of the electricity consumed in IBM's managed locations was sourced from renewable generation assets in 2017.

In March 2018, IBM finalized a power purchase agreement to procure all of the electricity — roughly 10,000 MWh per year — generated by a 6-megawatt solar array to be constructed at IBM's Boulder, Colorado, facility. The array is expected to go into production by early 2019. IBM continues to work with regulated utilities, energy retailers and service companies, and renewable project developers to craft shorter-term (4–6 year), economically viable contracting approaches for renewables procurement.

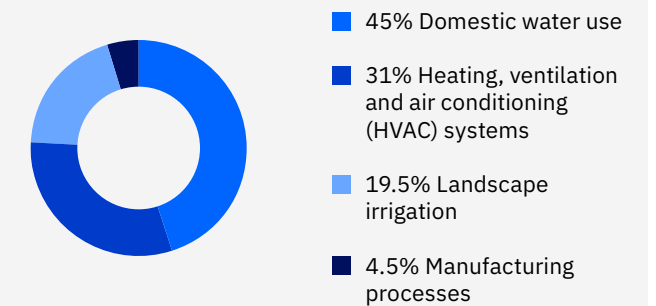**Operational CO$_2$ emissions management**
IBM's operational CO$_2$ emissions reduction goal is applicable to its managed locations. From 2016 to 2017, IBM reduced CO$_2$ emissions at its managed locations by 96,000 metric tons (7.7 percent) to 1,158,000 metric tons. When measured against the goal's 2005 emissions baseline, we reduced our CO$_2$ emissions by 42.9 percent, continuing the attainment of our goal to reduce emissions by 35 percent by 2020.

IBM received a Climate Leadership Award from the Center for Climate and Energy Solutions, The Climate Registry and Bloomberg Philanthropies in the category of Excellence in Greenhouse Gas Management Goal Achievement in March 2018, in recognition of achieving our third-generation CO$_2$ emissions reduction goal in 2016. This award made IBM the first and only company to win a Climate Leadership Award six times in this program's seven-year history.

Water conservation

The preservation of water resources and the protection of watersheds are important areas of focus for IBM. In 2016, IBM established a new water conservation goal to achieve year-to-year reductions in water withdrawals at 45 data centers and other large IBM facilities located in water-stressed regions. In 2017, withdrawals at these locations were reduced by 2.9 percent versus 2016.

**2017 water use at IBM locations in water-stressed regions**

- 45% Domestic water use
- 31% Heating, ventilation and air conditioning (HVAC) systems
- 19.5% Landscape irrigation
- 4.5% Manufacturing processes

2017 total generated hazardous waste worldwide by treatment method
(% by weight of 1,460 metric tons processed)

- 44.2% Recycle
- 33.6% Incineration
- 18.8% Landfill
- 3.4% Treatment
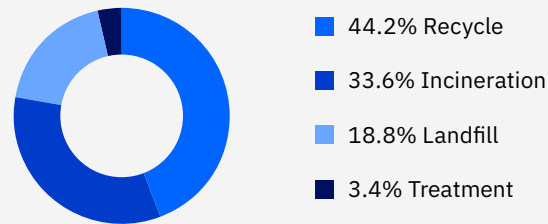
2017 total generated nonhazardous waste worldwide by treatment method
(% by weight of 36,900 metric tons processed)

- 87.8% Recycle
- 10.8% Landfill
- 1.4% Other treatments
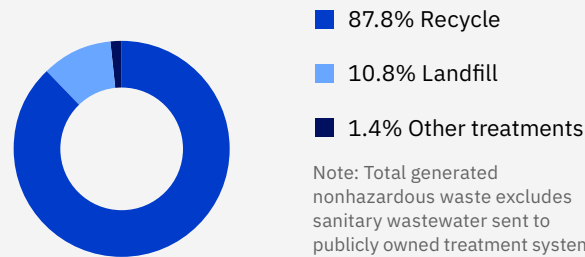
Note: Total generated nonhazardous waste excludes sanitary wastewater sent to publicly owned treatment systems.

Hazardous and nonhazardous waste management

The best way to prevent pollution is to reduce the generation of waste at its source. This has been a basic philosophy behind IBM's pollution prevention program since 1971.

IBM's total hazardous waste generation in 2017 increased by 7 percent (by weight) from 2016, to 1,460 metric tons. This increase was caused by the disposal of hazardous waste generated by a water leak from a fire suppression system at one of our facilities. The water was contaminated with diesel fuel from an emergency generator located within the area where the leak occurred. The contaminated water was contained, avoiding any release to the environment. If hazardous waste generated as a result of this incident had been removed, IBM would have seen a 16 percent reduction in hazardous waste generation in 2017.

Of the total 1,460 metric tons of hazardous waste IBM generated, 44.2 percent (by weight) was recycled, 33.6 percent was sent by IBM directly for incineration, 18.8 percent to regulated landfills, and 3.4 percent for treatment.

In 2017, our worldwide operations generated approximately 36,900 metric tons of nonhazardous waste, a decrease of about 7,600 metric tons from 2016. IBM recovered and sent 87.8 percent

(by weight) of its nonhazardous waste to be recycled—surpassing our goal of 75 percent.

Product stewardship

IBM established its product stewardship program in 1991 as a proactive and strategic approach to the environmental design and management of our products. The program's mission is to develop, manufacture and market products that are increasingly energy efficient; that can be upgraded, refurbished, remanufactured and reused to extend product life; that incorporate recycled content and environmentally preferable materials and finishes; and that can be dismantled, recycled and disposed of safely.

IBM's product energy efficiency goal is to improve the computing power delivered for each kilowatt-hour of electricity used for each new generation of servers. In 2017, IBM released its POWER9-based Power Systems Accelerated Compute (AC922) server for high-performance computing analytics and artificial intelligence. When compared to comparable IBM POWER8® products, IBM POWER9-based servers have Server Efficiency Rating Tool (SERT) weighted geomean active efficiency scores up to three times higher—which represents three times the performance or work delivered without any increase in power use. The SERT was created by the Standard Performance Evaluation Corporation (SPEC).

IBM also introduced its next-generation mainframe, the IBM z14 server, in 2017. On average, the IBM z14 server delivers 23 percent or more work per kilowatt depending on the choice of components and cooling method.

IBM also has a goal to qualify its new server and storage products to the U.S. Environmental Protection Agency's (EPA) ENERGY STAR program criteria where practical, and where criteria have been developed for the specific server or storage product type. In 2017, IBM certified select configurations of the IBM Storwize V7000 storage product to Version 1 of the ENERGY STAR data center storage requirements. None of the server products IBM released during 2017 were subject to ENERGY STAR criteria.

As of May 2018, IBM had five Power Systems servers and seven storage products certified to the ENERGY STAR requirements. The Power Systems servers meet the EPA's requirements for power-supply efficiency, idle power limits or power management capability, and SPEC SERT metric data reporting. The storage products meet requirements for power-supply efficiency and reporting of the Storage Networking Industry Association Emerald Power Efficiency Measurement Specification results.

Product end-of-life management
As part of our product end-of-life management (PELM) activities, IBM began offering product takeback programs in Europe in 1989, and has

extended and enhanced them over the years. In many countries and U.S. states, we offer solutions to household consumers for the end-of-life management of computer equipment, either through voluntary IBM initiatives or programs in which we participate. IBM's global PELM operations processed 26,500 metric tons of end-of-life products and product waste in 2017. Of this total, we sent 0.7 percent directly to landfill or incineration as a disposal treatment, better than our goal of not-to-exceed 3 percent (by weight), while 52.2 percent was sent for recycling as materials, 39.6 percent was resold as products, 4.4 percent was product reused by IBM, and 3.1 percent was incinerated for energy recovery.

2017 product end-of-life management operations

(% by weight of 26,500 metric tons processed)

- 52.2% Recycled
- 39.6% Resold
- 4.4% Reused
- 3.1% Waste-to-energy
- 0.7% Landfill and incineration
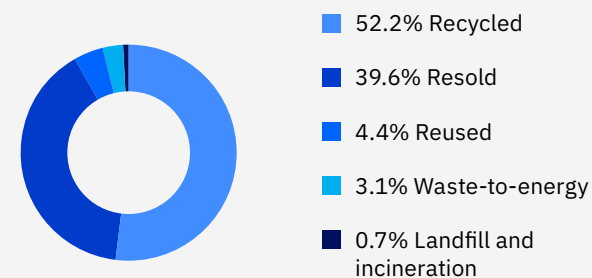
Solutions for environmental sustainability

At IBM, we thrive on challenges. And, striving to solve environmental challenges is a job we take very seriously. We apply our vast technology, expertise and insight across industries, addressing the necessities of life itself — from the air we breathe, to the water we drink and the food we eat. The challenges we face today have never been more complex, demanding or seemingly impossible to solve. However, IBMers are working to develop and implement solutions once only dreamed of — creating innovation that truly matters for our company and the world. Following are examples of some innovative solutions we are developing and implementing that contribute toward environmental sustainability.

Protecting and managing our water resources

Water affects every aspect of human life. It plays a role in everything from health and nourishment, to business and commerce, to energy and transportation. IBM solutions provide the technical foundation to facilitate the flow of information across organizations and establish a shared, comprehensive view of our water resources. Our solutions also help the farming industry to improve crop yield while using less water.

Tackling ocean plastic with IBM
A 2015 research paper published in *Science* magazine estimated that between 5.5 and 14.6 million metric tons of plastic made their way into our oceans that year, and that the yearly amount could double by 2025.

Working with IBM and IBM Business Partner® Cognition Foundry, Plastic Bank is mobilizing entrepreneurs from the world's poorest communities to recycle plastic waste in return for life-changing goods. The team developed a blockchain-powered token reward to underpin the recycling of plastic waste. The tokens can be exchanged for valuable commodities. IBM's blockchain technology tracks the plastic recycling process, from waste collection, credit and compensation through delivery to companies for reuse.

Plastic Bank's token rewards and exchange platform incentivizes the collection of plastic, preventing it from entering the oceans. To date, Plastic Bank has collected over 8 million pounds of plastic waste — the equivalent of 144 million plastic bottles — from its first recycling centers in Haiti. This was accomplished by more than 1,850 full-time collectors working across 40 collection locations. (Watch a video about this project.)

IBM researcher Harry Kolar deploys a Dublin City University Water Institute sensor at Lake George in New York.

Using sensors with IBM's cognitive IoT technologies to improve water management
In 2017, IBM teamed with Dublin City University (DCU) Water Institute to launch a pilot program that uses the Internet of Things (IoT) combined with advanced analytics to monitor and manage ecological systems. The deployment of DCU sensors with IBM's machine learning and cognitive IoT technologies will help protect and conserve natural resources and address environmental management issues such as water quality for both freshwater and marine environments.

In the past, water systems have been monitored by technicians manually gathering water samples and sending them to labs for analysis. Yet with sensors becoming cheaper and more durable, it is now possible to place them directly into water systems and continually gather data. That, combined with geospatial coverage, creates full models of ecosystems that scientists can use to identify problems and intervene before they become major environmental issues. The sensors can measure physical, chemical and biological parameters to better understand changes in the environment. Additional applications may include improved management of pollution from sources such as agricultural or stormwater runoff that can affect lakes, rivers, estuaries and marine ecosystems.

IBM and DCU Water Institute are piloting these technologies in Ireland and the United States. In the United States, the first DCU sensors are being used

in Lake George, New York, in conjunction with the ongoing Jefferson Project at Lake George. This project, begun in 2013 with partners Rensselaer Polytechnic Institute and The Fund for Lake George, is an ambitious effort in lake modeling in order to get a holistic view of everything happening in and around one of the United States' most pristine lakes. The project not only helps to manage and protect this particular natural resource, but also provides a blueprint to preserve important lakes, rivers and other bodies of freshwater around the globe. (Watch a video about this project.)

Watson IoT enables water conservation through precision irrigation
Having farmed in California for more than 80 years, E. & J. Gallo Winery believes that no resource is more important than water, making water management a top priority of the company for decades. The winery worked with IBM Watson IoT™, which developed technologies to use weather reports and remote sensor data to deliver precise amounts of water to each grapevine, optimizing growth and reducing the amount of water required for irrigation. The secret is located above the clouds, in a satellite looking down on the vineyard.

A 30-by-30-meter grid, aligned with National Aeronautics and Space Administration satellite imagery, is mapped over the vineyard block. Each block of vines in the grid gets its own personal irrigation plan based on weather data and soil moisture levels. This allows the exact amount of

water needed—based on highly targeted irrigation requirements—to be dispensed to each grapevine. As the weather changes, the irrigation rates change to ensure vines only receive water when needed. The result? For E. & J. Gallo Winery, the world's largest family-owned winery, the Watson IoT solution resulted in a 26 percent improvement in yield quantity, a 50 percent improvement in uniformity, and a 25 percent reduction in water use required.

Improving the air we breathe

According to the World Health Organization (WHO), exposure to outdoor air pollution accounts for approximately 3 million deaths annually. WHO has concluded that this more than doubles previous estimates, and confirms that air pollution is now the world's largest single environmental health risk. IBM is working with cities around the globe to tackle air pollution challenges and provide solutions to help improve the air we breathe.

Providing community air quality data
One way to increase public awareness of the impacts of air pollution is by making air quality data more broadly available. In 2017, The Weather Company (an IBM Business) collaborated with air quality sensor manufacturer PurpleAir to expand the availability of local air quality and pollution data for the public. As a result of this collaborative effort, owners of PurpleAir devices can now contribute data from their units to Weather Underground®, a consumer division of The Weather Company. This

Dr. Jin Dong of IBM Research — China leads IBM's Green Horizons initiative.

data is displayed on maps on its website to provide one of the most granular pictures available of air pollution within the United States.

Green Horizons initiative and air pollution forecasting

Green Horizons is a 10-year initiative launched by IBM in 2014 with the city of Beijing. It uses advanced machine learning and IoT technologies to improve the understanding and forecasting of pollution events. The IBM China Research Laboratory is working with the Beijing Environmental Protection Bureau to provide one of the world's most advanced air quality forecasting and decision support systems, able to generate high-resolution pollution forecasts and pollution trend predictions. It models and predicts the effects of weather on the flow of pollutants in the air and the reactions between weather and pollutant particles.

Utilizing IBM's data assimilation and cognitive modeling, the city of Beijing has seen a significant reduction in fine particulate matter concentration (known as PM2.5). During the first seven months of 2017, the PM2.5 concentration was recorded to be 34.7 percent lower than during the same period in 2013, prior to the launch of Green Horizons. IBM has also entered into research collaborations with governments in Delhi, India, and Johannesburg, South Africa, to leverage Green Horizons technology and address air pollution issues in those cities as well.

For future applications, Green Horizons will move toward personalized pollution exposure measurements and health services. Because environmental pollution, health, and safety are highly connected, IBM is moving swiftly to apply a targeted yet integrated approach to enable governments and individuals in their efforts to battle pollution and associated diseases.

Conserving energy and addressing climate change

Climate change is one of the most critical environmental challenges facing the planet. Since the early 1990s, IBM has been collaborating with clients and others on innovations to help protect the world's climate through energy conservation and the use of renewable energy. Today, we continue that effort and reinforce our long-standing commitment to addressing these environmental challenges.

Developing smart sensors to detect greenhouse gas emissions

Most pollutants are invisible to the human eye, until their effects make them impossible to ignore. Methane, for example, is the primary component of natural gas. If methane leaks into the air before being used, it can warm the earth's atmosphere. Methane is estimated to be the second-largest contributor to global warming after carbon dioxide.

In the United States, emissions from oil and gas systems are the largest industrial source of methane gas in the atmosphere. The U.S. Environmental Protection Agency estimates that 9.3 million metric tons of methane leaked from natural gas systems in 2016. Scientists at IBM are working with natural gas producers, such as Southwestern Energy, to develop intelligent methane monitoring systems.

At the heart of IBM's research is silicon nano-photonics that are tuned to detect minuscule amounts of methane. This evolving technology transfers data by light, enabling computing literally at the speed of light. These chips can be embedded in a network of sensors on the ground near natural gas infrastructure, or even fly on autonomous drones — generating insights that, when combined with real-time wind data, satellite data and other historical sources, can be used to build complex environmental models to detect the origin and quantity of pollutants as they occur.

Smarter Buildings

The IBM Smarter Buildings solution started as an internal pilot initiated by IBM's Real Estate Strategy and Operations, software development, and research organizations. The objective was to apply IBM analytics to existing building system operational data, generating insights to improve energy efficiency. What began as a pilot at one IBM location in 2009 is now deployed at 24 major IBM campuses, encompassing 155 buildings and over

24.5 million square feet of space around the globe. This solution captures 40 percent of IBM's energy usage and 34 percent of our energy spending.

The IBM Smarter Buildings solution combines IBM's real estate management, software and services expertise with analytics to reveal a building's hidden failings and to identify opportunities for improvement in building performance and efficiency. The solution implemented at IBM compiles real-time operating data from approximately 27,000 field data sources (e.g., air conditioning systems, boilers, chilled water systems) every 15 minutes. The Smarter Buildings solution sends out automatic alerts when systems are operating outside of optimal conditions, with a specific focus on energy efficiency, so that personnel can take corrective action and implement operational modifications.

From 2013 to 2017, IBM's global energy management team utilized IBM's Smarter Buildings solution to reduce energy consumption by 35,000 MWh per year, with associated annualized savings of $1.7 million. The implementation has demonstrated on average a positive return on investment after one to two years, while energy savings have increased in each year of operation. Due to the outstanding results of IBM's internal Smarter Buildings solution implementation, IBM offers the service to its clients as Building Optimization with IoT.

Protecting wildlife

The protection of wildlife and endangered species from extinction is important to the health of the planet. While it may be viewed as a natural process, extinction is being hastened due to a number of factors — poaching being one of them. IBM technology is being used on the front line to help save African rhinos from the threat of poachers and extinction.

Today, South Africa is home to more than 70 percent of the world's remaining rhino population. Conservationists are battling to protect these iconic animals. Over the past decade, more than 7,000 rhinos were killed across the African continent, and in 2016, 1,054 were reported killed in South Africa alone.

In 2017, IBM joined forces with Wageningen University in the Netherlands, India IT provider Prodapt, and MTN, a leading African telecommunications provider, to protect endangered rhinos at South Africa's Welgevonden Game Reserve. A solution was needed that would help the wildlife managers to understand and predict possible threats of poaching, and act ahead of time to prevent harm to the animals.

According to research conducted on Welgevonden Game Reserve, prey animals in the wild react in different ways, depending on the type of threat they encounter and the perceived danger from predators, such as lions and leopards, or the presence of people in the vicinity. IBM's IoT technology was selected by MTN as part of their Connected Wildlife Solution.

Protecting the rhinos begins with fitting collars containing custom sensors onto prey animals including zebra, wildebeest, eland and impala. Information is collected on animal location, movement, direction and average speed of travel. Using the data, patterns are developed based on the animals' response to threats. As a result, animals such as zebras will act as sentinels with their response patterns becoming an early warning system to indicate the presence of poachers and protect the rhinos.

The predictive nature of this solution takes away the reliance on game reserve teams to be in the right place at the right time, or to respond to events such as the distant sound of gunfire. The aim is for the technology to be made available for deployment at game reserves across Africa and abroad.

IBM Research

Smarter solutions for critical challenges

IBM Research applies world-class expertise and leading-edge technologies to innovative solutions for healthcare, energy, the environment and other societal challenges.

A cryostat from IBM's quantum computing lab

The IBM Research Science for Social Good initiative tackles emerging societal challenges using science and technology.

Breakthroughs to watch

Each year IBM Research showcases five innovations that will help change our lives within five years. The result of work by more than 3,000 researchers in 12 labs on six continents, these "5 in 5" breakthroughs have the potential to solve big, societal problems. In 2018, one of these innovations combats bias in AI systems and algorithms, so that they will be impartial and trusted for decision making.

Another problem we're tackling is protecting our most important natural resource: water. By 2025 more than half of the world's population will be living in water-stressed areas, yet water is crucial to our survival. Plankton provide clues to the health of our oceans, rivers and lakes as they are the base of the oceanic food chain and highly sensitive to changes in water quality. But very little is known about their behavior in their natural habitat and they are time consuming and expensive to study in the lab. IBM researchers are building small, AI-powered, robot microscopes that will be placed in bodies of water around the world and networked in the cloud. Continually monitoring plankton behavior and thus the condition of our water, this innovation will help preserve the health of our ecosystems.

Read more about 5 in 5 at IBM Research.

Science for Social Good

In IBM's Science for Social Good initiative, IBM Research scientists and engineers work with a diverse range of nongovernmental organizations (NGOs) to tackle emerging societal challenges using science and technology. Projects in 2017 included:

Cognitive disease hunter
Predicting new or unexpected outbreaks remains one of the most difficult problems of modern times. Given that most infectious diseases emerging in humans originate in animals, the team is using AI to study the intrinsic features of pathogens that cross-infect humans, with the aim of identifying new infectious pathogens before they emerge.

Emergency food efficiencies
Emergency food provider, St. John's Bread & Life, serves more than 2,500 meals daily with extraordinary efficiency. The team is capturing these best practices to model the food supply chain and create and share an interactive digital experience. This will allow Bread & Life to share best practices with food providers around the country and engage more effectively with the public about combatting hunger.

Tools to tackle the opioid crisis
Understanding the patterns and signs of addiction and guidelines for responsible prescription are instrumental when battling new opioid addictions. The team is coupling advanced machine learning methods with the wealth of Watson Health™ Truven

Health Analytics® data to develop insights and early warning systems, and making them available to providers, payers and public health officials to help curb the opioid epidemic.

Data-driven social impact
Many social entrepreneurs are lost early in their journey due to lack of support. Echoing Green, a funder of social enterprises, receives around 3,000 applications per year for a limited number of two-year fellowships that include financial and technical support. The IBM team is analyzing the collection of applications to uncover trends and characteristics of successful organizations to help prospective social entrepreneurs better direct their efforts and magnify impact.

Financial empowerment
Lack of cash between paychecks coupled with predatory lending is one of the leading causes of burdensome debt among low-wage workers. Neighborhood Trust Financial Partners provides programs, counseling and tools to help clients change their financial future. Using data and experiences of past clients, the team is developing predictive models and decision support that allow Neighborhood Trust to offer financial advice tuned to each client.

Read more about IBM's Science for Social Good initiatives.

Environment and energy

This report's environment section describes "solutions for environmental sustainability" that include work by IBM Research.

Accessibility

IBM Research is using AI tools and expertise to help eliminate barriers, personalize interactions and prolong independence.

A smart approach to healthy living
In collaboration with the University of California at San Diego, we are advancing the use of AI to enhance quality of life and independence for seniors. At the new Artificial Intelligence for Healthy Living Center (AIHL), located at the UC San Diego campus, we are modeling changes in cognition during the aging process, with the goal of creating AI-powered, personalized robots that help support wellness.

Ah-ha moments for all
For people with cognitive disabilities, the aging population, or those learning English as a second language, understanding complex content can be challenging. Content Clarifier uses AI to simplify content while retaining meaning. Complex words and phrases are replaced with simpler alternatives and supplemented with additional context, so that people have an easier time consuming and comprehending the most important concepts.

Learn about additional projects at IBM Accessibility Research.

Healthcare and life sciences

Our healthcare and life sciences team explores and develops methodologies and improves processes for a broad range of healthcare challenges—diagnosing diseases, managing population health, or improving our understanding of the human genome.

IBM scientists devise AI strategies for Africa
Most African countries still have fewer than one doctor for every thousand people, and the continent overall has a short supply of equipment and medication. There's a need to build more hospitals and train more doctors, but this isn't enough. Africa needs to merge healthcare and technology for care delivery—and one obvious strategy is through AI. Three researchers at our lab in Johannesburg, South Africa, are working on projects to help improve how data is used to manage healthcare resources. For example, in South Africa there is a five-year lag time in cancer statistics reporting, which prevents any meaningful prevention strategies. IBM's Africa Lab is using cognitive algorithms to automate the inference of national cancer statistics in South Africa, which is expected to bring reporting to near real-time. The IBM team also spent several weeks in Uganda meeting with more than 40 oncologists from a dozen countries to get feedback about how AI can help them meet more patients and provide better care.

AI helps fight malaria
With continuing budget pressures, public officials need to know what malaria intervention strategies work best, where and when. AI can hold the answers. Working with the University of Oxford, IBM Research—Africa is developing multiple AI algorithms to act as expert advisors, exploring "what if" scenarios and supporting policy makers with insights into how to do the most good for the greatest number of people.

IoT and analytics to improve access to drinking water
IBM scientists in Africa developed a water management service platform to address the needs of approximately 3 million Kenyans living in the remote northern regions of the country without access to safe water. The platform is part of the Kenya Resilient Arid Lands Partnership for Integrated Development (Kenya RAPID) and was developed in collaboration with various private and public sector partners, as well as representatives from the northern counties. The water services platform uses data from remote sensors to provide a range of capabilities, including a repository for information about water points (locations where water can be accessed); a historical record of water drawn from boreholes, along with a record of breakages and repairs; the capability to create detailed water budget models; and a view into the groundwater potential throughout the region.

Learn about additional projects at IBM Research healthcare and life sciences.

The IBMer

Smarter business begins
with the IBMer

IBMers are committed to leading a new
era of business and IBM commits to
empowering their success — supporting
and guiding them in careers that reward
themselves, our clients and the world.

IBM's ability to serve our clients and communities depends upon employee well-being.

Supporting IBMers

To thrive in an ever-changing world, we must continue to reinvent how we work and inspire IBMers in their careers. We provide personalized guidance and resources—augmented by AI and supported by digital, social and mobile technology—so that IBMers around the world can enjoy satisfying careers, increase their expertise, learn from others and engage in their professional development. Our investment in skills, combined with our use of design thinking and agile practices as standards of working, have created a workplace uniquely capable of delivering better solutions in less time.

Blue Matching
Blue Matching helped nearly 800 IBMers advance their careers in 2017. The internal service uses workforce predictive analytics to produce a list of jobs currently available in IBM based on the employee's location, level, job role and experience. By "opting-in" IBMers receive weekly notifications to view potential job matches within the company. Since Blue Matching more effectively targets applications, IBMers who use it have received up to twice as many interviews and five times the number of offers.

My Career Advisor
My Career Advisor is a personal cognitive solution IBMers can interact with for real-time career insights and guidance. Using what-if scenarios, the tool recommends how to grow skills, future job roles and stretch assignments.

Your Learning
The Your Learning platform is an IBMer's gateway to professional development. Personalized with cognitive capability, it understands exactly what an IBMer needs and recommends and tracks the employee's professional education all in one place.

Employee well-being

At IBM we continue to believe that our ability to serve our clients and communities depends upon employee well-being. In 2017, we focused on supporting evolving global community health priorities while continuing to enhance our health and safety management system.

Disaster relief efforts in the Americas
In 2017, our health and safety teams provided timely support to IBMers and their families affected by hurricanes Harvey, Irma and Maria; earthquakes in Chiapas, Oaxaca, Mexico City; and wildfires in California. They engaged with IBM's crisis management teams and building management staff to ensure safety during these events, volunteered in cleanup efforts, supported the reoccupation of facilities and provided much-needed employee and family counseling to address emotional health, medical support, financial and legal challenges.

Bureau Veritas recertifies IBM's Well-Being Management System
IBM's Well-Being Management System (WBMS) is framed around IBM's Corporate Policy 127, responsibility for employee well-being and product safety. Following International Organization for Standardization (ISO) consensus standards, system components include proactive planning, execution excellence, measurement and continuous improvement in the areas of employee health and well-being.

Continued external certification of IBM's WBMS through the Occupational Health and Safety Assessment Series (OHSAS) 18001 certification process, and a standardized approach to managing employee well-being globally, provide IBM the ongoing ability to fulfill marketplace demands and foster business opportunities around the world.

Additionally, all of IBM's hardware research and development operations in the United States were recognized once again as Occupational Safety and Health Administration (OSHA) Voluntary Protection Programs star sites for outstanding programs and results.

Awards
– IBM received the American Heart Association Gold Designation for a healthy workplace, achieving double the average score.

– IBM was recognized with two International Association of Business Communicators (IABC) Gold Quill Awards, for excellence in human resources and benefits communications, and for merit in internal communications.

Employee inclusion

IBM consciously builds inclusive teams and encourages diversity of ideas to have the greatest impact for our clients, our colleagues and the world.

Standing with our employees

IBM's long history with LGBT+ (lesbian, gay, bisexual, transgender) workplace equality began in 1984 when we included sexual orientation in our nondiscrimination policy. In 1995, we established an LGBT+ executive task force that today is known as the Global LGBT+ Council and is focused on making IBM a safe and desirable workplace for all people.

For the 15th consecutive year, IBM scored 100 percent on the Human Rights Campaign's Corporate Equality Index, the national benchmarking tool for corporate policies and practices related to LGBT+ employees. The index, released each autumn, provides an in-depth analysis and rating of large U.S. employers and their policies and practices pertinent to LGBT+ employees.

In 2017, IBM fought the transgender bathroom bill in Texas, where it is a significant employer. The company bought full-page ads in some of the state's largest papers, joined forces with other technology companies and signed a joint letter to the governor, and sent our executives to Austin to persuade state legislators to drop the bill—which they did in August.

Later in the year, IBM took a similar tack to urge the U.S. Congress to find a permanent legislative solution to enable "dreamers"—children raised in the U.S. after their parents brought them into the country without legal immigration status—to stay in the United States. The company launched an awareness campaign and flew the 31 "dreamers" it employs to Washington to meet with lawmakers directly. Ginni Rometty also went to Washington for discussions with lawmakers. For more, read the statement by IBM Vice President of Government and Regulatory Affairs, Christopher Padilla, about IBM's *amicus curiae* brief filed in the U.S. District Court for the Northern District of California. The brief supports several states, local governments and others challenging the revocation of the Deferred Action for Childhood Arrivals (DACA) program.

Advancement of women

A significant imperative for IBM has been the belief that "you can't be what you can't see," and in a world where less than 5 percent of CEOs at S&P 500 companies are women, we continue to take pride in our Chairman's leadership and the diverse

perspective that offers us. Four of Ginni Rometty's direct reports are women: IBM Senior Vice Presidents Michelle Browdy (IBM's general counsel), Diane Gherson (human resources), Michelle Peluso (chief marketing officer) and Bridget van Kralingen (leader of IBM's global blockchain business).

For us it's not simply about representation, but also driving a culture of inclusion where women can thrive. We've done this through initiatives such as Elevate—a leadership development program focused on helping to prepare women to be considered for advancement from middle-management positions into senior leadership roles through customized learning plans, coaching, and shadowing opportunities. Started in 2015, the program has reached over 700 women across 20 countries. About half of participants have already been promoted into senior roles.

IBM's hiring practices continue to be based on identifying the best-qualified individual to fill a position. At one time, the industry standard for the selection of programmers was the IBM Programmer Aptitude Test—in 1967, over 700,000 people took it, resulting in 20,000 women going into programming in the 1970s. Over time, this test was overtaken by newer, much less scientific, personality-based assessments, resulting in a decline of women entering technical/engineering fields. Today, IBM continues to use cognitive aptitude tests, proven predictors of job performance—and arguably this

We are committed to the progress and leadership development of women at IBM.

gender-neutral selection approach helps explain why we continue to have one of the highest proportions of technical women in our industry—and a culture of inclusion.

IBM has also partnered externally to drive outcomes. One example is a collaboration with the Soledad O'Brien Foundation, through which we co-launched the IBM and PowHERful summit in 2017. The summit provided young women, ages 14 to 23, an opportunity to explore different career options, receive guidance and advice, and interact with IBM technical professionals. Participants engaged in a three-hour Cognitive Challenge where they worked with IBM Watson® and received coaching from IBM artificial intelligence experts.

Our success in initiatives such as these has led to our receiving the prestigious 2018 Catalyst Award for leadership in building a workplace that values diversity and inclusion. IBM was the only tech company honored this year—and the only company in the history of the award to be recognized for a fourth time. IBM was also recognized by *Working Mother Media* as one of the top 10 companies on both its 2017 100 Best Companies (for the 32nd consecutive year) and Best Companies for Multicultural Women lists (for 15 consecutive years). *Working Mother* also named IBM a top 10 employer in India for 2016 (the inaugural year) and 2017. We also received the Momentum Award from the Anita Borg Institute for significant year-over-year growth in women technologists in senior and executive roles.

PINK October – Breast cancer awareness
Leaders of the IBM Women's Executive Council and the IBM International Foundation launched PINK October globally throughout IBM. During the month, we provided resources, support and hope for IBMers who have been diagnosed, are in remission or are supporting others in the fight. Through local activities and work we are doing with clients and partners supporting the cause, we explored the vast impact breast cancer has on society and planned breast cancer walks globally with IBM representation.

People with disabilities

Including people with different abilities in IBM's workforce is based on sound business judgment and anchored in IBM principles and HR strategy. IBM's recruiting teams play an essential role in identifying and interviewing skilled people with disabilities. Through a training module and a recruitment guide, IBM helps recruiters understand how to effectively provide reasonable accommodations when recruiting people with different abilities and to know what support is available within IBM for employing people with disabilities.

In 2017, IBM was recognized by the U.S. Business Leadership Network as the Employer of the Year for its commitment to building a better working world through its actions and engaging with like-minded

organizations and individuals. IBM is regarded as a thought leader around the world for people with disabilities, as illustrated by some recent awards.

– Australia—IBM came first in the Australian Network on Disability's Access and Inclusion Index

– India—IBM received the Nipman Foundation Equal Opportunity Award

– Italy—IBM received the Dyslexia Friendly Corporate Certification Award from the Italian Dyslexia Foundation

– Hungary—IBM received the Disability-friendly Workplace Award delivered by the Salva Vita Foundation

Employee engagement

IBM's efforts to lead progressive workplace practices around diversity and inclusion are a constant part of the company's culture. In 2017, IBM dramatically expanded family support options in the United States, to meet the increasingly diverse needs of parenting today.

– We increased paid parental leave for IBM birth mothers up to 20 weeks (from 14 weeks).

– We doubled paid parental leave for IBM fathers, partners and adoptive parents to 12 weeks.

– IBM parents can choose to take bonding leave time during the first year following the birth or adoption of a child.

– IBM will reimburse up to $20,000 for eligible adoption or surrogacy expenses, including medical costs associated with surrogate birth mothers.

IBM Business Resource Groups (BRGs) are volunteer, cross-department, employee-led groups that focus on a common interest or a certain constituency. BRGs aim to align their programs and initiatives with IBM's business and talent workstreams, which include Recruitment and Hiring, Talent Development, Employee Retention and Market Development.

– IBM now has 45,000 employees who belong to 300 BRG chapters registered in 51 countries supporting 13 constituencies or focus areas.

– Recent groups added include an LGBT+ BRG in Russia and our first Women's BRGs in Saudi Arabia and Pakistan.

Leadership development

At IBM, we support our leaders through simple, science-based solutions to sustain high performance and accelerate adaptation to change. Programs such as Leading with Resilience provide a whole-self approach to adopting new mindsets and behaviors to meet the demands of the job and bounce back even stronger when challenged. Our leaders strive for and maintain excellence by utilizing data-based, externally benchmarked success profiles and assessments to build skills targeted for critical roles.

Aspiring Manager's Program
In 2017, we expanded the opportunity for those who aspire to be managers by creating a scalable, engaging and cost-effective assessment and development experience. By using multi-method, criterion-validated assessments and simulations, we are providing objective business insight and uncovering hidden talent. Using design thinking, we created a highly engaging experience that considers the needs of participants, their managers, as well as HR and business unit leadership. The inclusion of a manager's portal for participants' managers, and a cadre of debriefing specialists/coaches to support participant questions and help interpret their assessment, keeps the human connection intact as we move to a digital platform. The scalability achieved reduces the cost, allowing more aspiring managers to participate.

Coaching
We augmented our Coaching Community of Practice in 2017 through the addition of Blue Core Coaching, which utilizes a peer-to-peer engagement framework by pairing a subject matter expert (SME) with a cohort of learners. Learners do pre-session development and then use 10 weekly sessions to practice the GROW (Goal, Reality, Options, Will) model for coaching. Participants learn from the SME and from each other, which enables better skills integration and maximizes SME impact. The success of Blue Core Coaching encouraged us to apply this approach to other leadership training, such as Servant Leadership, Leading with Resilience, sales leadership, agile coaching and offering management.

Manager Champion Group
Manager Champion Group (MCG) is a one-year leadership development experience, launched in 2013, that grows and empowers exemplary IBM managers to drive change. Participants have opportunities to accelerate IBM's business goals, serve as the voice of IBM managers around the world and further develop their own leadership skills and the talent of others. In 2017, Manager Champions facilitated over 50 management development workshops, led coaching circles and participated as co-hosts for Leadership Live (our monthly, live leadership development broadcast); advocated for new initiatives such as Performance Management, the Aspiring Manager's Program, and Cognitive Talent Alerts; and partnered with the Millennial Corps, Employee Experience Team, the IBM Leadership Academy and many other key stakeholders.

Corporate citizenship
IBM uses its globally recognizable brand to lead social progress by partnering with external organizations that serve diverse populations and underrepresented communities to provide leadership development. In 2017, in association with

Pro bono programs help equip IBMers for the challenges of working and leading in a global organization.

IBM's Diversity Team, we engaged with college students and early professionals through partnerships with Leadership Enterprise for a Diverse America (LEDA), Advancing Minorities' Interest in Engineering (AMIE) and the American Indian Science and Engineering Society (AISES). We worked with IBM Corporate Citizenship to deliver education on feedback, coaching and manager effectiveness at the Global Peace Foundation's annual conference in Manila, and delivered a Leadership Impact Grant to the International Young Leaders Assembly during their 2017 Global Summit hosted at the United Nations.

Professional growth through social impact

IBMers have the opportunity, through specific IBM pro bono programs, to apply their professional and technical skills for social impact. Whether a project is on the other side of the world or across town, they collaborate with communities and organizations to solve immediate problems and return after their engagement more skilled and engaged.

These immersive experiences equip IBMers for the challenges of working and leading in a global organization. For example, over 80 percent of 2017 Corporate Service Corps (CSC) participants said the experience improved their leadership skills, and over 90 percent said it benefited their teamwork and

collaboration skills. Among 24 professional skills we ask about, CSC participants said their engagements helped develop 11 on average. Over 40 percent also reported that their CSC work improved their proficiency in key technologies including data analytics, cloud and social.

Corporate Service Corps (CSC) offers IBMers an immersive experience designed to benefit communities, enrich its participants culturally and support IBM's global leadership development. The program deploys teams of 10–15 to partner with governmental, not-for-profit and social organizations, healthcare providers and other civic leaders to address high-priority issues in education, health, economic development and community resiliency.

IBM Health Corps teams focus on healthcare disparities, using technology to expand access to services and improve health systems. The program engages with partners to develop innovative solutions for improving health systems, access to services and population outcomes. IBM experts deploy for three weeks and in 2017 our work reached sub-Saharan Africa, Panama and the Southeastern United States.

Smarter Cities Challenge has sent IBMers to devise solutions for urban challenges in 138 cities over seven years. IBM experts deploy for three weeks to collaborate with local city and civic leaders on issues including social equity, economic development, emergency management or the environment. In 2017, teams assisted five cities on four continents.

IBM also supports employees and retirees in self-directed efforts through IBM Volunteers, our expanded, refreshed and renamed initiative. Launched in 2003 as On Demand Community, the program has recorded over 20 million hours of service in 80 countries, including 1.2 million in 2017. It provides free resources to help IBMers share their skills and expertise to improve communities while enriching their professional development.

Supply chain

A smarter, responsible supply chain

We seek diversity among IBM's suppliers, require them to demonstrate a commitment to social and environmental responsibility, and collaborate to help advance these values in our industry.
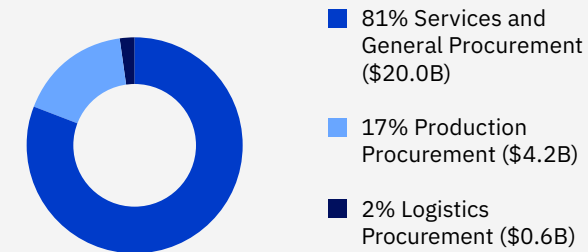
Our supply chain

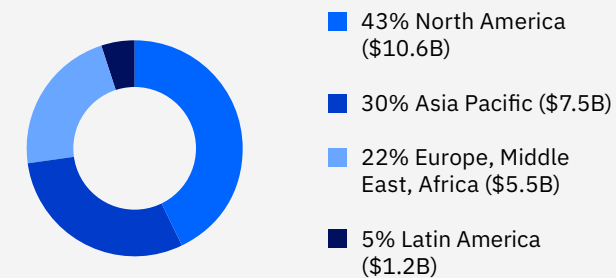IBM's 2017 global supply chain spend was $24.8 billion with over 13,000 first-tier suppliers in 100-plus countries. In our relationships with these suppliers, we require a commitment to social and environmental responsibility—as an extension of what IBM's own clients expect of us. We establish meaningful requirements for suppliers and assess compliance, collaborate with industry groups to drive broader improvements, and work to increase the diversity of our supply chain. We recognize the potential for progress in a supply chain of this scale, and invest in a range of initiatives to promote sustainable performance as a shared objective.

The following lists of suppliers—with links to their responsibility reports and/or related websites— represent a significant portion of IBM's global expenditures. In 2017, half of our suppliers listed below published corporate responsibility reports, and nearly 85 percent of those published are mapped to the Global Reporting Initiative guidelines. We encourage our suppliers without public reporting to take that step as a means to further expand the transparency of the supply chain.

2017 supplier spending by category

- 81% Services and General Procurement ($20.0B)
- 17% Production Procurement ($4.2B)
- 2% Logistics Procurement ($0.6B)

2017 supplier spending by location

- 43% North America ($10.6B)
- 30% Asia Pacific ($7.5B)
- 22% Europe, Middle East, Africa ($5.5B)
- 5% Latin America ($1.2B)

In 2017, 90 percent of our global spending in Production and Logistics Procurement (supporting our hardware brands and product distribution operations) was with the following 50 firms:

- Acbel Polytech
- Applied Materials
- Artesyn
- BDT Media Automation
- Benchmark Electronics
- Broadcom
- Cavium
- Celestica
- Cisco Systems
- Compro Business Services
- Delta Electronics
- DFF Corporation
- DHL
- Finisar
- Flextronics
- Fuji Electric
- Fujifilm
- Geodis
- GlobalFoundries
- Hon Hai/Foxconn
- i3 Technologies
- Intel
- Jabil Circuits
- Kyocera
- Lenovo
- Mellanox Technologies
- Mercury Corporation
- Micron Technology
- Microsemi
- Molex
- NEC Platform Technologies
- NetApp
- Nvidia
- Pontocom
- Quantum
- Redsis
- Samsung
- Seagate
- SK hynix
- Super Micro Computer
- Syncreon
- Teleplan
- Thermo Fisher Scientific
- Tokyo Electron
- Toshiba
- Trenton Systems
- Venture
- Western Digital
- Wistron
- Zollner Elektronik

In Services and General Procurement (supporting client services, software offerings, and internal operations) 46 percent of our global spending was with the following 50 firms:

- Adecco
- Akamai Technologies
- American Airlines
- American Express
- Apple
- Aricent Holdings
- Artech Info Systems
- AT&T
- Bilfinger
- BMC Software
- CA Technologies
- Camelot Info. Systems
- CBRE Group
- CDI
- CenturyLink
- Cisco Systems
- Collabera
- Computer Task Group
- CVS Caremark
- Dell
- Delta Airlines
- Fluor
- George P. Johnson
- HCL Technologies
- Hilton
- Hitachi
- Infinite Computer Systems
- INTEC
- Internet Initiative Japan
- Jones Lang LaSalle
- Juniper Networks
- LeasePlan
- Lenovo
- Manpower
- Microsoft
- Mitsubishi
- NTT Group
- Oracle
- Persistent Systems
- Red Hat
- Rocket Software
- SAP
- SDI International
- SHI International
- Sumitomo Corporation
- The Employment Solution
- UNICOM Systems
- Westcon Group
- WPP
- Zebra Technologies

Supply chain social responsibility has been a key element of our procurement strategy since 2004.

Supplier assessment and improvement plans

Commitment to continuous improvement is essential to sustained progress in supply chain social responsibility. In 2017, our ongoing efforts to lead and encourage our supply chain to embrace positive change generated many improvements. This section includes successes that IBM and our suppliers achieved, along with our approach to the challenges that still remain.

IBM's Social and Environmental Management System for its suppliers
In 2010, IBM established a requirement that first-tier suppliers create a management system to address their social and environmental responsibilities. Our objective was to help our suppliers build their own capability to succeed in this area. In summary, suppliers are required to:

– Define, deploy and sustain a management system that addresses intersections with employees, society and the environment, and that addresses integration with and compliance to the Responsible Business Alliance (RBA) Code of Conduct.

– Measure performance and establish voluntary, quantifiable environmental goals in the areas of waste, energy and greenhouse gas emissions.

– Publicly disclose results associated with these voluntary environmental goals and other environmental aspects of their management systems.

– As part of their social and environmental management system, conduct self-assessments, audits and senior leadership reviews of their system.

– Cascade these requirements to their next-tier suppliers.

In 2017, over 1,200 new suppliers—primarily from the Services and General Procurement sector of our supply chain—were afforded a period not to exceed 12 months to demonstrate compliance with these requirements. Suppliers are tracked monthly and action is taken to confirm plans reach acceptance.

More information on these eight supplier requirements may be found on IBM's supply chain environmental responsibility webpage.
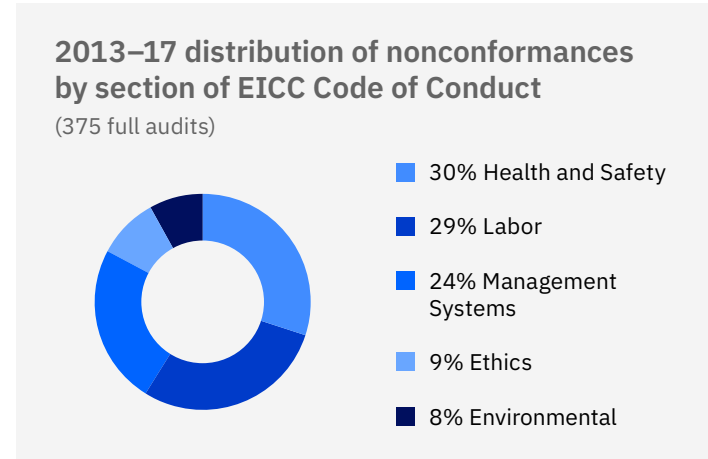
Supply chain social responsibility
Supply chain social responsibility has been a key element of our procurement strategy since 2004, when IBM elevated this work based on the growing interest of stakeholders and our realization of the added responsibility that comes with having a supply chain dispersed over 100 countries. Today this work forms a segment of our larger risk management work that encompasses a 360-degree view of the supply chain. As a founding member of the Electronic Industry Citizenship Coalition (EICC), IBM endorses the EICC Code of Conduct for its internal operations and requires the same of our direct (first-tier) suppliers for hardware, software and services. IBM communicates our requirement for code compliance at the initial stages of supplier onboarding. Continuous focus on social responsibility as part of our daily business and the commitment of our suppliers has led to many improvements over the past decade and a half. Along with participating in EICC-generated education, audits and re-audits continue to play a valuable role in providing our suppliers with objective, third-party evidence to determine if their operations are code-compliant or need further improvement. As described in the "engagement and collaboration" section below, the EICC re-branded itself the Responsible Business Alliance (RBA) in October 2017. For purposes of this year's report, we will retain use of EICC terminology since all audits were completed against the EICC code. For 2018 onward, the code and assessments will be performed under the RBA banner.
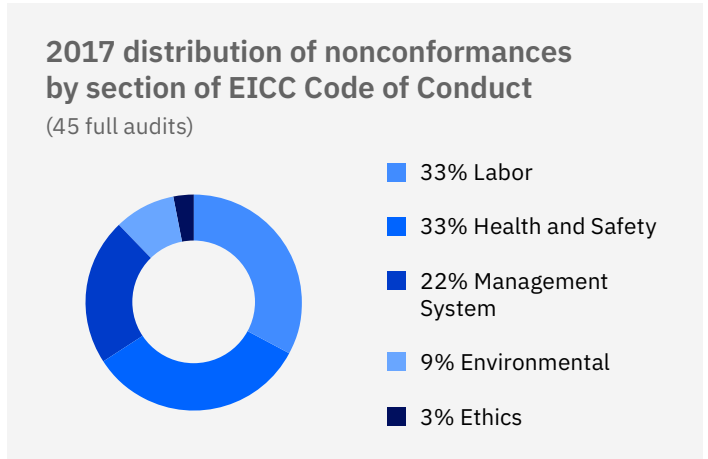
In this report, we share summarized results of the audits and improvements made by our suppliers, which can positively promote good working conditions for thousands of people employed in our extended supply chain. In 2017, audits to the EICC code took place simultaneously for both our Production and Logistics Procurement suppliers, and those in the Services and General Procurement supply chain. IBM has long maintained a dual path

of supplier audits and included its services and general purchasing suppliers. Our experience has been that risk of noncompliance is present in these sectors as well, as services suppliers may be less familiar with health and safety and environmental aspects of the code. By including both categories of suppliers, we have assessment coverage across our broad set of suppliers, which permits testing of code compliance across the spectrum of suppliers in critical emerging areas such as the prevention of human trafficking. For all supplier audits, IBM continued its long-standing use of the EICC's Validated Audit Process (VAP), the standardized social responsibility audit developed by the electronics industry.

From 2004 through 2017, the total number of IBM driven full-scope audits (not counting re-audits) reached 1,966. These audits measure supplier compliance to the EICC code and in earlier years—prior to 2010 for Production Procurement suppliers, and 2012 for Services and General Procurement suppliers—to IBM's Supplier Conduct Principles.

2013–17 distribution of nonconformances by section of EICC Code of Conduct
(375 full audits)

- 30% Health and Safety
- 29% Labor
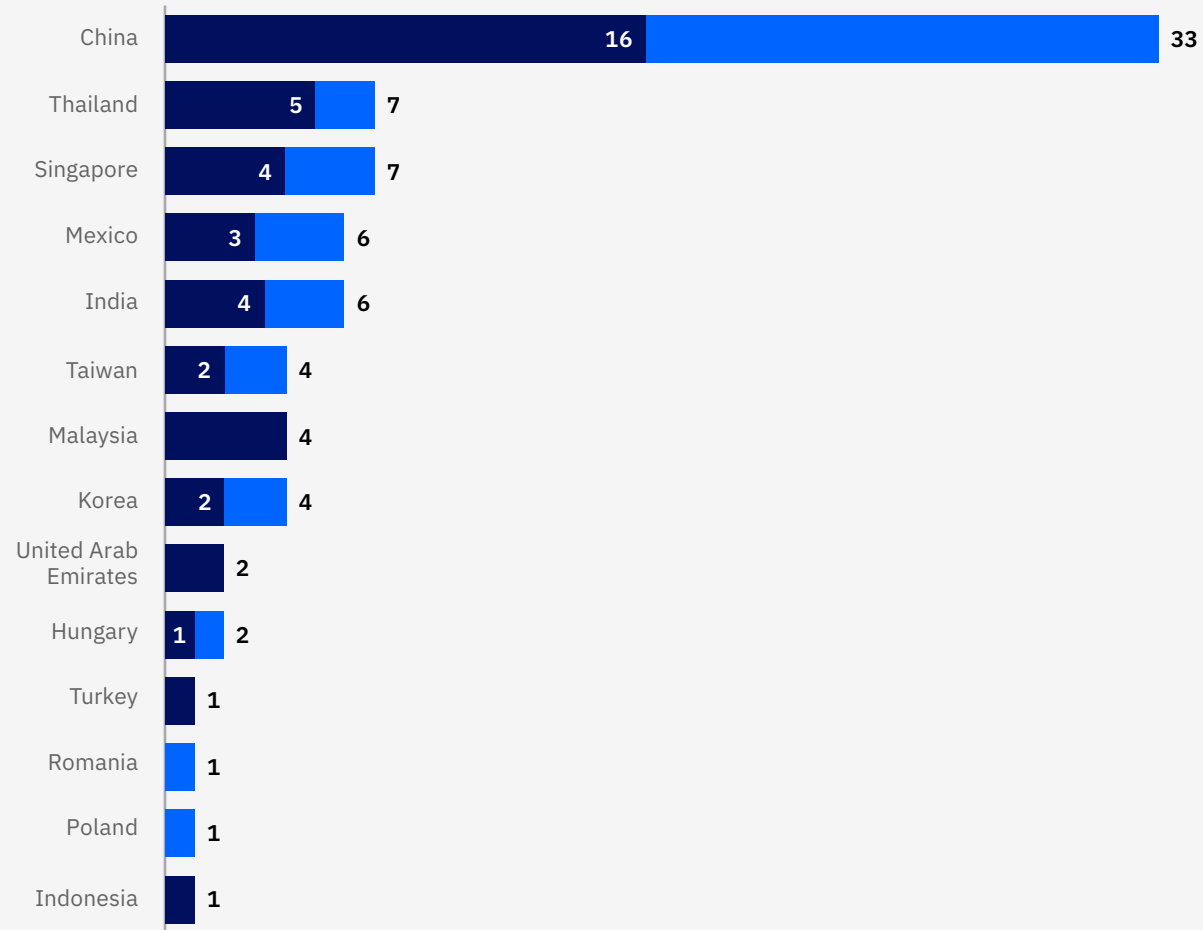- 24% Management Systems
- 9% Ethics
- 8% Environmental

Since 2013, we directed 375 full-scope EICC audits. Data included in the 2013–17 cumulative and 2017 chart depicts the percentage of major and minor nonconformance regarding the five categories in the EICC code: labor, health and safety, environmental, ethics, and management system. (For reporting purposes, incidents of priority nonconformance found during audits are consolidated into major nonconformance depicted in the charts.)

2017 distribution of nonconformances by section of EICC Code of Conduct
(45 full audits)

- 33% Labor
- 33% Health and Safety
- 22% Management System
- 9% Environmental
- 3% Ethics

In 2017, IBM had full-scope audits conducted on 45 of its first-tier suppliers: 30 were Production Procurement suppliers and 15 were Services and General Procurement suppliers. Data included in the 2017 chart depicts the percentage of major and minor nonconformance in each EICC category.

2017 completed full audits and re-audits by country

(79 total)

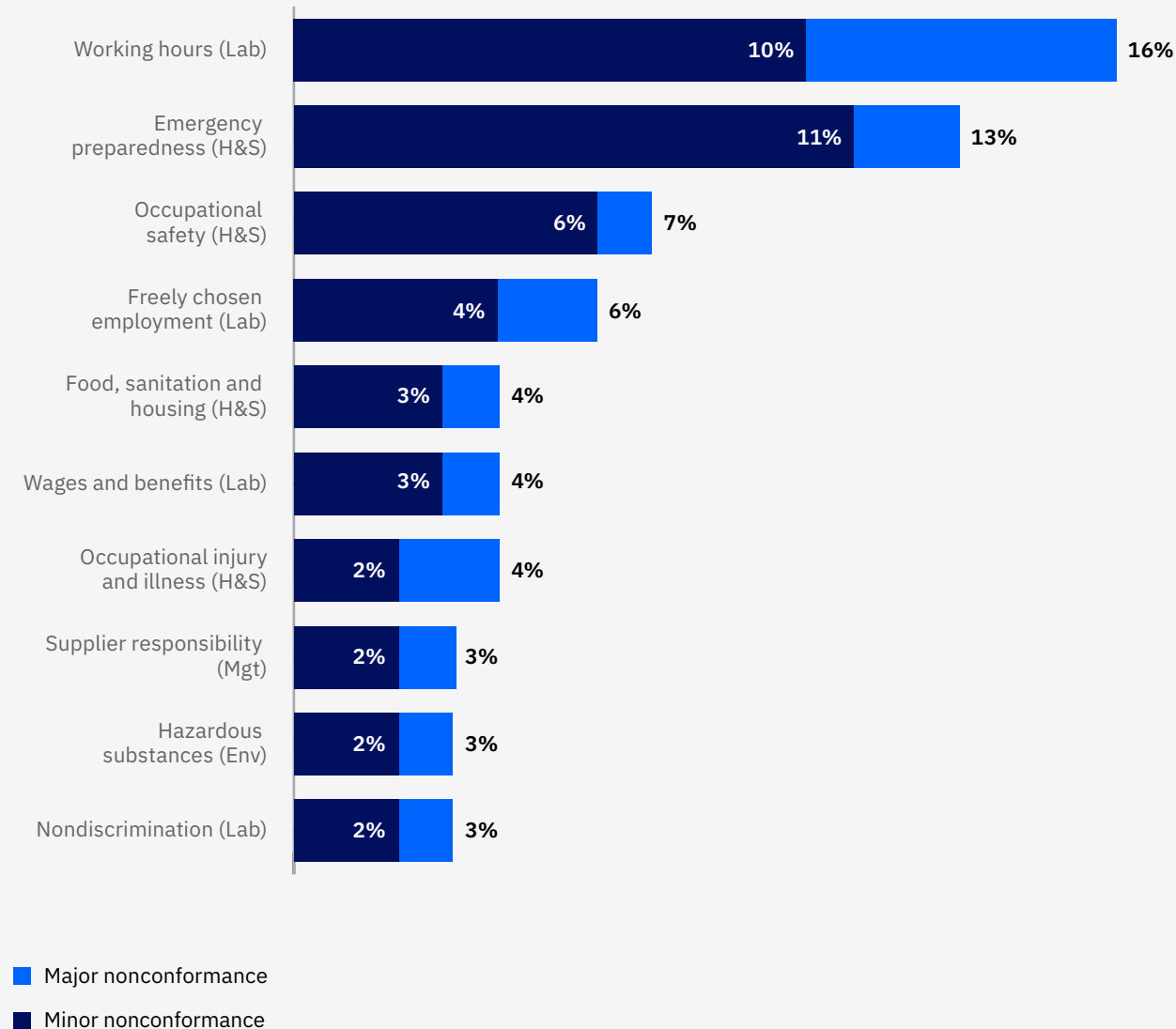| Country	Value
China	16 / 33
Thailand	5 / 7
Singapore	4 / 7
Mexico	3 / 6
India	4 / 6
Taiwan	2 / 4
Malaysia	4
Korea	2 / 4
United Arab Emirates	2
Hungary	1 / 2
Turkey	1
Romania	1
Poland	1
Indonesia	1

■ Full Audits
■ Re-Audits

For a broader view of our 2017 assessment activity, IBM's 45 full-scope supplier audits were combined with 34 re-audits for a total of 79 audits in 14 countries or territories—China was the most active for audits and re-audits, followed by Thailand, Singapore, Mexico, India, Taiwan, Malaysia and South Korea. Across these audits, 72 percent were with our Production and Logistics suppliers, and 28 percent with our Services and General Procurement suppliers.

2017 results from 45 full audits

(top 10 nonconformances to EICC code provisions by %)

Working hours (Lab)	10%	16%
Emergency preparedness (H&S)	11%	13%
Occupational safety (H&S)	6%	7%
Freely chosen employment (Lab)	4%	6%
Food, sanitation and housing (H&S)	3%	4%
Wages and benefits (Lab)	3%	4%
Occupational injury and illness (H&S)	2%	4%
Supplier responsibility (Mgt)	2%	3%
Hazardous substances (Env)	2%	3%
Nondiscrimination (Lab)	2%	3%

■ Major nonconformance
■ Minor nonconformance

In the 45 full-scope EICC audits in 2017, the 10 most frequent code nonconformance (major and minor) are provided in the chart to the left. To link the nonconformance to the five code sections, we have noted this via abbreviation: Lab (labor), H&S (health and safety), Env (environmental), Eth (ethics) and Mgt (management system).

In 2017, the two largest areas of noncompliance were labor, and health and safety. The environmental category improved its compliance level as a result of continued dialogue with our suppliers and our requirement that suppliers have a social and environmental management system in place.

Audits are a valuable tool, and if combined with long-term supplier relationships and suppliers' agreements to invest in improvements toward code compliance, audits can help drive relative long-term improvement. For example, in the case of "working hours." By comparing results over the near- and mid-term, we can see improved results. In 2017 data, combined major and minor nonconformance for working hours was 16 percent for audits conducted, down from 20 percent in 2016. Similarly, "hazardous substances" saw an improvement from 7 percent in 2016 to 3 percent in 2017.
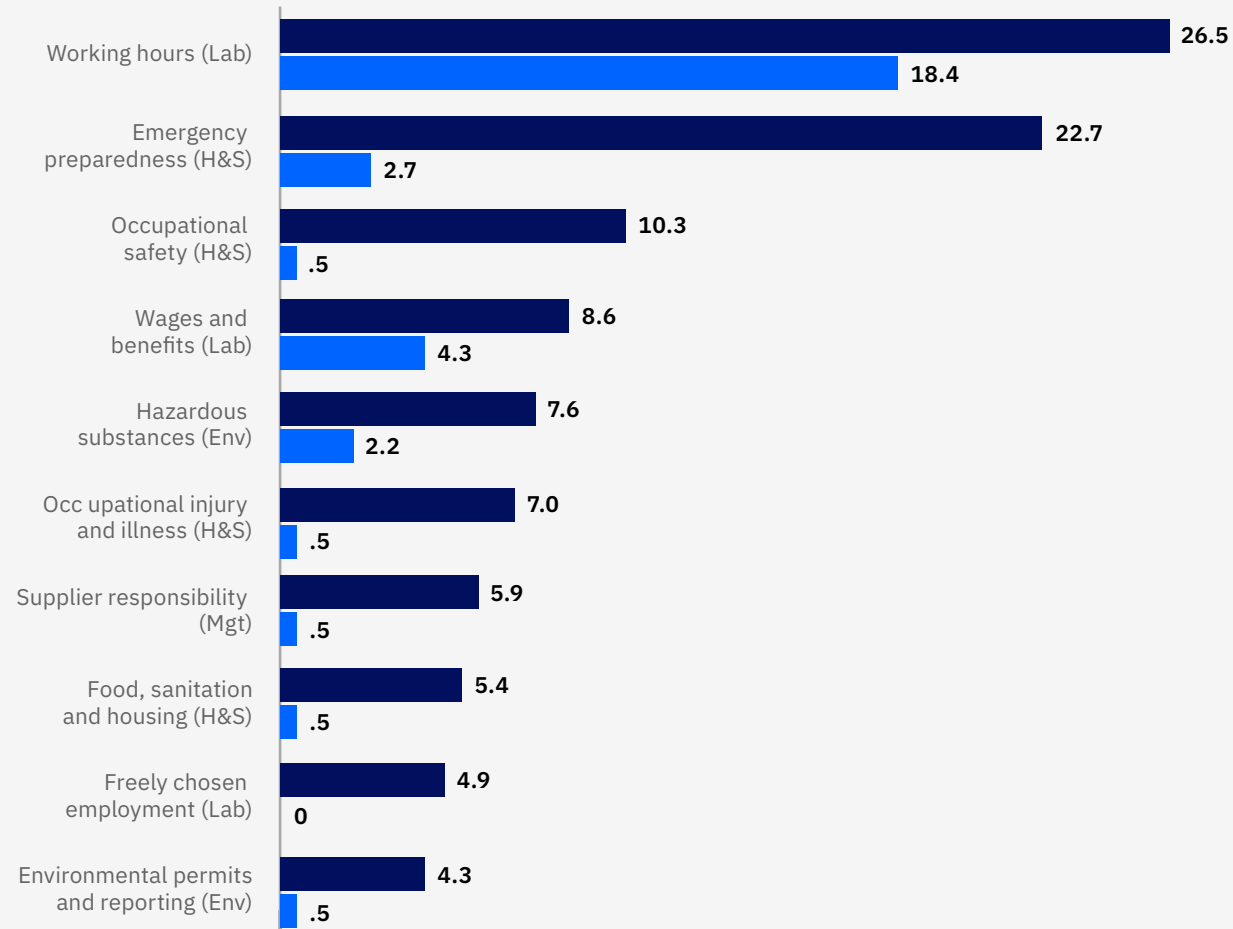
The EICC code requires an organization to have robust management systems to achieve and maintain ongoing compliance with the code provisions. Suppliers who fail to conform to the code often lack one or more elements of a strong management system—having documented goals, objectives, metrics, periodic reviews with in-line management and tracking of improvements. An EICC audit report identifies and describes noncomformance found during the audit with a cross-reference to the applicable provision of the EICC code. This level of detail is an important feature of an EICC audit and enables suppliers to isolate the root cause of any finding so they can work on improvements.

IBM's supplier assessment activity follows the methodology developed by the EICC, under which audited suppliers create and submit a Corrective Action Plan (CAP) for all nonconformances discovered in an assessment. This requirement is a core tenet of IBM's supplier management system and is fully supported by IBM Global Procurement and its executive team. The CAP enables the audited company to create meaningful targeted improvements—and later, to test their effectiveness through a re-audit. During 2017, 57 supplier CAPs were reviewed and accepted within 90 days of submission, reflecting audits and re-audits that occurred in late 2016 and throughout 2017.

2017 improved nonconformance rates from re-audits

(% nonconformance to EICC code provisions)

Provision	Full Audits	Re-audits
Working hours (Lab)	26.5	18.4
Emergency preparedness (H&S)	22.7	2.7
Occupational safety (H&S)	10.3	.5
Wages and benefits (Lab)	8.6	4.3
Hazardous substances (Env)	7.6	2.2
Occ upational injury and illness (H&S)	7.0	.5
Supplier responsibility (Mgt)	5.9	.5
Food, sanitation and housing (H&S)	5.4	.5
Freely chosen employment (Lab)	4.9	0
Environmental permits and reporting (Env)	4.3	.5

■ Full Audits
■ Re-audits

Provisions shown are the 10 most frequent major findings from the full audits preceding the re-audits.

The effectiveness of our audit/CAP/re-audit system is demonstrated by comparing "before and after" results of suppliers undergoing a complete assessment cycle, as shown by the chart to the left. Re-audits conducted during 2017 at 34 Production and Services and General Procurement suppliers are compared with their full-scope audits (conducted over the 2015–17 timeframe). Major and minor noncompliance results are shown.

Within the 34 re-audits, there were 41 code provisions from the full-scope audits with major or minor nonconformance. The CAPs drove compliance improvement across all 41 code provisions. The chart to the left shows a sample of these improvements focusing on the 10 provisions having the highest nonconformance. All 10 provisions showed significant improvement, including working hours (30 percent improvement), emergency preparedness (88 percent improvement) and occupational safety (95 percent improvement). For the following 27 code provisions, all prior major and minor noncompliance were fully corrected in the CAP/re-audit process:

- Freely chosen employment (Lab)
- Young worker avoidance (Lab)
- Humane treatment (Lab)
- Non-Discrimination (Lab)
- Freedom of association (Lab)
- Industrial hygiene (H&S)
- Physically demanding work (H&S)
- Machine safeguarding (H&S)
- Health and safety communication (H&S)
- Pollution prevention and resource reduction (Env)
- Wastewater and solid waste (Env)
- Air emissions (Env)
- Product content restrictions (Env)
- Storm water management (Env)
- Energy consumption and greenhouse emissions (Env)
- Business integrity (Eth)
- No improper advantage (Eth)
- Disclosure of information (Eth)
- Intellectual property (Eth)
- Fair business, advertising, and competition (Eth)
- Company commitment (Mgt)
- Management accountability and responsibility (Mgt)
- Legal and customer requirements (Mgt)
- Training (Mgt)
- Worker feedback and participation (Mgt)
- Documentation and Records (Mgt)
- Corrective action process (Mgt)

In addition to the above improvements, 41 percent of the re-audited suppliers resolved all code non-compliance after completion of their re-audit cycle — a sizable accomplishment and testament to the results of following the full EICC process as well as the commitment of our suppliers to invest in lasting improvements. IBM Global Procurement has contingency plans for suppliers that remain non-compliant after a re-audit, and each is being handled with executive involvement. Our procurement executive team reviews the results of all supplier audits (full-scope and re-audits) on a monthly basis, and quarterly with IBM's chief procurement officer.

From the results of 2017 EICC full-scope audits and re-audits, IBM is adjusting its communication plans with suppliers for 2018 audits. Our 2018 audit plan includes full-scope audits aligned with the Responsible Business Alliance (RBA) Code of Conduct version 6 (effective Jan. 1, 2018), and to further improve full-audit compliance, we will be extending to suppliers access to a core set of RBA learning academy courses designed to help them build capability in the provisions of the code.

Center of Excellence for Product Environmental Compliance
IBM's Center of Excellence (CoE) for Global Product Environmental Compliance helps IBM to meet environmental regulations in all countries where IBM does business, by rolling out consistent methodologies to deliver environmentally compliant products. The CoE's mission includes comprehensive and detailed reviews of regulations, the development of compliance strategies, processes and deployment plans, as well as education and training materials for IBM's employees and suppliers. The CoE is also an active member on many industry and regulatory bodies around the world.

As governments worldwide become increasingly concerned about the environment and health and safety of their citizens, the number of product environmental laws has grown exponentially over the last several years and we expect this trend to continue. Not only are such laws growing in number, they are also increasingly detailed and the scope of what constitutes an environmental law has continued to expand. The product-oriented laws directly pertain to all hardware products IBM designs, manufactures or contracts to manufacture, and/or purchases for resale. The scope of IBM's product environmental compliance work includes but is not limited to:

— Validating that all IBM hardware products do not contain prohibited substances, or do not exceed certain maximum thresholds of reportable substances, as specified by EU RoHS and REACH regulations, in addition to non-EU RoHS and REACH-type regulations.

— Meeting eco-design directives as well as power and energy reduction regulations and voluntary standards such as the U.S. Environmental Protection Agency's ENERGY STAR program.

— Complying with the U.S. Toxic Substances Control Act, nanomaterials reporting requirements, battery laws, product takeback regulations and annual reporting.

— Delivering supplier education via dedicated global webinars.

Globally in 2017, we identified 160 new or modified product-related regulations and acted upon them to meet the milestones and requirements defined by the regulations.

Engagement and collaboration

Collaborating with industry groups, academics, nongovernmental organizations and other professional organizations is a way of leveraging multiple efforts for the benefit of the whole. IBM openly shares our work and learns from these others in order to make ongoing investments in supply chain social responsibility.

In October 2017, our primary supply chain social responsibility collaboration group, the EICC, re-branded itself as the Responsible Business Alliance (RBA). This change in name was the culmination of over a year and a half of work by the Board, its officers, and focus groups comprised of members and their management. More than just a new name and logo, this change reflects the dynamic nature of the group — which has continued to grow in scope and membership during each year of its existence.

At year-end, the EICC/RBA had grown to over 120 members across automotive, communications, consumer electronics, computer brands, contract manufacturing, hardware components, industrial equipment, logistics, software, retail, and (new for 2017) toy and other service industries — representing multiple distinct tiers of the extended supply chain. IBM is also an active member of the Responsible Minerals Initiative (RMI), which is

focused on the topic of conflict minerals and staying ahead of other emerging issues in extraction (such as cobalt).

IBM's involvement with the EICC/RBA remained strong in terms of support, participation and utilization of the organization's growing base of collateral. As a founding member, IBM encourages its suppliers of products and services to join the group and participate in the development and deployment of resources aimed at driving improvements in social responsibility.

Each member of IBM's global Supply Chain Social Responsibility team is part of one or more of the EICC/RBA's workgroups. This allows us to remain engaged in, contribute to and learn from other companies that constitute the various groups:

- Code revision workgroup
- Validated audit process workgroup
- Audit manual sub-workgroup
- Capability building workgroup
- Indirect spend workgroup
- China smelter engagement team
- Europe smelter engagement team
- Asia/Indonesia smelter engagement team
- Global smelter engagement team
- Gold subteam
- Conflict minerals reporting template team

Building upon its long history of working with indirect suppliers (in our services and software businesses), IBM co-leads the indirect spend workgroup. This group is engaging members that deploy the EICC/RBA Code of Conduct to indirect suppliers that support the electronics industry. Suppliers in this sector are varied and range from large global firms to locally owned, small enterprises, which presents a challenge in communicating and assessing compliance to the code.

The EICC/RBA annual report provides an in-depth review of the organization's accomplishments. This report is highly recommended for anyone with an interest in the areas the group is engaged in and the collateral being developed for members and suppliers to use in making improvements across the five pillars of the RBA Code. Readers are encouraged to link to the RBA website and explore the varied topics this important group is engaged in, at responsible-business.org.

In addition to its involvement with the EICC/RBA, IBM continues its engagement activities with local and nongovernmental organizations around the globe. For example, as a key member of the electronics industry in Mexico, IBM collaborates with industry chambers and nonprofit organizations that share our passion for a sustainable and responsible supply chain.

IBM continues its relationship with Centro de Reflexión y Acción Laboral, a nongovernmental organization located in Mexico. On a case-by-case basis and through open communication, we are addressing in a constructive manner areas of mutual concern regarding working conditions in our regional supply chain.

Conflict minerals

In 2017, we continued our efforts to achieve an upstream supply chain using tantalum, tin, tungsten and gold mined and processed in a responsible manner. These four minerals (also known as 3TG) are referred to as conflict minerals, with focus placed on sources emanating from the Democratic Republic of Congo or adjoining countries (DRC). With proper care, however, market access to legitimate sources of supply from within the DRC is possible to support a compliant supply chain. Like most companies using these four materials, IBM is not a direct purchaser and is four to six supplier tiers downstream from the smelters or refiners (SORs) of these minerals.

IBM's conflict minerals program is executed by a geographically dispersed, dedicated team of experienced supply chain professionals within the IBM Global Procurement organization. That team reports to IBM's vice president and chief procurement officer.

IBM participates in the Responsible Minerals Initiative (RMI), along with over 350 other companies and industry groups, focused on working to resolve challenges associated with this issue. IBM and RMI members are working together to identify, vet, converse with and lead the entire portfolio of member-identified SORs to participate in the Responsible Minerals Assessment Program (RMAP). RMAP was created for SORs that play a crucial role in the extended supply chain, as they are the point at which concentrated ores are refined into the higher-level materials that cascade into technology products. Readers are encouraged to access the RMI website for information on the many tools and programs being driven by this important initiative at responsiblemineralsinitiative.org.

IBM's due diligence measures for conflict minerals conform to the framework set forth in the Organisation for Economic Co-operation and Development (OECD) Due Diligence Guidance for Responsible Supply Chain of Minerals from Conflict-Affected and High-Risk Areas. Our work to date can be summarized in four categories:

1) Establishing a supply chain standard for conflict minerals.

2) Performing a Reasonable Country of Origin Inquiry (RCOI) regarding the potential sources of conflict minerals in our products.

3) Performing due diligence by surveying our in-scope direct suppliers using the RMI's Conflict Mineral Reporting Template (CMRT) to ascertain the SORs present in the supply chain.

4) Working with those SORs to gain their engagement in RMAP or equivalent programs. In the spirit of collaborative work, IBM accepts the LBMA Good Delivery List, Responsible Jewellery Council Chain of Custody Certification, TI-CMC as proof of conflict-free stature.

To determine information about its upstream sources of 3TG, IBM used multiple iterations of the RMI CMRT with its in-scope direct suppliers. The CMRT was developed to provide companies with a common format for their upstream suppliers to identify the use of 3TG, the SORs used in the extended supply chain and, where possible, the country of origin of 3TG. In the fourth quarter of 2017, IBM deployed the CMRT to our in-scope suppliers representing greater than 95 percent of our total supply chain expenditures for our covered products. We received responses from all of the in-scope suppliers and learned the identities of 307 upstream 3TG SORs located in 61 countries. By comparing the IBM-identified SORs to the RMAP list and the results of our further due diligence on SORs not participating in one of those third-party audit processes, we determined at the end of 2017 that 92 percent of the SORs identified by our in-scope suppliers were conflict-free or pursuing assessment (up from 86 percent at year-end 2016). The specific

names and locations of these smelters or refiners are published in IBM's 2017 Conflict Minerals Report at ibm.com/conflictminerals.

In-scope direct suppliers with CMRTs containing SORs that are not progressing toward conflict-free are required to have a plan to remove those SORs from products provided to IBM. The IBM Conflict Minerals team and the IBM Global Procurement organization work closely with suppliers to help them achieve this goal. Recognizing that a well-informed supply base is required to sustain this complex challenge, IBM has provided conflict minerals education to our suppliers through webinars and RMI online courses. The work to attain a conflict-free supply chain is difficult, yet our suppliers recognize the expertise of the team and our commitment to their success.

Another aspect of our efforts to drive change is direct interaction with SORs and trade groups that are associated with the processing of these materials. Our global Conflict Minerals team works in association with the RMI smelter engagement team to contact SORs and bring them into the RMAP process. In 2017, IBM global team members along with other member companies of RMI met with SORs in China, Czech Republic, India, Netherlands and Vietnam to advance their participation in RMAP. This work takes us to production facilities where we promote RMAP participation and help them to prepare for their assessments. To remove the cost barrier of RMAP audits, IBM donated to the RBA

Foundation and Initial Audit Fund, which offers SORs an incentive for participating in the RMAP by fully paying for the cost of their initial audit. Our outreach efforts extended to minerals conferences in China, Dubai, India and Indonesia, which we attended to meet with SOR and industry contacts, to further RMAP participation and understanding.

In 2018, we are continuing our work to reach conflict-free on 3TG and have started exploring our supply chain for cobalt, which may become the next material of interest.

Supplier diversity

IBM has long recognized that diversity is critical to fostering innovation, impacting our bottom line and delivering value to clients—and that supplier diversity adds to our competitive advantage while stimulating growth in a global marketplace and driving development in growing economies.

IBM created its supplier diversity program in 1968, predating the existence of the U.S. Department of Commerce's Minority Business Development Agency; the National Minority Supplier Development Council (NMSDC); and the Women's Business Enterprise National Council (WBENC). With half a century of engagement in this area, our program's perennial goal is to provide opportunities to diverse suppliers that can add value to our supply chain in every region where we operate. Suppliers qualify as diverse by being at least 51 percent owned by people from an ethnic minority (as defined in each country or region), or by women, military veterans, people with disabilities or LGBT individuals.

In 2000, IBM was the first information technology firm to join the Billion Dollar Roundtable, an organization that encourages businesses to increase their spending with diverse suppliers. Since then, IBM has annually conducted greater than $1 billion in business with first-tier diverse suppliers in the United States. (Companies with which IBM has direct business relationships are considered

2017 spending with first-tier diverse suppliers by region

Map Created by Ted Grajeda
from the Noun Project

Canada
$153M

United States
$1.4B

Latin America
$80M

E/ME/A
$211M

Asia Pacific
$213M

"first-tier" suppliers.) With the growth of IBM's diverse supplier initiative outside the United States, IBM since 2006 has conducted more than $2 billion in business annually with first-tier diverse suppliers globally. In 2017, IBM purchased $2.6 billion in goods and services from first- and second-tier diverse suppliers globally, of which nearly $1.4 billion was with first-tier diverse suppliers in the United States and $657 million with first-tier diverse suppliers in other countries.

In 2003, IBM expanded the program beyond the United States to seek relationships with diverse suppliers in every country where we operate. Each geographic region has its own program manager, and each has established locally relevant criteria for diverse suppliers. IBM's representatives actively engage in collaborations with external organizations involved with outreach programs to facilitate diverse supplier identification and development. We have also expanded our second-tier program beyond the United States, requiring our direct suppliers to seek diversity through their supply chains. Our goal is to seek suppliers that can provide value to our supply chain, and to promote economic opportunities for historically disempowered groups wherever we operate.

IBM is a member of many international affiliates of the NMSDC, including the Canadian Aboriginal and Minority Supplier Council (CAMSC), Minority Supplier Development China (MSD-China), Minority Supplier Development U.K. (MSDUK), South Africa

Supplier Development Council, Supply Nation, and WEConnect International. IBM employees are on the boards of CAMSC, MSDUK, MSD-China, and WEConnect International, where an IBMer is also chair of its board.

IBM works with its diverse suppliers to help them expand their capabilities and delivery models so they can respond more effectively to IBM's requirements. For example, SuperSeva Services Pvt. Ltd, a certified WEConnect International India member, received their first Request For Proposal (RFP) from IBM in 2007. Over the next two years they honed their skills and obtained their first IBM purchase order in 2009. From this point they worked with IBM's Asia Pacific procurement team to understand our growing customer requirements and were awarded an additional contract in late 2009. During this time we recommended they pursue WEConnect certification, which they did in 2011. This certification accelerated the number of RFPs from IBM. By 2015 they had won Employee Transport Management contracts with IBM, with support workers numbering 140. By year-end 2017, they were managing various business projects for IBM—including Employee Transport Management, Asset Management, Workplace Security, SSP Operations, Class Management and Stamp Paper Services—with approximately 400 workers supporting this work, illustrating the growth of this one supplier over a 10-year period with us.

During our 50-year history of supplier diversity, IBM has been a leader in inclusion. We have always understood that our actions on this front resonate, not just within the walls of IBM but throughout the world economy. Within our supply chain, IBM's Global Supplier Diversity organization has been widely considered an industry leader globally. Our supplier diversity organization and IBM employees were recognized approximately 30 times in 2017. The most prestigious awards were:

- WBENC Top Corporation, Platinum Level—14th consecutive year IBM has received "top corporation" status
- NMSDC Global Link Award—Best International Program in the world
- European Diversity Awards—Supplier Diversity Program of the Year Award
- Business Equity Network—Inaugural Eminence Award for our work with LGBT suppliers

NMSDC included IBM Program Director of Global Supplier Diversity Michael Robinson on its list of the 45 Most Influential People who have impacted diversity, and their organizations, in the NMSDC's 45-year history. He also received the National LGBT Chamber of Commerce Legacy Award for his contributions to LGBT suppliers. These corporate and individual awards are a demonstration of IBM's commitment and leadership in the industry. They are not limited to the U.S. or to a specific constituency, and illustrate the program's global impact.

As IBM marks the 50th anniversary of our supplier diversity program in 2018, we will continue to foster diversity in our global supply chain as business needs evolve, and will work with external organizations to support the identification and development of diverse firms in countries where we have purchasing needs.

Governance

Trust, transparency
and smarter business

Our diligent approach to governance —
measuring compliance, managing risk
and engaging public discourse — enables
IBM to innovate while maintaining the
trust of clients and society.

IBM Cloud data center

All IBMers worldwide participated in our Business Conduct Guidelines program in 2017.

Governance at IBM

IBM has a culture based on ethics and integrity, guided by a rigorous system of corporate governance. Grounded in our standards, we remain committed to addressing today's challenges through transformative leadership, innovation, values and essential partnerships. In this section you'll find examples of how we continue to enhance the ways we govern our company, manage risk and contribute our expertise to public discourse.

IBM senior management, overseen by our Board of Directors, is responsible for the company's economic, environmental and social performance, as well as for adherence to IBM's overall compliance programs. Corporate responsibility is integrated across the business through the following forums.

Corporate Responsibility Executive Steering Committee

Chaired by the vice president for Corporate Citizenship, our Corporate Responsibility Executive Steering Committee provides leadership and direction on key corporate responsibility issues. The committee comprises senior executives from functional areas across the company, with each area responsible for developing its own corporate responsibility goals and strategy. Organization-wide goals are approved by the steering committee.

Corporate Responsibility Working Group

The Corporate Responsibility Working Group manages IBM's corporate responsibility activities and stakeholder engagement. Meeting at least monthly to review key policy and strategic issues and make recommendations to the steering committee, the working group consists of representatives from 10 functional areas across the company, including global representation. Daily activities are coordinated in the Corporate Citizenship organization, which reports to the chief communications officer.

Ethics and integrity leadership

Creating and maintaining IBM's sustained culture of ethics and integrity starts with our employees and leaders and extends to our business partners and suppliers. We teach, listen and collaborate, as we continue to transform and enhance our internal compliance, education and integrity programs.

Teach: IBM achieved 100 percent participation in its Business Conduct Guidelines (BCG) program—employees around the world certified our BCG policy, currently available in 25 languages, and completed the BCG course. The BCG course includes an introductory video from our Chairman emphasizing the importance of integrity to IBM and business scenarios depicting integrity decisions that employees may face while conducting IBM's business.

IBM's trust and compliance (T&C) officers, lawyers and management in 2017 provided in-person compliance and ethics training to more than 26,000

IBMers around the world on topics including public procurement, business amenities, anticorruption and ethics. Additionally, more than 28,000 IBMers completed Corporate T&C University online education lectures. For employees facing new integrity challenges at turning points in their careers—for example, when they are new to IBM, new to management or new to emerging markets—targeted integrity training is required.

Also in 2017, IBM senior business leaders around the world sponsored integrity summits in 34 countries, in both emerging and major markets. These summits, managed and run by local senior leadership, emphasized the role of leaders in creating an ethical culture and focused on key compliance risks in each region, along with specific actions that can be taken to mitigate these risks.

Listen: For more than 50 years, IBM has maintained an internal "speak up" reporting channel for employees, as well as channels for suppliers, business partners and others to report concerns or suspected violations of our BCGs or unethical or unlawful behavior to the company. These channels support anonymous reporting.

In 2017, nearly 24,000 IBMers completed our annual Global Integrity survey, providing valuable feedback on their perception of ethics and integrity within the organization. We use the insights

gathered from these annual surveys, completed since 2010, to enhance our global ethics and integrity programs.

Collaborate: IBM's commitment to ethics and integrity leadership extends to our IBM Business Partners' and suppliers' employees, as part of their partnership commitment to IBM. In 2017, IBM provided online ethics and integrity education to more than 15,000 representatives from our IBM Business Partners and suppliers around the world. IBM Business Partner and supplier personnel have received in-person training in connection with our integrity summits in some emerging markets. For the fifth year in a row, IBM's chief trust and compliance officer emphasized the value of ethics and integrity in an annual address at our Global Business Partner Leadership Conference (PartnerWorld®).

Security and privacy

Responsible data stewardship is central to IBM's commitment to its clients. This approach is surprisingly unusual within the tech industry today, but it is how IBM has always done business. As a result, data privacy and security have been, and will continue to be, a critical consideration for all aspects of our business.

IT security
As companies continue to expand their businesses and IT infrastructure—adding more devices and increasing connectivity—their vulnerabilities can

also increase. At IBM, we not only carefully consider security when developing our technology solutions, but also examine our internal systems and processes to assess how we can best reduce risk and maintain the continuity of our business.

The human element also puts businesses at risk as attackers take advantage of lapses in security or use social engineering to target unwitting users. Recognizing that education is among the best forms of protection, we continuously strive to reinforce a cybersecurity-aware culture within our company and throughout the communities around us, by promoting increased knowledge and understanding of relevant issues. Because threats continuously evolve, each of IBM's employees is required to complete an annual cybersecurity and privacy course that is regularly updated with new insights on the latest types of attacks and security best practices.

Embracing regulatory change
IBM has been at the vanguard of rapidly evolving data privacy regulations. We were one of the first companies to appoint a chief privacy officer, to develop and publish a genetics privacy policy, to be certified under the APEC Cross-Border Privacy Rules system, and to sign the EU Data Protection Code of Conduct for Cloud Service Providers (the EU Cloud Code of Conduct). IBM is bringing that same spirit to implementation of the EU General Data Protection Regulation (GDPR).

Effective May 25, 2018, the GDPR represents the biggest change in data privacy legislation in two decades. IBM has established and is executing a global program to prepare our internal processes and our commercial offerings for the GDPR. As part of this program, we are enhancing our ongoing commitment to "privacy by design," to help ensure that personal data use is limited by default to what is specifically required. We are revising all agreements with our suppliers, vendors and clients where personal data is collected or processed, and incorporating measures into new and existing contracts to cover the new GDPR requirements. IBM also is leveraging the capabilities of its readiness program to help clients prepare for the GDPR. For more, read about IBM's Journey to GDPR Readiness, including the IBM GDPR Framework.

Data privacy and security have been, and will continue to be, a critical consideration for all aspects of our business.

Forging industry standards

IBM does not simply wait for regulatory require-ments; we actively work within the technology industry to establish prudent standards to safeguard customer data. In 2017, we expanded our partici-pation in the EU Cloud Code of Conduct to cover 24 additional services—making IBM the first company to offer our customers this transparent, indepen-dent endorsement across such a large portfolio of services, covering not just infrastructure but also software and platform cloud services. More details are available in this blog post by IBM Chief Privacy Officer Cristina Cabella.

IBM also has certified more than 160 offerings to date for compliance with Privacy Shield; and, in 2017, IBM further certified to the Swiss-U.S. Privacy Shield framework. IBM will continue to certify additional offerings under available frameworks on an ongoing basis.

Fighting to protect customer data

When necessary, IBM will fight to protect customer data under applicable legal frameworks. In 2017, IBM joined a handful of technology companies in supporting a legal challenge to a government request for customer data which, in IBM's view, did not follow proper channels and process. For more, read the statement by IBM General Counsel Michelle H. Browdy about IBM's amicus curiae brief to the U.S. Supreme Court. This brief detailed IBM's long-standing position that government efforts to obtain data for law enforcement purposes should

go through recognized legal channels. IBM remains committed to being a responsible participant in the important discussion concerning law enforce-ment access to data, as well as a strong advocate for our clients.
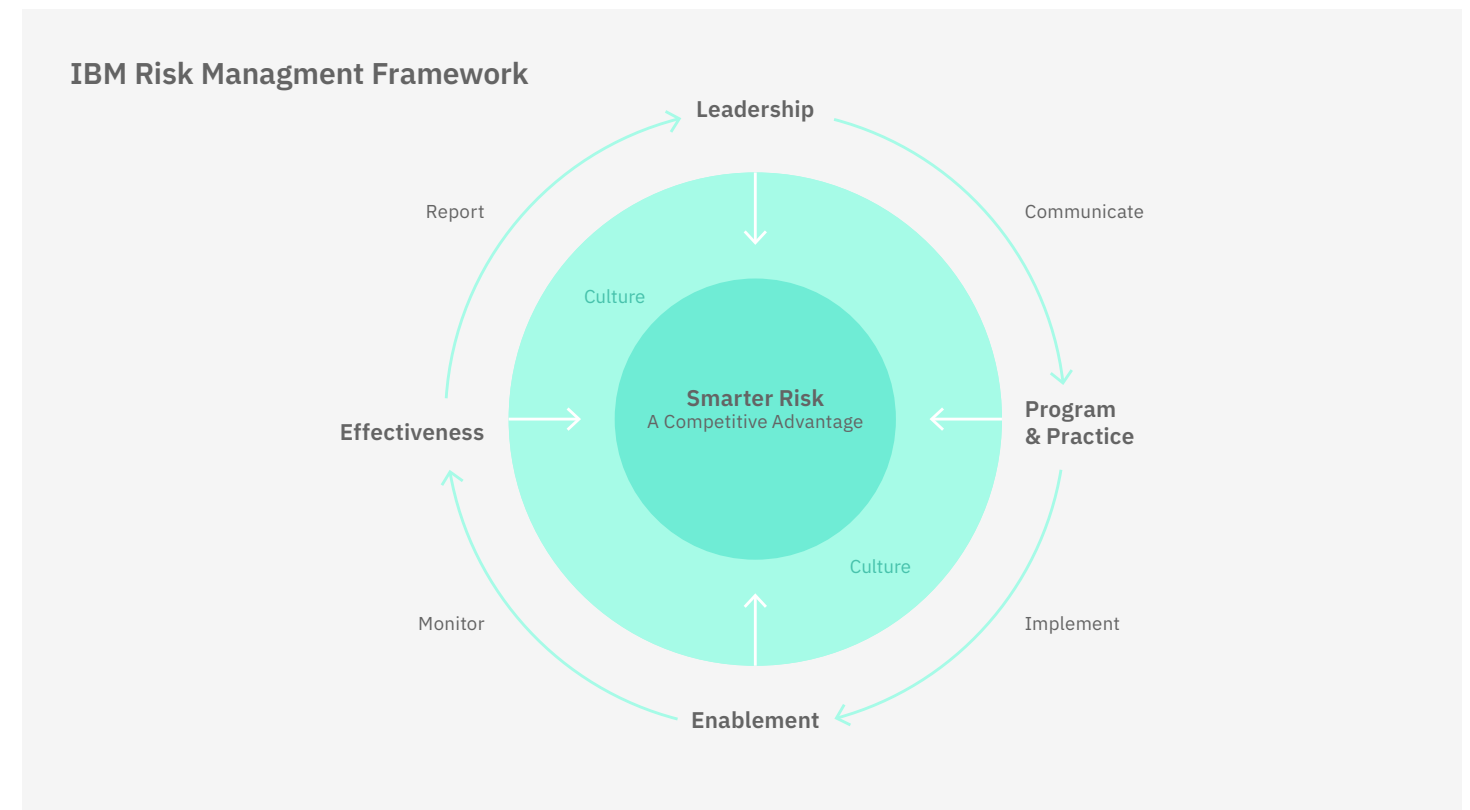
Enterprise risk management

IBM has developed a consistent, systemic and integrated approach to risk management to help determine how best to identify, manage and

mitigate significant risks throughout the company. The IBM Risk Management Framework aligns to industry standards and good practices, focusing on leadership, programs and practices, enablement and effectiveness supported by a strong risk-aware culture.

Leadership and governance

In 2017, the leadership team, compromised of senior management, continued its collaborative process of identifying, evaluating and managing

IBM Risk Managment Framework

Leadership

Report

Communicate

Culture

Effectiveness — **Smarter Risk** A Competitive Advantage — Program & Practice

Culture

Monitor

Implement

Enablement

IBM is focused on applying technology, tools and analytics to support risk management.

enterprise-level risks. This includes periodic reviews and interaction with the Board of Directors, whose Audit Committee oversees the company's enterprise risk management (ERM) framework, program and associated processes. Through our executive compensation program, we motivate our leaders to deliver a high degree of business performance without encouraging excessive risk-taking.

Our ERM Executive Council, comprising 17 senior managers representing different units, functions and geographies, meets regularly to help improve the management of enterprise risks. In 2017, we refreshed the ERM Council with seven members rotating off and seven new members replacing them, and we expanded the council for the IBM Credit business. To foster collaboration and transparency, participants share risks and mitigating actions so that the council can more effectively manage risk across the entire enterprise, identifying best practices from one part of the business to standardize and apply across units globally.

Addressing emerging risks
Our company-wide approach to identifying and managing risk is based on the ISO 31000 Risk Management and the Committee of Sponsoring Organizations of the Treadway Commission (COSO) ERM guidance. In adapting these, IBM considers and assesses potential strategic, financial, operational, regulatory and other risks to our business, which

could be driven by various factors, such as changes in the external environment, the company's strategic imperatives and where and how we do business.

Over the course of the year we held in-depth discussions with leading consultants on emerging risks and conducted a robust internal study that included polling, surveys and interviews of approximately 150 top executives. In 2017, we held a design thinking session with leaders from IBM Research to identify emerging risks and trends. As a result, we updated our enterprise-level risk map and refined senior management focus for 2018.

Advancing risk management through analytics and cognitive
IBM is focused on applying technology, tools and analytics to support risk management. In 2017, we continued to build upon the success of the award-winning Country Financial Risk Scorecard; we enhanced the predictive algorithms, expanded coverage and performed deep dive assessments of the risk environment across several countries. Analytics and cognition are the next big frontiers for risk management which, when coupled with the abundance of data, provide the ability to infuse insight into risk management. In 2017, we deployed to over 100 countries our cognitive-based tool to automate the identification of emerging storylines and risks and project possible future scenarios and implications. The tool enhances our global geographic leaders' risk awareness and ability to improve local resiliency to risks.

Benchmarking and effectiveness
An effective risk management framework should ultimately lead to improved business performance and help the company protect its reputation while delivering on its social responsibilities. IBM continuously evaluates its ERM practices for effectiveness and alignment with those priorities. In 2017, we established and baselined a set of new enterprise-level metrics for effectiveness. We also continued to collaborate with Internal Audit, Trust and Compliance, Business Controls and other oversight organizations to enhance IBM's approach to identifying, prioritizing and addressing risk within business processes, in order to improve support for risk-based controls and assurance. Lastly, we continued our benchmarking with other leading organizations to provide insights to good practice and emerging risks.

Driving a risk-aware culture
The success of the framework is predicated on a strong culture of risk awareness, identification, analysis and mitigation. To support this, IBM continued to deploy education modules in video formats and provide awareness and transparency through global video blogs, case studies, external perspectives and business leader risk and tool training. In 2017, approximately 50,000 IBMers from around the world collaborated in internal social communities, engaging with a range of materials and risk-management experts, to broaden their risk education.

Advancement through community engagement
Community engagement helps advance the risk management acumen of our current and future business leaders. In 2017, we participated on five ERM councils, including advisory board membership for two university ERM programs, and delivered presentations on contemporary risk best practices at IBM- and non-IBM sponsored industry events.

Principles for trust and transparency

IBM believes organizations that collect, store, manage or process data have an obligation to handle it responsibly. That belief—embodied in our century-long commitment to trust and responsibility in all relationships—is why the world's largest enterprises trust IBM as a steward of their most valuable data.

In October 2017, IBM Chairman Ginni Rometty told the *Financial Times*, "We're entering an era in which data can be used to solve all sorts of the most pressing problems, but only if there's trust in how that data has been handled." We take that trust seriously, and in 2017 launched a comprehensive statement of beliefs and practices that we follow in advancing new technologies and growing the digital economy.

We expanded on that in May 2018 with three "principles for trust and transparency" for protecting client data and insights, and for providing the responsible, transparent use of AI and other transformative innovations. They include:

The purpose of AI is to augment human intelligence.
The purpose of AI and cognitive systems developed and applied by IBM is to augment—not replace — human intelligence. Our technology is and will be designed to enhance and extend human capability and potential. At IBM, we believe that AI should make all of us better at our jobs, and that the benefits of the AI era should touch the many, not just the elite few. To that end, we are investing in initiatives to help the global workforce gain the skills needed to work in partnership with these technologies.

Data and insights belong to their creator.
IBM clients' data is their data, and their insights are their insights. Client data and the insights produced on IBM's cloud, or from IBM's AI, are owned by IBM's clients. We believe that government data policies should be fair and equitable and prioritize openness.

– Data ownership: Clients are not required to relinquish rights to their data—or insights derived from it — to have the benefits of IBM's solutions and services.

– Data privacy: IBM is fully committed to protecting the privacy of our clients' data, which is fundamental in a data-driven society.

– Data security: IBM is devoting our powerful engines of innovation to create tools to protect our clients, their data and global trade from cyberthreats, and convening a broader discussion on balancing security, privacy and freedom.

– Government access to data: IBM has not provided client data to any government agency under any surveillance program involving bulk collection of content or metadata.

– Cross-border data flows: IBM views the free movement of data across borders as essential to 21st-century commerce.

New technology, including AI systems, must be transparent and explainable.
For the public to trust AI, it must be transparent. Technology companies must be clear about who trains their AI systems, what data was used in that training and, most importantly, what went into their algorithm's recommendations. If we are to use AI to help make important decisions, it must be explainable. IBM will make clear:

– When and for what purposes AI is being applied.

– The major sources of data and expertise—and the methods—used to train AI systems and solutions.

– Although bias can never be fully eliminated, IBM and all companies advancing AI have an obligation to address it proactively. We therefore continually test our systems and find new data sets to better align their output with human values and expectations.

Learn more at ibmpolicy.com/trust-principles.

IBM