# 2012
# Corporate Responsibility Report

**IBM**

# Contents

# Overview

In this section, Chairman, President and Chief Executive Officer Ginni Rometty's letter describes how IBM's goal to unite its business and citizenship strategies is taking shape. We take a thoughtful, comprehensive approach to corporate responsibility and corporate citizenship at IBM, and we integrate that approach into many aspects of our company. In this section you will also find a high-level overview of some of our major activities.

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*Innovation that matters*

Five years ago, we began a conversation with the world about building a Smarter Planet. It was based on what we were seeing with clients and stakeholders around the world, as a new era of technology and global integration unleashed an unprecedented volume, velocity and variety of data.

We believed this so-called "Big Data" constituted nothing less than a new natural resource. What steam power, electromagnetism and fossil fuels were to earlier eras, data could be to ours. It held the potential to unleash new levels of prosperity and societal progress.

Since then, we have been working with clients, partners, academic peers, government leaders and other constituencies to mine and apply that resource—helping to make healthcare more accessible, education more effective, food safer, transportation more reliable and cities more livable. We have also applied analytics, social networks and cloud infrastructure within our own company—making IBM more valuable and transparent, reducing our energy use, and improving our capacity to innovate for our clients and for the world.

These are important goals—and you can read in this report how we measure our progress against them. But our commitment to Smarter Planet yielded something beyond Key Performance Indicators. To build a Smarter Planet—and to run a smarter enterprise—it turns out that your business and citizenship strategies must be more than aligned. They must become one.

This is a fairly novel way to look at business—and at corporate responsibility. It's very different from checkbook philanthropy or even traditional notions of "giving back" or CSR. And speaking as an IBMer, I believe it comes from the core of our culture, values and purpose as an enterprise—to be essential to our clients and to the world.
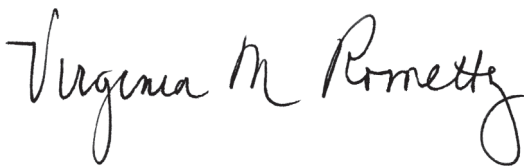
As Thomas Watson, Jr., IBM's second chairman and the son of its founder, put it: "Corporations prosper only to the extent that they satisfy human needs. Profit is only the scoring system. The end is better living for us all."

As you read this report, I encourage you to think about how this model of corporate responsibility takes shape in concrete, measurable ways, such as:

- Making better decisions through predictive analytics: We don't just apply analytics to our clients' businesses and to our own strategic judgments, but also to our citizenship initiatives. For example, Smarter Cities Challenge, now in its third year, is a donation of IBMers' problem-solving expertise to 100 cities around the world, helping city leaders solve critical problems as they collect and analyze data from complex urban systems, to reduce costs, improve infrastructure and make cities more livable.

- Creating greater value through social networks: Social environments amplify benefits not just for IBM's employees and our clients but also for all the stakeholders with whom we collaborate. Consider Supplier Connection, a network of global companies working together to make it easier for small businesses to become suppliers to large companies—helping them to grow and increase hiring. Or take the IBM On Demand Community, in which IBMers share service opportunities and resources, making nonprofit organizations more productive. Through this program, IBMers have contributed more than 15 million hours of service in 10 years.

- Reimagining how services are delivered: On a Smarter Planet, value can increasingly be delivered not just to "segments," but to individuals—whether customers, students, patients or citizens. One notable example is Pathways in Technology Early College High School, or P-TECH, in Brooklyn, New York, where students are mentored by IBMers. P-TECH was cited by President Barack Obama in his 2013 State of the Union address. This radical new educational model for grades 9–14 leads to an associate degree in applied science to help prepare successful students to enter the workforce or complete a college degree. The P-TECH model is expanding throughout New York State to Chicago and to other cities across the United States.

This list could go on—new approaches to leadership development (as in IBM's Corporate Service Corps), supply chain, environmental sustainability, citizen engagement, entrepreneurship and more, built by strong collaborations with government and civil society. This strategy brings successful innovations to scale and builds them to last. Many examples are described and quantified in this report.

The pursuit of a Smarter Planet and the resulting convergence of our business and citizenship strategies have resonated both inside and outside IBM—galvanizing our workforce and inspiring other organizations to consider similar approaches. A rising generation of innovators and leaders is making our planet smarter at the local, city and even global level. For more than 430,000 IBMers across the globe, helping them do so is the opportunity of a lifetime. I hope you will join us in seizing it.

**VIRGINIA M. ROMETTY**
Chairman, President and Chief Executive Officer

# Our Approach to Corporate Responsibility

IBM pursues the highest standards of social responsibility, from how we support and empower our employees, to how we work with our clients, to how we govern the corporation. We aim to regularly exceed those standards. In this section, you will find more detail about our approach to corporate responsibility and corporate citizenship.

IBM is a company of more than 430,000 employees, doing business in nearly 170 countries. We manage a supply chain of more than 20,000 suppliers. We strive to operate our business consistent with the highest standards of corporate responsibility. We do so because we believe this is how a great company is built and sustained. We integrate our commitment to corporate responsibility into many aspects of our company.

We engage a vast network of stakeholders, from clients, to employees, to business partners and investors. And the work we do impacts not only individual companies' business success, but the efficiency and innovation of countries, cities, governments, communities and our planet's critical infrastructure.

Throughout its history, IBM has taken a thoughtful, comprehensive approach to corporate responsibility that we believe aligns with IBM's values and maximizes the impact we make as a global enterprise. In all these efforts, there are several guiding principles we follow.

## Alignment to values

A company must be true to its values in its activities, internally and externally. While strategies and circumstances may evolve, IBM's core values have remained consistent, and are embedded in all our citizenship activities.

- Dedication to every client's success

- Innovation that matters for our company and for the world

- Trust and personal responsibility in all our relationships

We insist on the highest ethical practice. Contributions are not connected to any sales transactions. Our contributions align to our business and use the best assets of our business, but are not made with intent to receive any direct benefit back from the recipient, its officers or directors, or to influence their purchasing decisions.

This commitment is fostered throughout the company and led by senior management, which is ultimately responsible for our economic, environmental and societal performance, as well as compliance with laws, regulations and our various codes of conduct. The IBM Board of Directors and its committees regularly review performance and compliance.

Our corporate responsibility activities are coordinated by a steering committee made up of executives from all relevant functions across IBM. Its chair is IBM's vice president of Corporate Citizenship & Corporate Affairs, who also serves as president of the IBM International Foundation.

## Cross-sector collaboration

No one sector of the economy on its own can solve the problems the world faces. We work closely with the public sector, cities, states and national governments as well as nonprofit organizations and school systems. We engage with highly qualified public and civic entities that are deeply committed to finding solutions and bringing them to scale.

It is essential to identify the best organizations to work with, those that share our view that innovation, management experience and capacity, deep subject matter expertise and commitment to sustainability and scalability are essential to achieve maximum value and impact. And we insist on both excellence and accountability.

Consistent with our values, we treat our collaborators and grant recipients no differently from business customers, giving them the same attention and support. At IBM, we value depth of engagement. We are committed to every client's success. We know that it takes time and hard work to successfully implement technology solutions in organizations. For this reason we tend to form longer lasting and deeper connections with our collaborators and grant recipients.

## Alignment to and integration of the full range of our company resources

The greatest value IBM can offer the world is to apply our innovation and expertise to address significant societal problems. We believe that we need to be part of identifying and then implementing solutions. Finding and implementing the appropriate knowledge and solutions that attack problems at their root cause requires full utilization of IBM's best technologies and particularly the skills of our people. For this reason we favor rolling up our sleeves in full collaboration with partners across other sectors, as opposed to simple "checkbook philanthropy." Further, we empower our employees and others by building their skills to better serve their communities through innovative online resources.

## Thought and execution leadership

We believe our approach of using the best technology in strong collaboration with others is a path to real and lasting change and demonstrates the essential nature of our company. We have been in the forefront of articulating, implementing and promoting these ideas. We also strive to be at the forefront of identifying opportunities and demonstrating practical solutions. In all of our community efforts, as in our business pursuits, we aim to provide real leadership in creating solutions, bringing them to scale and making them sustainable.

## Focus on essential issues

We believe it is important to focus efforts on fewer, more comprehensive programs that help address issues critical to society and IBM. This means prioritizing issues, supporting projects consistent with those priorities and proactively disengaging from efforts that are no longer consistent with those priorities.

Accordingly, we focus on projects designed to help ameliorate significant social and educational conditions that impact quality of life and well-being around the globe, and we focus on subject areas where our expertise and solutions have particular applicability. Key examples of areas we support are:

- Education, particularly in science, technology, engineering and mathematics (P-TECH)

- Cities (Smarter Cities Challenge)

- Entrepreneurship, job training and local community and economic development (Supplier Connection, SME Toolkit)

- Disaster response and preparedness

- The social safety net and health and human services (SafetyNet)

- Capacity building and skills building through services, software and technology grants to nonprofits and schools

Concurrent with all our programs is a company-wide commitment by our employees to community service and volunteerism via the IBM On Demand Community where we marry IBMers' skills to the needs of communities where IBMers live and work.

## Impact and measurement

Whether it's solving the complex problems of the world's cities or developing schools that prepare students for careers, we expect to effect widespread, measurable change. To maximize the leverage of these investments, our relationships with grantees include planning for and incorporating the ability to bring solutions to scale as we seek to transfer solutions to other locations to solve the same or similar problems, which results in longevity and sustainability.

As with our business, we measure our results and adjust our approaches regularly to achieve maximum benefit. Programs receiving IBM support include both process and summative evaluation plans. Major new initiatives are structured to include evaluation plans. Ongoing programs are reevaluated regularly to assess their continued impact and value and to modify them as appropriate to ensure effectiveness and efficiency.

## Good for the business

Good corporate citizenship is also good for business. Strong communities and strong schools go hand in hand with strong business enterprises, which are directly connected to jobs and economic growth, so our good corporate citizenship produces real value for society and all of IBM's stakeholders.

Also, customers are more likely to enter into business relationships with corporations that have strong values and are involved in their communities, and people are much more likely to want to work and stay employed at a company that is a good corporate citizen.

# 2012 Year in Review

At IBM, corporate responsibility is fully integrated with our business model. This is evidenced in the strategy we set, the alliances we establish and the relationships we build with the communities around us. There are four aspects of IBM's corporate responsibility activities that are of particular interest to our stakeholders:

1. The support of our employees and communities.

2. The impact of IBM's products and operations on the environment.

3. The management of our global supply chain.

4. The governance, ethics and integrity of our company.

In this section you'll find a summary of our activity in 2012 regarding these four key aspects of corporate responsibility. You'll also find a few examples of our values at work. For more detailed information please visit our corporate responsibility website.

## Employees and Communities

Our 430,000 employees across the world personify IBM—they represent our brand, they embody our values and they drive our success. And so we continuously strive to find new ways to support our employees' growth, development and satisfaction. Hiring, nurturing and retaining employees continued to be a top priority at IBM in 2012. Over the last year we worked on fostering the alignment of IBMer engagement and client experience. We understand that the more we challenge and support our employees to be at their best, the more effective and satisfied they are in their jobs, which in turn improves customer interaction and satisfaction. To this end we held a broad range of tactical activities across geographies and business groups, from new manager training in India to "IBM University" in the United Kingdom and virtual job fairs in the United States and elsewhere. In 2012 we also intensified our focus on social media in order to cultivate expertise, share health and wellness information, understand employee sentiment, foster collaboration with each other, reach out to new hires and extend learning opportunities. Using analytics to drive action was also an important component of our 2012 activities that helped train HR professionals and identify key performers and effective managers. And we continued to help build employee skills and improve the IBMer experience through IBM's pioneer activities: the Corporate Service Corps, Executive Service Corps and Smarter Cities Challenge.

### Sharing experiences, expertise to reinvent our cities

In 2012, 173 IBMers were deployed to 31 cities around the world to assist local government leaders in their efforts to make their cities smarter and more livable. They worked to develop strategies on topics such as improving efficiency, spurring economic growth and engaging citizens. As part of the second full year of our Smarter Cities Challenge program, a three-year, 100-city program, these IBMers drew on the experience and knowledge gained through their work and immersed themselves in issues critical to each city, such as the administration of healthcare, education, public safety, social services, transportation, communications, sustainability, budget management, jobs and economic opportunity, and energy and utilities. The Smarter Cities Challenge is perhaps the best example of IBM's integrated approach to corporate citizenship. This $50 million competitive grant program provides teams of IBM experts to 100 cities around the world over a

three-year period. Though this is a philanthropic endeavor, it draws on the expertise and knowledge we've gained through building a substantial business in helping cities collect and analyze critical data, gaining a clearer understanding of how these complex governmental systems of systems really work, and especially to identify how they can work better.

"The truth is some serious work has been done, very complete work," said Mayor Francisco de la Torre of Málaga, Spain, which used a Smarter Cities Challenge grant to help develop a sustainable, integrated economic plan based on an expanded culture of entrepreneurship. "Many people have been interviewed, many hours have been spent studying Málaga's reality and I believe they have found a series of key proposals to advance our technological development, drive entrepreneurship and therefore, create jobs."

In November 2012, IBM welcomed more than 150 Smarter Cities Challenge city leaders—including nearly 20 mayors representing every inhabited continent, as well as urban thought leaders and IBM's Smarter Cities Challenge experts—to the Smarter Cities Challenge Summit in Palisades, New York. Following the Summit, IBM Citizenship published a white paper, "How to Reinvent a City: Mayors' lessons from the Smarter Cities Challenge," sharing the insights mayors learned from their participation in this IBM Citizenship initiative.

The Smarter Cities Challenge engages IBM top talent directly in addressing city problems and the development of meaningful solutions, helping build expertise among IBMers and transferring that expertise to city officials to achieve long term results.

## Other employee initiatives

On the employee well-being front, IBM's Integrated Health Services (IHS) team placed particular emphasis on holistic health in 2012. Mental health care coverage is now available to IBMers in many countries, and our IHS team launched programs to help relieve the negative effects of stress. Safety—both in buildings and on the road—was the target of other 2012 well-being programs. We also built on the foundation of programs that drive healthy behaviors through smoke-free policies, nutritious food selections at the worksite and options for physical activity, weight management, infection prevention and disease screening. Meanwhile, we continue to expand the reach of primary care. Two years ago, IBM took an extraordinary step by providing 100 percent coverage for primary healthcare for IBMers in the United States who are enrolled in IBM's self-insured health plans. In 2012, the expansion of fully covered primary care was extended to many other countries including Mexico, the Philippines and Turkey. More information on employee well-being is available in this Report.

We also continued to demonstrate leadership in our support of constituent groups in the areas of lesbian, gay, bisexual and transgender workplace equality and the advancement of women and people with disabilities. We sponsored the 2012 Cultural Adaptability Awareness Week, designed to highlight the programs, activities and resources we've developed to help IBMers cultivate deeper cultural knowledge and insights. More information on diversity is available in this Report.

IBM's long history of investing in the development of its leaders continued to be a top priority during 2012 as we focused on building unique experiences and refreshing core programs to accelerate advancement to leadership positions. These include the Joint Leadership Development Program, the Integration and Values Team and the Client Experience Team.

Understanding the importance of working collaboratively across all of civil society—with lawmakers, regulators, public officials and civic leaders—we contribute our expertise, experience and perspective on some of the most urgent issues facing the world today. In 2012, one important area of focus for us was the worldwide shortage of graduates prepared for careers in science, engineering, technology and math (STEM). IBM is working to address this issue by encouraging action on the part of states, localities and the US Congress. We are working to drive education reform, workforce training and immigration/migration legislation and policy, and have used our localized efforts (for example, Pathways in Technology Early College High School or P-TECH) to develop recommendations and demonstrate innovative educational approaches.

## Better preparing students for promising careers

During his 2013 State of the Union address, President Barack Obama highlighted a new approach to educating high school students, designed to better prepare them for jobs. He was referring to a collaborative effort between IBM, educators and business to develop an innovative school model for grades 9–14 that helps prepare students for college completion or a career in computer science technology or electromechanical engineering technology, and he stated that every student should be offered such opportunities.

The first school to implement this model, called Pathways in Technology Early College High School (P-TECH), opened in September 2011 in Brooklyn, New York. P-TECH is a collaboration between the New York City Department of Education, the City University of New York, New York City College of Technology and IBM. During 2012 the P-TECH model was replicated in four Chicago schools, and plans were developed to spread its innovative model elsewhere. IBM is sponsoring one of these schools, the Sarah E. Goode STEM Academy, in collaboration with the Chicago Public Schools, City Colleges of Chicago, and Richard J. Daley College. Via the leadership of Governor Cuomo, the P-TECH model is also expanding throughout New York State and to other cities across the United States.

This new model for public school innovation brings together the best elements of high school, college and the world of work. Within a six-year, structured and integrated timeframe, students graduate with not only a high school diploma, but an Associate in Applied Science degree, along with the skills and knowledge to continue their studies or be competitive for jobs in the information technology industry. This model was designed to be both widely replicable and sustainable as part of a national effort to enhance career development and technical education.

The P-TECH model was designed not only to better prepare young people for 21st century jobs, but to also address the shortage of skills to fill key positions in the workforce. As the model expands, IBM hopes to work with others to help many more students and better connect education to jobs and spur local economic development.

## Helping communities, employees and the company

In 2008, IBM first launched a unique service program, loosely modeled after the Peace Corps, and designed to deliver deep benefits at the individual, corporate and community levels. Since then the Corporate Service Corps (CSC), has sent nearly 2,000 IBMers to more than 30 different countries, working collaboratively with governments, educational institutions, and nonprofit organizations to address local challenges at the intersection of technology and society to develop sustainable economic solutions. CSC teams comprise eight to fifteen IBMers who spend approximately six months on a CSC engagement—three months in preparation, one month full-time in the local community and two months in post-service work. This blending of social responsibility and business expertise produces a triple benefit: premier leadership development for civic-minded individuals, pro bono problem solving for communities in need, and a greater understanding of new markets for IBM.

In 2012, CSC provided services to 32 communities in 20 countries, engaging in 100 vitally important projects. One example is a CSC team that worked with the Kenyan government, the US government and the Presidents Emergency Fund for AIDS Relief (PEPFAR), in the fight against cervical cancer. The groups worked collaboratively to solve the information management challenges that arise from collecting data between more than 4,000 clinics and six levels of healthcare facilities spread over a large geographical area serving 15 million women. With the CSC team's help, the program will collect more reliable data to improve screening rates, which have already jumped from almost none to 70 percent in five years. Work like this helped earn IBM the No.1 ranking in The Civic 50, a ranking of America's most community-minded businesses published by *Businessweek* in November 2012. The Civic 50 measures how companies use their time, talent and financial resources to improve their communities. The award recognizes the continuing and growing impact and leadership of our global corporate service work.

# Environment

IBM has long maintained an unwavering commitment to environmental protection, formalized in a corporate environmental policy in 1971. Our policy calls for IBM to be an environmental leader across all of our business activities—from our research, operations and products to the services and solutions we provide our clients.

Our comprehensive environmental programs range from energy and climate protection to pollution prevention, chemical and waste management to resource conservation and product design for the environment. IBM's energy and climate programs are highlighted here because of the increased global interest in this topic. In 2012, we achieved outstanding operational results and continued to leverage our research, technologies and solutions to help clients and the world grow in ways that are more energy efficient and protective of the planet. More information on environmental issues is available in this Report.

## Energy conservation across the enterprise

In 2012, IBM's energy conservation projects delivered savings equal to 6.5 percent of our total energy use, significantly exceeding our annual goal of 3.5 percent. These projects avoided the consumption of 336,000 megawatt-hours (MWh) of electricity and 215,000 million Btu of fuel oil and natural gas, representing the avoidance of 155,000 metric tons of $CO_2$ emissions. They also saved $35 million in energy expense. From 1990 through 2012, our annual energy conservation actions have avoided 6.1 billion kWh of electricity consumption, avoided 3.9 million metric tons of $CO_2$ emissions (equal to 57 percent of the company's 1990 global $CO_2$ emissions) and saved $477 million.

In 2009, amid business growth and continued increases in global energy prices, IBM created an aggressive strategy to conserve 1,100,000 MWh of energy by year-end 2012. This was a substantial undertaking because 1,100,000 MWh represented over 20 percent of the total energy IBM consumed during 2008. Over the last four years, an integrated team from IBM's environmental and finance staffs, real estate organization and business units saved 1,246,000 MWh of energy through conservation and efficiency, exceeding our target by 13.3 percent. More than 6,000 individual projects were completed across more than 500 facilities in 56 countries.

## Data center energy efficiency

IBM manages a diverse portfolio of data centers all over the world. In 2012, the European Commission, the executive body of the European Union (EU), awarded 43 IBM data centers in 19 countries "Participant" status on data center energy efficiency, based on the EU Code of Conduct for data centers. The registered data centers represent more than 70 percent of IBM's strategic outsourcing data center space in the EU. This honor represents the largest portfolio of data centers from a single company to receive this recognition to date.

## Performance against our 2nd generation climate protection goal

As of year-end 2012, we reduced our operational $CO_2$ emissions by 15.7 percent through conservation and purchases of renewable energy, exceeding the company's stated goal of a 12 percent reduction by 2012 using 2005 as the base year. This achievement is particularly noteworthy considering that between 1990 and 2005 IBM had already reduced its operational $CO_2$ emissions by an amount equal to 40 percent of the company's 1990 emissions through energy conservation.

## Research to advance renewable energy

Scientists from IBM Research are working with others to develop an affordable photovoltaic system that can convert 80 percent of incoming solar radiation into useful energy. The design is based on a low-cost, large dish-like concentrator and micro-channel cooled high performance photovoltaic chips that can be mass produced. If successful, it could provide sustainable energy and potable water to locations around the world including southern Europe, Africa, southwestern United States, South America and Australia.

# Supply Chain

IBM conducts business with suppliers located in nearly 100 countries, with social and environmental responsibility being a major aspect of our business relationship. We work closely with our suppliers to help them attain improvements throughout our global supply chain across various aspects of corporate responsibility. This work begins with our requirement for suppliers to implement and sustain a Social and Environmental Management System, which encourages suppliers to set voluntary goals, measure their performance and report publicly in order to increase transparency across the entire supply chain.

In 2012, we continued our supply chain assessment activities conducting 377 initial audits and re-audits of suppliers located in 29 countries. These third-party audits measure supplier compliance to the Electronic Industry Citizenship Coalition (EICC) Code or the IBM Supplier Code of Conduct. Though there is more to do, we saw continued improvement in code compliance across our global supply chain.

During 2012, IBM and other members of the EICC, the Global e-Sustainability Initiative (GeSI), and companies from other sectors continued working toward the goal of achieving a supply chain with socially responsible sources of tin, tantalum, tungsten and gold. EICC/GeSI updated its web-based listing of Conflict-Free Smelters highlighting companies that successfully completed their rigorous assessment. The CFS assessment is directed at smelters and refiners that play a crucial role in the extended supply chain, as they are the link where concentrated ores are converted into the higher level materials that are used in technology products. The year also saw the release of the updated EICC/GeSI Conflict Minerals Reporting Template and Dashboard. This survey provides companies a common format for their upstream suppliers to identify the use of the four focus materials, smelters used and—when known—the country of origin of the raw materials. IBM has deployed successive versions of this survey to account for its use of the four materials and is providing consolidated results to its clients.

IBM also saw continued growth in its base of diverse suppliers, with purchases reaching $3.3 billion for both first-tier and second-tier companies. In parallel, we maintained our support and engagement with organizations worldwide that are dedicated to the nurturing and development of this important element of the extended supply chain. More information on our supply chain efforts is available in this Report.

# Governance, Ethics and Integrity

At IBM, a rigorous set of corporate governance systems facilitate our ability to achieve the highest standards of ethics, transparency and integrity. One such system is our Corporate Responsibility Steering Committee, composed of senior executives who meet periodically to provide leadership and direction on key corporate responsibility issues. The Steering Committee is supported by our Corporate Responsibility Working Group, which includes representatives from 10 functional areas who meet monthly to manage IBM's corporate responsibility activities and stakeholder engagement across the company. We also work shoulder-to-shoulder with communities, governments and the social sector to engage and collaborate with stakeholders.

Our Business Conduct Guidelines reflect our longstanding commitment to ethical conduct and decision-making. Every IBMer receives training in the Guidelines every year to promote the highest ethical standards in our work.

We have 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. In 2012, we continued to expand risk education and training, and focused on applying technology, tools and analytics to support risk management.

We take privacy and security very seriously at IBM, and we consider these issues in everything we do. We are aware that institutions of all types must work to earn the public's trust in their ability to steward information, and in turn we as consumers must take educated steps to protect ourselves and our families. In 2012, IBM launched a number of initiatives around privacy and expanded others already underway. For example, we worked with the Future of Privacy Forum to develop a consumer trust seal, we continued our involvement with the Pro Bono Privacy Initiative to help human services agencies navigate privacy and data protection issues, and we furthered our work on the Privacy by Design program. More information on our integrity activities is available in this Report.

# About this Report

IBM's Corporate Responsibility Report is published annually during the second quarter of the subsequent calendar year. This report covers our performance in 2012 and some notable activities during the first half of 2013.

To select the content for inclusion in the 2012 Corporate Responsibility Report, we have used the Global Reporting Initiative (GRI) Reporting Principles of materiality, sustainability context, stakeholder inclusiveness and completeness. IBM also provides on its corporate responsibility website a comprehensive GRI Report utilizing the GRI G3 Sustainability Guidelines at a self-declared GRI Applicant Level A.

Unless otherwise noted, the data in the Report covers our global operations. More details about IBM's corporate responsibility activities and performance are available here. Information about our business and financial performance is provided in our 2012 Annual Report. IBM did not employ an external agency or organization to audit the 2012 Corporate Responsibility Report.

# Communities

It's not enough to develop world-class technology, services and expertise—at IBM we realize we must directly apply these things to the communities in which we live and work in order to have a positive impact. In this section, you will find examples of the ways we practiced this approach over the course of 2012 and into 2013.

# Education in Communities

Educating children is a top priority in communities around the globe. At IBM, we understand that strong educational foundations are essential for preparing and supporting our children and young adults as they develop the skills they need to lead the next generation.

In 2012, our portfolio of educational programs continued to evolve and grow as we work to help strengthen teacher instruction and better meet the learning needs of children.

## 9–14 School Model: Pathways in Technology Early College High School (P-TECH)

Over the last five years, a great deal of attention has been paid to the shortage of jobs in the United States and elsewhere. But far less attention has been paid to the shortage of skills. There are more than 29 million middle skill jobs—those requiring postsecondary degrees—currently available in the United States, with these jobs paying more than $35,000 per year on average, according to a recent report by Georgetown University. Many of these jobs pay significantly more; nearly 10 million jobs pay more than $50,000 annually and 3.6 million pay more than $75,000 annually. Data also shows that over the next 10 years, 14 million new jobs requiring these same skills will be created. And those requiring science, technology, engineering and math (STEM) expertise will offer the highest pay among them, according to Harvard University's Graduate School of Education.

New education models can and must play a key role in resolving this shortage by better preparing young people for twenty-first-century jobs. That's why IBM has worked with educators and business to develop an innovative and integrated school model for grades 9–14. The first school, called Pathways in Technology Early College High School (P-TECH), opened in September 2011 in Brooklyn, New York. P-TECH is a collaboration between the New York City Department of Education, The City University of New York (CUNY), New York City College of Technology and IBM.

This new model for public school innovation brings together elements of high school, college and the world of work. Within a six-year, structured and integrated timeframe, students will graduate with an Associate in Applied Science degree, along with the skills and knowledge they need to continue their studies or step seamlessly into jobs in the information technology industry. This model was designed to be both widely

replicable and sustainable as part of a national effort to enhance career development and technical education. To that end IBM developed a playbook to help interested parties replicate P-TECH.

Already the P-TECH model has been replicated in four Chicago schools in September of 2012. IBM is spearheading one of these schools, the Sarah E. Goode STEM Academy (Goode), in collaboration with the Chicago Public Schools, City Colleges of Chicago and Richard J. Daley College. Other companies involved in the Chicago initiative include Cisco, Motorola and Verizon.

## A public school model for all students

Both P-TECH and Goode are public schools and operate with existing public school funding. The schools do not screen students, meaning that there are no tests or grade requirements for admission; students only need to express interest in attending. Student learning is structured as an integrated sequence of high school and college coursework that culminates with students earning an Associate in Applied Science degree awarded by the school's affiliated college. Each student moves through a personalized academic pathway, aligned to college and career requirements, which is closely monitored by teachers and advisors based on the student's individual needs and performance. The focus is on mastery, not seat time.

In order to help prepare students for a career, the model features special Workplace Learning courses. As part of this strand, IBM has identified the skills necessary to fill entry-level positions in the IT industry and worked with high school and college faculty to map those skills to the curriculum. In addition, students are matched in one-to-one relationships with IBM mentors, participate in project-based learning activities, meet guest speakers, participate in structured workplace visits and, in future years, will tackle skills-based, real-world projects through internships and apprenticeships.

## National spotlight

The P-TECH model has been widely covered in the media, including articles in *The New York Times*, *The Wall Street Journal* and *TIME Magazine*. It was referenced in President Obama's 2013 State of the Union speech, has been highlighted by the Mayors of New York City and Chicago, the Governor of New York State and also by US Secretary of Education Arne Duncan. The P-TECH model is consistent with the US Department of Education's "Blueprint" for Career and Technical Education reform.

A number of states, cities, private foundations and private sector companies have expressed interest in supporting a broad expansion of the model in other geographies—both urban and rural. In February of 2013, Governor Andrew M. Cuomo announced that New York would be the first state to replicate the P-TECH model with 10 new schools—one in each of the state's 10 economic development regions. IBM hopes to serve as industry lead for two of these schools.

*"We need to give every American student opportunities like this."*
**PRESIDENT BARACK OBAMA**

As the model expands, the challenge will be to engage more companies and educators to reach many more students in efforts to better connect education to jobs and spur local economic development.

"Let's also make sure that a high school diploma puts our kids on a path to a good job. Right now, countries like Germany focus on graduating their high school students with the equivalent of a technical degree from one of our community colleges, so that they're ready for a job. At schools like P-TECH in Brooklyn, a collaboration between New York Public Schools, the City University of New York, and IBM, students will graduate with a high school diploma and an associate degree in computers or engineering. We need to give every American student opportunities like this," said President Barack Obama during the State of the Union 2013 speech.

## Academic Achievements—Pathways in Technology Early College High School (P-TECH) in Brooklyn, New York

### NYC High School Standards

- **98%** were promoted from grade nine to ten.

- After only two semesters, **72%** of students passed both English and math Regents with a score of 65 or better, meeting NYC high school graduation requirements.

- After only three semesters, **80%** are meeting or exceeding the state standard of scoring proficient on two core Regents exams in English and math.

### College Readiness Indicators

- After only two semesters **48%** of students met the CUNY college readiness indicators by scoring a 75 on the English Language Arts Regents or an 80 on a Math Regents exam.

- At the start of the fourth semester, **50%** had met college-ready benchmarks in both English and math, which will allow over 60 students to enroll in college courses at the New York City College of Technology.

### College Credit Completion

- Within three semesters, **48** students completed at least one college course at City Tech, and more than 90% of students earned a C or higher in technical courses.

- Currently, **74** students are enrolled in at least one college course.

# Teachers TryScience

IBM understands that preparing the next generation of innovators requires great science teachers with the skills and knowledge to educate, inspire and motivate students. To that end, we continue our efforts to provide teachers with the resources they need to strengthen their instruction and better prepare students for the jobs of the 21st century, which will increasingly be in STEM fields, according to the US Department of Commerce.

In the spirit of IBM's TryScience online program for students, Teachers TryScience was launched in 2011 as a collaborative effort with the New York Hall of Science and TeachEngineering.org. The program is designed to help teachers improve their instruction in project-based learning by providing free and engaging lessons, integrated with pedagogical strategies and resources. The site also provides social networking tools that enable educators to comment on and rate the lessons and resources, submit their own teaching materials and form public and private groups to engage in focused discussions with colleagues in the same district or around the globe.

In 2012 we strengthened the Teachers TryScience website with the following efforts:

- IBM teamed with the National Board for Professional Teaching Standards to create 15 videos of board-certified teachers instructing Teachers TryScience lessons. Based on the knowledge that an important way for teachers to improve their teaching is to observe and learn from their peers, these videos feature key teaching moments and teacher reflections. Future plans include working with Achieve, Inc. to link teacher lesson plans to the new common core standards in science.

- In 2011, IBM launched THINK as an exhibit at Lincoln Center in New York City, one of several initiatives commemorating IBM's Centennial anniversary. It now has a home at Innoventions West at Epcot®, part of the Walt Disney World® Resort in Orlando, Florida, to show how the world can work better with the help of technology. A free app was developed around the concept of THINK, and now IBM has teamed with the New York Hall of Science to develop a set of Teachers TryScience lesson plans based on the THINK app. These lessons enable teachers to help students better understand some of the scientific concepts behind the THINK exhibit and inspire them to be innovators in their daily lives.

# Reading Companion

Literacy is a key contributor to the economic growth of any region. Launched more than a decade ago, Reading Companion® is IBM's web-based literacy initiative that uses voice recognition technology to help children and adults learn to read in English. Developed by IBM researchers working together with schools and nonprofit organizations, Reading Companion is an effective and easy-to-use technology that assists individuals as they learn to read. This innovative software "listens" and provides feedback, enabling emerging readers to practice reading and their English pronunciation as they acquire fundamental reading skills.

Reading Companion has proven to be an excellent resource to IBM employees, teachers from existing grant sites and others who are interested in contributing to the growing virtual library of original content in the form of "e-books," which are practice-reading books that can be created using the Book Builder publishing tool in Reading Companion. Once e-books are published on the website, they become part of the Reading Companion virtual library that is available to all schools and nonprofit organizations participating in this program around the world. In 2012 alone, 100 new titles were added to the Reading Companion virtual library of e-books from authors worldwide. This brings the total number of books available from the virtual library to 456, half of which are for young learners. Reading Companion is currently being used in more than 3,200 schools and nonprofit organizations in 49 countries. Approximately 160,000 users are participating in this grant program.

In 2012, Austin Free-Net (AFN), a nonprofit organization dedicated to providing digital opportunities to underserved adults in Austin, Texas, started an e-book-writing campaign based on IBM's Reading Companion. AFN clients utilize Reading Companion to exercise their recently acquired computer skills and improve their reading, while learning valuable information along the way. And AFN volunteers have written e-books that can be read by Reading Companion users worldwide.

Additionally, the British Council contributed several stories from their LearnEnglish and TeachingEnglish websites, along with accompanying lesson plans for many of the e-books. With more than 70 years of English language teaching and learning experience, the British Council supports millions of teachers and learners around the world by offering resources and training materials.

## 100

The number of new titles added in 2012 to the Reading Companion virtual library of e-books from authors worldwide, bringing the total to 456.

*"IBM's Reading Companion gives our adult learners the ability to improve their reading skills while creating their own unique story. This program opens minds and changes lives."*

**MEREDITH SISNETT**
Trainer with Austin Free-Net

# KidSmart Early Learning Program

IBM's KidSmart Early Learning Program enriches pre-kindergarten curriculum with interactive teaching and learning activities through the use of technology. IBM's KidSmart program features Young Explorer™, a computer housed in brightly colored, child-friendly Little Tikes™ furniture and equipped with award-winning educational software to help children learn and explore concepts in math, science and language. Since the inception of the KidSmart Early Learning Program in 1998, IBM has donated more than 64,000 Young Explorers to schools and nonprofit organizations in 60 countries, reaching more than 110,000 teachers and serving more than 10 million students.

Increasingly, countries around the world have identified investing in quality early childhood education as vital for the future success of children. In 2012 the US Department of Education announced Race to the Top—Early Learning Challenge (RTT-ELC), a grant competition focused on improving the quality of learning and development programs for young children. IBM made strategic investments in several states that were awarded RTT-ELC grants including Maryland, Massachusetts, Minnesota, Rhode Island and North Carolina, donating 270 Young Explorers, consulting services and software together valued at over $800,000.

As part of our response to Hurricane Sandy, which devastated coastal areas in the Northeastern United States during the fall of 2012, 226 Young Explorers were donated for use in shelters, schools and locations where families receive services.

Also in 2012 a Corporate Service Corps (CSC) team of IBMers was deployed to the Eastern Cape of South Africa to further develop a robust tool for KidSmart monitoring, evaluation and teacher professional development. The tool was initially created by a previous CSC team working in Limpopo province. Informed by an agreement with the national Ministry of Education, the system incorporates systematic evaluation of the quality of teaching and learning, ongoing professional development, collaborative working and full curriculum integration. The monitoring and evaluation tool will also be used by the Ministry of Education as a basis for evaluating the implementation of South Africa's new national curriculum. Based on the successful performance of the system in the Eastern Cape and Limpopo provinces, the South African Ministry of Education plans to extend this initiative nationwide. It will also be shared with other African countries implementing the KidSmart program.

## 64,000

The number of Young Explorer™ child-friendly computers IBM has donated since the KidSmart Early Learning Program began in 1998

# Transition to Teaching

Transition to Teaching is an extension of IBM's work in education and community service. Since 2006, IBM has supported those employees who want to begin second careers as fully accredited teachers in STEM subjects in their local communities. Transition to Teaching provides employees with guidance and funding to help them transition into teaching as their next career move, while still working at IBM. IBM was the first company to provide its employees with the opportunity to pursue a second career as a K–12 math or science teacher.

By 2012, the number of employees who are participating in the Transition to Teaching program topped 100, and 32 graduates have already completed their teacher certification and are teaching in classrooms or leading online courses in the United States.

Acknowledging that a shift in vocation takes time and training, the Transition to Teaching initiative helps underwrite the costs while employees pursue the education and training experiences required for teacher certification—combining traditional coursework, online courses and practice teaching. Employees are able to choose the certification program that meets their needs so they can get the necessary education courses as well as assistance during the student teaching period.

IBM continues to share what it has learned about the critical path to a second career in teaching with other companies, as well as with the education community. We hope to help develop a thriving talent pipeline for K–12 science and math teachers.

## 32

The number of IBMers who have completed their teacher certification and are currently teaching in classrooms or leading online courses.

# University Relations

Collaborating with the academic community has been critical to IBM throughout the company's history. We believe that higher learning is central to the advancement of our company, and civilization in general. That's why IBM works with thousands of universities around the world on a number of levels; we conduct collaborative research and development, we provide awards and donations and we inform curriculum to help develop the next generation of science and technology innovators.

Among the highlights in 2012:

- **Cybersecurity fundamentals program**—While many universities are building courses and degree programs in these areas, there is a shortage of faculty to teach these courses. To help train faculty, IBM developed a 40-hour "train the trainer" program in cybersecurity fundamentals, delivered as a pilot to 25 professors from six universities in Costa Rica, where IBM has a Global Delivery Center. IBM is making training materials available to faculty around the world to help increase the number of graduates with these critical skills.

- **Collaborative Innovation Centers**—Technology is changing at an ever-increasing rate and this has led to some well-defined skills shortages. Because there aren't enough skilled practitioners, opportunities are being left unfulfilled. IBM is working with universities on regional economic development projects where critical skills can be consolidated into a Collaborative Innovation Center (CIC), funded by governments and industry collaborators. CICs can comprise one or more universities and perform needed research to further develop disciplines such as business analytics.

  In 2012, IBM worked with the Government of Nova Scotia, Nova Scotia Business, Inc. and a consortium of six higher education institutions to create curriculum and research programs to help equip students with the high-demand analytics skills needed to drive the local economy. In conjunction with this initiative, IBM entered into a services agreement with the Government of Nova Scotia, and an agreement with Nova Scotia Business Inc. to assist in the establishment of an IBM Services Delivery Center that will create up to 500 new highly skilled jobs within Nova Scotia.

- **CrisisTracker**—Developed as part of the Open Collaboration Research program between IBM Research and University of Oulu in Finland, CrisisTracker is a tool that captures Twitter activity around large-scale events such as natural disasters as they unfold in real-time. By automatically tracking sets of custom keywords found in tweets and building relationships among them, the system creates content that can be analyzed to provide disaster recovery decision-makers with critical information. CrisisTracker was piloted in collaboration with IBM during the recovery stages of Hurricane Sandy in the Northeastern United States.

- **Students for a Smarter Planet**—Designed to involve students in creating projects that benefit communities, Students for a Smarter Planet was launched in 2011 as a coalition of local, student-led organizations and individuals who collaborate with other student groups, professionals and policy makers to develop and implement innovative solutions with a positive impact. In 2012, student projects included the development of a smart classroom at the University of Colima in Mexico and a solar-powered safety zone at North Carolina State University.

# Technology in Communities

Organizations have an obligation to leverage their greatest strengths to help overcome the challenges society faces today. At IBM, that means applying technology in creative and innovative ways to benefit our communities.

## World Community Grid

Launched in 2004, World Community Grid advances scientific research into humanitarian issues by harvesting unused computing capacity donated by volunteers across the globe. In the past, solving complex scientific problems required the use of supercomputers; with the grid, research can be dramatically accelerated by making vast computing power available for free to scientists around the world engaged in nonprofit, humanitarian projects.

Research supported by World Community Grid includes efforts to find cures for muscular dystrophy, influenza, childhood cancer, dengue fever and HIV/AIDS. Other projects include researching inexpensive water filtration systems and low-cost materials for capturing solar energy.

In 2012, two new World Community Projects were launched.

**Computing for Sustainable Water**—Issues of water quality and conservation affect people all over the world; more than 1.2 billion people lack access to clean, safe water. World Community Grid is helping researchers study watershed sustainability and the effects of human activity on a large watershed.

**Say No to Schistosoma**—Schistosomiasis is a tropical disease that kills 200,000 people each year and impacts more than 207 million people. Caused by parasitic worms that are transmitted by freshwater snails, Schistosomiasis is second only to malaria in its socioeconomic devastation. World Community Grid is helping researchers find new compounds to accelerate the discovery of drugs to combat tropical disease.

To find a treatment for this deadly disease, researchers at Inforium University in Belo Horizonte and Fiocruz Minas, Brazil are using World Community Grid to run computer simulations that map the interactions of millions of chemical compounds with selected target proteins. Instead of performing expensive and time-consuming laboratory experiments, computer simulations of millions of experiments can accelerate the search for effective drug therapies—but these require a degree of computing power not typically available to this type of research. With World Community Grid, the researchers estimate they will slash testing and evaluation time from more than 30 years to less than one year.

## 2.2 million

The number to date of computing devices registered to help accelerate critical nonprofit, humanitarian research on 10 current research projects, returning over 1 billion results.

Other active World Community Grid research projects are:

- GO Fight Against Malaria The Scripps Research Institute, USA (launched November 2011)

- Drug Search for Leishmaniasis PECET, University of Antioquia, Colombia (launched August 2011)

- Computing for Clean Water Tsinghua University, China (launched August 2010)

- The Clean Energy Project Harvard University, USA (launched June 2010)

- Help Cure Muscular Dystrophy Universite Pierre et Marie Curie, France (launched May 2009)

- Help Fight Childhood Cancer Chiba University, Japan (launched March 2009)

- Help Conquer Cancer University of Toronto, Canada (launched November 2007)

- Human Proteome Folding New York University, USA (launched July 2006)

- FightAIDS@Home The Scripps Research Institute, USA (launched November 2005)

The key to World Community Grid is scaling capacity. That's why every year IBM actively promotes the project and encourages new members to sign up. In 2012 we continued our social media strategy, including outreach on LinkedIn, Citizen IBM, Facebook and Twitter. During the year, the grid added more than 289,900 new devices, contributed more than 142,700 years of computer run time and returned more than 347 million discrete results to the research projects.

World Community Grid is a powerful example of how IBM tightly integrates its expertise as a technology and services company with community service efforts. Over 600,000 members from around the world have linked 2.2 million laptops and other computing devices to World Community Grid to donate more than 700,000 years of total computer run time. World Community Grid has worked with over 440 organizations, including the Executive Council of New York, Harvard Engineering and Applied Sciences, and Tech-Pacifica to connect volunteers to the Grid. Research scientists who have used World Community Grid have published 35 peer-reviewed research papers—five in 2012 alone—that discuss their findings, demonstrating industry recognition of the important contributions of World Community Grid.

# 600,000

The number of members from around the world who have linked 2.2 million laptops and other computing devices to World Community Grid to donate more than 700,000 years of total computer run time.

# Services Grants

IBM strives to make its donations to the nonprofit community sustainable, impactful and scalable. We closely tie many of our contribution offerings to our business expertise and product offerings. In this way, IBM eschews "checkbook philanthropy," and instead engages nonprofit organizations on a deeper, more collaborative level. This approach helps us better understand the true needs of these organizations in order to deliver greater value, and it helps the organizations better understand IBM.

IBM Services Grants are designed to offer nonprofit organizations and schools a chance to enhance their operational performance and assist them in delivering better services to the community. These offerings were developed in collaboration with our grantees in the nonprofit community and are designed to help recipients improve process and infrastructure, as well as provide them with access to IBM consultants with significant expertise in business areas such as strategic planning, project management and leadership training. By refining these core competencies, grantees are often able to solve current operational problems and make strategic decisions to build a strong organization for future growth. The Services Grants often involve in-depth workshops or technology services, such as analytics and cloud collaboration software.

In 2012, IBM expanded the program both within the United States and abroad. The company gave more than 350 Services Grants worldwide during the year, with a combined market value of approximately $9 million.

The program will continue to evolve as the needs of the nonprofit community change and IBM's business offerings grow. Currently IBM offers 14 different types of Services Grants in three categories:

- Capacity building

- Strategic/growth

- Integrated/premier

## Services Grants spotlight

Trócaire, the official overseas development agency of the Catholic Church in Ireland, works in more than 27 countries to fight poverty. In 2012 the organization was awarded a Services Grant from IBM for training in its SPSS (Statistical Package for the Social Sciences) software that examines existing operational and market data to uncover unexpected patterns and associations. With this software training, the agency has significantly improved its analysis of client data in key areas.

*"We are very grateful for the training on SPSS, which has improved our ability to better analyze data to help our beneficiaries, some of the poorest people in the world."*

**JUSTIN KILCULLEN**
Executive Director of Trócaire

## 350+

Services Grants IBM gave out worldwide in 2012, totaling approximately $9 million and more than doubling the 150 Services Grants given in 2011.

# Disaster Relief

Being a responsible company in the world today means responding to our communities during times of need. Over the years, IBM has learned effective ways to combine our technology and expertise to bring needed relief and recovery to disaster areas.

IBM's mobilization efforts in the immediate aftermath of a disaster focus on providing information technology to government and relief organizations to enhance their capacity to gather, manage and analyze critical information. We have taken this approach to 38 disasters in 22 countries since 2001.

## Hurricane Sandy

On October 31, 2012, Hurricane Sandy struck the East Coast of the United States, devastating the coastal areas of Connecticut, New York, New Jersey, and Delaware, as well as eastern Pennsylvania. In our ongoing response to this disaster, IBM's role has been focused on offering real solutions to aid in recovery. The total market value of IBM's post-Sandy efforts for 2012 and continuing in 2013 is estimated at $1.4 million.

Among our efforts in 2012:

- A team performed IT inventory and assessment at nine police sites in New York that suffered extensive damage.

- A consulting team created a custom workshop targeted at economic development corporations supported by Small Business Services using our SME Toolkit, which provides entrepreneurs and small businesses with free information critical to burgeoning businesses in areas such as finance, accounting, international business, marketing and human resources.

- A grant of consulting services to Points of Light helped launch a volunteer reception center run by the Health & Welfare Council of Long Island and Long Island Voluntary Organizations Active in Disaster.

- A team of IBM consultants provided extensive input in establishing the Hurricane Sandy New Jersey Relief Fund. "Mary Pat and I are grateful for the support IBM gave to the Hurricane Sandy New Jersey Relief Fund. Because of their knowledge and expertise, the Fund is able to provide relief to New Jersey families and communities in an efficient and effective manner," says Governor Chris Christie of New Jersey.

- "When we created a response plan for New Jersey and established our relief fund, IBM was one of the first companies to reach out and offer help to us. They then brought talent and expertise to establish our overall operations, a technology plan and our grant-making strategy. We could not have launched the fund without the skills and expertise of the team at IBM," adds Mary Pat Christie, New Jersey First Lady.

*"Mary Pat and I are grateful for the support IBM gave to the Hurricane Sandy New Jersey Relief Fund. Because of their knowledge and expertise, the Fund is able to provide relief to New Jersey families and communities in an efficient and effective manner."*

**CHRIS CHRISTIE**
Governor of New Jersey

## 226

The number of Young Explorer computers donated to shelters, schools and family-services locations in areas affected by Hurricane Sandy.

- Through IBM's KidSmart Early Learning Program, 226 Young Explorer computers equipped with award-winning educational software were donated for use in shelters, schools and locations where families received services.

- 1,200 IBM Trauma Guides offering practical guidance to caregivers, volunteers and relief workers on spotting signs of trauma in children and adults were printed and shipped to two nonprofits, which distributed them to paraprofessionals and volunteers.

- The IBM SmartCloud for Social Business platform was donated to the Hurricane Sandy New Jersey Relief Fund, the NYC Small Business Services and Pro Bono Net to facilitate inter- and intra-agency collaboration and communication.

- CrisisTracker was deployed to capture a subset of tweets about Sandy and cluster them into like "stories" evaluated by IBM volunteers for veracity and geo-coding. Processed stories appeared on a GIS interface, showing the locations that tweets were associated with.

IBM continued with other projects in early 2013 as recovery efforts progressed.

## Other efforts

In response to the tragic shootings at Sandy Hook Elementary School in Newtown, Connecticut, IBM volunteers worked to help restore the website that had been established to raise funds and then crashed during the holidays. In addition, more than 100 IBM volunteers were involved in activities including handling calls to the call center and helping to establish a mentoring program in math and science at the local middle school and high school. Working closely with the school district, IBM also donated technology to further assist in these programs.

Much of our humanitarian disaster response activity in 2012 was carried out through local or regional IBM involvement. Highlights of this 2012 activity included:

- In May a series of large earthquakes occurred in the northern region of Italy. Local IBMers responded by donating KidSmart Young Explorer systems and by providing SmartCloud services to establish a website used by local business owners.

- In June, wildfires swept through the state of Colorado. Local IBM funds were provided for the Teaming for Technology project at Mile High United Way in Denver, which works to make nonprofits more technologically efficient.

- In July, severe flooding in Russia occurred in Krasnodar Krai, near the coast of the Black Sea. IBMers responded through their local International Federation of Red Cross chapters by personally volunteering their time and skills and by donating supplies for the city of Krymsk.

# IBM SafetyNet with Nonprofits

Nonprofit social service programs deliver much needed benefits to our most vulnerable citizens. And while private contributions are valued by these agencies, much of their support comes from government contracts. In cities like New York, government funding for nonprofits engaged in social services is in the billions of dollars. Yet securing the funding required to provide these crucial services is becoming more difficult, as donors and government agencies are requesting methodical and detailed accounting of how money is spent in order to better document program effectiveness. As most nonprofit organizations run lean operations with minimal staff, they struggle to gather the needed data from disparate sources and are ill equipped to track information and quickly generate detailed reports.

In 2011 IBM began developing an application to help simplify these important functions and improve the data provided to service workers to improve services to families. Called IBM SafetyNet with Nonprofits, this cloud-based, open-source application reduces administrative time and costs and helps these groups access data to provide better services to a growing client base more effectively and efficiently. The application is currently in use in a handful of settlement houses in New York and is being packaged for broader availability later this year.

The data management application, accessed through a web browser, helps organizations standardize contract, program and client information to improve communications and establish common processes. Fragmented data is brought together into a central repository in the cloud, offering a single point of entry and a comprehensive view of an organization's information to better track and manage a client's progress through a program. The application also enhances data analysis capabilities to speed decision making and improve report generation.

The market value of the SafetyNet application, services and maintenance is approximately $125,000 per organization. By sharing our information experience and capabilities, we believe that SafetyNet can improve the delivery of a wide range of nonprofit services.

*"IBM SafetyNet allows our children and youth department to track information, run reports and have a more accurate picture of program performance that helps provide better programs and services for our clients…"*

**CAROLYN MCLAUGHLIN**
Executive Director
BronxWorks

# Service in Communities

At IBM, creating a culture that promotes service and skills-based volunteerism is essential to our corporate citizenship efforts. These priorities are an important part of what it means to be an IBMer.

## Employee Donations and Programs

IBM teams with employees to support organizations and causes in the communities where they live and work. Community-level grant making and extensive volunteer programs help our employees become personally involved in community projects.

### Employee Charitable Contributions Campaign

The annual Employee Charitable Contributions Campaign (ECCC) in the United States provides employees and retirees with an opportunity to contribute to more than 10,000 community organizations. These organizations offer a wide array of services including environmental, cultural, health and human services, literacy and disaster relief. The 2012 ECCC generated about $34.2 million in support to communities in the United States. The Employee Charitable Fund program in Canada provided about $3 million in contributions to Canadian organizations. IBM salutes the generosity of its employees and is proud to provide these programs to assist them in support of their communities.

**$34.2 million**

The total of US employee and retiree contributions to the Employee Charitable Contributions Campaign in 2012.

### Matching Grants

The IBM Matching Grants program enables US employees and retirees to increase the value of their donations to educational institutions, hospitals, hospices, nursing homes and cultural and environmental organizations with a matching gift from IBM. The recipient organization can choose to receive its gift in the form of either cash or IBM equipment. Hundreds of educational institutions and thousands of nonprofit organizations have benefited from contributions by IBM and our employees through this program. Recipients of IBM Matching Grants are a variety of organizations that includes the Nature Conservancy, Memorial Sloan-Kettering Cancer Center, the Educational Broadcasting Corporation, the Metropolitan Opera, the University of North Carolina and Yale University. In 2012, 6,395 organizations received grants with a total value of $12 million.

**$12 million**

The total value of matching grants received by 6,395 organizations in 2012.

## Community Grants

IBM Community Grants support employees and retirees around the globe who regularly volunteer with nonprofit organizations. When IBM volunteers work with eligible community organizations for a minimum of 40 hours, the organization qualifies for either a cash or equipment grant. Grants begin at $500 and may be higher if the IBM volunteer uses Activity Kits from the IBM On Demand Community site, or if IBM volunteers work in teams. Organizations may receive one Community Grant per calendar year. In 2012, community organizations received grants with a value of $4 million through IBM Community Grants.

## On Demand Community

One of the most common ways IBMers demonstrate their commitment to social responsibility and citizenship is through service. The focus of this service activity is IBM's On Demand Community, an online community that offers programs, presentations, software and IBM professional expertise to facilitate volunteer engagement and action. Using this community, which is designed to accommodate the way people work today by including mobile and work-at-home employees, IBMers can find volunteer activities and apply skills and expertise to a cause.

Through the On Demand Community, IBMers have an opportunity to apply to community organizations the same strengths and talents that they use at IBM, be it project management skills, technology expertise, communication strategies or other capabilities. IBMers can develop a unique service project that speaks to them personally, or they can select from a range of pre-packaged projects that marry IBM's competencies with community issues. Since its launch in 2003, more than 235,000 IBM employees and retirees have registered at the site and logged 15 million hours of volunteer service.

Every year IBM awards significant individual and team volunteer work with the IBM Volunteer Excellence Award. Among the 13 winners for 2012 were:

**Mobilizing legal pro bono support for global disaster response**— Theresa Mohan, senior regional counsel for IBM in New York, has led the charge to create an infrastructure that supports legal pro bono volunteerism across the IBM legal function. In 2011 she collaborated with international disaster relief charity ShelterBox to kick off a volunteer legal effort with more than 60 lawyers. But she didn't stop there; when Hurricane Sandy ravaged the East Coast of the United States in late 2012, Theresa initiated an informal legal clinic in the early days of the disaster with IBM lawyers, former IBM lawyers, law firm associates, bar association lawyers, and law school faculty and students to help hurricane victims. From their first weekend with one tent, the effort grew to staffing five locations. Theresa's efforts have evolved further, and she's now working with all of the legal groups responding in NYC, participating in a Disaster Best Practices conference, and using IBM's SmartCloud collaboration software for cross-organization communication and collaboration.

## $4 million

The total in IBM Community Grants to organizations in 2012.

## 15 million

Hours of volunteer service logged by more than 235,000 IBM employees and retirees since 2003.

**Improving education in rural China**—Hai Nan Yin has led a team of eight colleagues from IBM China in a three-part project designed to improve education in rural areas of the country. These efforts include organizing employees to donate books to rural schools in the Gansu province of China; IBMers collaborating with students at Shanghai Jiao Tong University (SJTU) in a volunteer teaching program that uses IBM Activity Kits; and IBMers working with SJTU students to help an NGO solve issues in its donation process. For the third issue, the team set up a cloud platform to automate the donation tracking process and serve as a portal of volunteer activities, showcasing how cloud computing can streamline operations management for communities, business, schools and government. Throughout the project the IBM volunteers have used their professional skills in project management, software development and business process management, as well as training and presentation.

**Motivating at-risk young people**—Pilar Linan Vallecillos is the IBM team lead for a group of 77 volunteers from IBM Spain committed to helping young people with a background of academic failure find motivation. Project Coach, an initiative started by the nonprofit group Fundacíon Exit, works to help these youth continue their education and develop the work-readiness skills required to be successful in the business world. Launched in 2009 in Madrid and 2011 in Barcelona, the program engages IBM volunteers to serve as coaches to the youth, sharing their own personal experiences and giving the students their first contact with the professional world. The IBMers rely on their professional skills in this project and use a variety of IBM Activity Kits in their mentoring.

# Development in Communities

The communities in which IBMers live and work span the globe, and are the building blocks of a Smarter Planet. The following programs represent a few of the ways in which we work together with local and national organizations to improve the quality of life in communities around the world.

## Smarter Cities Challenge

Perhaps no program exemplifies IBM's integrated approach to corporate citizenship better than the Smarter Cities Challenge. Announced in November of 2010, this $50 million competitive grant program is providing teams of IBM experts to 100 cities around the world over a three-year period. In 2012—the second full year of the program—173 IBMers were deployed to 31 cities to advise city leaders on strategies to help improve efficiency, spur economic growth, engage citizens and more.

Though this is a philanthropic endeavor, it draws on the expertise and knowledge we've gained through our work. For the last four years, IBM has been building a substantial business in helping cities in both developed and developing countries to collect and analyze critical data, gaining a clearer understanding of how these complex systems of systems really work, and how they can work better. With this understanding, IBM team members work alongside leaders from the public, private and volunteer sectors and immerse themselves in issues critical to each city, such as the administration of healthcare, education, public safety, social services, transportation, communications, sustainability, budget management and energy and utilities. Smarter Cities Challenge grants are valued at approximately $400,000 on average.

"The truth is some serious work has been done, very complete work," said Mayor Francisco de la Torre of Málaga, Spain, which used a Smarter Cities Challenge grant to help develop a sustainable, integrated economic plan based on an expanded culture of entrepreneurship. "Many people have been interviewed, many hours have been spent studying Málaga's reality and I believe they have found a series of key proposals to advance our technological development, drive entrepreneurship and therefore, create jobs." Echoed Mayor Mónica Fein of Rosario, Argentina: "The Smarter Cities Challenge has been extremely valuable; [the IBM team] has left us with a roadmap to work on innovation, integration of information and greater citizen participation, all fundamental tools of good government…We are committed to making Rosario a smarter city."

## $50 million

The value of IBM grants to 100 cities around the world over 3 years.

Over the course of each Smarter Cities Challenge project, a carefully selected team of IBM executives and senior subject matter experts from across the business helps the municipality analyze and prioritize its needs, review strengths and weaknesses and learn from the successful strategies used by other cities. The team also studies the role that intelligent technology might play in uniting and advancing different aspects of city life. The team ultimately delivers to the city a roadmap that identifies ideas and opportunities designed to help make regions healthier, safer, smarter, more prosperous and attractive to current and prospective residents and businesses. In 2012 several cities used ideas and opportunities outlined in these roadmaps and began implementing changes accordingly. For example:

- The City of Cheongju, South Korea, merged with nearby Cheongwon County to become a significantly larger city, and the mayor has set aside $3 million to roll out the Smarter Cities Challenge team's recommended bus rapid transit system. Cheongju also received the national government Minister's Citation of Public Administration and Security for the best practice of budget efficiency. The city shared the IBM Smarter Cities Challenge experience with the national government and explained how it helped to save their budget through leveraging global IBM specialists.

- In Durham, North Carolina, the mayor, county manager and superintendent established a leadership task force to oversee the Durham Connecting Youth Initiative, appointing a staff person to drive implementation of the Smarter Cities Challenge team's recommendations. The city, county and Durham Public Schools have also approved joint funding for staff positions to oversee and coordinate the Durham Connecting Youth Initiative. A technical advisory committee has been established, including representatives from various organizations. The Durham Workforce Development Board Youth Task Force is charged with implementing the workforce development and opportunity components.

- The Council Leader of Glasgow, Scotland established an Affordable Warmth Executive Team, with IBM representation, and announced a new £1 million fuel subsidy for elderly Glaswegians, linked to the Smarter Cities Challenge team's work and regional priorities.

- Following significant leadership and operational changes implemented by city officials in St. Louis, Missouri, voters passed Proposition A, returning control of the police department to City Hall after 151 years of state control.

- The City of Jacksonville, Florida named an Economic Development Officer in November 2012, based on the Smarter Cities Challenge team's recommendations, and has proceeded with planning more activities in downtown, proposed legislation for residential and retail investments and mixed-use of old library facilities, and streamlined processes for collaboration with companies.

**$400,000**

Average value of a Smarter Cities Challenge grant.

Smarter Cities Challenge engagements in growth markets are staffed through the Executive Service Corps, an initiative which grew out of the Corporate Service Corps in 2010.

### Smarter Cities Challenge Summit 2012

In November 2012, IBM welcomed more than 150 Smarter Cities Challenge city leaders—including nearly 20 mayors representing every inhabited continent, as well as urban thought leaders and IBM's Smarter Cities Challenge experts—to the Smarter Cities Challenge Summit in Palisades, New York. Key themes included the importance of reliable and accessible data, clear governance and meaningful civic engagement. The event was hosted with Living Cities, EUROCITIES, the Urban Institute, Regional Plan Association, AVINA Foundation and Center for an Urban Future. Following the Summit, IBM Citizenship published a white paper, "How to Reinvent a City: Mayors' lessons from the Smarter Cities Challenge," sharing the insights mayors learned from their participation in this IBM Citizenship initiative.

Cities interested in researching, and potentially applying for, a Smarter Cities Challenge grant can visit the website.

The Smarter Cities Challenge is sponsored by the international philanthropic foundation at IBM, which has been a leader in corporate social responsibility and corporate citizenship for nearly 100 years. IBM implements a range of initiatives to address specific vital issues such as the environment, community economic development, education, health, literacy, language and culture. IBM employs its most valuable resources—technology and talent—to bring these programs to fruition.

## Corporate Service Corps

In 2013 IBM will celebrate the fifth anniversary of the Corporate Service Corps (CSC). Through CSC, IBM blends social responsibility and business expertise to produce a triple benefit: premier leadership development for IBM employees, pro bono problem solving for governments and communities and a greater understanding of new markets for IBM.

CSC teams comprise eight to fifteen IBMers who spend approximately six months on a CSC engagement—three months in preparation, one month full-time in the local community and two months in post-service work. On location, these teams collaborate with government agencies, educational institutions and nonprofit organizations in areas where business, technology and society intersect to develop sustainable economic solutions.

In 2012, CSC sent over 100 teams of IBM top talent to 32 communities in 20 countries, delivering 100 vitally important projects. Some recent host countries include Mexico, Nigeria, the United Arab Emirates, Senegal, Argentina, Chile, India, Peru and Greater China, which received its eighteenth CSC team.

"Kunming SME Financial Transaction's service platform provides small and micro businesses with a more secure financial management model. This model is a global innovation, so we have faced many unexpected challenges. During this critical period, the IBM CSC team provided us with a clear vision and plan so that we could more effectively manage and reduce our risks," says Zhang Zhi, deputy president of Kunming SME Financial Transaction in Kunming, China.

CSC is a terrific example of the strength of public and private collaboration. For example, through IBM's work with the United States Agency for International Development (USAID) and CDC Development Solutions, CSC teams have made significant contributions in Kenya, Kazakhstan, Senegal and Ghana. Additionally, IBM is working with many other companies to guide them in the development of their own global corporate service programs and expand the contributions made to communities.

The work of CSC teams helped IBM reach No.1 in The Civic 50, a ranking of America's most community-minded businesses published by *Businessweek* in November 2012. The Civic 50 measures how companies use their time, talent and financial resources to improve their communities. The award recognizes the continuing and growing impact and leadership of our global corporate service work.

Below are some examples of work done by CSC teams in 2012:

- Cervical cancer is a leading cause of cancer-related deaths in women in Kenya and is a major public health concern in many East African countries. Recently the Kenyan government, with support from the US government and the President's Emergency Fund for AIDS Relief (PEPFAR), took strategic action in the fight against cervical cancer. IBM CSC worked to solve the information management challenges that arise from collaboration between more than 4,000 clinics and six levels of healthcare facilities spread over a large geographical area serving 15 million women. With the CSC team's help, the program will collect more reliable data to improve screening rates, which have already jumped from almost none to 70 percent in five years.

- Since 1999, Casa da Criança (CdC) has remodeled the physical structures and improved the management of 33 youth centers and children's hospitals in 15 states across Brazil, benefitting more than 20,000 children. An IBM CSC team helped CdC to resolve information, communication and storage problems by designing a collaborative portal using IBM's SmartCloud Engage.

- Economic growth is hampered in many regions in Africa due to the cost and unreliability of energy. The East Africa Power Pool (EAPP) is an intergovernmental organization established in 2005 to facilitate cross-border trade in energy resources among seven Eastern African countries. The mission of the EAPP is to make affordable, sustainable and reliable electricity available for the Eastern African region by pooling electrical energy resources, promoting regional

# 20

The number of countries that received IBM CSC teams during 2012.

integration, poverty reduction and economic development. An IBM CSC team designed the framework for an EAPP-wide information systems network to allow interaction and data sharing between members and with the trading platforms.

# SME Toolkit

IBM and the International Finance Corporation (IFC) have worked together to create a small and medium enterprise toolkit, or SME Toolkit, which provides entrepreneurs and small businesses with free information in areas critical to growing businesses such as finance, accounting, international business, marketing and human resources. IBM supports SME Toolkit in order to accelerate economic development and job growth in geographies and communities that are striving to grow their engagement in the market economy, as well as to help spur development of women- and minority-owned businesses in the United States.

The Toolkit is available in 40 countries and 18 languages. It is available in emerging markets such as the Philippines and Bangladesh. In the United States, SME Toolkit focuses on businesses owned by underserved communities such as women, African Americans, Hispanics, Native Americans and Asians. The Toolkit delivers interactive tools, online collaboration and educational content to help small businesses learn and implement sustainable management practices. These tools are often only available to Fortune 1000 companies.

Organizations working with the IFC in each of the countries hosting the site are responsible for localizing, customizing and translating content so that it speaks to the local markets. These organizations, such as EDC Pan-African University in Nigeria, can also help nurture local businesses and improve their chances of survival.

IBM has dedicated more than $6 million to improve the usability and performance of the SME Toolkit, providing enhanced functionality and creating a resource hub, learning location and meeting place for small and medium businesses. SME Toolkit is a leading example of IBM's commitment to collaborating with significant outside organizations and contributing IBM's technical expertise and solutions to help address pressing social issues.

## 40

Number of countries with the SME Toolkit.

## $6 million

The amount IBM has dedicated to improving SME Toolkit.

# Supplier Connection

Supplier Connection was launched by IBM and US Small Business Administration (SBA) Administrator Karen Mills to promote job growth by helping small businesses more easily access opportunities with large companies. The program's web-based portal was created and is maintained by IBM through a $10 million grant from the IBM International Foundation. Supplier Connection was recognized with the 2012 Distinction Award for Best Collaboration by the Supply Chain Distinction Awards North America, which celebrates excellence across the most important disciplines in supply chain management. Specifically, the award recognized IBM and Supplier Connection for improving business performance based upon a mutually beneficial collaborative effort between many buying corporations and small business suppliers in the United States.

Small businesses are crucial to the vitality of the US economy, as they employ half of all private sector employees. However, it can be challenging for small businesses to sign up new, large accounts, especially with global companies. Without this source of sustained and sufficient demand, small businesses have little incentive to expand their operations or hire new employees. With the goal of fueling economic growth and job creation in the United States, IBM and a consortium of large corporations are collaborating to make it easier for small businesses to potentially become suppliers to large companies.

Supplier Connection provides small companies with a standardized and streamlined way to register basic information, share business practices and potentially connect with both large and small businesses to enhance their opportunity for growth. In turn, large companies are able to quickly find registered suppliers, communicate with them and forge stronger relationships with new and existing suppliers. Since its inception, Supplier Connection has provided growth to many small businesses across multiple industries. Participating members have increased their spending with small businesses on average by 3 percent, totaling more than $10 billion.

## A small business owner on Supplier Connection:

**Puritan Press**
Puritan Press is a printing and publishing business based in Hollis, New Hampshire. In an effort to create new business opportunities, Puritan Press joined Supplier Connection in 2011 after learning of the consortium through its local industry network. Within six months, the organization secured a contract with IBM to produce more than 30,000 copies of the 2011 IBM CEO Study. That initial contract opened Puritan Press's opportunities with IBM, and it has secured several more contracts in 2012.

## $10 billion

Amount that participating members spent with small businesses.

"Supplier Connection has allowed Puritan Press to make connections with large corporations that otherwise might never be possible—and has directly impacted our business for the best. Once IBM took the initiative to get us involved, they followed up with significant job awards. We produced several large print projects in 2012, and have been awarded additional jobs in 2013 as well as opportunities to bid. It is this level of action as well as the corporate commitment to support and engage with small businesses that has made us believers in this process," says Kurt Peterson, president of Puritan Press. "Our involvement with the Supplier Connection portal has provided additional value and benefits to us through increased visibility in our market. As we expand our reach we count on the support of this small business tool for marketing our services to those corporations who are truly supporting small businesses. We know our products and services are leaders in our industry and now with the added advantage of the Supplier Connection we can get the word out on the street to more and more potential buyers."

# The IBMer

A great company is forever evolving and growing. At IBM, we make it a top priority to hire, support and retain the people who make us a great company. In this section, you will find examples of the ways we support both the personal and professional development of our employees.

# Supporting IBMers

At IBM we believe that in order to build a great brand, we must first be a great company. And the key to being a great company is hiring, supporting and retaining great employees.

Across the world there are more than 430,000 IBMers. These employees represent our brand, they embody our values and they drive our success. They are IBM. And that is why the work of developing their full potential is never complete. Within the human resources function at IBM, we are constantly crafting new strategies to meet our employees' needs. During the last two years, we have been challenging ourselves to rethink how we select, recruit, train and develop IBMers in a range of critical job roles, especially client-facing and manager roles. This focus continues to intensify.

In 2012 and going forward, our focus has been on fostering the link between IBMer engagement and client experience. This focus has included a broad range of tactical activities across geographies and business groups, from engagement councils in China to new manager training in India to "IBM University" in the United Kingdom and virtual job fairs in the United States and elsewhere. We also invested heavily in developing new, more social approaches to finding and cultivating expertise, to understanding employee sentiment and to fostering collaboration with one another. Several of these investment activities will be launched in 2013, including a new approach to locating the right IBM expert on any topic, at any time.

Social technologies continue to change how we work together with other IBMers, and how we work with our clients. Today, new hires are given the option to begin relationship-building as soon as they accept a job offer, thanks to a new social platform called Soon 2 B Blue that connects soon-to-be-IBMers with IBMers already in place. Our learning programs are infused with rich social interaction and collaboration opportunities that continue long after a formal training program is complete. IBMers have the option to thank one another—publicly or privately—in the digital BlueThx environment, built by volunteers at IBM for IBMers. And increasingly HR teams are using their own internal blogs and Lotus Connection online platforms to introduce new programs, solicit feedback to existing programs and fine-tune the IBMer experience.

Also in 2012, we continued to focus on using analytics to drive action by training HR professionals worldwide on the use of data and analytics. We have launched a self-service Cognos data portal customized for use by the worldwide HR team. And our workforce analytics team takes on an increasing number of projects to determine what distinguishes performance, what makes managers effective and how to best retain key performers.

# Employee Well-Being

Employee well-being is integrated into every aspect of IBM's global business. It underpins our total health management system and demonstrates a commitment to employee health and safety that values the whole person—at work, at home or as a member of a larger community.

In communicating his 2012 vision statement to more than 400,000 IBMers around the world, Dr. Kyu Rhee, MD, vice president of IBM Integrated Health Services (IHS), explained it this way: "We optimize performance through healthy choices, people, workplaces, families and communities." This vision is further expressed in our well-being mission statements:

• Address local and global health priorities

• Improve the overall health and vitality of our employees

• Provide safe and healthy work environments

• Design health benefits and health promotion programs to improve access, increase quality, reduce costs and drive innovation

• Support business continuity and growth

Under the leadership of Dr. Rhee, IBM's IHS team delivers on this vision through a set of global health priorities that encompasses health promotion, safety and medical programs and health benefits design and strategy.

## Engagement in the social business space

In 2012, IBM broke new ground with the launch of its social business community called Commit to Health. Members of IBM's well-being team created blogs and forums for interaction with employees about various health, safety and wellness topics, allowing the team to identify and track related concerns across our vast workforce through their comments. In response to a blog post on the flu, for example, employees expressed their support for this communication channel:

"Thank you Doc. These are good points and I will share them with my family members. Thanks for my virtual doctor's office visit."

"Thanks Dr. Rhee, your information is well organized and very useful. I'll be passing this on to colleagues, family and friends."

## Supporting the whole person

Well-being efforts at IBM take a holistic approach to the experience of health, and that includes stress. Sometimes stress can lead to mental health concerns, so IBM provides support for employees and their families with an array of programs and resources. Coverage for mental health care is now available in many countries.

A special focus in 2012 was the new dimension of mental health first aid. The IBM well-being team in Australia/New Zealand arranged for human resource partners to complete a mental health first aid course to assist in the management of a mental health crisis presenting at work. Participation of 75 percent of the total number of the partners available indicated the importance of skill building in this area.

## Safety

Providing safe workplaces in today's frequently changing business landscape is a top priority for IBM. The workplace is now defined in many ways and often involves various external partners as we move business execution closer to the client. As a result, IBM's safety programs have evolved in 2012 to include:

- Safe buildings—Last year a record number of building inspections were conducted, pre- and post-occupancy, in focus areas including IBM leased sites and customer sites. Specific focus was provided on standardizing practices in growth markets for delivering high-value safety programs that support employee well-being and help meet applicable safety regulations. Skill development, team integration and management responsibility were top goals. Mature-market safety professionals worked with their growth-market peers to help interpret regulations, convey best practices and resolve issues.

- Safety on the road—In many markets, transportation infrastructure and driving behavior creates risk for our employees as they come to and from work, wherever that workplace is. Special programs were designed last year to teach employees how simple changes can improve their safety while on the road, as a driver or pedestrian.

For example, IBM India delivered various programs to help reduce risk:

- Online awareness programs were extended to all employees through multiple resources.

- Onsite programs were organized in 42 buildings.

- Employee participation in onsite programs reached 22 percent.

At the conclusion of this effort, employees pledged to drive safely.

## Recognition of excellence

External certification of IBM's Well-Being Management System through the OHSAS 18001 certification process has helped improve the quality and consistency of our global implementation of well-being. It has also enabled IBM to fulfill marketplace demands and foster business opportunities because the company is more readily able to demonstrate its standardized approach to managing employee well-being to existing and potential clients. IBM remains the only organization with a health/safety management system that has been certified by OHSAS 18001 globally. In 2012 we also received the following recognition:

- All of IBM's hardware research, development and manufacturing operations in the United States were recognized as OSHA Voluntary Protection Programs "Star" sites. This is OSHA's highest honor that is given only to those that are proactive and exhibit exemplary safety and health programs and results.

- IBM India won second prize in the Large Scale Industries Sector, which included both manufacturing and corporate sectors. IBM India also received a "Certificate of Commendation" from the Confederation of Indian Industry for innovative practices in the field of environmental health and safety.

- IBM Mexico's Guadalajara location was recognized by the Health and Safety Ministry for implementing programs and helping other companies in the safety and health arena.

- IBM Canada's Bromont location was recognized by the Quebec Health and Safety Agency with a Grand Prix Innovation award for its ergonomic "microbreak" initiative to prevent musculoskeletal discomfort, injuries and illnesses.

- Other highlights from 2012 include four patents granted to members of IBM's Integrated Health Services with four more pending.

## Continued focus on primary care

IBM has understood the benefits of driving patient-centric primary care for some time. Two years ago, IBM took an extraordinary step by providing 100 percent coverage for primary healthcare for IBMers in the United States who are enrolled in IBM's self-insured health plans. In 2012, the expansion of fully covered primary care was extended to many other countries including Mexico, the Philippines and Turkey. Additional preventive care services for women, such as contraceptives, some patient counseling, prenatal visits and screening for gestational diabetes, are now covered 100 percent.

## Well-Being Management System

IBM's Well-Being Management System (WBMS) is the foundational architecture that provides this coordinated and consistent delivery of health and safety objectives across all geographies and time zones.

## 100

The percentage of coverage for primary healthcare for IBMers in the United States who are enrolled in IBM's self-insured health plans.

First implemented in 1999, WBMS is framed around IBM's corporate policy of responsibility for employee well-being and product safety. This cornerstone of IBM's WBMS follows the "plan-do-check-act" principles that are common in International Organization for Standardization (ISO) consensus standards. System components include proactive planning, execution excellence, measurement and continuous improvement in areas of employee health and well-being.

Each year we engage in a strategic planning process to consider new WBMS global objectives that align with evolving business priorities. These objectives are translated into relevant initiatives with the flexibility to accommodate unique well-being and safety requirements at a local level. The desired outcomes are improved productivity, managed costs and elimination of unnecessary expenses.

## Employees and their families

Each IBMer is a member of a family and often provides health benefits for family members, putting them in a position to share valuable learning about health and safety with the people in their lives. With this in mind, IBM has chosen to create programs that help our most important resource to care for themselves and their families. We also encourage people to make a commitment to their health goals.

"Like everything else we do to achieve success in our personal life, optimizing health can be enhanced through a deep commitment to goals. I ask that you make a healthier lifestyle one of your goals—and commit to a healthier way of living today. Regular practices like physical activity, healthy food selections and effective stress management—when coupled with guidance from your physician—all help to put you on the right path to success," says Dr. Rhee.

To facilitate commitment, IBM has prioritized programs and offerings designed to help make the healthiest choice also be the easiest choice for employees and families.

**IBM's approach to helping IBMers improve their quality of health**

### Commit to Health
IBM commits to empowering IBMers. IBMers commit to taking action.

**IBM**

- Provides a portfolio of evidence-based health guidance, wellness programs, safe work environment and health benefits.

- Make the healthiest choice—the easiest choice—by putting informed resources directly in the hands of IBMers.

**IBMers**

- Make a personal commitment to live a healthy lifestlye.

- Take action to leverage IBM tools and resources to improve personal health and the health of families, community and the workplace.
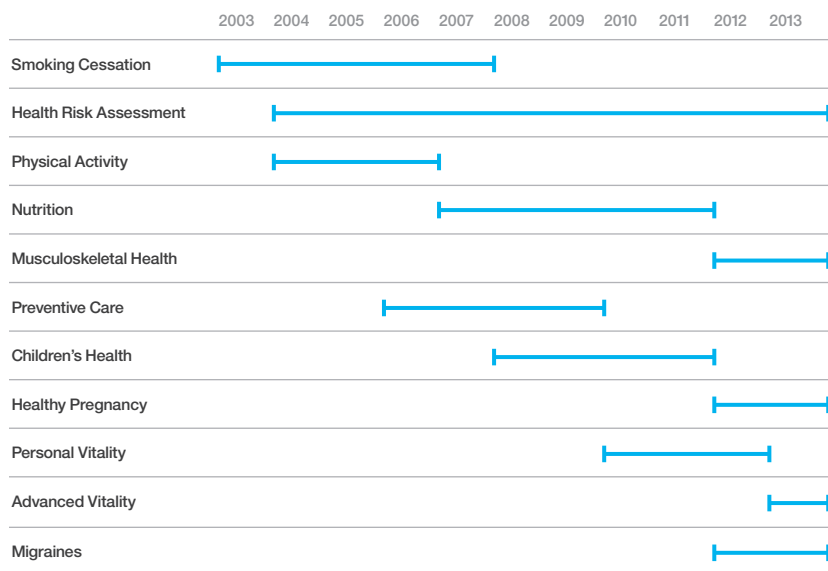
## Delivering the IBM commitment

To support employee commitments, IBM in 2012 continued to build on the foundation of programs that drive healthy behaviors through smoke-free policies, nutritious food selections at the worksite and options for physical activity, weight management, infection prevention and disease screening. For example, in response to the alarming cardiac and diabetes rates across the general population in India, IBM now offers cardiovascular and diabetes screening camps:

- Parameters tested: blood pressure, blood sugar, total cholesterol and body mass index

- Programs across 80 sites (IBM India and Global Process Services); 38,800 employees participated

- 856 high-risk cases identified for risk intervention strategy over three months

Other examples of health programs based on local needs include IBM Korea's onsite program to check for metabolic syndrome, the precursor to cardiovascular disease, and IBM Japan's cervical, breast and colon cancer screening. In the United States, offerings directed at preventing cardiovascular disease and cancer stress the value of physical activity and healthy eating by offering rebates for targeted health promotions. The following chart outlines the evolution of this approach to stimulate participation in healthy living choices:

### Overall High Engagement in Rebate Programs

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Smoking Cessation | ●━━━━━━━━━● | | | | | | | | | | |
| Health Risk Assessment | | ●━━━━━━━━━━━━━━━━━━━━━━━━━● | | | | | | | | | |
| Physical Activity | | ●━━━━● | | | | | | | | | |
| Nutrition | | | | ●━━━━━━━━━● | | | | | | | |
| Musculoskeletal Health | | | | | | | | | ●━━━● | | |
| Preventive Care | | | ●━━━━━━● | | | | | | | | |
| Children's Health | | | | | ●━━━━● | | | | | | |
| Healthy Pregnancy | | | | | | | | | ●━━━● | | |
| Personal Vitality | | | | | | | ●━━━━● | | | | |
| Advanced Vitality | | | | | | | | | ●━● | | |
| Migraines | | | | | | | | | ●━● | | |

- Employees earn up to $300 for completing two 12-week programs
- Enrollment historically around 80% annually
  - Slight decrease to 77% in 2012
  - Additional decrease to 74% in 2013

Diagnoses of illnesses attributable to obesity (e.g., hypertension, diabetes) are no longer confined to adults, and these illnesses can take a heavy toll on families through the impact on children. The Children's Health Rebate was designed to reward good nutrition and physical activity for the entire family, which is key to helping children develop healthy habits for a lifetime and support maintenance of healthy weight.

## The vitality link

IBM understands that implementing a broader vision of wellness—one that integrates key approaches for building vitality and the capacity to flourish—best meets the emerging needs of employees and the company. With the fast pace, constant change, evolving roles and demand for creative solutions in today's business environment, employees must be healthy, optimistic, energetic and resilient to achieve personal and business success. This requires a high state of well-being beyond the absence of illness, disease and injury. Two offerings were developed around this theme:

- Personal Vitality Rebate Program—This US-based rebate program was designed to introduce employees to new vitality-building practices or techniques via a web-based tool and encourages experimenting with the practices in their daily lives over four weeks. These techniques range from improving sleep habits to building positivity and mindfulness to incorporating new routines into work practices. Over 70,000 employees have participated in the Personal Vitality program since it began in 2011.

- Healthy IBMer Program: A Game Approach—To promote awareness, ownership and actions regarding health and well-being among IBMers, a series of games were created by IBM India. This approach brought the additional benefit of improving the overall environment and promoting teamwork. Participating IBMers were divided into groups with managers as captains of each group. This "healthy" competition covered three challenges with disease screening, fitness and health risk assessment components.

## Healthcare system delivery reform

IBM maintains a leadership role in championing well-being for the benefit of the company and its employees, their families and the communities in which they live. In the area of benefits design and redesign, bids routinely include coverage for preventive screening, as well as maternity and behavioral health care. The practice of excluding coverage for pre-existing disease is being eliminated by IBM. The IBM benefit design approach establishes a benchmark for employer excellence and historically has forced our competition to adopt IBM best practices in order to vie for talent. What was once novel now becomes the norm and these improvements create positive change at the community level.

**70,000**

The number of employees that have participated in IBM's Personal Vitality program since it began in 2011.

## Contributing through corporate service

In 2012, IBM's well-being organization participated once again in the company's Corporate Service Corps to deliver community service. Enrique Zepeda, IHS Mexico manager, was assigned to Malaysia along with 11 other IBM employees to help the Sarawak State Library simplify the implementation of the library's Health and Safety Management System. The outcome was a management commitment to implement the group's recommendations and provide training material for managers and employees.

## Leading the way in professional communities

Participation in professional communities contributes to the body of research, best practices and standards development that helps communities at large. IBM sponsors and collaborates with several US university-based consortia research programs to help ensure the safe use of current, new and emerging materials critical to the semiconductor industry. Included are:

- The Semiconductor Research Corporation Engineering Research Center for Environmentally Benign Semiconductor Manufacturing, a multi-university research center leading the way to environmentally friendly semiconductor manufacturing

- Sematech-ISMI EHS Advanced Technology Assessment projects developing EHS data for current and future manufacturing technologies

- Albany College of Nanoscale Science & Engineering EHS research on workplace safety and toxicity of nanomaterials

IBM led the Semiconductor Industry Association gap analysis of environmental health and safety efforts sponsored by semiconductor industry members to achieve a well-defined set of goals and results that support the International Technology Roadmap for Semiconductors.

IBM is actively involved in the US National Science Foundation-sponsored Center for Environmental Implications of Nanotechnology (CEINT), a consortium of universities and researchers. The results of this research will be foundational as the industry moves into a post-CMOS world.

Thirteen IBM well-being staff supported their professional communities in their respective disciplines including medicine, nursing, industrial hygiene and safety. Whether through a term on a professional board, acceptance of a publication or delivery of a speech, IBM maintained a leadership position in these professions dedicated to helping people stay healthy and safe.

# Employee Inclusion

Since its beginning more than a hundred years ago, IBM has understood that diversity is the bridge between the workplace and the marketplace. We know that success with our clients begins with success in the workplace. And as we innovate and grow, we continue to focus on our core corporate values to guide us.

Over the years, IBM has responded to the kinds of challenges some parts of the world are still grappling with today, where women continue to struggle for a safe and harassment-free work environment; where lesbian, gay, bisexual and transgender people lack legal recognition and feel unsafe; and where people with disabilities are denied equal access to employment opportunities due to lacking accessibility standards or discrimination.

As we approach decisions and negotiations regarding expanding IBM operations around the world, our client teams and business leaders are clear about how we conduct ourselves in the world of business and the global community. Rather than be deterred by different cultures or beliefs, we share our beliefs so that we can conduct business within any country that is aligned with our global corporate values and employment policies. IBM's willingness to take on issues of equity, fairness and equal opportunity in the United States and around the world not only sets us apart, it makes us a magnet for the smartest and most talented people. And we have a long history of precedent-setting action in this regard. For example:

- 1899 — IBM hired three women (Emma Manske, Nettie Moore and Lilly Philp) 20 years before women were given the right to vote.

- 1899 — IBM hired Richard MacGregor, IBM's first black employee, 10 years before the founding of NAACP and 36 years after the Emancipation Proclamation.

- 1914 — IBM hired its first employee with a disability, 76 years before the Americans with Disabilities Act.

- 1934 — IBM hired its first professional woman, 29 years before the Equal Pay Act.

- 1953 — IBM wrote its first Equal Opportunity Policy that called for equal opportunity in hiring regardless of race, color or creed.

In each of these cases, IBM leadership chose to manage employees in line with our values and beliefs and to engage governments, communities and other corporations in our effort to change, even if unpopular or disruptive to normal business relationships. "Diversity is good business. IBM's strategy is designed to help all IBMers appreciate how our differences are unique factors that help spur innovation," says Ron Glover, IBM's vice president of Diversity and Workforce Policy.

*"Diversity is good business. IBM's strategy is designed to help all IBMers appreciate how our differences are unique factors that help spur innovation."*

**RON GLOVER**
IBM's Vice President of Diversity and Workforce Policy

In 2012, IBM continued to demonstrate leadership in its support of constituent groups. The following are a few examples.

## LGBT (lesbian, gay, bisexual, transgender) workplace equality

IBM has a long history when it comes to LGBT workplace equality. As early as 1984, IBM included sexual orientation in our nondiscrimination policy. In 1995, an LGBT executive task force was established. Today, that task force is known as the Global LGBT Council and is focused on making IBM a safe and desirable workplace for all people.

IBM is a sponsor of Out & Equal Workplace Advocates, a group that works to protect and empower employees to be productive and successful so they can support themselves and their families while contributing to a world free of discrimination. Harry van Dorenmalen, chairman of IBM Europe, won the 2012 Out & Equal Champion Award, which recognizes a non-LGBT person who has played a pivotal role in advancing equal treatment of LGBT employees on the job. Van Dorenmalen was recognized for his significant commitment to LGBT workplace rights, such as the structure he created within IBM to drive progress on LGBT issues and his numerous initiatives leading to significant improvements both within IBM and in the broader business and LGBT communities outside IBM.

In addition, for the 10th consecutive year, IBM scored 100 percent on the Human Rights Campaign Foundation's Corporate Equality Index, the national benchmarking tool for corporate policies and practices related to LGBT employees. The index, released each fall, provides an in-depth analysis and rating of large US employers and their policies and practices pertinent to LGBT employees, such as equal employment opportunity policies that include sexual orientation and gender identity or expression, employment benefits for all benefits-eligible US employees, and ongoing LGBT-specific engagements that extend across the company.

## Advancement of women

In 2012, IBM was recognized by the National Association for Female Executives (NAFE) as a Top 50 Company for Executive Women. Through innovative programs like Building Relationships and Influence for Women, designed to help high-potential women leaders develop skills in building and maintaining business relationships, we demonstrate our ongoing commitment to the development of women.

IBM has achieved many milestones in support of the advancement of women. In 1943, Ruth Leach, IBM's first female executive, was promoted to vice president. In 1989, Fran Allen was named IBM's first female Technical Fellow, and in 2011 Ginni Rometty was elected president and CEO while Jeanette Horan was appointed IBM's chief information officer. More than 22 percent of IBM's global executive population is made up

*"Men and women will do the same kind of work for equal pay. They will have the same treatment, the same responsibilities and the same opportunity for advancement."*

**T. J. WATSON, SR.**
IBM founder

of women. About two thirds of IBM's women executives across the world are working mothers—clearly demonstrating IBM women do not have to choose between a career and motherhood.

## People with disabilities

In 2010, IBM's People with Disabilities (PwD) Council leaders sat down with eight IBMers with disabilities from around the globe for a "reverse mentoring" session, in which the executives learned about the opportunities and challenges of the PwD constituency. The small session was then opened up to IBM employees from Canada, China, Brazil, France, Germany, India and the United States to share their employment experiences with PwD council leaders—both the positive aspects and the areas for improvement.

The first-of-its-kind seminar addressed some of the actual and perceived barriers PwD employees face as they enter the workplace. Attendees were also asked tough questions resulting in a powerful PwD initiative called In Their Shoes, which includes video modules on accessibility and innovation, client attitudes toward people with disabilities, mentoring and career advancement and recruiting—all geared toward highlighting both existing and future ways IBM can help our PwD community thrive.

We plan to conduct a similar seminar in 2013 with additional focus on hiring, mentoring, coaching and development. IBM has implemented simplified global hiring approvals for qualified PwD candidates and will focus on educating managers to ensure PwD employees succeed at work. Similar programs will be conducted at targeted recruiting events to match job opportunities with skilled veterans who have served their country.

# Leadership in work-life flexibility

If IBM is to maintain its leadership position as one of the world's top globally integrated enterprises, it's important to create an environment that offers employees not only financial security but also flexibility. In fact, that understanding is a cornerstone of our employment value proposition; we know that IBMers need time to cultivate personal interests and integrate the demands of the job with the demands of their personal lives.

To address both employee and business needs, IBM follows six flexibility principles. These principles can be adapted by each country as needed, based on legislation, local custom and other factors.

## IBM's six flexibility principles

1. The Enterprise does not stop: In a globally integrated enterprise, the enterprise never stops working. Somewhere in the world, IBMers are working on solutions for our clients.

2. Balancing of needs: IBM is committed to providing its employees the greatest degree of flexibility while balancing the needs of our clients, our business, team effectiveness and the individual IBM employee.

3. Trust and personal responsibility: Consistent with our core value of "trust and personal responsibility in all relationships," IBM expects managers and employees to make decisions, including those about flexibility options, consistent with this value and to demonstrate personal responsibility to ensure business commitments are met.

4. Range of options: Flexible work options are a vehicle for IBM to meet the needs of our global clients and can be employee- or management-initiated and approved based upon the needs of the business, clients or individuals.

5. Understanding differences: IBMers must consider the needs of our global stakeholders—clients, customers, colleagues and the communities in which we operate. Each of us must take responsibility to explore, understand and reflect differences in culture, customs, time of day, holidays, language, business requirements, the personal needs of stakeholders and the impact of our decisions on business dealings.

6. Focus on results: IBMers must focus on results, setting goals and measuring performance with an eye toward providing an outstanding experience for IBM customers, clients and employees.

## Cultural adaptability/intelligence

Every IBMer is considered a global IBMer. That means each employee must be able to seamlessly collaborate across borders and business units. Leading and working in multicultural teams to solve complex client problems has become the norm as IBMers do business around the world.

IBM sponsors an annual Cultural Adaptability Awareness Week to increase the cultural adaptability of the entire organization—from the most senior executive to the recent hires. The focus of the 2012 Cultural Adaptability Awareness Week was to highlight the programs, activities and resources we've developed to help IBMers cultivate deeper cultural knowledge and insights. We asked all IBMers to join the Global IBMers Community in our internal social business intranet and spend at least one hour of their time participating in activities to broaden their understanding of cross-cultural challenges and improve the way we do business across borders. These included a cultural webcast series focused on more than 11 countries, a podcast series on becoming an IBM global leader, opportunities for global cultural mentoring to gain expertise from their global colleagues and the n.Fluent language translation contest, which allows IBMers to take an active role in improving IBM's strategic machine translation system.

## Business Resource Groups

As we refine our employment and leadership practices to continuously attract and develop global thought leaders, it is imperative that our diversity strategy enables us to meet the company's business objectives and talent requirements. As part of the Global Diversity & Inclusion Summit 2011, participants concluded that we needed to expand the role of Diversity Network Groups in helping drive business and talent success. And so, in the fall of 2012, we began transitioning our 236 global Diversity Network Groups to Business Resource Groups (BRGs), talented groups of diverse IBM professionals whose mission is to engage with our constituencies and communities to better support IBM's people, clients and the business. These BRGs consist of IBM employees who voluntarily come together with the goal of enhancing the success of IBM's business by helping their fellow IBMers succeed. We have asked the BRGs to ensure their programs and initiatives are aligned to support at least one of four IBM business and talent work streams: recruitment and hiring, talent development, employee retention and market development. The BRGs have chosen their focus areas and have begun to share best practices across the company.

# Leadership Development

As we continue to deliver and expand our mission of building a Smarter Planet, it's essential that we develop leaders who inspire other IBMers, our clients and our larger community of stakeholders to make the world work better.

To support this belief, IBM offers a wide variety of innovative leadership programs designed to enrich IBMers with experiences and opportunities that will serve them at IBM or wherever their careers take them.

IBM's long history of investing in the development of its leaders continued to be a top priority during 2012, a year during which we focused on building unique experiences and refreshing core programs to accelerate advancement to leadership positions. Below are highlights of some of those leadership development programs during 2012.

## Joint Leadership Development Program

The Joint Leadership Development Program is a two-year, multi-company initiative where select senior leaders enhance their leadership capabilities by developing relationships and gaining perspectives outside their own company. Each senior executive attends and actively participates in seven learning events over the two-year journey. Six sponsoring companies are collaborating to create the development experience, where each company hosts and plans a single face-to-face event. Participants also engage in virtual team exercises to gather experiences from each session; they then share their consolidated learning with their respective organizations.

IBM's event was held in March 2012 with the theme "IBM's Transformation Journey." The event included discussions with IBM President and CEO Ginni Rometty, past CEOs Sam Palmisano and Lou Gerstner, and an interactive session with IBM's supercomputer Watson. The event was well received by participants and set a high standard for others to come. Other events during 2012 covered the topics of globalization and leadership in a global world. The final four sessions will take place during 2013, culminating with a graduation ceremony.

## I&VT 9: IBM's leadership in social business

For the last seven years, the Integration and Values Team (I&VT) has played an integral role in the advancement of IBM's most promising leaders. I&VT members are appointed with the expectation that they will work to integrate and transform IBM, lead by values and develop other IBM leaders.

Since 2006 there have been nine successful I&VT initiatives that centered on important areas of focus for IBM: client value, enabling the globally integrated enterprise, the global IBMer, cloud computing, business analytics, Africa and most recently social business. Each of these initiatives has transformed the way IBM does business, brought value to our clients and helped in the development of our senior executives.

The most recent initiative, I&VT 9, focused on IBM's leadership in social business. This initiative was pivotal in engaging IBM senior leaders to think, act and lead in a social way. The team had the opportunity to learn through hands-on experience, working with experts both inside and outside of IBM and witness the impact of social media on the world.

Some members of I&VT 9 team participated on committees to explore how we connect and collaborate with clients and partner organizations. Other I&VT 9 team members committed their efforts to IBM employee engagement. With a lens on social media, the I&VT 9 team explored how IBM can leverage social business to access expertise while enhancing our culture to be more personalized, leading to even more positive employee engagement. This new behavior is championing IBM's social transformation.

## The Client Experience Team (CET)

In 2012 IBM launched the Client Experience Team (CET) based on the premise that a company can't build a great business without nurturing from within. As we strive to enable our clients to do their best work, we recognize the need to advance the client-valued skills and expertise of IBMers.

The team, chaired by Ginni Rometty, is a diverse group of client-facing leaders representing all business lines and geographies within the company. The team convened around a charter focused on three themes: build a system of engagement that delivers signature client experiences; close the gaps that detract from the client experience; and make pervasive a culture that enables IBMers to live our values.

The CET embraced the opportunity to critically analyze the ability of IBM and other leading companies to activate their cultures in service of client experience. The CET met with CEOs and senior leaders at several companies and convened our Board of Advisors who offered valuable input on how IBM and the IBMer are unique.

In early 2013, the CET engaged the expertise of IBMers at every level to re-define a number of talent development and employee engagement programs. IBMers had the opportunity to engage and offer their input into the Client Experience Jam—a live, online brainstorm from which we determined what it means to be an IBMer and defined behaviors which set us apart and shape our client experience.

Several other programs have been enhanced and expanded in 2012 to widen our leadership development reach and impact. These are just a few:

- **General Manager Leadership Development Program**
  During 2012 we expanded our General Manager Leadership Development Program (GM LDP) for future leaders in growth markets. In less than 5 years, participants in the GM LDP rotate through assignments designed to accelerate their advancement around the globe. Rotations through units such as consulting, business development and sales and corporate functional assignments are included.

- **Accelerate Executive Leaders**
  Accelerate Executive Leaders (AccEL), designed to guide newly appointed executives, was refreshed and enhanced to provide an even more personal development experience in 2012. Real-world application, case methodology and team learning are now included to ensure the transition of these IBMers to the executive level is successful.

- **Cornerstone**
  Cornerstone for Global Business Services, which accelerates the advancement of our pre-executives to executive through a six-week journey of blended learning, expanded beyond North America to include Europe and growth markets in 2012. The program includes learning from senior leaders, diagnostic tools, team learning, feedback, simulations, coaching and personal experimentation.

# Environment

IBM's unwavering commitment to environmental protection is evidenced across all of our business activities, from our research, development, products and services to the solutions we provide our clients that help them be more protective of the environment. In this section of IBM's Corporate Responsibility Report, you will find information on our environmental programs, performance and solutions during 2012.

# A Commitment to Environmental Leadership

IBM's corporate environmental programs date back to the 1960s. In 1971, Thomas J. Watson, Jr., IBM's CEO at the time, formalized the company's commitment to environmental protection with our Corporate Policy on IBM's Environmental Responsibilities. Updated a number of times over the years, the policy and the environmental programs supporting it have defined and driven IBM's longstanding commitment to environmental leadership across all of our business activities.

IBM's operations can affect the environment in a number of ways. For example, the chemicals needed for research, development and manufacturing must be properly managed from selection and purchase through storage, use and disposal. Our data center operations are generally energy-intensive, and some of our manufacturing processes use a considerable amount of energy, water or both. We continually look for ways to reduce consumption of these and other resources.

Our product stewardship requirements include product energy efficiency, the use of environmentally preferable materials and designing for reuse, recycling and safe disposal at the end of the product's useful life. In addition, as we incorporate more purchased parts and components into our products, our requirements for the overall environmental responsibility of our suppliers and the environmental attributes of the goods they provide have become even more important.

We also apply our expertise, research and technology to develop solutions that can help our company, our clients and the world operate in a way that is more efficient and protective of the environment. We apply our research and innovation to help discover scientific solutions to some of the world's most challenging environmental problems.

# Global Governance and Management System

IBM's Corporate Policy on Environmental Affairs calls for environmental leadership in all of the company's business activities.

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## Global Environmental Management System

Our corporate environmental affairs policy objectives range from workplace safety, pollution prevention and energy conservation to product design for the environment and the application of IBM's expertise to help address some of the world's most pressing environmental problems.

The policy is supported by corporate directives that govern IBM's conduct and operations worldwide. These directives cover areas such as pollution prevention, chemical and waste management, energy management and climate protection, environmental evaluation of suppliers, product stewardship, and incident prevention and reporting.

IBM's commitment to environmental leadership is implemented through our Global Environmental Management System (EMS) which requires and confirms that we adhere to the same high standards all across the world.

### Employee and management responsibility

Every employee is expected to follow IBM's corporate environmental policy and report any environmental, health or safety concern to IBM management. Managers are expected to take prompt action when faced with a potential violation of the policy or its directives.

In addition, all of our employees are required by the company's Business Conduct Guidelines to comply with environmental laws and with IBM's own environmental requirements.

IBM executives are responsible for the environmental performance of their organizations or locations.

IBM's environmental programs and leadership are reviewed annually by the Directors and Corporate Governance Committee of IBM's Board of Directors. Formed in 1993, the Charter for this committee established its responsibility for reviewing IBM's position and practices on significant issues of corporate public responsibility, including protection of the environment.

### Environmental goals

Environmental goals are an important part of IBM's EMS. We maintain environmental goals covering the range of our 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 their respective sections of this report, and are provided in the listing of IBM's environmental Key Performance Indicators.

## ISO 14001 Standard on Environmental Management Systems

In 1997, IBM became the first major company in the world to earn a single global registration to the International Organization for Standardization (ISO) 14001 Environmental Management System Standard. We achieved this credential within just one year of the finalization of the standard.

The initial registration covered IBM's manufacturing, product design and hardware development operations across our business units worldwide. We have since expanded our global ISO 14001 registration to include our research locations that use chemicals, several country organizations with their non-manufacturing locations, our product development function, our Global Asset Recovery Services and our Integrated Supply Chain organization.

As our business model has evolved to include more services offerings, we have updated our EMS to appropriately address environmental opportunities and challenges in the services area.

## ISO 50001 Standard on Energy Management Systems

IBM's energy management program dates back to 1974, when our CEO issued a formal corporate policy calling for the conservation of energy and materials in all of IBM's activities. Over the intervening years, we sustained our global energy management program and integrated it into the company's global EMS.

Upon the issuance of the ISO 50001 standard on energy management systems in June 2011, IBM set forth a strategy to achieve verification of conformity of our EMS against this newly published standard.

Within one year of the issuance of this standard, we achieved ISO 50001 registration of our energy management program at the corporate level and as an integral component of IBM's global EMS. Our approach recognizes and leverages the fact that IBM's existing EMS addresses both environmental and energy management.

Consistent with our global ISO certification strategy and following our successful ISO 50001 EMS registration at the corporate level, IBM's major energy-consuming locations are now receiving registration audits of their site-specific energy programs under IBM's single global ISO 50001 certification. Three of our manufacturing locations, one in the United States, one in Mexico and one in Canada, have successfully concluded their registration audits thus far. Additional IBM locations are undergoing ISO 50001 registration audits during 2013 and 2014 as we continue the demonstration of conformity of our global EMS, inclusive of our energy program, against the requirements of the ISO 50001 standard.

## Public disclosure

IBM's Corporate Policy on Environmental Affairs also calls for the company to publicly disclose information on our environmental programs and performance. This report marks IBM's twenty-third consecutive year of annual corporate environmental reporting.

In addition to providing information on our environmental programs and performance in this report, which we have been publishing annually since 2002, we provide a report based on the Global Reporting Initiative (GRI) and information through a number of other voluntary reporting programs and tools, such as the Carbon Disclosure Project and the OneReport® Sustainability Reporting Network. IBM's additional environmental reporting may be found at the following websites:

• Responsibility at IBM (ibm.com/ibm/responsibility)

• IBM and the Environment (ibm.com/ibm/environment)

# Stakeholder Engagement

IBM has a variety of outreach programs through which we engage with various groups and individuals on the subject of the environment. Our community environmental outreach programs range from open houses and emergency preparedness drills with local organizations to the support of and participation in local environmental projects and environmental education efforts.

IBM has ongoing dialogues with many stakeholders, including socially responsible investors and other shareholders, environmental nongovernmental organizations (eNGOs), governments, employees and others on a range of environmental issues. We consider these relationships to be very valuable, as they allow us to share ideas and obtain various perspectives, input and feedback regarding our programs, activities and performance. They also inform our reporting, enabling us to better meet the information needs of a wide variety of interested people and entities.

In addition, IBM Stockholder Relations holds an annual Corporate Responsibility Financial Analysts Call and Webcast during which executives from various areas of corporate responsibility in IBM—including Corporate Environmental Affairs, Global Supply Chain, Corporate Legal/Governance, Global Human Resources and Corporate Citizenship & Corporate Affairs—present a brief update on our programs and performance and invite questions from analysts on any of the areas of corporate responsibility in IBM.

The executives participating on this annual analyst call are on IBM's Corporate Responsibility Executive Steering Committee. Corporate responsibility is not a separate, standalone organization in IBM. Consistent with our century-long commitment to being a good corporate citizen, corporate responsibility is integrated throughout IBM. We coordinate across the company through our Corporate Responsibility Executive Steering Committee, which consists of executives responsible for the various relevant functions in IBM. The Committee is supported on a day-to-day basis by a Corporate Responsibility Working Group of representative experts from these various IBM functions.

Another example of engagement is collaborative innovation. We believe that integrating different expertise and different perspectives can accelerate new solutions to longstanding problems. You will find examples of IBM's collaborative innovation—in research and solutions, with business partners, clients, universities and other entities—throughout this report.

# Voluntary Partnerships and Initiatives

IBM is strongly committed to participation in voluntary programs and we have founded or joined many voluntary initiatives and partnerships with governmental and nongovernmental organizations over the years.

Some current governmental examples include the United States Environmental Protection Agency's (EPA) ENERGY STAR®, SmartWay® and WasteWise programs and the European Union (EU) Code of Conduct for Energy Efficient Data Centers.

Examples of partnerships with eNGOs include our charter membership in the World Wildlife Fund's Climate Savers program and membership in the Center for Climate and Energy Solutions (the successor to the Pew Center on Global Climate Change). We also work with and support organizations such as The Conservation Fund, the Environmental Law Institute and the World Environment Center (WEC).

In addition, we partner with other companies and institutions to foster solutions for environmental sustainability. For example, IBM is a founding member of the GridWise® Alliance, an organization representing a broad range of the energy supply chain—from utilities and technology companies to academia and venture capitalists. Its mission is to transform the electric grid to achieve a sustainable energy future.

Two recent initiatives follow:

- In January 2013, IBM joined the Green Power Market Development Group (GPMDG) in Bangalore, India. Launched by the World Resources Institute (WRI) and the Confederation of Indian Industry, the objective of this initiative is to help improve the purchasing conditions for electricity generated from renewable sources and spur the growth of competitively priced renewable energy in this market. (IBM was a charter member of the WRI's Green Power Market Development Group in 2000.)

- In January 2012, IBM and the WEC formed the Innovations for Environmental Sustainability Council with the participation of major corporations. Its purpose is to explore how innovation in business process and technology can enable strategic solutions to major challenges such as those involving materials, energy, water, infrastructure and logistics. The Council recently published a report entitled "Meeting Next Generation Challenges through Innovations in Sustainability." (IBM has been a member of the WEC since its founding in 1977.)

A more complete listing of our voluntary partnerships and initiatives may be found on IBM's Voluntary environmental initiatives website at http://www.ibm.com/ibm/environment/initiatives/

We also encourage our employees to support environmental efforts. For example, through our Matching Grants program IBM matches contributions made by our US employees to a wide variety of environmental organizations including The Nature Conservancy and the World Wildlife Fund, as well as smaller groups dedicated to preserving lands and habitats in local communities.

In addition, our employees can support environmental organizations in their local communities through IBM's On Demand Community (ODC) program. ODC is a first-of-its-kind global initiative to encourage and sustain corporate philanthropy through volunteerism. It provides our employees and retirees with a rich set of IBM technology tools they can use to help schools and nonprofit organizations with which they volunteer, including environmental organizations. The program combines the expertise, interests and skills of our employees with the power of IBM's innovative technologies and solutions to help nonprofit organizations more effectively address community needs.

# Environmental Investment and Return

Over the past five years, IBM has spent $89.4 million in capital and $498.5 million in operating expense to build, maintain and upgrade the infrastructure for environmental protection at our plants and labs, and to manage worldwide environmental programs.

**Environmental Capital and Expense Worldwide**
($ in Millions)

|         | 2008   | 2009   | 2010     | 2011     | 2012   |
|---------|--------|--------|----------|----------|--------|
| Capital | $31.7  | $14.3  | $15.1[1] | $18.4    | $9.9   |
| Expense | $111.3 | $102.3 | $90.6    | $96.1[2] | $98.2  |
| Total   | $143.0 | $116.6 | $105.7   | $114.5   | $108.1 |

1 IBM has restated our worldwide Environmental Capital Cost for 2010 due to discovery that some costs were previously omitted from the 2010 Environmental report.

2 IBM modified our methodology for estimating operating expenses in 2011 to include information on expenses associated with compliance with worldwide environmental legal requirements for products, including costs associated with compliance with worldwide product takeback and recycling requirements.

IBM has tracked environmental expenses related to our facilities, corporate operations and site remediation efforts for more than 25 years, and began publicly disclosing this information in our environmental report for 1992. In 2011, we expanded our tracking of environmental expenses to include expenses associated with compliance with environmental legal requirements related to products, including those costs incurred for compliance with product takeback and recycling requirements. In 2012, total environmental expenses associated with IBM's operations were $108.1 million.

IBM also estimates savings that resulted from our policy of environmental leadership. These include savings that come from energy, material and water conservation; recycling; packaging improvement initiatives; reductions in chemical use and waste, and process improvements from pollution prevention. Ongoing savings from the previous years' initiatives are not carried over in this comparison, resulting in very conservative estimates.

In addition, IBM realizes avoidance of costs that likely would occur in the absence of our environmental management system. These savings are not measurable in the same way that expenses are, but avoiding these environmental costs does result in savings for IBM, and a reasonable attempt has been made to estimate them. In 2012, IBM's estimated environmental savings and cost avoidance worldwide totaled $141 million.

IBM's experience has shown that annual savings from our focus on conservation, pollution prevention and design for the environment consistently exceed environmental expenses, thus demonstrating the value of proactive environmental programs and performance.

## $141 million

estimated environmental savings and cost avoidance worldwide in 2012

## 2012 Environmental Expenses Worldwide
($ in Millions)

| | |
|---|---|
| Personnel | $39.1 |
| Consultant and legal fees | 3.6 |
| Laboratory fees | 2.1 |
| Permit fees | 0.7 |
| Waste treatment and disposal | 7.7 |
| Surface water and wastewater management operations | 8.3 |
| Air emission control operations | 0.4 |
| Groundwater protection operations | 1.3 |
| Product takeback and recycling costs | 0.9 |
| Waste and materials recycling | 2.2 |
| Superfund and former IBM site remediation | 22.7 |
| Other environmental operations | 9.2 |
| Total | $98.2 |

## 2012 Estimated Environmental Savings and Cost Avoidance Worldwide
($ in Millions)

| | |
|---|---|
| Location pollution prevention operations* | $34.6 |
| Corporate operations* | 5.6 |
| Packaging improvements | 17.3 |
| Environmentally preferable materials usage | 0.3 |
| Energy conservation and cost avoidance | 51.1 |
| Superfund and site remediation efficiencies | 1.7 |
| Spill remediation cost avoidance** | 4.9 |
| Compliance cost efficiency*** | 19.6 |
| Potential fines, penalty and litigation avoidance**** | 5.9 |
| Total | $141.0 |

* Savings or costs avoided by having internal professional staff and tools versus using external consultants and tools.

** These savings are estimates based upon certain assumptions. The figure for spill remediation cost avoidance is estimated considering IBM's actual experience with remediation costs.

*** Compliance cost efficiency considers costs avoided through proactive efforts to stay ahead of environmental regulations and requirements.

**** The estimation for the avoidance of potential fines, penalties and litigation does not include cost avoidance of potential business interruption or fines related to noncompliance with product environmental laws and regulations (e.g., EU REACH or RoHS requirements).

# Process Stewardship

Among its objectives, IBM's Corporate Policy on Environmental Affairs calls for our use of development and manufacturing processes that are protective of the environment.

## Environmentally Preferable Substances and Materials

As an integral part of the global EMS, through which we support the objectives of our Corporate Policy on Environmental Affairs, we routinely and consistently monitor and manage the substances we use in our manufacturing and development processes and in our products.

Our precautionary approach includes the careful scientific review and assessment of certain substances prior to their use in IBM processes and products. In specific instances, we have chosen to proactively prohibit, restrict or substitute substances used in our processes and products when the weight of scientific evidence determines a potential adverse effect upon human health or the environment, even when law permits the use of the substance.

We also conduct scientific assessments of existing approved substances when new processes or major modifications to existing processes are being developed. The objective of these scientific assessments is to identify potential substitutes that may be environmentally preferable. We believe that the same scientific rigor is required when investigating the human health and environmental effects of potential substitutes as was applied to the investigation of the substance in use.

IBM has a long history of continually taking proactive steps to evaluate the chemicals used in our processes and products; identifying potential substitutes that may have less impact on the environment, health and safety; and eliminating, restricting and/or prohibiting the use of substances for which a more preferable alternative is available that is capable of meeting quality and safety requirements of our processes and products.

The following provides a sampling of IBM's nearly 40 years of early leadership in prohibiting or restricting many substances of concern from our processes and products before regulatory requirements were imposed. A more complete listing may be found on our Materials use at http://www.ibm.com/ibm/environment/products/materials.shtml

- **Polychlorinated biphenyls (PCBs)**
  IBM initiated a multi-year effort to eliminate PCBs from use in our products in 1974 and achieved elimination in 1978.

- **Chlorofluorocarbons (CFCs)**
  In 1989, IBM became the first major information technology manufacturer to announce a phase-out of CFCs, a Class I ozone-depleting substance, from our products and manufacturing and development processes.

- **Class I and II ozone-depleting substances**
  IBM completed the phase-out of Class I ozone-depleting substances in 1993. Subsequently, we eliminated Class II ozone-depleting substances from our products and processes in 1995.

- **Trichloroethylene (TCE), ethylene-based glycol ethers and dichloromethane**
  Examples of other chemicals that IBM voluntarily prohibited from our manufacturing processes include TCE in the late 1980s, ethylene-based glycol ethers in the mid-1990s and dichloromethane in 2003.

- **Polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs)**
  IBM prohibited PBBs and PBDEs from our product designs in the early 1990s and then extended the prohibition to purchased commodities through our procurement specifications in 1993.

- **Cadmium**
  IBM prohibited the use of cadmium in inks, dyes, pigments and paints in 1993; in plastics and plating in 1994; and in CRT monitors along with nickel cadmium batteries in the mid-1990s.

- **Polyvinyl chloride (PVC) and tetrabromobisphenol A (TBBPA)**
  IBM ceased the specification of PVC in our IT system enclosures in 2000 and prohibited the use of TBBPA as an additive flame retardant in IT system enclosures for newly released products in 2007.

- **Specific perfluorinated compounds (perfluorooctane sulfonate [PFOS] and perfluorooctanoic acid [PFOA])**
  IBM prohibited the compounds' use in the development of new materials in 2005, in new manufacturing applications in 2007, and eliminated the use of PFOS and PFOA in manufacturing, development and research processes as of January 31, 2010.

The IBM restrictions on specific substances and other environmental requirements for our products are identified in our Engineering Specification: Baseline Environmental Requirements for Supplier Deliverables to IBM at http://www.ibm.com/ibm/environment/products/especs.shtml

# Nanotechnology

By definition, nanotechnology is the application of scientific and engineering principles to make and utilize very small things (dimensions of roughly 1 to 100 nanometers), creating materials with unique properties and enabling novel and useful applications. It involves an ever-advancing set of tools, techniques and unique applications involving the structure and composition of materials on a nanoscale.

Nanotechnology is already part of a wide variety of products—from cosmetics and sunscreens to paints, clothing and golf equipment. It can make products lighter, stronger, cleaner, less expensive and more precise, and has been critical to advancements in the IT industry.

IBM Research became involved in the world of nanoscience in 1981 when Gerd Binnig and Heinrich Rohrer invented the scanning tunneling microscope, revolutionizing our ability to manipulate solid surfaces the size of atoms. Since that time, IBM has achieved a number of developments in the field—from moving and controlling individual atoms for the first time and developing logic circuits using carbon nanotubes to incorporating sub-nanometer material layers into commercially mass-produced hard disk drive recording heads and magnetic disk coatings.

We were also one of the first companies to create safe work practices and health and safety training for our employees working with nanoparticles. IBM, along with the International SEMATECH Manufacturing Initiative (ISMI) and other semiconductor companies, is participating in a collaborative study with the National Institute for Occupational Safety and Health (NIOSH) and the College of Nanoscale Science and Engineering (CNSE) of the University at Albany-SUNY to monitor potential workplace exposure to nanoparticles during chemical mechanical planarization (CMP) operation and maintenance.

IBM's current nanotechnology research aims to devise new atom- and molecular-scale structures and methods for enhancing information technologies, as well as discovering and understanding their scientific foundations. We believe these technologies can bring with them significant social and environmental benefits.

The following are highlights of some of our latest nanotechnology research milestones:

- IBM announced a major advance in the ability to use light instead of electrical signals to transmit information for future computing. The breakthrough technology—called silicon nanophotonics—allows the integration of different optical components side-by-side with electrical circuits on a single silicon chip using, for the first time, sub-100 nanometer semiconductor technology. Silicon nanophotonics takes advantage of pulses of light for communication and provides a superhighway for large volumes of data to move at rapid speeds between computer chips in servers, large data centers and supercomputers, thus alleviating the limitations of congested data traffic and high-cost traditional interconnects.

- Researchers from IBM and the Institute of Bioengineering and Nanotechnology announced their development of an antimicrobial hydrogel that can break through diseased biofilms and completely eradicate drug-resistant bacteria upon contact. The synthetic hydrogel, which forms spontaneously when heated to body temperature, is the first-ever to be biodegradable, biocompatible and non-toxic. Comprised of more than 90 percent water, if commercialized, it is ideal for applications like creams or injectable therapeutics for wound healing, implant and catheter coatings and skin infections and to help combat serious health hazards facing hospital workers, visitors and patients.

- IBM scientists demonstrated a new approach to carbon nanotechnology that opens up the path for commercial fabrication of dramatically smaller, faster and more powerful computer chips. For the first time, more than 10,000 working transistors made of nano-sized tubes of carbon have been precisely placed and tested in a single chip using standard semiconductor processes. These carbon devices are poised to replace and outperform silicon technology, allowing further miniaturization of computing components and leading the way for future microelectronics.

# Pollution Prevention

Pollution prevention is a critical aspect of IBM's environmental efforts, and it includes, among other things, the management of hazardous waste, nonhazardous waste and chemical releases.

## Hazardous Waste

The best way to prevent pollution is to reduce the generation of hazardous waste at its source. This has been a basic philosophy behind IBM's pollution prevention program since 1971. Where possible, we redesign processes to eliminate or reduce chemical use and substitute more environmentally preferable chemicals. We maintain programs for proper management of the chemicals needed for research, development and manufacturing, from selection and purchase to storage, use and final disposal.

To more effectively track IBM's hazardous waste management performance, we developed a methodology to correlate the hazardous waste generated from our manufacturing operations relative to production in 1992 and expanded it to our manufacturing operations worldwide in 1993. We established a voluntary environmental goal based on this methodology in 1995 to drive continual reduction in the hazardous waste generated from these operations.

The goal is to achieve year-to-year reduction in hazardous waste generation from IBM's manufacturing processes indexed to output. The metric is measured at IBM's three microelectronics manufacturing locations that generate more than 90 percent (5,357 metric tons) of IBM's hazardous waste generation attributable to manufacturing processes (5,841 metric tons), although not all hazardous waste generated at these locations are indexed to production.

In 2012, IBM's hazardous waste generation indexed to output increased by 2.9 percent, or 68 metric tons, compared to 2011. There were two primary factors for this year-to-year increase: 1) an increased quantity of a hazardous waste solvent from a photolithography process, and 2) an increase in a hazardous waste stream from another wafer production line caused by a tool set problem that temporarily resulted in additional water entering the waste stream before the problem could be addressed.

**Hazardous Waste Generation**

## 2.9%

In 2012, IBM's hazardous waste generation indexed to output increased by 2.9% (68 metric tons) over 2011—despite ongoing, focused reduction efforts. There were two primary factors for this year-to-year increase: 1) an increased use of a solvent in a photolithography process, and 2) a mechanical problem that resulted in additional water entering a hazardous waste stream before the situation could be addressed

## Annual Change in Hazardous Waste Generation Indexed to Output
(metric tons & percent increase)

| Year | Value |
|------|-------|
| 2008 | -330.0 / -10.9% |
| 2009 | 205.5 / 8.4% |
| 2010 | -714.0 / -21.6% |
| 2011 | -88.0 / -3.5% |
| 2012 | 67.5 / 2.9% |
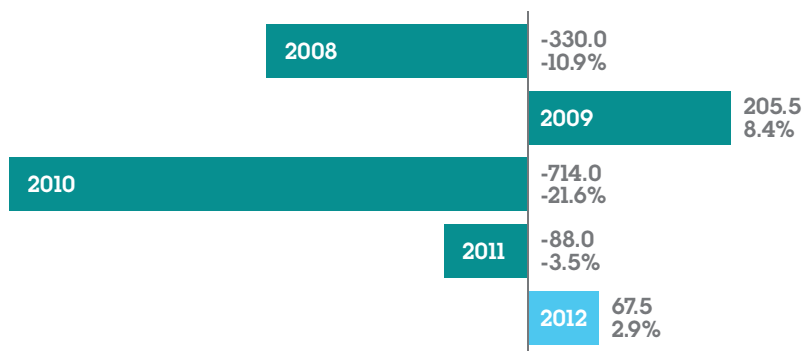
For the hazardous waste that is generated, we focus on preventing pollution through a comprehensive, proactive waste management program. For example, the waste solvents from photolithography are considered hazardous waste by regulatory definition and are therefore included in our hazardous waste metric. However, IBM has an active program for the off-site reclamation and beneficial use of the primary spent solvent in this waste. As is noted in the Awards and Recognition section of this report, our manufacturing location in East Fishkill, New York, received a Most Valuable Pollution Prevention Award from the US National Pollution Prevention Roundtable for its On-site and Off-site Waste Solvent Accomplishments Project in 2012.

Of the almost 7,400 metric tons of total hazardous waste IBM generated worldwide in 2012, 36 percent was recycled, 14 percent was sent off-site for treatment, 11 percent was sent for incineration, and the rest was sent to suitable regulated landfills worldwide. Of the total amount sent to landfills, approximately 90 percent were hazardous waste sludges generated from on-site industrial wastewater treatment processes. Government regulations required disposition of these hazardous waste sludges in secure landfills.

## 2012 Total Generated Hazardous Waste Worldwide by Treatment Method
(7,400 metric tons)

- 36% Recycled
- 39% Landfill
- 14% Treatment
- 11% Incineration
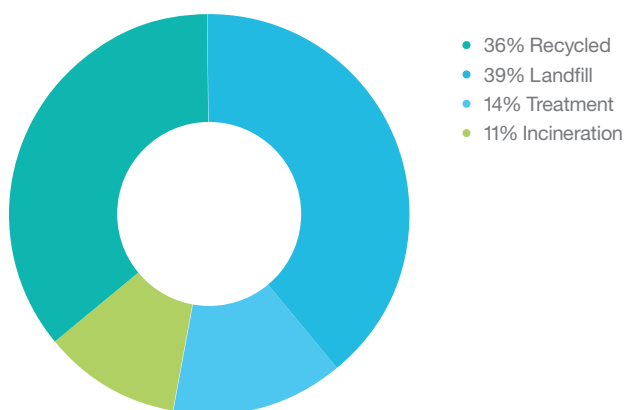
# Nonhazardous Waste

IBM also has focused for decades on preventing the generation of nonhazardous waste, and where this is not practical, recovering and recycling the materials that are generated. Nonhazardous waste includes paper, wood, metals, glass, plastics and other nonhazardous chemical substances.

We established our first voluntary environmental goal to recycle nonhazardous waste streams in 1988. The goal has since evolved on two fronts. The first expanded on the traditional dry waste streams to include nonhazardous chemical waste and end-of-life IT equipment from our own operations as well as IBM-owned equipment that is returned by external customers at the end of a lease. The second expansion was made to include nonhazardous waste generated by IBM at leased locations, meeting designated criteria.

In 2012, IBM's worldwide operations generated approximately 68,900 metric tons of nonhazardous waste. This represents an absolute reduction of an estimated 1,200 metric tons, or 2 percent, when compared to 2011 quantities. The reduction was despite an annual increase in the generation of construction debris and an increase in end-of-life IT equipment and parts managed by IBM in 2012, when compared to 2011 quantities. Waste reduction and avoidance initiatives by IBM worldwide were estimated to have prevented the generation of 2,400 metric tons of nonhazardous waste, with estimated annual handling, treatment and disposal cost savings and revenue returns totaling $1.8 million. In addition, IBM worldwide Product End-of-Life Management (PELM) operations reused 2,673 metric tons of end-of-life IT equipment and parts that were recovered during 2012.

Our voluntary environmental goal is to send an average of 75 percent of the nonhazardous waste generated at locations managed by IBM to be recycled. In 2012, we recovered and sent 87 percent of nonhazardous waste generated from designated IBM locations to be recycled.

The increase in our recycling rate for 2012 was partially attributable to the recategorization of some general office waste streams in Europe to indicate that they are being sent for energy recovery at controlled incineration facilities. IBM categorizes incineration with energy recovery as a method of recycling for the purposes of reporting against this goal. Ongoing reforms to waste management legislation in Europe are requiring that certain solid waste streams previously disposed of in landfills be diverted by waste management suppliers to beneficial reuse practices such as energy recovery.

**Nonhazardous Waste Recycling**

## 75%

**Goal**
Send an average of 75% of the nonhazardous waste generated at locations managed by IBM to be recycled

## 87%

**Result**
In 2012, IBM sent 87% of our nonhazardous waste to be recycled

Treatment methods that were credited towards the recycling target included: recycle, reuse, energy recovery, composting, reclamation, fuel blending and land farming. Treatment methods that result in a non-beneficial use that are not credited towards the recycling target include:

- Incineration

- Landfilling

- Treatment, such as aqueous treatment, biodegradation of organics, filtration, neutralization and stabilization

## Total Annual IBM-Generated Nonhazardous Waste Quantity and Recycling Performance

| Metric Tons x 1,000 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| Total sent for recycling | 62 | 60 | 56 | 55 | 60 |
| Total generated | 82 | 79 | 71 | 70 | 69 |
| Percentage recycled* | 76% | 76% | 79% | 78% | 87% |

* Percent recycled versus the target of 75%

## 2012 Total Generated Nonhazardous Waste Worldwide by Treatment Method
(68,900 metric tons)



- 87.5% Recycled
- 11.2% Landfill & Incineration
- 1.3% Treatment
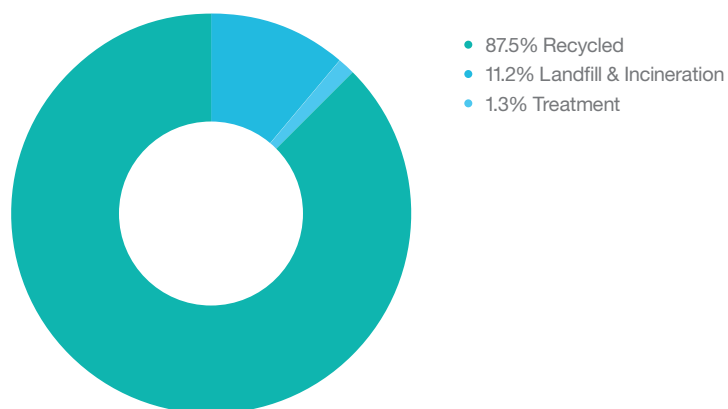
# Management of Chemical Releases

Under Section 313 of the US Emergency Planning and Community Right to Know Act (EPCRA), companies are required to file an annual inventory of reportable quantities of more than 600 chemicals that were manufactured, processed or otherwise used in quantities exceeding the reporting threshold of 10,000 pounds (4.54 metric tons) for the preceding calendar year. These reportable quantities include:

- Routine releases of chemicals to the environment (e.g., permitted air emissions, water discharges, etc.)

- Chemical quantities that are treated, recycled or combusted for energy recovery on-site

- Chemical quantities that are sent off-site for recycling, combustion for energy recovery, treatment or disposal

Though EPCRA is a US reporting requirement, we have voluntarily extended this reporting metric to cover our worldwide operations since 1994. In 2012, IBM's worldwide reportable quantities of EPCRA-listed chemicals amounted to 2,797 metric tons, representing a reduction of 13.5 percent compared to 2011. More than 81 percent of this quantity was treated on-site or sent off-site for recycling or combustion for energy recovery.

**2012 Worldwide Reportable Quantities of EPCRA-Listed Chemicals**
(2,797 metric tons)



- 65.7% On-site Treatment
- 12.8% Off-site Recycling
- 17.6% Release to Water
- 2.9% Off-site Energy Recovery
- 0.6% Release to Air
- 0.3% Off-site Treatment
- 0.1% Off-site Disposal
- 0.0% On-site Recycling
- 0.0% Discharge to Public Treatment Works
- 0.0% Release to Land
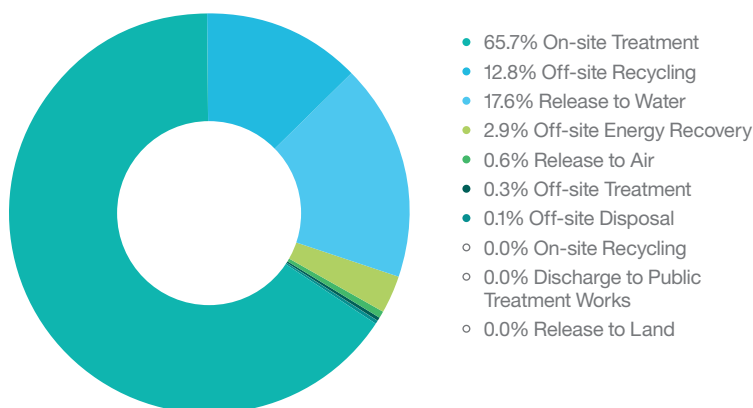
**Worldwide Reportable Quantites of EPCRA-Listed Chemicals\***
(2008–2012, metric tons x 1,000)

| Year | Value |
|------|-------|
| 2008 | 3.6 |
| 2009 | 3.2 |
| 2010 | 3.6 |
| 2011 | 3.2 |
| 2012 | 2.8 |

\*As defined under Section 313 of the U.S. EPCRA.

## 2012 Worldwide Reportable Quantities of EPCRA-Listed Chemicals

| Chemical | Metric Tons |
|---|---|
| Sulfuric acid (Aerosol only) | 1,182 |
| Nitrate compound | 647 |
| Xylene | 214 |
| Hydrogen fluoride | 210 |
| Nitric acid | 156 |
| n-methyl-2-pyrrolidone | 152 |
| Ethylbenzyne | 46 |
| Ozone | 29 |
| All others | 161 |
| Total | 2,797 |

IBM's voluntary goal in this area is to achieve year-to-year reduction in routine releases of EPCRA reportable chemicals to the environment, indexed to output.

In 2012, IBM's routine releases of EPCRA reportable chemicals indexed to output increased by 3.8 percent from the prior year. The primary reasons for this year-over-year increase was an increase in nitrate releases indexed to output from two processes at one of our manufacturing sites. One increase was due to delayed connection of manufacturing equipment to a new chemical reuse system. The other was a reduction in wastewater treatment efficiency during the fourth quarter caused by new wastewater characteristics attributable to the installation of new manufacturing equipment.

Releases of nitrate compounds from this facility are not impacting the quality of the receiving water body in a material way and nitrate compound concentration is not a parameter that is regulated by our discharge permit at this facility. However, limiting discharges of nitrate compounds is an IBM corporate requirement that is set in our own environmental practices. Accordingly, and consistent with our environmental management system, we continue to invest in process upgrades and treatments aimed at reducing nitrate discharges in our effluents.

# Water Conservation

## The preservation of water resources and protection of watersheds are important areas of focus for IBM.
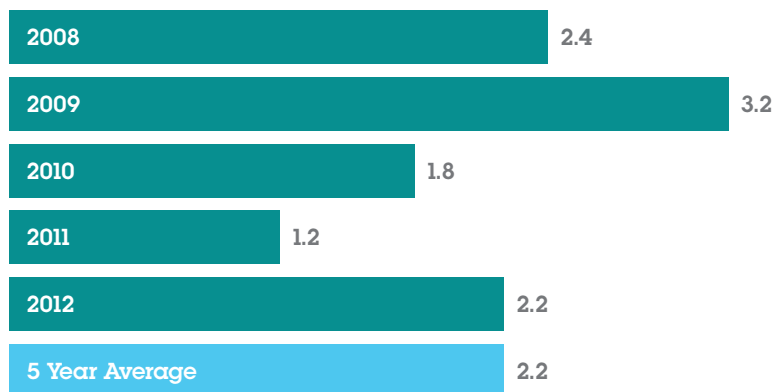
IBM's microelectronics manufacturing operations are our company's most water-intensive ones. In 2012, these operations represented 81 percent, or 9,300 TCMs (thousand cubic meters), of the 11,460 TCMs of water used at our manufacturing operations and laboratories worldwide.

Though our microelectronics operations are not located in areas of water scarcity, in 2000 we established a water conservation goal to achieve average annual water conservation savings equal to 2 percent of IBM's annual water use at microelectronics manufacturing operations, based on the water usage of the previous year and measured over a rolling five-year period. This voluntary environmental goal measures increases in annual water conservation resulting from new water reduction projects and improvements in water reuse and recycling at these locations.

In 2012, new water conservation initiatives in IBM's microelectronics manufacturing facilities achieved an annual 2.2 percent water conservation savings versus 2011 usage. Over the past five years, new water conservation initiatives at our microelectronics manufacturing facilities have achieved an average of 2.2 percent water conservation savings versus the 2 percent goal.

**Water Conservation in Microelectronics Manufacturing Operations**

### 2%

**Goal**
To achieve an annual average water savings equal to 2 percent of total annual water usage in our microelectronics manufacturing operations, based on the water usage of the previous year and measured as an average over a rolling five-year period

### 2.2%

**Result**
As of year-end 2012, IBM's microelectronics manufacturing operations achieved an average annual water savings of 2.2 percent over the past five years

**Annual Percentage Increases in Water Conservation Savings in Microelectronics Manufacturing Operations**
(savings as percentage of previous year's total water use)

| | |
|---|---|
| 2008 | 2.4 |
| 2009 | 3.2 |
| 2010 | 1.8 |
| 2011 | 1.2 |
| 2012 | 2.2 |
| 5 Year Average | 2.2 |

The significant efforts undertaken by IBM's microelectronics operations in the early years of our water conservation goal were very effective in capturing opportunities for water conservation. Further improvements in water conservation are particularly challenging because, due to the low cost and high availability of water in the regions where we operate our microelectronics facilities, new water conservation projects at these

locations are seldom financially compelling. That said, we continue to investigate options to further drive the efficient use of water at our manufacturing operations and laboratories worldwide.

In 2012, 569 TCMs of water were conserved in our microelectronics manufacturing operations through new and ongoing reduction, reuse and recycling activities. Of this total conservation, 425 TCMs of water withdrawals were avoided through on-site water reuse, and wastewater and groundwater recycling projects. New water use reduction projects contributed a further 144 TCMs in water savings. The total accumulated conservation efforts over the past five-year rolling period avoided the usage of 3,902 TCMs of water resource.

## Smarter Water® solutions

Leveraging our experience and advanced analytics, information management, technology services and business consulting capabilities, IBM is providing strategic water management solutions that help governments, water utilities and companies monitor and manage water operations more effectively.

We are also applying our research to advancing water conservation and availability. One example: In May 2013, we opened an IBM Research Center in Nairobi, Kenya, our first research center in Africa. Research that will be conducted at the lab will include both applied and far-reaching exploratory research.

Water is one example of the applied research: Nairobi is currently home to more than three million inhabitants, and the population is expected to grow to over five million by 2020 as migration to urban areas continues. With this large population growth, it is necessary to better manage and reconcile the various systems within the city. IBM Research in Africa will initially focus on two of these systems—water and transportation. Using multiple data sources, analytics and models, IBM Research hopes to develop a complete understanding of Kenya's water system and optimize the use, storage, safety and distribution of the country's water supply.

# Product Stewardship

IBM's Product Stewardship program was established 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; can be upgraded and reused to extend product life; incorporate recycled content and environmentally preferable materials and finishes; and can be recycled and disposed of safely.

## Framework

IBM's product stewardship objectives and requirements are implemented through IBM's Global Environmental Management System (EMS), internal standards, product specifications and other requirements in IBM's Integrated Product Development process. Product environmental attributes such as energy efficiency, materials content, chemical emissions testing, design for recycling, end-of-life management plans and packaging data must be documented and reviewed in IBM's Product Environmental Profile (PEP) tool at various checkpoints during the development process.

Compliance management tools like the Product Content Declaration for IBM Suppliers support the assessments required for a complete PEP prior to product release. IBM's design and compliance controls, including a specification for Baseline Environmental Requirements for Supplier Deliverables to IBM, Product Content Declarations and compliance assessment protocols are managed by an interdisciplinary team with representatives from all IBM organizations that design, manufacture, procure, deliver and service our product offerings. The team's activities are coordinated by IBM's Center of Excellence for Product Environmental Compliance.

## Planning and Design

IBM's System z® development engineers are designing products that will be offered in 2016 and beyond. This requires anticipation of future environmental requirements and proactive partnerships with our suppliers to develop technology roadmaps with sound material selection strategies.

In advance of regulatory developments, IBM imposed prohibitions on benzyl butyl phthalate (BBP), dibutyl phthalate (DBP) and bis (2-ethylhexyl) phthalate (DEHP) above 0.1 percent in our suppliers' deliverables. These substances were identified by the European Union (EU)'s Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) Directive as Substances of Very High Concern (SVHCs), and their continued use in cables and other IT components would require authorization under the directive. Rather than pursue continued authorization to use the substances, IBM's hardware organization modified the internal PEP tool to incorporate mandatory transition plans for products containing these compounds. All new requirements for development were reflected in updates of IBM's environmental product specifications for suppliers.

In product specifications related to the requirements of the EU's Restriction of Hazardous Substances (RoHS) Directive, IBM Engineering Specifications 53P6233 and 97P3864 were updated to reflect new provisions of the recast RoHS Directive (2011/65/EC) and to proactively prohibit several exemptions well ahead of their official expiration dates.

These exemptions include lead (Pb) in linear incandescent lamps with silicate coated tubes (expiring September 2013), cadmium in certain color-converting LEDs for display systems (expiring July 2014), and cadmium in photoresistors for analog optocouplers in professional audio equipment (expiring December 2013).

In addition, the specifications inform suppliers that IBM will eliminate lead (Pb) in solders that complete a viable electrical connection between the semiconductor die and carrier within integrated circuit flip chip packages by July 1, 2014, though this exemption currently has no expiration date in the law. These and other exemptions from the materials restrictions were officially included in the RoHS Directive because reliable alternatives were not available when the Directive was published. IBM and our suppliers continue to work to eliminate the exempted uses where practical, and ahead of official expiration dates.

In 2012, all of our product brands also successfully completed the phase-out of uses for lead (Pb) in compliant pin connector systems other than c-press connectors and lead (Pb) in dielectric ceramic for capacitors in more than 200 distinct product offerings. IBM's development organizations gained experience with a custom, smart data management interface called the Exemption Tracking Tool, designed by IBM to assess the need for any critical exemptions and drive conversions toward RoHS exemption-free parts in all of IBM's current and future product materials. The Exemption Tracking Tool consolidates documentation on the parts and suppliers affected by each expiring exemption of the RoHS Directive, along with documentation on the conversion plans for those parts and the qualification status of the corresponding exemption-free replacement parts.

# Orchestration and Execution

The rapid pace of new requirements for electrical and electronic equipment in global markets is reflected by IBM's need to notify suppliers of 91 new or modified laws affecting our hardware and/or chemical product offerings in 2012. More than 6,000 individual communications to suppliers covered topics like the EU's REACH Directive, new requirements for implementing the recast RoHS Directive and the US Toxic Substances Control Act.

To address the increasing demands of due diligence, IBM's Integrated Supply Chain organization enhanced its Quality Management System to integrate product environmental compliance reviews into its supplier audit processes. The objective of these enhanced audits is to ensure that suppliers keep pace with the cadence of worldwide regulations and can provide all necessary technical documentation to substantiate conformance to environmental requirements.

## 2012 Product Stewardship Goals and Performance

**Recycled Plastics**

Recycled plastic used in IBM's products can range from 25 to 100 percent by weight of the commercial resin. In 2012, 25.5 percent of the total weight of plastic resins procured by IBM and its suppliers through IBM's corporate contracts for use in IBM's products were resins that contained between 25 and 100 percent recycled content. Comparing only the weight of the recycled fraction of these resins to the total weight of plastics (virgin and recycled) purchased, 12.6 percent of IBM's total weight of plastic purchases in 2012 was recycled plastic versus the corporate goal of 5 percent recyclate.

**Use of Landfills**

IBM's Product End-of-Life Management operations worldwide processed 36,100 metric tons of end-of-life products and product waste, and sent only 0.3 percent of the total to landfills or to incineration facilities for treatment, versus IBM's corporate goal of minimizing its combined landfill and incineration rate to no more than 3 percent of the total amount processed.

## Product Energy Efficiency*

**Servers***

IBM System p®: IBM released two models of Power Systems™ servers, the Power® 770 and 780, for which previous models or generations existed. These new servers provide reductions of 10 to 58 percent in the typical power consumption per unit of relative performance compared to their previous generation system. In addition, the power supplies were upgraded from 80 PLUS® Gold to 80 PLUS Platinum certified power supplies.

IBM System x®: The 11 System x servers announced in 2012 for which comparison models existed provide reductions in watts/MTOPS** (the Japan Energy Saving Law metric) of 18 to 93 percent over the previous generation. All servers were announced with 80 PLUS Platinum certified power supplies. Five of the servers reduced power use by 50 percent or more when idle, and 10 servers by 32 percent or more.

IBM System z: IBM announced the new IBM zEnterprise® EC12 with a radiator-based air-cooled system and optional water cooling. The air-cooled system delivers a 48 percent improvement in capacity per watt and the water cooling option delivers a 57 percent improvement as compared to the previous generation z196. The system also offers a high-voltage DC power option which improves system efficiency by 3 percent through the elimination of two power conversions.

**Storage Subsystems***

IBM announced the new IBM System Storage® DS8870 in 2012 that reduces energy use by 20 percent over the previous generation DS8800 system and reduces the power use per gigabyte of capacity by 35.9 percent. The system also incorporates a power supply which would qualify for the 80 PLUS Gold level but does not qualify because it is a multi-volt power supply. IBM continues to improve storage performance through the use of mixed-drive systems with capacity and throughput improvements and optimization driven by software capabilities such as Easy Tier,® thin provisioning and storage virtualization.

* IBM's product energy goal is to continually improve the computing power delivered for each kilowatt-hour (kWh) of electricity used with each new generation or model of a product.

** MTOPS-million theoretical operations per second is a calculation of machine operations based on a specified formula.

Note: The above table no longer includes performance information for Point-of-Sale terminals as IBM sold the Retail Store Solutions division in 2012.

# Product Energy Efficiency

Product energy efficiency has long been one of IBM's environmental and climate protection objectives. It was formalized as one of the company's corporate objectives when IBM's Product Stewardship program was established in 1991. We have initiated and invested in innovations and integrated solutions through collaboration between IBM Research and our product development teams. These teams have combined hardware and software innovations to improve the energy efficiency of IT equipment and data centers.

IBM also actively assists in the development of external product energy efficiency standards. As we did in 1992 when we helped to develop and were a charter member of the United States Environmental Protection Agency (US EPA) ENERGY STAR® Computer program, IBM is currently participating in the development of the ENERGY STAR specifications for server, storage and network devices, and providing technical assistance and equipment-operating data to assist in the development of criteria.

In March 2013, the US EPA finalized Version 2 ENERGY STAR program requirements for computer servers; the requirements for products covered by Version 1 will go into effect in December 2013. Version 2 also creates new product categories for blade servers and resilient servers, and eligible systems can be qualified upon the publication of the Version 2 requirements.

As of April 2013, IBM had 19 Version 1 qualified server systems available on the market—four System p and 15 System x enterprise server systems. These servers meet the US EPA's requirements for power supply efficiency, idle power limits or power management capability and data reporting. A list of IBM ENERGY STAR qualified servers may be found on the IBM and ENERGY STAR web page. IBM intends to qualify its System p and System x servers to the ENERGY STAR Version 2 requirements, including the addition of blade and resilient servers.

## New advancements for increased product energy efficiency performance

The following are examples of new IBM technologies, software and solutions that have enabled the increased energy efficiency of IBM's servers and storage products:

### IBM System x

IBM announced new server solutions designed to expand cloud and analytics capabilities, helping to make Smarter Computing a reality for IBM System x x86 server clients. IBM's new portfolio of x86 computing solutions includes the following:

- The IBM BladeCenter® HS23 offers an integrated virtualization platform with built-in system management which ships preconfigured with servers, storage, and networking integrated into a BladeCenter chassis. BladeCenter Foundation for Cloud offers 62 percent more computer power and four times more memory compared to previous generation technologies enabling clients to run 20 percent more virtual machines, making more efficient use of the system hardware and reducing the energy needed to complete a given set of workloads.

- The IBM System x3550 M4 delivers four times more memory, 33 percent more storage capacity, 18 percent better performance/power capability (as measured by the Japan Energy Law metric), and more virtual machines. The server has an 80 PLUS Platinum certified power supply and reduces energy consumption by 50 percent when no workload is present.

The energy use reduction benefit of IBM System x products is exemplified by an IBM System x3650 M3 server installation at a large UK financial services firm. IBM migrated 84 percent of the existing physical environment to a new virtualized server and storage environment, upgrading to energy efficient IBM System x3650 M3 servers. As a result, 66 physical servers were consolidated to just six servers across two sites, plus an additional nine IBM hosts to provide the new virtual environment. In the four weeks following completion of the project in April 2012, overall power consumption had been reduced by 37 percent. This equates to a projected savings of approximately $46,000 per year and the avoidance of almost 13 metric tons of $CO_2$ emissions.

## IBM PureSystems™

A completely new product offering for 2012, PureSystems combine automated systems management expertise and pre-loaded/pre-tuned application software with open, scalable hardware systems that help maximize system utilization and reduce the total number of servers required in the data center. By eliminating lower utilization servers, PureSystems allows companies to consolidate their IT operations and enable continued application/user growth without significant hardware system additions. Increased utilization leads to a smaller real-estate requirement, lower energy costs and lower systems management costs.

The IBM PureFlex™ System, (part of the IBM PureSystems product family) combines computation, storage, networking, virtualization and management into a single infrastructure system. The table that follows illustrates the levels of facility space and energy use savings that can be achieved by consolidating older server/storage systems onto the integrated, virtualized PureFlex platform. The cost calculations are based on six user installations employing the full range of SAP applications. Results are based on a set of before and after calculations for each installation.

**Examples of IBM PureFlex System Savings**

| | | PureFlex System % Less | |
|---|---|---|---|
| **Installation** | **Consolidation Type** | **Facilities** | **Energy** |
| IT Services Company | Mixed Platforms | 92% | 87% |
| Manufacturing Company 1 | Unix Servers | 94% | 94% |
| Distribution Company | Unix Servers | 80% | 78% |
| Retail Company | Mixed Platforms | 66% | 59% |
| Manufacturing Company 2 | x86 Servers | 80% | 71% |
| Diversified Company | x86 Servers | 65% | 68% |
| Average for All Installations | | 89% | 85% |

## IBM System z:

IBM announced the zEnterprise EC12, our next generation System z server, in August 2012. System z servers offer a host of capabilities that can drive energy efficiency in the data center: high levels of virtualization and utilization, static power savings mode for idle processors, a DC power option and optional water cooling.

The zEC12 can help provide better control of energy usage in the data center, offering a selection of energy efficient infrastructure options to complement the ability to run many workloads at high utilization. A static power savings mode allows for turning off processors that are not being used. The Unified Resource Manager monitors power use and provides trend reporting of energy efficiency for the entire system infrastructure. The zEC12 and zBX (zEnterprise BladeCenter Extension) includes a water-cooling option that offers energy savings without compromising performance. Two general examples of System z's energy efficiency benefits based on use of the previous generation systems are provided:

- A large insurance firm consolidated 3,000 distributed, largely underutilized servers onto Linux virtual servers running on IBM System z mainframes. By consolidating their distributed infrastructure to a private cloud supported on a handful of z196 and z10 servers, the client achieved an 80 percent reduction in power, cooling and floor space requirements—even as its application landscape has grown considerably. The company also expects to manage the majority of its 30 percent annual growth in computing requirements by provisioning new virtual servers on the existing System z cloud infrastructure.

• A major transportation operator wanted to upgrade its IT systems to meet the challenge of maintaining safe, secure and cost-effective air traffic control services in an increasingly busy airspace. To ensure 24/7 availability for these applications, the client migrated them to a private cloud environment hosted on an IBM zEnterprise 196 mainframe with the IBM zBX. The installation shrunk the data center footprint by 80 percent and reduced energy consumption by 58 percent.

## Storage systems

IBM continues to enhance our portfolio of storage systems, utilizing and improving various software-based data management capabilities such as Easy Tier, thin provisioning and storage virtualization which can reduce the storage hardware and energy footprint and the number of terabytes required to accomplish a given storage task. IBM also disclosed the DS8870 metric results for the Storage Networking Industry Association (SNIA) Emerald™ Power Efficiency Measurement Specification, the first disclosure for a storage system under that specification.

In 2012, IBM made a significant step to incorporating solid state disk (SSD) storage systems into our product lines with the acquisition of Texas Memory Systems (TMS). We plan to incorporate TMS products into our PureSystems prepackaged hardware systems, as well as into other storage, server and software product lines. SSDs offer performance and reliability advantages over traditional spinning disk based systems and have a significantly smaller power profile, making for more energy efficient systems.

## High Performance Computers (HPC)

IBM offers a full range of purpose built and "off-the-shelf" technical computing (supercomputer) solutions. IBM's supercomputer solutions are prevalent on both the TOP500® and Green500™ supercomputer lists. As of November 2012, six of the top 10 and 21 of the top 25 most energy efficient supercomputers in the world are built on IBM high-performance computing technologies. IBM HPC systems also occupy six of the top 10 spots and 10 of the top 25 spots on the November 2012 TOP500 list of the world's top supercomputers. Technologies developed through IBM's HPC development efforts are leveraged across the entire IBM Systems and Technology Group product line to improve performance and energy efficiency.

The speed and expandability of IBM's HPC products have enabled business and the scientific community to address a wide range of complex problems and make more informed decisions in the life sciences, astronomy, climate, system simulations and modeling, and many other applications. The use of HPC systems also enable simulations of activities, such as crash testing, vehicle or airplane designs, and fuel burners, without the need to expend physical resources on prototypes or physical testing. IBM continues its leadership performance in a space-saving, power-efficient HPC package to address the most demanding performance applications. Two examples follow:

• One of the world's premier research universities implemented an IBM HPC solution to expand its computing capacity from 9 to 21.5 teraflops, increase the flexibility of the system to support and facilitate a more diverse range of research work beyond the previous, primary mission of climate research while also reducing power consumption and increasing efficiency. The upgraded system automatically powers on and off, depending on need and usage, reducing the power use and the $CO_2$ emissions footprint of the system.

• A major supercomputing center in Germany built an HPC system incorporating IBM System x iDataPlex Direct Water Cooled dx360 M4 servers with more than 150,000 cores to provide a peak performance of up to three petaflops. A revolutionary new form of hot-water cooling technology invented by IBM allows the system to be 10 times more compact, removes heat 4,000 times more efficiently than air, and substantially improves peak performance while consuming 40 percent less energy than a comparable

air-cooled machine. The integration of hot-water cooling and IBM application-oriented, dynamic systems management software allows energy to be captured and reused to heat the buildings during the winter on the sprawling campus—and provides savings of $1.2 million per year.

## Innovations in semiconductor manufacturing

IBM Research and IBM Systems & Technology Group continue to drive innovation in semiconductor technologies to increase computing and storage capacity while reducing the energy required for a given functionality. Two recent innovations:

- IBM Research has developed flexible, low-power circuitry that can be built on metal oxides, referred to as strongly correlated materials. These materials can be induced to change their ability to transmit electricity, establishing the state of a cell by switching the material state from a conductor to an insulator or vice versa. The approach promises to be more energy efficient than standard silicon transistors as the resulting strongly correlated material transistors would not need to have power constantly applied to maintain their state.

- IBM has developed a process to place more than 10,000 transistors made from carbon nanotubes (CNT) onto a single chip. While significantly below current silicon-based circuit densities of more than a billion circuits on a processor, the development is an important next step in commercializing CNT-based processor technologies. CNT circuits are smaller and can potentially carry higher current densities than silicon circuits and offer a potential replacement for silicon-based processors as silicon technologies reach their physical limits.

# Product Recycling and Reuse

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. IBM's Global Asset Recovery Services organization offers Asset Recovery Solutions to commercial customers in countries where we do business. These solutions include:

- Management of data security and disk overwrite services

- Worldwide remarketing network for product resale

- State-of-the-art refurbishing and recycling capability for IT equipment

- Optional logistic services, such as packing and transportation

In many countries and US 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.

In 2012, IBM worldwide PELM operations processed 36,100 metric tons of end-of-life products for reuse or recycling. This represents 66 percent of the estimated 54,300 metric tons of new IBM IT equipment put on the market in 2012, up from 60 percent in 2011. The increase was primarily attributable to a reduction in the weight of equipment put on the market by IBM, due to the divestiture of our Retail Store Solutions business during 2012.

**2012 Product End-of-Life Management Operations**
**Total processed: 36,100 metric tons**
(percentage by weight)



- 53.1% Recycled
- 35.9% Resold for Reuse
- 8.2% Reused
- 2.5% Waste-to-Energy
- 0.3% Landfill & Incineration
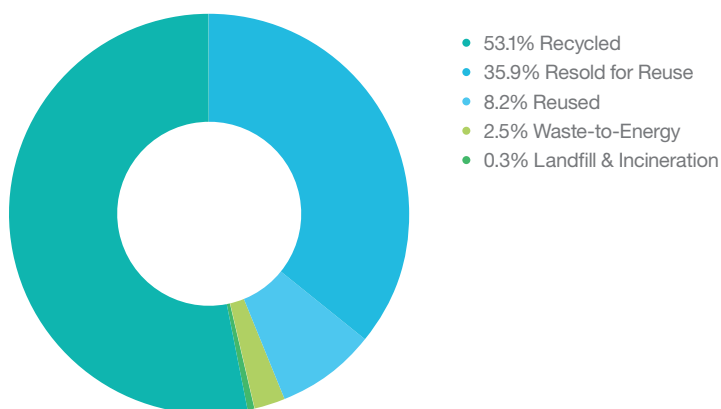
**Product End-of-Life Management (PELM)**

## 3%

**Goal**
Reuse or recycle end-of-life products such that the amount of product waste sent by IBM's PELM operations to landfills or to incineration for treatment does not exceed a combined 3 percent of the total amount processed

## 0.3%

**Result**
In 2012, IBM's PELM operations sent only 0.3 percent to landfills or to incineration facilities for treatment

IBM's voluntary environmental goal is to reuse or recycle end-of-life products such that the amount of product waste sent by our PELM operations to landfills or to incineration facilities for treatment does not exceed a combined 3 percent of the total amount processed. In 2012, IBM worldwide PELM operations continued to send less than 1 percent (approximately 0.3 percent) to be landfilled or incinerated for treatment worldwide.

Of the total processed by IBM's worldwide PELM operations during this period, 53.1 percent was recycled as materials, 35.9 percent was resold as products, 8.2 percent was reused by IBM, 2.5 percent was incinerated for energy recovery, and 0.3 percent was sent to landfill or incinerated for final disposal.

Of the total 36,100 metric tons of product and product waste processed through IBM's worldwide PELM operations, approximately:

- 44 percent was processed in North America;
- 30 percent in Europe, the Middle East and Africa;
- 19 percent in Asia Pacific; and
- 7 percent in Latin America

IBM's corporate-wide requirement for the environmental evaluations of the company's PELM suppliers was established in 1991, an expansion of our supplier environmental evaluation program introduced in 1972. We evaluate these suppliers prior to doing business with them and every three years thereafter. Our objective is to use only those suppliers that have a strong focus on environmental management, including complying with laws and regulations as well as sound management practices. More about IBM's requirements for our PELM suppliers may be found in the Environmental Requirements in the Supply Chain section of this report.

From 1995, when we first began including product recovery in our annual corporate environmental report, through the end of 2012, IBM has documented the collection and processing of approximately 880,000 metric tons (over 1.9 billion pounds) of product and product waste worldwide.

**IBM Worldwide PELM Operations: Total Annual Quantity Processed** (Metric Tons)

| Year | Total Processed |
| --- | --- |
| 2008 | 42,600 |
| 2009 | 38,000 |
| 2010 | 36,700 |
| 2011 | 38,000 |
| 2012 | 36,100 |

## 880,000 metric tons

of product and product waste collected and processed for reuse and recycling from 1995 through 2012

# Product Packaging

IBM has had a program focused on the environmental attributes of our product packaging since the late 1980s. Under the program, IBM packaging engineers design solutions that minimize toxic substances and packaging waste by specifying nontoxic materials and inks. We keep packaging to a minimum while continuing to provide protection to the product being shipped to clients, and collaborate with suppliers to use recycled and recyclable materials and promote reuse.

The design of rugged products and other optimization measures for the efficient use of product-protective packaging are addressed within IBM's Product Stewardship program and associated engineering specifications. Efficient use of product packaging and less tangible environmental benefits associated with improvements in transportation efficiency are tracked through this program.

IBM's environmental requirements for product packaging are included in our Environmental Packaging Guidelines, which were first published in 1990 and have been updated as needed over the years. Key elements of IBM's Packaging Guidelines have also been embedded in various engineering specifications and procurement documents, which extend their reach beyond IBM to include our supply chain and other business partners. The following supplier environmental packaging requirements are accessible from the Information for suppliers website:

- IBM Packaging requirements, 2006 as amended

- Engineering Specification(ES) 5897661: Recyclable packaging materials, selection and identification, 2012

- ES 5897660: Packaging materials, essential requirements, restricted heavy metals and other substances of very high concern, 2011

- ES 37L8024: Wooden packing, materials treatment and marking requirements, 2009

IBM's environmental packaging requirements incorporate a list of the most commonly used packaging materials. Each is evaluated on a variety of environmental criteria. Shippers are required to use materials that provide the best overall product protection and value, but when all else is equal they are required to choose the material that has the least possible adverse effect on the environment. The materials listed are based on practical and regulatory experience and customer feedback.

Other environmental areas addressed in the packaging requirements include:

• Ozone depleting substances;

• Restricted heavy metals and other materials of concern;

• Source reduction;

• Re-useable packaging systems;

• Recyclable packaging; and

• Conserving natural resources.

## IBM's Recyclable Packaging Materials Selection and Identification specification

IBM's corporate Recyclable Packaging Materials Selection and Identification specification was updated in May 2012. The global specification applies to all primary, secondary and tertiary packaging for products, devices, parts, sub-assemblies, materials and supplies purchased by IBM for use in our manufacturing and distribution operations. It also applies to all packaging used in protecting, handling, or the marketing of IBM products, parts and supplies, including those manufactured by an original equipment manufacturer.

The objectives of the specification are:

• To establish parameters for the recycled content to be included in corrugated and plastic packaging

• To reduce or eliminate the use of non-recyclable materials or material compositions that prevent the recycling of IBM packaging after use

• To promote recycling by providing information (in the form of markings) that will increase the likelihood that our packaging materials will be recycled

The specification applies, but is not limited to, the following type of packaging materials and components:

• Molded and fabricated cushions (of any plastic resin)

• Corrugated fiberboard and paperboard

• Rigid and flexible plastics (bags and wraps)

• Wooden pallets, crates and skids

## Protective product packaging

In 2012, our integrated worldwide packaging engineering team saved an estimated 1,400 metric tons of packaging materials through the implementation of 50 packaging redesign projects for parts and assemblies shipped from suppliers to manufacturing operations, and for packaged finished products supplied to clients worldwide. All environmental project data are submitted into the IBM Packaging Savings Database to track overall performance and details of ongoing annual costs and environmental savings delivered. The total annual materials and transport cost savings reported in 2012 was nearly $17.3 million. The following are highlights of a few of the projects implemented:

- The second-tier chassis supplier for IBM's Power Systems servers ships packaged parts to the first-tier fabrication supplier for additional manufacturing value-add. In these shipments, the packaging from the first shipment was discarded and new packaging was used to subsequently transport the finished goods from the first-tier fabrication supplier to IBM for final customer configuration.

  Working with both suppliers, IBM arranged for the packaging from the second-tier chassis supplier to be reused by the first-tier supplier to transport the completed assembly to IBM, thereby eliminating one set of packaging. In addition, the thickness of the polyethylene bag used to protect the equipment from moisture and scratching during shipment was reduced, while still retaining the protective quality. Total savings of 117 metric tons of packaging materials were delivered annually, with total materials and transport costs savings of $288,000 per year.

- In collaboration with a supplier of planar sub-assemblies for IBM Power Systems, we determined that the corrugated fiberboard cushioning being used could be eliminated because the polyethylene foam was sufficient for cushioning the product. As a result, additional parts are now packed into the original corrugated fiberboard carton. The enhanced design saved nearly 19 metric tons per year in packaging materials, with a combined materials and transport cost savings of $246,000 per year.

- The IBM System Storage DS2000 and DS3000 series models originally had been packed separately from the accessories on a pallet. After packaging design enhancements, the accessories were able to be combined into a single, smaller corrugated fiberboard carton for shipment to clients. This redesign saved 9.5 metric tons per year of packaging materials and provided a total materials and transport cost savings of $82,000 per year.

- All IBM System x server switch assemblies were shipped from IBM's manufacturing sites to customers in a corrugated fiberboard carton incorporating polyethylene (PE) cushioning. Our packaging design engineers were able to reduce the overall dimensions of the carton and replace the PE cushion with a lighter, but stronger, thermoformed PE cushion, made from 100 percent post-consumer

# 1,400 metric tons

2012 savings in packaging materials through new or redesigned packaging solutions

# $17.3 million

Associated savings in materials and transport costs

recycled polyethylene. These design initiatives saved 3.4 metric tons per year of corrugated fiberboard and plastic packaging materials, with an annual combined materials and transport cost savings of $274,000. Similar projects were implemented globally across different products during the year.

Suppliers are also applying these types of new design specifications for IBM and with other customers to deliver tangible benefits across the integrated supply chain.

Over the last five years, IBM has reported combined environmental savings of over 6,200 metric tons of product packaging materials from redesign projects implemented by the engineering packaging team worldwide. The total materials and transportation cost savings was approximately $60.4 million over the same period, benefiting IBM, parts suppliers and clients globally.

## IBM's requirement for sourcing packaging materials

We established IBM's voluntary environmental requirement for the responsible sourcing of paper and paper/wood-based packaging in 2002. It required that the paper- and wood-based packaging directly acquired by IBM be procured from suppliers that source from sustainably managed forests, where such sources exist.

When this goal was first established, sufficient quantities of sustainably sourced paper and packaging materials were not yet available for much of the company's needs. With a continued focus on this objective by IBM and our suppliers over the years, since 2010, 99 percent of the paper/wood-based packaging IBM procured worldwide has come from suppliers that contractually warranted that the source was derived from forests managed in an ecologically sound and sustainable manner. This requirement is now incorporated into our standard supplier specification for paper/wood-based packaging.

# Product Safety and Hardware Compliance

IBM's product safety and hardware compliance requirements are integrated within various steps of the product development, test, manufacturing and delivery processes. Each product completes the required product safety, electromagnetic compatibility, telecom and wireless regulatory compliance reviews as part of IBM's Product Safety Review Board process, ensuring newly announced or modified products comply with applicable hardware compliance standards. The review board process also ensures that products comply with applicable national regulations, and that IBM obtains any third-party or national certifications required by law. Our Integrated Supply Chain organization helps us ensure that our suppliers provide hardware that is compliant with current international and national requirements.

Programs for continual improvement include both internal and third-party assessment of IBM's product safety and hardware compliance design, development and product controls implementation. These assessment results are fed back into the development and conformity assessment process for future products. In addition, product safety and regulatory compliance incident review programs provide effective capture, investigation and remediation of product safety-related incidents.

IBM plays a leading role in the development of national, regional and international product safety, electromagnetic compatibility and conformity assessment standards for IT products.

# Energy and Climate Programs

IBM recognizes climate change as a serious concern that warrants meaningful action on a global basis to stabilize the atmospheric concentration of greenhouse gases (GHGs). We believe all sectors of society, the economy and governments worldwide must participate in solutions to climate change.

## Climate Change

IBM has been a leader in addressing climate change through our energy conservation and climate protection programs for decades. IBM's leadership is defined by our:

- Longstanding global commitment

- Comprehensive and multifaceted programs covering the company's operations, products and services

- Leading-edge innovations and client solutions

- Significant results, both early and ongoing, benefiting IBM, our clients and the world

## A Six-Part Strategy

We have a six-part strategy to reduce the GHG emissions related to our operations:

1. Designing, building, updating and operating facilities, including data centers and manufacturing operations, that optimize their use of energy and materials and minimize GHG emissions

2. Purchasing electricity generated from low $CO_2$-emitting and renewable energy-generating sources where it makes business and environmental sense

3. Minimizing the use and emissions of perfluorocompounds (PFCs—a family of GHGs) in semiconductor manufacturing

4. Requiring our suppliers to maintain an Environmental Management System which includes energy use and GHG emissions inventory and reduction plans

5. Reducing employee commuting and business travel

6. Increasing the efficiency of IBM's logistics operations

In addition, in the area of our hardware and software products and services, IBM's strategy includes designing energy efficient products and providing clients with energy efficient solutions that also help protect the climate.

IBM considers energy and material conservation to be the cornerstone of our climate protection efforts. IBM does not have plans to use emissions offsets to become "carbon neutral" for all or part of our operations. Our efforts to reduce IBM's GHG emissions are focused on delivering results in the areas where the company can make the greatest positive impact on climate protection—by devoting available resources to actions, products and solutions that actually increase energy efficiency and reduce GHG emissions for both IBM and our clients, rather than offsetting them.

# Conserving Energy

IBM's commitment to energy conservation dates back to 1974 and has continued unabated ever since. Energy conservation is a major component of our comprehensive, multifaceted climate protection program because the release of $CO_2$ by utility companies powering our facilities, or from the use of fuel for heating or cooling, represents the greatest potential climate impact associated with our operations.

In 2012, IBM's energy conservation projects across the company delivered savings equal to 6.5 percent of our total energy use versus the corporate goal of 3.5 percent. These projects avoided the consumption of 336,000 megawatt-hours (MWh) of electricity and 215,000 million British thermal units (Btu) of fuel oil and natural gas, representing the avoidance of 155,000 metric tons of $CO_2$ emissions. The conservation projects also saved $35 million in energy expense. While the quantity of energy avoided through conservation projects is slightly (0.9 percent) lower than in 2011, the 6.5 percent avoidance is consistent with the 2008–2012 average of 6.4 percent per year. These strong results are due to our continued, across-the-board focus on energy demand reduction, efficiency and the implementation of standard, global energy conservation strategies for facility operating systems.

IBM's energy conservation goal recognizes only completed projects that actually reduce or avoid the consumption of energy in our operations. Reductions in energy consumption from downsizings, the sale of operations and cost avoidance actions, such as fuel switching and off-peak load shifting, are not included in the results for measuring performance against achieving this goal. Moreover, the conservation results discussed above are conservative in that they include only the first year's savings from the conservation projects. Ongoing conservation savings beyond the first year are not included in the tally. Accordingly, the total energy savings and $CO_2$ emissions avoidance from these conservation actions is actually greater than this simple summation of the annual results.

**Electricity and Fuel Use and Related $CO_2$ Emissions**
Scope 1 and Scope 2 $CO_2$ Emissions

| Year | Electricity and Fuel Use (thousand MMBtu) | CO₂ (estimated) (metric tons x 1,000) |
|---|---|---|
| 2008 | 22,443 | 2,502 |
| 2009 | 21,507 | 2,436 |
| 2010 | 21,622 | 2,156 |
| 2011 | 21,758 | 2,182 |
| 2012 | 21,613 | 2,195 |

IBM uses the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard developed by the World Resources Institute and the World Business Council for Sustainable Development for estimating and reporting its $CO_2$ emissions.

$CO_2$ emissions data includes the $CO_2$ avoidance associated with IBM's purchases of renewable energy.

**Energy Conservation**

## 3.5%
**Goal**
Achieve annual energy conservation savings equal to 3.5 percent of IBM's total energy use

## 6.5%
**Result**
In 2012, IBM's energy conservation projects across the company delivered savings equal to 6.5 percent of our total energy use

## 155,000 metric tons
of $CO_2$ emissions avoided through IBM's energy conservation projects in 2012

**1990–2012**
## 6.1 billion kWh
of electricity conserved

## 3.9 million
metric tons of $CO_2$ emissions avoided

## $477 million
saved through IBM's annual energy conservation actions

Between 1990 and 2012, IBM saved 6.1 billion kWh of electricity consumption, avoided 3.9 million metric tons of $CO_2$ emissions (equal to 57 percent of the company's 1990 global $CO_2$ emissions) and saved $477 million through our annual energy conservation actions.

## Managing IBM's energy program

Our global energy management program leverages the expertise of more than 40 IBM energy management professionals deployed around the world. The team has created best-practices checklists that set minimum expectations for building systems and operations, including controls and equipment for lighting, HVAC (heating, ventilating and air conditioning), central utility plants (CUPs), compressed air, data center and IT systems, cafeterias and office systems.

All IBM sites using 2,000 MWh/year or more of energy must complete the checklists, perform a gap analysis and develop an energy conservation implementation plan a minimum of every four years. The program is buttressed by several enterprise-level databases that collect, store and analyze energy-use data, conservation project results, completed checklists, and relevant key performance indicators. These analyses enable monthly metrics reporting to the management team and the identification of opportunities for improvement. The continuous review of energy use and conservation performance has driven the strong results noted above.

More than 2,670 energy conservation projects involving a full range of energy efficiency initiatives delivered savings at over 400 IBM locations globally in 2012. Examples include:

- Projects to match building lighting and occupancy schedules or install more efficient lighting systems were implemented at 208 locations, reducing electricity use by 12,700 MWh while saving $1.7 million.

- HVAC systems or operating schedules were modified at over 150 locations reducing 48,500 MWh of electricity use and 99,000 MMBtu of fuel use, saving $5.3 million.

- Central utility plant projects were implemented at 92 locations:

  - Boiler and chiller operation optimization helped reduce 19,300 MWh of electricity and 21,000 MMBtu of natural gas consumption at a savings of $1.4 million.

  - Free cooling reduced 8,200 MWh of electricity consumption saving $0.8 million.

  - Equipment upgrades and maintenance improvements reduced 17,200 MWh of electricity and 25,000 MMBtu of natural gas consumption while saving $0.9 million.

- Manufacturing energy efficiency projects:

  - IBM's microelectronics locations derived energy savings from nearly 220 efficiency improvement projects in their manufacturing and test areas. These projects saved 33,800 MWh of electricity, 69,000 MMBtu of fuel and $2.9 million.

    The projects focused on increasing the capacity and throughput of manufacturing equipment through process optimization, improved HVAC management and relaxed space temperature and humidity specifications where appropriate, as well as upgrades to more efficient equipment such as variable-speed vacuum pumps on semiconductor manufacturing tools.

## Leveraging analytics for further efficiencies

As opportunities for incremental savings from typical energy conservation projects diminish due to IBM's decades-long focus on energy efficiency, we are increasingly leveraging analytics to uncover less obvious, embedded opportunities to achieve continual improvement in operational energy efficiency.

- Smarter Buildings technologies such as IBM TRIRIGA® Energy Optimization (ITEO) are being deployed in IBM facilities to increase energy efficiency. IBM locations are updating and connecting existing sensor networks to analytics-based control systems to collect data and analyze individual events and system trends. This information is then used to optimize building energy consumption. Through March 2013, IBM deployed ITEO at 23 of our highest energy consuming sites, with deployment underway at eight more locations in 2013. Twelve sites reported reductions of 8,400 MWh of electricity and 29,000 MMBtu of fuel use, with a net savings of $500,000 in 2012.

- Chilled water optimization software and supporting sensor systems are being installed at IBM locations with large chiller plants. Three sites recorded 13,500 MWh and $980,000 of savings in 2012. Four other locations installed the system in 2012; savings from those sites will be reported in 2013. Six additional US locations plan to install the software and supporting sensor systems in 2013.

## Data centers

IBM manages a diverse portfolio of data centers, consisting of both IBM and IBM-managed customer facilities all over the world. IBM operates additional raised-floor space to support internal operations, as well as design and test centers for our Systems and Technology Group and Software Group.

We take a holistic approach to managing our data center portfolio, building new, high-efficiency data center space where we need to expand our raised-floor space to meet the needs of existing and new customers, and retrofitting and improving existing data center space to increase utilization and derive more workload per area, equipment and energy resources. These efforts are accomplished through initiatives that include the following:

1. Building new high-efficiency data center space. IBM's most recent data center expansions in the United States have achieved LEED® certification and use state-of-the-art design and system techniques to enable PUE (Power Usage Effectiveness) measurements of 1.4 to 1.6 when the data center is fully populated. PUE is the ratio of the total power required at the data center divided by the power required to operate the IT equipment.

2. Implementing best practices and thermal monitoring programs at our data centers to optimize cooling delivery and minimize energy use and cost.

3. Consolidating and virtualizing workloads for our internal operations and our customers' operations, and utilizing cloud computing.

## New data center construction

IBM's most recent data center expansion, constructed in 2012 in Canada, uses state-of-the-art design and system techniques to enable PUE measurements of less than 1.4 when the data center is fully populated. The data center is designed to operate at 60 percent less energy than existing data centers through the inclusion of several leadership characteristics:

- **Smarter data center management:** Intelligent building systems connect IT equipment with the centralized energy consumption analysis system, constantly measuring power, water and fuel use in real-time to identify opportunities to conserve energy commensurate with demand.

- **Free-flow cooling:** Energy consumption is reduced by taking advantage of free cooling—using the outside air to cool the data center. The data center is located in a favorable climate zone; we will gain an estimated 200 days of full "free" cooling annually, and 120 days of partial free cooling.

- **Variable speed fans and chiller systems:** The data center cooling system uses energy efficient mechanical equipment, including motors, variable frequency pumps and chillers that will deliver a return on investment in three years or less.

- **Higher chilled water operating temperatures:** The cooling water delivered from the chillers to the raised-floor has been increased from 48 degrees in a data center built just four years ago to 55 degrees at this site.

- **Modular data center design:** Our new leadership data center in Canada uses the same innovative modular design as IBM's leadership data center in Raleigh, NC. It was built in smaller increments—or modules—allowing it to respond to business growth while adapting to IT changes in a way that permits upgrades without disrupting operations.

## Existing data centers

In 2012, we completed nearly 400 projects at over 120 existing data center locations that reduced energy use by over 49,700 MWh, and saved more than $5.5 million. Total savings from these projects are equivalent to the energy use of a 4,000 to 6,000 square meter IBM strategic data center.

The IBM Measurement and Management Technology (MMT) thermal management system has been installed at IBM's major data centers representing more than 60 percent of the global raised-floor energy consumption for IBM's internal and client IT operations. This innovative technology from IBM Research produces a real-time, three-dimensional thermal map of the detailed heat sources and sinks within a data center. Using the information provided by MMT, IBM has been able to take the following actions over the past three years:

- Install thousands of blanking panels and cable cutout plugs, reducing the short circuiting of cooling air in the data center

- Shut down more than 20 percent of the total installed CRAC units and improve average CRAC utilization to greater than 60 percent

- Increase the average raised-floor temperature by 1.6°C, with work continuing to further raise temperatures toward an average of 24°C

MMT offers the additional benefit of rebalancing a data center's thermal profile as equipment is removed and installed, enabling the early identification of developing problems to proactively mitigate their impacts.

**$5.5 million**

saved by nearly 400 energy conservation projects at more than 120 existing data center locations that reduced energy use by a total of over 49,700 MWh

## System virtualization and cloud computing

Virtualizing workloads allows a single system to support multiple applications or images, making greater use of the full capabilities of the IT equipment and executing more workloads in less space with less energy.

IBM is utilizing virtualization to consolidate multiple workloads from servers and storage systems with low utilization onto single systems, reducing energy use and cost by more than 104,300 MWh and $10 million in 2012. IBM virtualized more than 22,000 applications in our owned/leased data centers in 2012 and plans to continue these projects in 2013 and beyond to continually improve utilization of IBM and client hardware assets and reduce data center operation energy use and space requirements.

We continued to expand IBM's cloud computing programs through 2012, offering cloud services from seven IBM data centers around the globe. Cloud computing is an efficient model for providing IT services that optimize the use of virtualization technologies. It allows us to further improve utilization of IT equipment assets, better balance workloads, adjust power consumption and virtualize infrastructure in data centers to align processing and storage needs with power consumption.

## Data center power usage performance

IBM measures, calculates or uses estimating protocols to determine the PUE of the data centers we manage. These data centers include recently constructed Leadership Data Centers as well as large legacy data centers. The average PUE for this raised-floor space is 1.73.

Because the majority of the data centers in IBM's facility portfolio consist of spaces that are 10 to 30 years old and contain IT equipment varying in age from new to 10 years, improving the energy efficiency of these data centers requires thoughtful planning and execution to ensure that we meet both our operational objectives and our commitments to our customers.

The overall performance of these IBM data centers compares favorably with the average PUE of 1.8 to 1.89 as reported in the Uptime Institute 2012 Data Center Industry Survey of 1,100 data center users and with an average PUE of 2.9 as reported by a Digital Realty Trust 2012 survey of 300 IT decision makers. The results from both surveys were reported in an April 15, 2013, *Techworld* article. IBM has made—and will continue to make—significant investments and improvements to reduce energy demand and improve energy efficiency in our data centers. Our results speak to the success of our efforts.

## Voluntary data center energy efficiency initiatives

In January 2012, the European Commission (EC), the executive body of the European Union (EU), awarded 27 IBM data centers in 15 EU countries with "Participant" status in Data Center Energy Efficiency, based on the EU Code of Conduct (CoC) for Energy Efficient Data Centers.

An additional 16 IBM data centers were awarded "Participant" status later in 2012 under the EU CoC. The registered data centers represent more than 70 percent of IBM's IT delivery and business recovery data center space in the EU. This honor represents the largest portfolio of data centers from a single company to receive the recognition to date. The EU CoC for Energy Efficient Data Centers is a voluntary initiative that aims to promote energy efficiency performance standards for data centers.

IBM maintains energy efficiency leadership in data centers by deploying uniform practices across our global data center portfolio. In addition, IBM applies innovative solutions such as Measurement & Management Technologies (MMT) thermal monitoring and control system, virtualization technologies, dynamically managed air conditioning control systems and development of alternate power systems such as the direct current solar system at IBM's software lab in India.

IBM data center and IT system professionals continue to be involved in governmental and professional data center energy efficiency initiatives, including the EU CoC for Energy Efficient Data Centers program, ENERGY STAR® and The Green Grid® initiatives. These programs set operating criteria or metrics that inform and encourage data center operators and owners to reduce energy consumption in a cost-effective manner while enabling operators to maintain the mission-critical functions of their data centers.

## An additional significant energy conservation goal

In 2009, amid business growth and continued increases in global energy prices, IBM set an additional goal to conserve 1,100,000 MWh of energy by year-end 2012. This was a substantial undertaking—1,100,000 MWh represents more than 20 percent of the total electricity IBM consumed in 2008.

Over the last four years, an integrated team from IBM's environmental and finance staffs, real estate organization and business units saved 1,246,000 MWh of energy through conservation and efficiency, exceeding our target by 13.3 percent. Over 6,000 individual projects were completed across more than 500 facilities in 56 countries. The projects involved the deployment of unique IBM technologies and know-how, as well as a strong management system supported by senior executives.

**43**

IBM data centers across

**19**

countries were awarded "Participant" status in Data Center Energy Efficiency, based on the EU Code of Conduct for Energy Efficient Data Centers

**1.246 million MWh**

of energy avoided through conservation and efficiency actions from 2008–2012

**13.3%**

Percentage by which we exceeded our target

The following provides a summary of the accomplishments achieved over the period of this initiative:

- Server and storage virtualization and consolidation projects reduced or avoided 375,000 MWh/year of energy use and enabled the closure and consolidation of 20 data center spaces into larger, more efficient data center space. Over 100,000 images were consolidated onto multi-image servers across IBM's data center and lab operations.

- Data center best practices were implemented across our data center portfolio and MMT was implemented at 47 data centers, reducing or avoiding 92,300 MWh/year of electricity use and $8.9 million per year.

- Forty-two locations in the United States, Canada and Europe implemented or improved free cooling systems, reducing energy use by over 34,000 MWh/year.

- Building systems operations were improved through the use of chiller plant and building analytics and continuous commissioning projects, conserving 88,000 MWh of electricity and 305,000 MMBtu of fuel and purchased commodity consumption.

- At IBM's semiconductor manufacturing locations, conservation projects involving equipment and process optimization, optimizing clean room temperature and humidity specifications and the installation of higher efficiency equipment saved 110,000 MWh in energy use.

This additional goal augmented IBM's already strong company-wide energy conservation focus and enabled us to increase our average annual energy conservation savings rate as a percentage of our annual energy consumption from the 5 percent we achieved between 2005 to 2008 to 6.3 percent from 2009 to 2012.

Executing this additional goal also revealed several keys to achieving continual improvement in energy conservation and efficiency, including:

- Integration of diverse skills, knowledge of interrelated activities and collaboration across business units are essential to capture the full energy conservation opportunity in integrated systems like data centers and manufacturing facilities.

- Use of IT-based monitoring, measurement and control technologies and analytics provide powerful insights into system performance and identify significant efficiency improvement opportunities, even in previously optimized systems.

# Renewable Energy

In 2012, IBM contracted with its utility suppliers to purchase 499 million kWh of renewable energy over and above the quantity of renewable energy provided as part of the mix of electricity that we purchased from the grid. The 499 million kWh represented 9.8 percent of our global electricity usage and resulted in the avoidance of 212,000 metric tons of $CO_2$ emissions. In addition, more than 5 percent of IBM's electricity purchases from the grid were electricity generated from renewable sources—bringing our total renewable energy purchases to approximately 15 percent of our consumption in 2012.

IBM continued to contract for defined renewable energy purchases in Australia, Austria, Belgium, Denmark, Finland, Germany, Italy, Japan, Netherlands, Sweden, Switzerland, the United Kingdom and the United States in 2012. We have at least two data center facilities located in each of these countries and these data centers receive some or all of their electricity from renewable energy purchases.

Our procurement of renewable energy must meet our business needs. Not only should the cost be competitive with market prices over time, but the energy must also be consistently reliable to ensure uninterrupted power for our critical operations. IBM's strategy of contracting for defined renewable energy has been successful in Europe and we continue to request the inclusion of electricity generated from renewable sources as an option in our contracts in all geographies.

Currently, due to limitations in the market regulatory and procurement structures and in the distribution infrastructure, there is limited renewable energy available through the grid in most areas of the world. These restrictions limit the total quantity of renewable energy available for purchase directly from the grid for consumption at a facility. Continued advances are needed in renewable electricity generation, distribution and storage technologies to increase the availability of economically viable renewable electricity in the marketplace to supply electricity directly to consuming locations. IBM is working with industry peers, utilities, NGOs and other renewable energy industry participants to identify, develop and capture opportunities to procure electricity generated from renewable sources where it makes business sense.

IBM also endeavors to incorporate on-site solar energy, co-generation or tri-generation systems or geothermal systems on an individual location basis. Some recent examples:

- In 2012, we contracted with the landlord of a leased location in Massachusetts to purchase electricity from a 780-kilowatt rooftop solar panel array at this location. The system supplies electricity directly to the facility and is estimated to deliver 5 to 10 percent of the location's annual electricity use. The system became fully operational in April 2013.

## 499 million kWh

of renewable energy purchased by IBM from our utility suppliers

## 9.8%

The amount of IBM's global electricity usage represented by purchased renewable energy

- Three IBM facilities in Europe have co-generation/tri-generation systems which provide 10 to 20 percent of our electricity use at these facilities, as well as heating and cooling to support building operations.

- IBM's Zurich Research Center has a geothermal heating system.

We are continuing to pursue additional opportunities to install on-site electricity generation systems at our facilities. These systems offer a means to diversify our electricity supply and increase our purchases of renewable energy, though they typically only generate 10 to 20 percent of our site energy demand because the majority of the energy consumed by IBM occurs at locations with energy-dense activities, such as data centers and semiconductor manufacturing sites.

## Research to advance renewable energy

In addition to procuring renewable energy for our own use, IBM is working to further the availability and affordability associated with various forms of renewable energy by investing in IT-related research and development. Three recent examples:

- IBM scientists have developed a method of dramatically improving the overall efficiency of concentrated solar power systems up to 80 percent. The prototype High Concentration Photovoltaic Thermal system uses a large parabolic dish, made from a multitude of mirror facets, which are attached to a sun tracking system that positions the dish at the best angle to concentrate the sunlight onto several microchannel-liquid cooled receivers with specialty photovoltaic chips. Hundreds of the photovoltaic chips are mounted on micro-structured layers that pipe liquid coolants within a few tenths of a micrometer off the surface of the chip to absorb the heat and draw it away 10 times more effectively than can be achieved with passive air cooling. The entire receiver combines hundreds of chips and provides 25 kilowatts of electrical power.

- IBM has demonstrated a light-weight, ultra-high-density lithium-air battery with the maximum energy density theorized to be 15 times greater than lithium-ion batteries. Most importantly, continued advancement of the technology may achieve energy density comparable to that of gasoline, which would markedly improve the economics of electric vehicles.

- IBM is working with a range of partners to deliver smart grid capability to improve the integration of distributed generating assets—including wind and solar electricity generation systems and systems with energy storage capacity, such as electric cars and large refrigeration systems—into grid dispatching and planning processes. These projects are critical to enabling the smooth integration of renewable energy generation resources into the grid system.
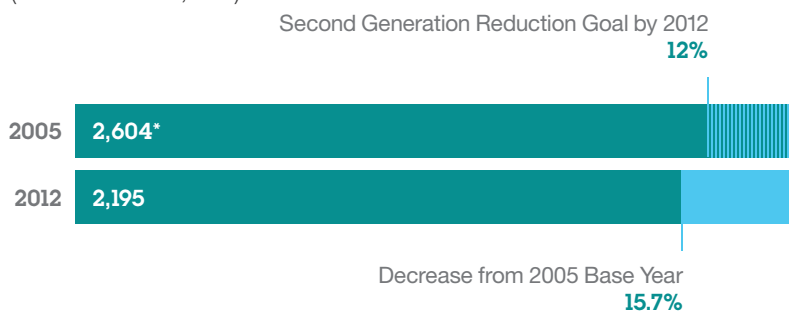
# CO$_2$ Emissions Reduction

IBM met its second-generation climate protection goal in 2012, reducing our operational CO$_2$ emissions by 15.7 percent against the 2005 baseline and exceeding our commitment to achieve a 12 percent reduction over the period. Operational CO$_2$ emissions increased slightly from 2011 to 2012 primarily due to an increase in the average CO$_2$ factor of IBM's purchased electricity.

IBM's CO$_2$ emissions reductions have been achieved through:

- IBM's energy conservation efforts that have reduced or avoided a total of 1.83 million MWh of electricity and 2.9 million MMBtu of fuel use (based on one-year savings associated with conservation projects) from 2006 to 2012, which resulted in a reduction in IBM's electricity and fuel use by 2.3 percent and 25.9 percent, respectively, against the 2005 baseline use adjusted for acquisitions and divestitures.

- IBM's direct purchases of electricity generated from renewable sources, i.e., beyond that supplied through grid-purchased electricity, and the associated CO$_2$ avoidance, increased by a factor of 3.8 from 2005 to 2012.

- An increase in the amount of renewable energy IBM procured as part of the grid-supplied electricity between 2005 and 2012. This is evident as the average grid emissions factor for IBM electricity purchases reduced from 0.45 metric tons CO$_2$/MWh in 2005 to 0.43 metric tons CO$_2$/MWh in 2012, as reported by the International Energy Administration and the US EPA. This increase is the result of higher percentages of wind, solar and natural gas generation and lower levels of coal (in some jurisdictions) in the mix of grid generation.

**CO$_2$ Emissions Reduction**

## 12%

**Goal**

Between 1990 and 2005, IBM's energy conservation actions reduced or avoided CO$_2$ emissions by an amount equal to 40 percent of our 1990 emissions. To further extend this achievement, IBM set an aggressive "2nd generation" goal: to reduce the CO$_2$ emissions associated with IBM's energy use 12 percent between 2005 and 2012 through energy conservation and the procurement of renewable energy.

## 15.7%

**Result**

As of year-end 2012, IBM's energy conservation results and procurement of renewable energy achieved a 15.7 percent reduction in IBM's energy-related CO$_2$ emissions from 2005.

**CO$_2$ Emissions Reduction**
(metric tons x 1,000)

Second Generation Reduction Goal by 2012
**12%**

| | |
|---|---|
| 2005 | 2,604* |
| 2012 | 2,195 |

Decrease from 2005 Base Year
**15.7%**

*2005 emissions baseline adjusted for acquisitions and divestitures of operations

# PFC Emissions Reduction

IBM releases some perfluorocompounds (PFCs) from our semiconductor manufacturing operations, with PFC emissions representing approximately 10 percent of IBM's Scope 1 and 2 emissions. IBM was the first semiconductor manufacturer to set a numeric reduction target for PFCs in 1998. We subsequently set a second-generation goal to achieve an absolute reduction in PFC emissions from semiconductor manufacturing of 25 percent by 2010 against a base year of 1995. We exceeded this goal by reducing IBM's PFC emissions by 36.5 percent at the end of 2010.

The Semiconductor Industry Association, of which IBM is a member, is currently working with the EPA to update various parameters (e.g., process emissions factors, emissions abatement system destruction efficiencies) and methodologies for estimating PFC emissions from semiconductor operations. IBM plans to incorporate, as appropriate, the updated factors and methodologies at the conclusion of this industry and EPA effort.

In the meantime, we continue to take actions to reduce our PFC emissions and monitor performance. Between 2010 and 2012, we reduced our PFC emissions by 2.9 percent. Two replacement projects at IBM's semiconductor manufacturing plant in Vermont primarily drove these reductions:

- Chamber cleans, which remove deposited material from manufacturing equipment parts, were originally performed using $C_2F_6$, a gas with low process utilization (20 to 40 percent). IBM is implementing replacement processes using $NF_3$, which has a very high utilization rate (95 to 99 percent), significantly reducing the GHG emissions from the process.

- In some other chamber clean processes where the $NF_3$ substitution does not work, $C_2F_6$ was replaced with $C_4F_8$, a gas with a much higher utilization rate and much lower global warming potential, significantly reducing the GHG emissions from the process.

IBM also monitors two other materials with global warming potentials that are used in connection with manufacturing and lab operations: 1) nitrous oxide ($N_2O$), which is used in manufacturing semiconductors but has a lower global warming potential than PFC gases; and 2) heat transfer fluids (HTFs) that are primarily used in tool-specific chiller units associated with manufacturing and lab processes.

IBM continues to evaluate replacements for the HTFs that have lower volatility and global warming potential. IBM has achieved reductions in these emissions through the use of lower GHG emitting materials in some test operations and through the installation of solid state chillers on some semiconductor equipment.

# Voluntary Climate Partnerships

IBM continued participation in the World Wildlife Fund's Climate Savers program in 2012. We achieved our committed goal to reduce $CO_2$ emissions associated with our operational energy (electricity and fuel) use by 12 percent between 2005 and 2012 through energy conservation and the purchase of renewable energy. This goal was over and above the 40 percent reduction and avoidance of $CO_2$ emissions IBM had already achieved between 1990 and 2005. By the end of 2012, IBM had exceeded its Climate Savers commitment, achieving a 15.7 percent reduction in operational $CO_2$ emissions against the 2005 baseline.

Under Climate Savers, IBM has also committed to improving the energy efficiency and energy utilization of our own and our clients' data centers through activities and offerings for data center best practices, measurement and monitoring programs, and virtualization and consolidation programs. Activities in support of this commitment are detailed in the Data Centers section above.

# Transportation and Logistics Initiatives

## Employee commuting and leased/rental vehicles

IBM has been active in promoting programs that reduce employee work commutes for decades. Key contributors to this effort are IBM's two flexible work programs:

- Work-at-home: Enables many employees to work from a home office

- Mobile employees: Enables many other employees to work from home for a designated number of days each week

In 2012, 103,000 of our 430,000 global employees participated in one of these two programs, which not only helps employees balance their work and personal responsibilities, but also benefits the environment. In the United States alone, IBM's work-at-home program conserved approximately 5.8 million gallons of fuel and avoided more than 45,000 metric tons of $CO_2$ emissions in 2012.

IBM joined the reconstituted United States Best Workplaces for Commuters[SM] (BWC) program in 2009. Currently, 22 IBM locations are registered as BWC sites, which represent approximately 60 percent of the company's US employees. Many locations actively work with their local or regional transit commissions to integrate IBM's programs with regional programs to increase commuting options for the company's employees. Globally, many of our locations provide support for the use of public transit systems, including shuttles from locations to mass transit stations and alternate transportation or "loaner" cars for business trips during the workday.

In some countries, IBM provides leased vehicles for employees that they may use for both business and personal purposes. For these vehicles, we continue our effort to move to more fuel-efficient models by setting standard guidelines for smaller engine sizes with lower emissions profiles. These guidelines enable reductions in average car emission levels as their car fleets are renewed. For the cars our employees rent while travelling for business, we have worked with rental car companies to require and/or offer more fuel-efficient vehicles for employee rentals.

## Reducing business travel

In 2012, IBM further expanded the use of collaboration tools, both internally and externally, which provide business efficiency and boost productivity by connecting our global workforce while reducing travel-related resource consumption and emissions.

We conducted more than 2.5 million minutes of online meetings and exchanged more than 50 million instant messages daily. We also have increased our use of video conferencing to help reduce travel and improve team interactions. In addition to video-equipped conference rooms around the globe, we completed work on an initial IBM Sametime® desktop video pilot to extend video capability to 6,000 employees' desktops. Because of its success, we plan to continue growing this capability in 2013.

Another area of IBM's focus on collaboration has been the use of social business technologies. The rapid adoption of the IBM Connections social business application has enabled approximately 60 percent of employees to further share plans, ideas and documents collaboratively. These knowledge-sharing capabilities bring employees together without travel through conversations on social networks regarding topics of business interest.

## Efficiency of logistics

IBM is reducing the $CO_2$ emissions associated with transporting our products through the efficient design of our packaging, working with suppliers on their packaging designs and optimizing logistics. IBM has been an active participant of the US EPA's SmartWay® Transport Partnership since 2006. SmartWay is a voluntary initiative to improve fuel efficiency and reduce GHG emissions associated with logistics operations.

Since 2009, 100 percent of IBM's spend for shipping goods within the United States and from the United States to Canada and Mexico went through a SmartWay logistics provider. IBM also voluntarily applies specific SmartWay requirements to our distribution operations globally.

IBM's packaging programs also help reduce transport-associated $CO_2$ emissions by reducing the volume and weight of the company's product shipments through innovative packaging design. Accomplishments in this area are discussed in the Product Stewardship section of this report.

# Energy and Climate Protection in the Supply Chain

As noted elsewhere in this report, IBM is committed to doing business with environmentally responsible suppliers. One of the supply chain areas on which we focus is our suppliers' energy efficiency and climate protection programs.

We require that all of our "first-tier" suppliers—those firms with which we hold a direct commercial relationship—establish and sustain a management system to address their corporate and environmental responsibilities—including their use of energy and Scope 1 and Scope 2 GHG emissions. Our suppliers are also required to measure their performance, establish voluntary goals in these areas and publicly disclose their performance against those goals. We manage this requirement through two processes: our membership in the Electronic Industry Citizenship Coalition (EICC) and IBM's own supplier environmental management system requirements.

IBM has been an active participant in the EICC Carbon Reporting System, which has completed its third year of operation. The EICC reporting process requests that selected suppliers providing components or products to EICC members disclose their operational energy and water use and GHG emissions through the EICC reporting tool.

We believe, as do the other EICC members, that as companies gain an understanding of their energy use and GHG emissions, they are more likely to take actions to improve their performance. EICC and its member companies have developed education modules to assist suppliers in developing their energy use and GHG emissions inventories. Companies in the electronics industry share many suppliers, and the EICC GHG emissions disclosure process provides efficiency associated with information disclosure.

Through the EICC's Carbon Reporting System, IBM and other participating companies gain insight on how suppliers are addressing climate change and working to reduce GHG emissions. As a participant in the program, IBM invited 107 of our suppliers to respond to the EICC reporting form in 2012 (reporting 2011 data). These 107 companies represent a cross-section of IBM's procurement spend. They included services, general and production-related spend (including logistics), third-party-operated data centers and rental cars.

Of the 107 IBM suppliers that received questionnaires, 89 responded. This 83 percent response rate is above the typical response averages for the EICC survey. The majority of the responding suppliers report their Scope 1 and Scope 2 emissions, have a GHG emissions reduction target in place and are taking actions to achieve their targets.

In addition to EICC supplier reporting, IBM has continued to work with Tier 1 suppliers to further our company's requirement that all IBM suppliers have an environmental and social management system in place and disclose on goals and performance. More information on this supplier program may be found in the Environmental Requirements in the Supply Chain.

IBM's requirements for our suppliers rest on the foundational belief that real results in GHG emissions reduction are made possible by actionable information about a company's energy use and GHG emissions, and that each company is best positioned to assess and implement actions to address its own emissions in a way that is meaningful and sustainable. In short, each enterprise must take responsibility to reduce its own energy use and GHG emissions.

## IBM's position on the determination of Scope 3 GHG emissions

Gross approximations of Scope 3 GHG emissions can help entities recognize where the greatest amounts of GHGs may occur during the lifecycle of a typical process or general product or service on a macro level. This can be helpful when assessing, for example, what phases of a general product's design, production, use and disposal are ripe for improved energy efficiency and innovation. However, IBM does not assert on a micro level what the Scope 3 GHG emissions are from the operations of our suppliers and external distribution partners in their work that is specific to IBM, or associated with the use of our products and services. The necessary estimating assumptions and corresponding variability simply do not allow for adequate credibility, let alone calculations that could be perceived as deterministic.

Like many manufacturers, IBM has thousands of suppliers around the world. They are in all types of businesses and very few, if any, work solely for IBM. Furthermore, the sources of energy used by these suppliers vary, and IBM does not believe we could determine a credible estimate or apportionment of the energy used by these suppliers that would be associated with the products or services provided to IBM, versus that associated with products or services provided to other companies and customers. In addition, IBM's specific scope of business with any given supplier remains dynamic, as it is driven by business need.

Moreover, one company's asserted Scope 3 emissions are another company's Scope 1 and Scope 2 emissions. Since the ultimate goal for climate protection is for global societies to achieve demonstrable reductions in actual GHG emissions, IBM believes real results in GHG emissions reduction are directly achieved when each enterprise takes responsibility to address its own emissions and improve its energy efficiency. This is reinforced by IBM's announcement in 2010 that all of our first-tier suppliers will be expected to develop a management system, inventory their key environmental impacts—including GHG emissions—and develop reduction plans for those key impacts.

# Our Smarter Planet® Solutions

IBM offers a variety of products, services and solutions that enable companies, governments and other entities to improve the efficiency of their operations and systems. Many of these Smarter Planet solutions also bring about environmental benefits or directly focus on managing environmental issues, ranging from operational energy management strategies and GHG inventory processes to solutions for optimizing the efficiencies of corporate business processes, logistics and transportation, water management and other operations. A sampling of the solutions related to climate and energy is provided below.

## Smarter Building solutions

IBM TRIRIGA® Energy Optimization (ITEO) software is an advanced solution that optimizes the energy and environmental performance of buildings. It monitors energy-consuming equipment, manages maintenance activities and reports performance. The solution applies analytic rules to heating, cooling, lighting and power systems that identify sub-optimal conditions. It also identifies savings, takes immediate action to optimize performance and provides a performance dashboard.

Employing a smarter buildings strategy can help organizations reduce energy use by up to 40 percent, and sometimes more, and increase facility utilization by up to 85 percent.

## Smart Grid solutions

IBM continues to develop our portfolio of Smart Grid solutions that integrate inventory, data collection, analytics and system management functionality into a holistic package that enables the monitoring and management of energy distribution grids and generation facilities. The objective is to improve system efficiency and reliability, reduce generating capacity requirements and integrate intermittent, distributed generation systems, such as those involving wind and solar generated power.

Many of today's distribution systems have little or no intelligence to balance loads or monitor energy flows, resulting in losses equivalent to the annual electricity use of India, Germany and Canada combined. Making the US grid five percent more efficient would alone be roughly equivalent to permanently eliminating the annual fuel use and GHG emissions associated with 53 million cars.

In addition to IBM's focus on the distribution grids and generation facilities, we also focus on other energy-related Smarter Solutions. A few examples:

### Electric vehicle solutions

IBM is teaming with an electric vehicle (EV) charging network provider to implement a fully integrated EV charging IT system across Ireland to help manage approximately 1,000 public electric vehicle charging points. The companies will add a layer of intelligence and convenience to the charging process, allowing electric vehicle drivers to connect, charge and pay using an identification card. Additionally, this project will provide utilities with access to energy usage data that can help improve grid operations, reduce power strain during peak charging times and ensure reliable energy distribution to customers.

### Smart Grid pilot based on renewable energy

IBM formed a consortium with several Swiss energy and retail companies to undertake a unique project called FlexLast that will use refrigerated warehouses as a buffer to help balance fluctuations driven by the availability of sun and wind energy on the energy grid.

Using software and algorithms developed by IBM scientists, the FlexLast pilot will integrate intermittent wind and solar generation with refrigerated warehouse energy consumption, maximizing air conditioning with high solar and wind production and initiating a lower refrigeration level or complete shut down when intermittent electricity production is minimal, in order to improve grid stability and increase the percentage of renewable energy sources that can be efficiently supported on the grid. IBM scientists have also successfully applied the same concept in Denmark for electric vehicles and appliances in the EDISON and EcoGrid EU projects.

## Smarter Energy® research

IBM is a member of the Smarter Energy Research Institute, a new collaboration between IBM Research and the energy and utilities industry practice. The goal of this collaborative work is to transform the operations of leading energy companies through the use of predictive analytics, system optimization and advanced computation to deliver better services to their customers. The Institute has identified five core innovation tracks to pursue joint research: outage planning optimization, asset management optimization, integration of renewable and distributed energy resources, wide-area situational awareness, and the participatory network.

## Smarter Computing/Data Center Solutions

IBM offers a range of data center energy efficiency solutions including planning, design and construction services for new, energy efficient facilities; measurement, management and assessment technologies to continually improve the efficiency of both existing and new facilities; and virtualization services to increase server and storage system utilization and the workload delivered per each unit of energy consumed. For example:

IBM worked with a major telecom and data services provider to design and build the largest data center facility in India to deliver new cloud and networking services. Covering more than 900,000 square feet with 20 enterprise modular data centers in a four-tower building, the new, highly efficient data center is designed to international "green" building standards and will easily scale to customers' growing infrastructure needs while optimizing the energy use of current operations.

IBM also designed and built a 1,100-square-foot data center for a furniture retailer. The new data center, which has a modular design and uses 100 percent free cooling, reduces energy costs and use by 40 percent and supports the furniture company's brand strategy and commitment to being an environmentally responsible company.

## Smarter Transportation and Logistics solutions

IBM solutions for Supply Chain and Traffic Management enable companies and governments to anticipate, control and react to demand and supply volatility within the distribution or transportation network and track and manage fuel use within their fleets. With the IBM Supply Chain Management for Logistics solutions, firms can now solve complex planning, scheduling and logistics management problems while tying these operations to corporate objectives to reduce costs, improve operational efficiency and enhance the customer experience.

IBM worked with an international airline to develop a system to accurately calculate, track and report fuel use and aircraft emissions. The system uses advanced analytics to map the carrier's carbon emissions and optimize its fuel usage through a detailed analysis of each flight. The system will enable the airline to reduce its overall fuel usage and its emissions profile.

# Environmental Requirements in the Supply Chain

As part of our longstanding corporate commitment to environmental leadership across all of our business activities, IBM is committed to working with environmentally and socially responsible suppliers. The objectives of our requirements for suppliers and our supplier evaluation programs include:

- Preventing the transfer of responsibility for environmentally sensitive operations to any company lacking the commitment or capability to management them properly

- Reducing environmental and workplace health and safety risks

While examples of this commitment have been highlighted in other sections of this report, the following table provides key milestones of this leadership over the past four decades.

## Environmental Evaluations of Suppliers

- **1972**
  Established a corporate directive requiring the environmental evaluation of suppliers of hazardous waste services

- **1980**
  Expanded our environmental evaluations of suppliers by establishing a second corporate directive to require the environmental evaluation of certain production-related suppliers

- **1991**
  Further expanded our environmental evaluations of suppliers, adding a requirement that product recycling and product disposal suppliers be evaluated

- **2002**
  Nongovernmental organizations raised a concern about electronic waste being exported to some non-OECD countries. Though we confirmed that IBM was not shipping hazardous electronic waste products to non-OECD countries, we added a requirement to assess our suppliers and certain subcontractors they may use to handle recycling and/or disposal operations in non-OECD countries

- **2010**
  Established a requirement that all of IBM's first-tier suppliers establish a management system to address their social and environmental responsibilities—and that they cascade this requirement to their suppliers

## IBM's environmental evaluations of suppliers

IBM's environmental requirements for its suppliers are set forth in a corporate directive that governs the contracts by which we:

- Specify and/or furnish chemicals, process equipment or contaminated equipment involved in production

- Procure materials, parts and products for use in hardware applications

- Procure hazardous waste treatment and/or disposal services

- Procure product end-of life management services

Specific environmental requirements are documented in our contracts with suppliers conducting these types of activities. These may include requirements related to chemical content, chemical management, waste management, spill prevention, health and safety and reporting, to mention some of the most relevant ones.

For hazardous waste and Product End-of-Life Management suppliers, IBM conducts an on-site review of the supplier facility's environmental, health, safety and industrial hygiene management program; its medical screening and monitoring programs; and a review of its environmental, health and safety audits for the previous three years. We evaluate these suppliers prior to entering into a contract with them and then again every three years thereafter to ensure their operations and commitment to workplace safety and sound environmental practices continues to meet our requirements. The audits are conducted by IBM's Corporate Environmental staff or by environmental professionals under the direction of this staff.

IBM's hazardous waste and Product End-of-Life Management supplier audits are comprehensive in the scope of the environmental aspects covered. The following provides a summary of the scope of the environmental aspects of the audits:

- Facility operational activities, capabilities, capacities and services

  - Waste management services, treatment, recycling or final disposal methods, processing capacity and facility construction design (floors, docks, secondary containment)

  - Treatment and recycling methods for the hazardous and nonhazardous special wastes generated by supplier's operations

  - Environmental, health and industrial safety and hygiene management plan, training, fire and safety equipment, emergency response plan, personal protective equipment, chemicals used and safety data sheets, evacuation plans, first aid, medical screening and monitoring programs, etc.

- Environmental and corporate responsibility

  - Social and Environmental Management System

- Applicable legal requirements and compliance

  - Permits, licenses and other applicable regulatory requirements, regulatory agencies and contacts

  - Compliance history (notices of violation, government citations, public complaints and summary of inspections and findings)

- Environmental programs including:

  - Air emissions, water discharges and water consumption

  - Underground storage tanks and piping systems

  - Spill prevention, containment and response

  - Environmental liabilities and insurance coverage

IBM also requires its hazardous waste and Product End-of-Life Management (PELM) suppliers to track the shipment and processing of any hazardous materials they handle for IBM and report that information to us.

## Global requirements for waste processing (treatment, recycling or disposal) and PELM

As we do with all of our environmental programs, IBM manages its hazardous waste and PELM programs to the same high standards no matter where in the world we are operating. Doing so can be particularly challenging in some countries when processing infrastructure (treatment, recycling and/or disposal) that meets IBM's requirements is lacking.

If there are no suppliers in a country that meet IBM's environmental and safety requirements for hazardous waste or product processing, the waste generated by IBM's operations is shipped to facilities in other countries where those requirements can be met. This shipping is done in compliance with country laws and regulations and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.

Though rare, there are sometimes situations in which local processing of waste is not possible and shipping to IBM-approved suppliers in other countries is not allowed due to legal requirements. In these situations, IBM will store wastes and product end-of-life materials in properly contained and managed storage facilities until suitable processing facilities are available.

The processing and recycling of lead acid batteries is a concern some interest groups recently brought to our attention. It had been reported in various media that some companies have been exporting lead acid batteries from the U.S. to Mexico or other countries where the batteries may be recycled in operations that are not properly protective of the workers or the environment. The uninterruptible power units for our data centers contain lead acid batteries—but all lead acid batteries disposed of by IBM are covered under IBM's hazardous waste management program and are recycled at IBM approved facilities within the country where they are generated, whenever possible. IBM does not export used lead acid batteries from the U.S. or any other country where suitable recycling facilities are available within the country.

## IBM's Social and Environmental Management System (S&EMS) requirement for all its Suppliers

In 2010, IBM established a requirement that all first-tier suppliers establish a management system to address their social and environmental responsibilities. Our objective in establishing this requirement was to help our suppliers build their own capability to succeed in this area.

These suppliers are required to:

- Define, deploy and sustain a management system that addresses their intersections with their employees, society and the environment

- Measure performance and establish voluntary, quantifiable environmental goals

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

- Cascade these requirements to their suppliers who perform work that is material to the products, parts and/or services supplied to IBM

More information on these new supplier requirements may be found in the Supply Chain section of this report and on IBM's Supply Chain Environmental Responsibility website.

# Remediation

When groundwater contamination was first discovered at one of IBM's sites in 1977, we initiated groundwater monitoring at all of our manufacturing and development locations worldwide. Today, IBM has 2,624 monitoring wells and 109 extraction wells.

In 2012, approximately 16,400 pounds of solvents from past contamination were extracted while remediating, controlling and containing groundwater at six currently operating sites and 11 former sites in three countries. At four of these sites, an additional 2,700 pounds of solvents were removed by soil vapor extraction or other methods. IBM also has financial responsibility for remediation at two additional former sites.

As a result of the US Superfund law, IBM is involved in cleanup operations at some non-IBM sites in the United States. The Superfund law creates retroactive responsibility for certain past actions, even though those actions may have been technically and legally acceptable at the time. As of year-end 2012, IBM had received notification (through federal, state or private party) of its potential liability at 112 sites, since the beginning of the Superfund program in 1980. Of these, 61 are on the US National Priority List. At the majority of the 112 sites, it has been determined that IBM either never had liability or has resolved its potential liability. As of now, IBM believes it may have potential liability at only 17 sites noticed through 2012.

When investigation and/or remediation at an IBM location or an off-site facility is probable, and its costs can be reasonably estimated, IBM establishes accruals for loss contingency. Estimated costs connected with closure activities (such as removing and restoring chemical storage facilities) are accrued when the decision to close a facility is made. As of December 31, 2012, the total accrual amount was $229 million.

# Audits and Compliance

IBM measures our environmental performance against both external and internal requirements.

Every year, and more frequently for some, IBM's manufacturing, hardware development and research sites and organizations—such as Product Development, Global Real Estate Operations, Global Asset Recovery Services, Global Logistics, Global Services Environmental Compliance and Integrated Supply Chain—complete a comprehensive self assessment. In addition, IBM's Corporate Internal Audit staff may conduct environmental, health and safety compliance audits. Audit results are communicated to top management. Follow-up, accountability and actions are clearly delineated.

In addition, as part of IBM's single, global registration to ISO 14001, approximately 25 sites or registered entities are audited annually by an independent ISO 14001 registrar. The company's manufacturing, hardware development and chemical-using research sites are audited by either the Corporate Internal Audit team or the external ISO 14001 registrar every 18 to 30 months.

# Accidental Releases

IBM sites around the world report environmental incidents and accidental releases to IBM management through the company's Environmental Incident Reporting System (EIRS). IBM's environmental incident reporting criteria are equal to or exceed legal reporting requirements and every event meeting IBM's reporting criteria must be reported through EIRS. Each IBM location must have a documented incident prevention program (including provisions for preventing environmental incidents or their recurrence) and reporting procedure.

In 2012, a total of 26 accidental releases of substances to the environment related to IBM operations were reported through EIRS. Of these, 12 were to air, seven to land, five to water, and two to both land and water.

Emissions to the air included 10 releases of refrigerants. One emission was smoke resulting from a chemical reaction that took place during cleaning activities (mixing of epoxy resin and hardener) and there was one release of particulate matter.

Releases to land included one each of reclaimed water, fuel oil, cooling tower water, hydraulic fluid, sanitary wastewater, potable water and chilled water.

Releases to water included one each of cooling tower water, chilled water, hot water, water containing a cleaning agent and one lubricant oil.

Releases to both land and water include two releases from treated groundwater.

The root cause was investigated for all releases and corrective actions were taken as appropriate. None of the releases was of a duration or concentration to cause long-term environmental impact.

# Fines and Penalties

One significant measure of a company's environmental performance is its record of fines and penalties.

IBM was the subject of 89 successful environmental regulatory agency inspections and visits worldwide in 2012 with no fines or enforcement measures being assessed associated with those inspections.

IBM did receive three fines, however, related to inspections in previous years. Relating to a 2009 Notice of Violation issued by the Connecticut Department of Environment and Energy Protection, IBM received two fines in 2012 totaling $36,814. The citations were for exceeding the permitted time limit for operating an emergency power generator at a data center and for failure to timely complete the scheduled emissions testing on the emergency generators. The emissions testing was completed after the notification in 2009 and we have since updated our processes to prevent recurrence.

In addition, a fine of $38,000 was paid to the Environment Authority of Portugal related to a 2010 shipment of used electronic products from Portugal to IBM's product reutilization facility in France. Shipments of used electronic products for recycling within the European Union require permits from both the shipping and receiving countries. In this particular case, the permit for the shipping country (Portugal) had expired the month prior to the shipment and had not yet been renewed. IBM has addressed the issue with its contracted logistics supplier to ensure that proper permits are in place in both shipping and receiving countries prior to any future shipments.

Over the past five years, IBM has paid five fines for a total amount of $104,814.

**Fines and Penalties Worldwide**
($ in thousands)

|        | 2008  | 2009   | 2010  | 2011  | 2012   |
|--------|-------|--------|-------|-------|--------|
| Number | 0     | 2      | 0     | 0     | 3      |
| Fines  | $0.0  | $30.0  | $0.0  | $0.0  | $74.8  |

# Supply Chain

Social and environmental responsibility is an important part of our business relationships with our suppliers. We work closely with them to encourage sustained improvement throughout our global supply chain and across various aspects of corporate responsibility. In this section you will find examples of how we set requirements for the companies we do business with, grow the global diversity of our supply base and collaborate with industry groups and stakeholders.

# Supply Chain

With suppliers located in close to 100 countries, social and environmental responsibility is a major facet of our corporate responsibility efforts and we have incorporated this into our business relationships with our valued suppliers.

IBM's supply chain is a strategic asset that helps us deliver consistently high-quality goods and services to our customers on a local and global level. We are very aware of the importance that comes with having a supply chain of this magnitude and, as such, we have crafted our social responsibility efforts in unison with our providers to promote sustainable performance as a shared objective. And to this end, in light of the increased interest many stakeholders have in our global supply chain, we continue to enhance our initiatives described here.

## Supplier spending: $35.3 billion total in 2012

**2012 Supplier Spending by Category**
(dollars in billions)

- 64% Services and General Procurement ($22.8 billion)
- 33% Production Procurement ($11.5 billion)
- 3% Logistics Procurement ($1.0 billion)
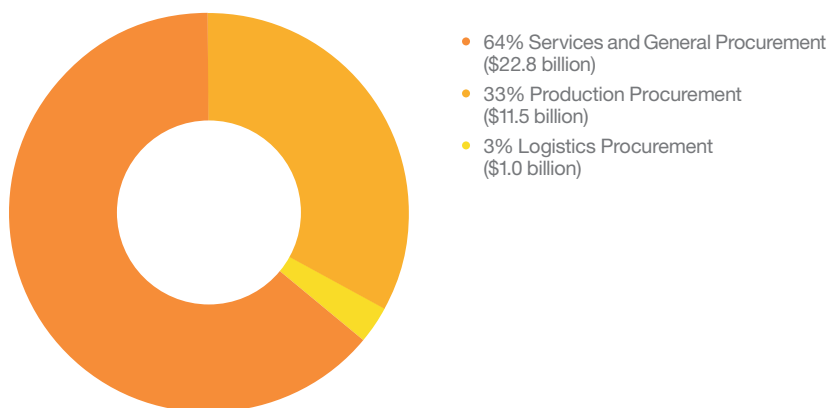
**2012 Supplier Spending by Supplier Location**
(dollars in billions)

- 35% North America ($12.4 billion)
- 35% Asia Pacific ($12.4 billion)
- 21% Europe, Middle East, Africa ($7.4 billion)
- 9% Latin America ($3.1 billion)
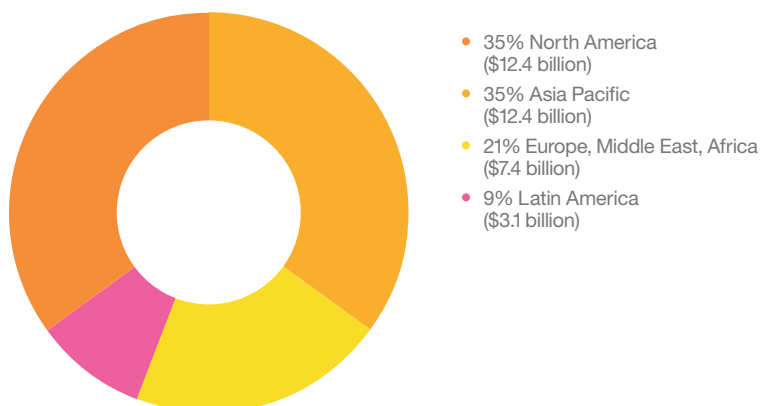
In 2012, approximately 90 percent of our global spend in Production and Logistics Procurement (in support of our hardware and logistics business operations) occurred with the following firms:

| | |
|---|---|
| **Acbel Polytech** | **Altis Semiconductor** |
| **Amkor Technology** | **Applied Materials** |
| **ASML** | **Avnet** |
| **Benchmark** | **Brocade** |
| **Celestica** | **Cisco Systems** |
| **Compro Business Services** | **Dai Nippon Printing** |
| **Delta Electronics** | **Elpida Memory** |
| **Emerson Network Power** | **Emulex** |
| **Endicott Interconnect** | **Flextronics** |
| **Fuji Electric** | **Geodis** |
| **GLOBALFOUNDRIES** | **Hitachi** |
| **Hon Hai** | **Hynix** |
| **Intel** | **Jabil Circuit** |
| **Kingston Technology** | **KLA-Tencor** |
| **Kyocera** | **Lam Research** |
| **Lenovo** | **Mellanox Technologies** |
| **Micron Technology** | **NEC** |
| **NetApp** | **NuFlare Technology** |
| **Pegatron** | **QLogic** |
| **Samsung** | **Seagate** |
| **Shin-Etsu Handotai** | **SMART Modular Technologies** |
| **Tel-Ad Electronics** | **The Karrie Group** |
| **Tokyo Electronic Ltd.** | **Toshiba** |
| **Venture** | **Volterra** |
| **Wistron** | **Xyratex** |

In Services and General Procurement (in support of our software, services and overall operations) approximately 45 percent of our global spend was with the following firms:

| | |
|---|---|
| **Adecco Group** | **American Airlines** |
| **American Express** | **Artech Information Systems** |
| **AT&T** | **BMC Software** |
| **CA Technologies** | **CBRE Group** |
| **CDI** | **Cisco Systems** |
| **Clarius Group** | **Collabera** |
| **CTG** | **CVS Caremark** |
| **Deloitte Touche Tohmatsu** | **Delta Air Lines** |
| **EMC** | **Fluor** |
| **Fujitsu** | **George P. Johnson** |
| **Hays** | **Hewlett-Packard** |
| **Hilton** | **Hitachi** |
| **HSG Zander** | **Infinite Computer Solutions** |
| **Infor Global Solutions** | **Internet Initiative Japan** |
| **IT Holdings** | **Johnson Controls** |
| **Jones Lang LaSalle** | **Juniper Networks** |
| **LeasePlan** | **Lenovo** |
| **Manpower** | **Marriott** |
| **Microsoft** | **Mitsubishi** |
| **Oracle** | **Randstad** |
| **Ricoh** | **Rocket Software** |
| **SAP** | **SDI International Corp.** |
| **SHI International** | **Sumitomo Corporation** |
| **TES** | **Verizon** |
| **WPP Group** | **ZeroChaos** |

# Supplier Assessment and Improvement Plans

In the globally connected world, much is expected from all parties in the extended supply chain. Companies with a brand presence are held to high expectations for their supply chain stewardship, which can reach many levels and cross numerous continents. As a result, IBM works diligently with its suppliers to promote best practices and encourage continuous improvement in order to meet these heightened expectations.

## Global Supply Social and Environmental Management System

In 2010, IBM Global Supply introduced its Social and Environmental Management System (S&EMS) to its worldwide supply chain. The objectives of S&EMS are to:

- Define, deploy and sustain a management system that addresses corporate responsibility, including social and environmental stewardship

- Measure performance and establish voluntary, quantifiable environmental goals

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

- Encourage first-tier suppliers to cascade these requirements to their own suppliers

In 2012, we followed up the introduction of S&EMS with a systematic review examining the evidence submitted by suppliers in order to satisfy the intent of each objective. In some cases, updated information or clarification was requested. To supplement this initiative we implemented a new checklist for our procurement teams to use during new supplier on-boarding to determine a supplier's compliance to our Supply Chain Social Responsibility and S&EMS programs. If a new supplier is not compliant at the time of on-boarding, they are given 12 months to become so. During this time members of our procurement organization periodically assess the suppliers' progress and offer guidance to assist them in reaching their objectives.

IBM's S&EMS received significant recognition during 2012, including ISO 14001 certification as well as the International Institute for Advanced Purchasing & Supply's Asian Award and Chambers Ireland's President's Award for Excellence in Marketplace.

## Supply Chain Social Responsibility

IBM's dedication to Supply Chain Social Responsibility (SCSR) has been clearly demonstrated over the past eight years. Year by year we have assessed a growing portion of our supply chain in the developing world, and we believe this has generated improvements in conditions for thousands of people working in the electronics sector supply chain. In 2012, we chartered 257 full audits and 120 re-audits for a total of 377 assessments of suppliers in 29 countries, our largest number of countries with audit activity in a single year. And we launched assessments for the first time in Bulgaria, Colombia, Costa Rica, Dubai, Peru and Slovenia, bringing our roster of countries with initial audits to 31.

**1,350**

initial audit assessments measuring supplier compliance from 2004 through 2012

### 2012 IBM SCSR Completed Audits by Country
(377 audits conducted)

| Country | Total |
|---|---|
| China | 67 total |
| India | 47 |
| Malaysia | 27 |
| Mexico | 26 |
| Brazil | 19 |
| Korea | 19 |
| Singapore | 19 |
| Turkey | 17 |
| Taiwan | 16 |
| Philippines | 15 |
| Romania | 14 |
| Thailand | 14 |
| Bulgaria | 11 |
| Slovenia | 11 |
| Dubai | 9 |
| Argentina | 8 |
| Russia | 8 |
| South Africa | 5 |
| Chile | 4 |
| Czech Republic | 4 |
| Costa Rica | 3 |
| Hungary | 3 |
| Colombia | 2 |
| Hong Kong | 2 |
| Peru | 2 |
| Slovakia | 2 |
| Kenya | 1 |
| Nigeria | 1 |
| Vietnam | 1 |

● Full Audits   ● Re-audits
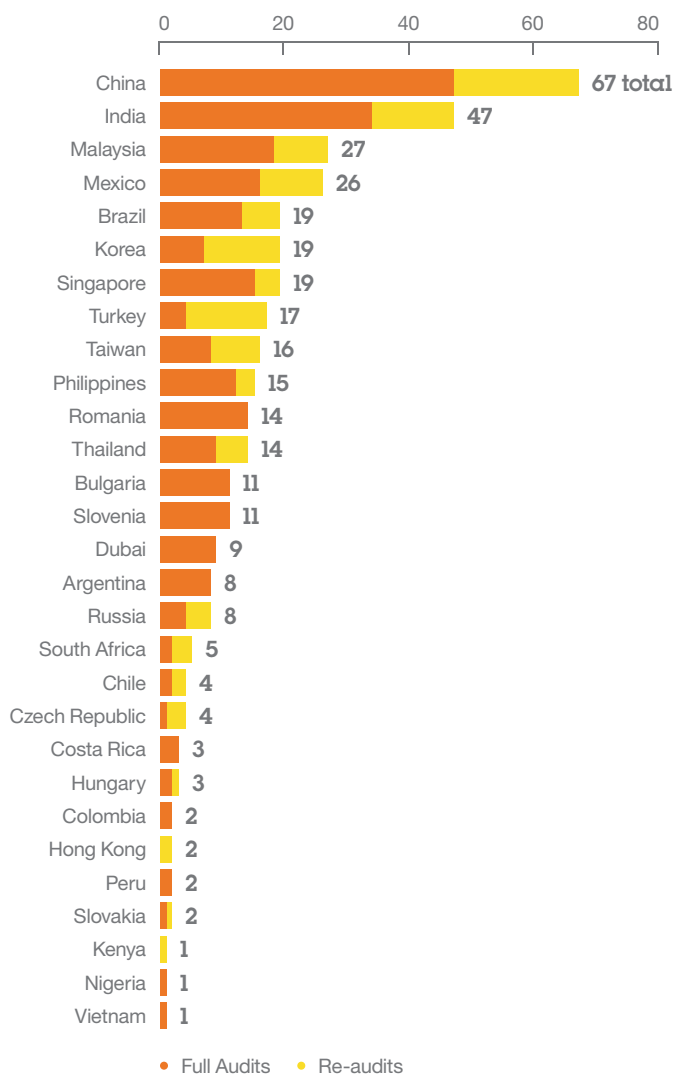
In 2012, the total number of IBM's initial supplier audits in an eight-year span reached 1,350, with cumulative results illustrated in the chart below. These assessments measured supplier compliance to the Electronic Industry Citizenship Coalition (EICC) or the IBM Code of Conduct. IBM is the largest user of the EICC's Validated Audit Process, directing all hardware supplier assessments through this collaboratively developed approach that provides a common process for sharing results and eliminating costly duplicate assessments.

**Supplier Initial Audit Results—Global Cumulative (2004–2012)**
(% non compliant to IBM/EICC code, base = +1,300 suppliers)

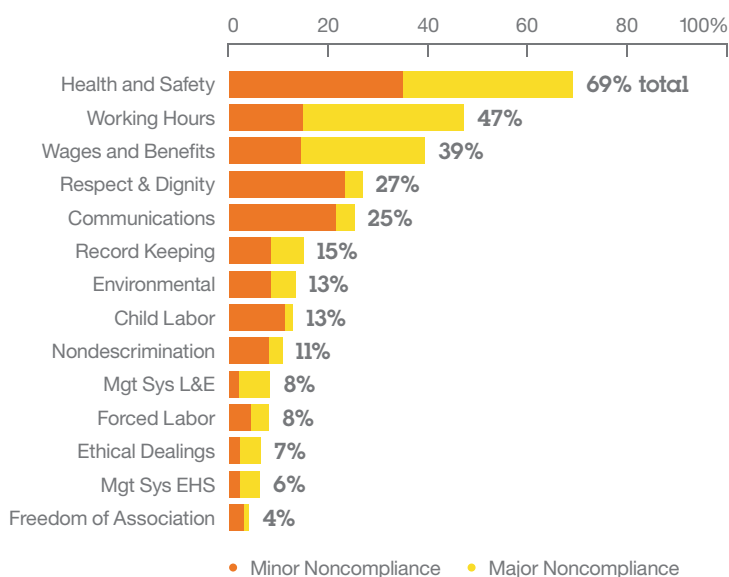| | | |
|---|---|---|
| Health and Safety | | 69% total |
| Working Hours | | 47% |
| Wages and Benefits | | 39% |
| Respect & Dignity | | 27% |
| Communications | | 25% |
| Record Keeping | | 15% |
| Environmental | | 13% |
| Child Labor | | 13% |
| Nondescrimination | | 11% |
| Mgt Sys L&E | | 8% |
| Forced Labor | | 8% |
| Ethical Dealings | | 7% |
| Mgt Sys EHS | | 6% |
| Freedom of Association | | 4% |

● Minor Noncompliance   ● Major Noncompliance

Audits performed in the following countries: Argentina, Brazil, Bulgaria, Chile, China, Colombia, Costa Rica, Czech Republic, Dubai, Hong Kong, Hungary, India, Indonesia, Kenya, Korea, Malaysia, Mexico, Nigeria, Peru, Philippines, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, Taiwan, Thailand, Turkey and Vietnam

Of the 257 full audits IBM conducted in 2012, 171 were on suppliers assessed for the first time. The audit performance of these suppliers is depicted in the chart below. This data shows that initial audit compliance has improved significantly in the areas of Health and Safety, Working Hours, Wages and Benefits, Communications, Environmental, Respect and Dignity, Nondiscrimination and Record Keeping.

IBM's efforts in communicating code compliance begin at the initial stages of supplier engagement and are part of regular business reviews at the functional and executive levels. Audit results demonstrate third-party assessments are a necessary resource to identify and help resolve issues. In some provisions (Management Systems (L&E and EHS), Child Labor, Ethical Dealings and Forced Labor), 2012 initial audits showed a higher degree of noncompliance than our historical data. This was the result of auditing to the current version of the EICC Code, which in early 2012 added additional compliance criteria in these important areas. The major noncompliance in the Child Labor provision was associated

with noncompliance to policies and practices to fully investigate pre-employment age documentation. In no instances were underage workers found in these audits during 2012.

**Supplier Initial Audit Results (2012)**
(% non compliant to IBM/EICC code, base = 171 suppliers)

| | 0 | 20 | 40 | 60 | 80 | 100% |
|---|---|---|---|---|---|---|
| Health and Safety | | | | **56% total** | | |
| Working Hours | | **39%** | | | | |
| Wages and Benefits | | **31%** | | | | |
| Communications | **18%** | | | | | |
| Environmental | **17%** | | | | | |
| Mgt Sys L&E | **15%** | | | | | |
| Child Labor | **14%** | | | | | |
| Ethical Dealings | **13%** | | | | | |
| Forced Labor | **13%** | | | | | |
| Respect & Dignity | **13%** | | | | | |
| Mgt Sys EHS | **8%** | | | | | |
| Nondescrimination | **6%** | | | | | |
| Record Keeping | **6%** | | | | | |
| Freedom of Association | **5%** | | | | | |

● Minor Noncompliance    ● Major Noncompliance
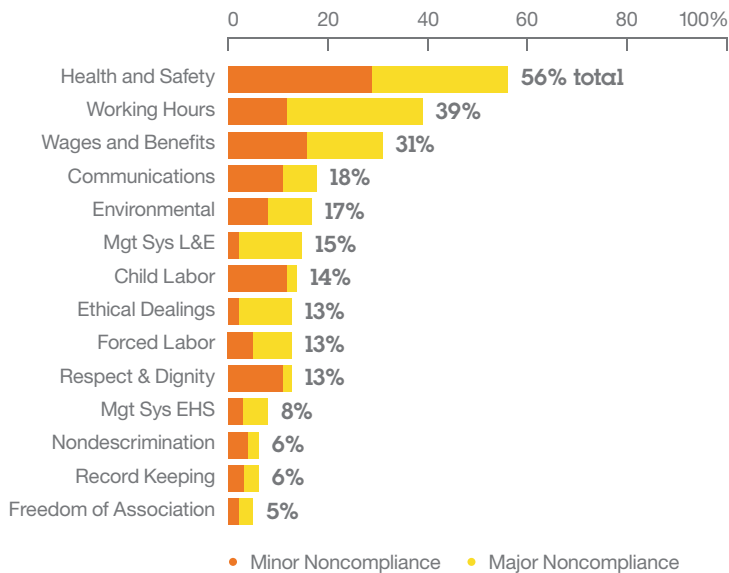
IBM's supplier assessment practice requires audited suppliers to create and submit a Supplier Improvement Plan (SIP) for all incidents of noncompliance discovered. The SIP links audit findings to root causes and improvements are tested by a re-audit. During 2012, 311 SIPs were reviewed and accepted within 90 days of the full audit by suppliers that had been audited within the prior 12-month time frame.

The effectiveness of our audit-SIP-re-audit strategy is illustrated by comparing the "before and after" results of suppliers experiencing a complete cycle, as shown by the chart below. Re-audits conducted on 118 Production and Services and General Procurement suppliers are compared with their full audits (conducted in the 2009–2011 timeframe). For ease of reading and comparison, only major noncompliance results are depicted in the chart.

**Comparison of 118 Full Audit vs. Re-audit Compliance**
(% non compliant, major noncompliance levels illustrated)

| | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70% |
|---|---|---|---|---|---|---|---|---|

Working Hours — Full Audits: **63%**, Re-audits: **18%**

Health and Safety — Full Audits: **43%**, Re-audits: **5%**

Wages and Benefits — Full Audits: **33%**, Re-audits: **9%**

Mgt Sys L&E — Full Audits: **25%**, Re-audits: **3%**

Ethical Dealings — Full Audits: **18%**, Re-audits: **0**

Communications — Full Audits: **16%**, Re-audits: **2%**

Mgt Sys EHS — Full Audits: **14%**, Re-audits: **0**

Record Keeping — Full Audits: **11%**, Re-audits: **3%**

Environmental — Full Audits: **9%**, Re-audits: **1%**

Forced Labor — Full Audits: **8%**, Re-audits: **1%**

Nondescrimination — Full Audits: **7%**, Re-audits: **1%**

Freedom of Association — Full Audits: **3%**, Re-audits: **1%**

Child Labor — Full Audits: **3%**, Re-audits: **0**

Respect and Dignity — Full Audits: **2%**, Re-audits: **0**

● Full Audits   ● Re-audits

With regard to a number of code provisions, the re-audits indicated major noncompliance was completely addressed in: Ethical Dealings, Management Systems (EHS), Child Labor and Respect and Dignity. In all other areas, substantial reductions in noncompliance were achieved, including a 90 percent improvement in Health and Safety compliance, a 70 percent improvement in Wages and Benefits compliance and a 70 percent improvement in Working Hours compliance. Working Hours remained the largest area of noncompliance, and while this is unsatisfactory, it is consistent with our knowledge of the challenges associated with full resolution on a global basis, especially in developing markets. Overall, 74 percent of re-audited suppliers resolved all major noncompliance issues after completion of one cycle—a significant achievement and in line with our trend data. IBM Global Supply is working on contingencies with its suppliers remaining noncompliant. Our leadership team reviews and tracks supplier assessment results on an ongoing basis. These are compiled and reviewed on a monthly basis with executives and on a quarterly basis with IBM's Chief Procurement Officer.

## 2012 Center of Excellence for Product Environmental Compliance

IBM's global Center of Excellence (CoE) for Product Environmental Compliance has end-to-end responsibility for meeting product-related government environmental requirements. The CoE's mission includes the development of strategy, processes, deployment plans, research and development of alternate materials and technologies, and education and training materials. The CoE also is an active member in industry and regulatory bodies around the world. Year over year, environmental regulations continue to increase in number and complexity. The types of regulations we address include prohibited substances, product take-back programs, product energy usage, batteries and most recently nanotechnology regulations. In 2012, IBM successfully transitioned thousands of part numbers that were affected by the conclusion of the European Union's RoHS Directive—designed to restrict the use of hazardous substances in electrical and electronic equipment— exemptions 7c3 and 11b. As of January 1, 2013, IBM products shipped into the EU are fully compliant and lead-free.

# Industry Collaboration

We embrace the practice of working in unison with other parties who share the vision of making sustained improvements in the extended supply chain.

In 2012, IBM's involvement with the Electronic Industry Citizenship Coalition (EICC) continued to expand in terms of support, participation and utilization of the organization's numerous resources. Founded in 2004 and incorporated in 2007 as a nonprofit industry group, the EICC continues to make strides toward its ultimate goal of creating a sector that consistently operates in a socially and environmentally responsible fashion. 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. At the end of 2012, the EICC had grown to 75 member companies across retail, electronics, software, logistics and communication industries, representing five distinct tiers of the extended supply chain. IBM completed its two terms of volunteer service as chair of the EICC board of directors, and expanded its representation in a number of working groups including Learning and Capability Building, Extractives/Conflict Minerals, Asia Program outreach, Governance Task Force and the Finance Committee.

Through the collective efforts of its members and support partners, the EICC attained the following notable accomplishments in 2012:

- Completed its tri-annual stakeholder/membership open commentary and released Version 4.0 of its Code of Conduct

- Expanded the geographic coverage of the Validated Audit Process to 19 countries and developed audit protocols for service suppliers and temporary labor agencies

- Launched EICC-ON Resources for sector interchange of EICC Self-Assessment Questionnaires and Validated Audit Reports

- Published updated rosters of Conflict-Free Smelters for Tantalum and Gold, with Tin and Tungsten in the works

- Hired its first executive director and elected a new and expanded board of directors

In addition to working within the EICC, IBM is also active at the country level engaging with organizations that share a common interest in driving improvements in supply chain social responsibility. An example of this can be found in Mexico, where we work with three regional organizations in the Guadalajara/Jalisco region. Jalisco's electronic cluster plays a key role in Mexico's development and contributes significantly to Mexico's GDP. IBM, along with other major electronic companies, has established collaboration mechanisms through industry chambers. One such group is CANIETI (Camara Nacional de la Industria Electronica y Tecnologias de Informacion, or National Chamber of Electronics Industry and Information Technologies) where firms are collaborating on common projects to increase the social responsibility of the sector in Mexico. IBM is also collaborating with ACTIVO Jalisco Sustentable to help small and medium enterprises develop socially responsible capabilities to drive economic, environmental and sustainable growth. During 2012 more than 800 guests from small and medium enterprises located in the Jalisco region attended workshops on Corporate Social Responsibility. IBM collaborates on this project with other leading companies and Tecnologico de Monterrey to help share our experiences and benefits of being a socially responsible enterprise. IBM also maintains a collaborative relationship with CEREAL, a key nongovernmental organization located in the region.

Through frequent meetings and open communication, the parties involved in these efforts can address in a constructive manner areas of mutual concern regarding working conditions in our regional IBM supply chain.

# Conflict Minerals

We understand the importance of achieving a supply chain that uses only responsibly sourced minerals. And so at IBM we continuously work toward this goal in the extended supply chain, and we communicate our efforts publicly.

Last year, IBM and other members of the Electronic Industry Citizenship Coalition (EICC), in conjunction with the Global e-Sustainability Initiative (GeSI) Supply Chain Work Group and companies from other sectors outside electronics continued working to achieve a supply chain free of Democratic Republic of Congo (DRC) conflict region-originated minerals. Four minerals (tin, tantalum, tungsten and gold) originating in the DRC are considered conflict minerals, although these materials are often found in other parts of the world and from legitimate sources within the DRC that are not conflict-related. IBM has published its conflict minerals standard outlining our recognition of the importance of this issue and our plans to take definitive steps to ensure only responsibly sourced materials are in our extended supply chain. This standard is posted to the Global Supply website and has been brought to the attention of our upstream suppliers.

In 2012, EICC/GeSI updated its web-based list of Conflict Free Smelter (CFS) results for companies that successfully completed this rigorous assessment. The CFS assessment process was created for smelters and refiners 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.

This year saw the updated release of the EICC/GeSI Conflict Minerals Reporting Template and Dashboard. This survey and consolidation software was developed to provide companies with a common format for their upstream suppliers to identify the use of the four materials, the smelters used in the extended supply chain and—where possible—the country of origin of the four minerals.

In the fourth quarter of 2012, IBM deployed this survey to 35 direct suppliers of subcomponents to our Microelectronics group. From this work, we learned the identities of 145 upstream tantalum, tin and tungsten smelters and gold refiners, located in 25 countries, currently used by our direct suppliers. We have shared a consolidated report of these survey results with more than 40 customers of the Microelectronics group in support of external interest in this topic. By comparing the smelters in the current EICC/GeSI CFS list we determined the vast majority of the upstream tantalum smelters in the IBM Microelectronics supply chain are indeed certified as conflict-free. In the fourth quarter we also deployed the conflict minerals survey with more than 300 direct suppliers to our Systems and Technology Group to gain similar insight to the smelters feeding into this portion of our extended supply chain, and we began compiling and analyzing this data during the second quarter of 2013.

Our upstream survey work is part of our preparation for reporting required by May 31, 2014 for the US Security and Exchange Commission's Dodd-Frank Wall Street Reform and Consumer Protection Act, section 1502.

# Supplier Diversity

IBM is committed to diversity in all parts of its business, and has been for more than 100 years.

IBM's history of maintaining a diverse supply chain is no exception. The company first established a global supply chain diversity program in 1968. This was four years before the creation of the National Minority Supplier Development Council (NMSDC) and 29 years before the Women's Business Enterprise National Council (WBENC) was founded. We were the first IT company to conduct more than $1 billion of business with diverse suppliers in the United States. And we learned early on that fostering diversity is not only the right thing to do for society, but for business as well. A diverse supplier base not only provides talent, it also helps add stability and flexibility throughout our supply chain and promotes economic growth in local communities.

In 2012, IBM conducted $3.3 billion of global business with first- and second-tier diverse suppliers. Of that, $2.6 billion was contracted with first-tier suppliers, up from $2.5 billion in 2011. And of that, we did $939 million in business with non-US first-tier diverse suppliers, representing a 7 percent increase from the previous year. The growth in diverse spend outside the United States is the result of our creation of full-time diversity positions in growth markets such as China.

## $3.3 billion

of business with first- and second-tier diverse suppliers in 2012

## 939 million

$ of purchasing with first-tier, non-US-based diverse suppliers in 2012

**Amount of IBM Business Conducted with
First-Tier Diverse Suppliers**
(dollars in billions)

| | |
|---|---|
| 2011 | 2.5 |
| 2012 | 2.6 |

For these and other accomplishments in 2012, IBM Program Director of Global Supplier Diversity Michael K. Robinson was named Supplier Diversity Ambassador by *Minority Business News USA*. Robinson also received the Executive Leadership Award at the 2011 Congressional Minority Business Awards Gala, and he was recognized by *Asian Enterprise Magazine* as their Advocate of the Year.

In addition to the NMSDC, IBM is a founding member of the WBENC, WEConnect International, the National Gay and Lesbian Chamber of Commerce and US Business Leadership Network's Disability Supplier Diversity Program. IBM also participates in international organizations focused on supplier diversity, such as the Australian Indigenous Minority Supplier Council, the Canadian Aboriginal and Minority Supplier Council, Minority Supplier Development United Kingdom, Minority Supplier Development China, South African Minority Supplier Development, WEConnect Canada, WEConnect Europe, WEConnect India and the International Gay and Lesbian Chamber of Commerce.

Since the inception of IBM's Supplier Diversity Program, IBM has received much recognition for its efforts. In the past 12 years the company has received more than 100 corporate and individual awards from local, regional, national and federal entities. This past year was particularly noteworthy, as IBM's efforts in maintaining a diverse supply chain were recognized by more than two dozen organizations. Among the top honors were:

- Top Corporation by the WBENC

- Corporation of the Year by the Minority Supplier Development Council-UK

- A Top Corporation by *DiversityBusiness.com*

- A 2012 Corporate One recipient by the Michigan MSDC

- Corporation of the Year by the WBEC of PA-NJ-DE

- Corporation of the Year by the MSDC of PA-NJ-DE

- NMSDC International Committee's Global Link Award

- IBM/Supplier Connection won the Best Collaboration Award from the Supply Chain Awards North America.

Looking forward, IBM will continue to foster the diversity of its global supply chain as our business needs evolve. IBM works with many potential diverse suppliers to clearly define its requirements in both direct and indirect supply areas. And we continue this work with diverse suppliers—especially our second- and third-tier suppliers—to help them grow their capacity.

# Governance

IBM's culture of ethics and integrity is guided by a rigorous system of corporate governance. In this section, you will find examples of the many ways we govern the conduct of the company, manage risk and contribute our expertise to public discourse.

# Governance

IBM senior management is ultimately responsible for our economic, environmental and social performance, as well as our adherence to IBM's overall compliance programs.

Corporate responsibility at IBM is integrated across the business through the following forums.

## Corporate Responsibility Steering Committee

Our Corporate Responsibility Steering Committee comprises senior executives from functional areas across the business and is chaired by the vice president for Corporate Citizenship and Corporate Affairs. The committee meets periodically to provide leadership and direction on key corporate responsibility issues. Each functional area is responsible for the development of its own corporate responsibility goals and strategy, with organization-wide goals approved by the steering committee.

## Corporate Responsibility Working Group

Our Corporate Responsibility Working Group consists of representatives from 10 functional areas (including global representation) and meets at least monthly to manage IBM's corporate responsibility activities and stakeholder engagement across the company. The working group reviews key policy and strategic issues and makes recommendations to the steering committee throughout the year.

On a day-to-day basis our activities are coordinated in the Corporate Citizenship and Corporate Affairs organization, which reports to the senior vice president for Marketing and Communications.

# Stakeholder Engagement

At IBM, we view stakeholder engagement as much more than communications and consultation. For us, it is about business engagement and collaboration—working shoulder-to-shoulder with communities, governments and the social sector.

Here are a few examples:

- Jams use IBM's large-scale electronic collaborative brainstorming platform to garner stakeholder input and engagement on a scale not previously possible in real time, accelerating the development of solutions to society's most enduring problems. Jams bring together thousands of representatives from nonprofit organizations, corporations, academic institutions and government agencies to engage in real-time, virtual discussions around social and business issues ranging from security and privacy in the digital age to the future of service and volunteerism.

  For example, ServiceJam, held in 2010, brought together more than 15,000 representatives of nonprofit organizations, corporations, academic institutions and government agencies in a discussion about how social innovation can help solve our world's largest problems.

- We use a variety of social media to help us more deeply engage with our community and the extended IBM workforce. This includes Citizen IBM, which promotes discussion with community organizations, teachers, students and parents worldwide on IBM's corporate citizenship programs. This website offers information about IBMers donating their time, talent and technology to assist communities around the world to help build a smarter planet. We also connect to our extended workforce community, which includes our retirees, through the IBM On Demand Community, our online system of community engagement.

## 15,000

Representatives of nonprofit organizations, corporations, academic institutions and government agencies that came together to discuss how social innovation can help solve our world's largest problems under IBM's ServiceJam.

IBM also actively seeks to work with organizations that are taking similarly innovative, global, open and collaborative approaches to corporate citizenship and sustainability.

Our memberships include:

- AmCham-China CSR Committee

- Business Civic Leadership Center

- Business for Social Responsibility

- Carnegie Global Council

- Center for Climate and Energy Solutions

- Chilean United Way

- Confederation of Indian Industry National Committee on CSR

- Conference Board

- Corporate Responsibility Officers Association

- Council on Foundations

- CSR Asia (IBM is a member of its Community Investment Round Table)

- CSR Europe (IBM is the current chair)

- Eco-Patent Commons

- Electronic Industry Citizenship Coalition (IBM is a board member and holds chair emeritus position)

- Environmental Law Institute

- European Academy of Business in Society (IBM is a board member)

- Group of Institutes, Foundations and Companies

- InnoCSR, China

- Instituto Argentino de Responsabilidad Social Empresaria/ Argentinean Institute of CSR

- Points of Light Institute Corporate Council

- World Environment Center

- World Wildlife Fund Climate Savers Program

## Business Conduct Guidelines

IBM's Business Conduct Guidelines (BCG), including the Government Client Guidelines supplement, reflect our longstanding commitment to ethical conduct and decision-making. Serving as our global code of conduct for IBM employees everywhere we do business, the BCG is available in 25 languages and is deployed in 98 countries. Each year, IBM employees are required to certify to the BCG and complete online interactive training. The BCG course is refreshed annually, to include timely and relevant business scenarios that employees may face when conducting IBM's business. In 2012 the course included topics on financial integrity, anti-bribery, secure computing, fair competition and reporting.

Working with third parties continues to be an integral part of IBM's business in meeting the needs of our clients. Just as IBM employees commit to ethical conduct and decision-making, IBM also holds its business partners to high standards of business conduct and practices. IBM's Business Partner Code of Conduct and Supplier Conduct Principles and Guidelines describe the standards of business conduct and practices we expect from our business partners and suppliers in order to do business with IBM. This year, IBM also required its business partners and suppliers to complete online education on a variety of topics relating to ethical conduct and compliance.

IBM provides communications channels for employees, suppliers, business partners and others to report concerns or suspected violations to the company. These reporting channels include mechanisms for submitting anonymous reports. IBM does not tolerate threats or acts of retaliation against any employee for reporting a concern or suspected violation.

# Privacy and Security

Today's digital society is built on the fast flow and analysis of information. The strides we make in gathering, routing and analyzing torrents of data hold the promise of an ever-brighter future, a vision we at IBM refer to as Smarter Planet.

But behind these data are real people, real organizations and real concerns about privacy and security. At IBM, we take these concerns very seriously.

## Privacy

IBM believes that consideration for privacy and data protection must be built into the fabric of our business, and our society, in order for individuals and organizations to realize the promises of social progress and economic growth offered by our increasingly interconnected and data-driven world.

The economic value of information continues to increase, and much of that information relates to us as individuals. This information, and how we use it, is at the heart of new business models, new jobs and new ways in which individuals and businesses organize and connect with one another around the globe.

Institutions of all types—including businesses—must work to earn the public's trust in their ability to steward information, and in turn we as consumers must take educated steps to protect ourselves and our families.

IBM has long been a pioneer in privacy policy and practice:

- Early 1970s—first company in the world to adopt a global privacy code of conduct

- 2000—one of the first companies of any size to appoint a chief privacy officer

- 2005—first company to adopt a global genetic nondiscrimination and privacy policy

- 2012—recognized as one of the top 10 companies "Most Trusted for Privacy" by US consumers for the seventh consecutive year

In 2012, IBM launched a number of new initiatives around privacy, and expanded others already underway. Some of these programs are designed to help organizations in need of expertise in these areas, some share what works at IBM with the rest of the world, and others strive to promote consideration of privacy and security in the realm of public policy.

### Promoting transparency

IBM has been urging better communication regarding privacy for years. As far back as 1999 we decided to withhold advertising dollars from North American websites that did not post their privacy policies. But industry can do more than post a privacy policy. That's why IBM and other companies worked with the Future of Privacy Forum in 2012 on a consumer trust seal, authenticated by a third party, to give consumers confidence in smart grids. The program helps companies certify their data collection and usage practices against an agreed-upon standard for privacy.

## Pro Bono Privacy Initiative

According to Independent Sector, a coalition of nonprofits, foundations and corporate giving programs, there are 1.4 million nonprofits in the United States serving the broad public interest by providing services such as homeless shelters, domestic violence assistance and nutrition support. Given the staggering growth of digital data, these nonprofits are increasingly likely to encounter privacy and personal data security-related issues that they must understand, analyze and address.

In 2012, IBM continued its involvement in an initiative we began in 2011 dedicated to providing nonprofit organizations free legal and other advice on responsible and pragmatic practices for protecting individual privacy and data security. Called the Pro Bono Privacy Initiative, this group of privacy professionals aims to engage with human services agencies to help them navigate mission-critical privacy and data protection considerations. Stemming from the initiative's pilot, IBM continued to share its data security and privacy expertise with Safe Horizon, the largest victims' assistance agency in the United States.

The Pro Bono Privacy Initiative is designed to help:

- Interested nonprofits improve their compliance and risk posture

- Participating privacy professionals give back to society while enriching their experience and networks

- Supporting companies, law firms and consultancies demonstrate corporate citizenship

## Privacy by Design

In 2012, IBM continued its extensive work to build a globally recognized enterprise privacy program that follows Privacy by Design practices. As big data continues to make headlines, we have built privacy-protective features into our new sensemaking analytics technology, code-named G2, and also published a related paper, coauthored by IBM Fellow and Chief Scientist of IBM Entity Analytics Jeff Jonas and Ann Cavoukian, Ph.D., information and privacy commissioner of Ontario, Canada.

## IBMPrivacy

Throughout 2012, we continued to develop IBMPrivacy, a site that offers resources and discussion about privacy and data protection for large enterprises, small businesses and nonprofit organizations. With this site IBM hopes to help demystify the privacy and data security issues that all organizations must address in today's digital world. By proactively developing privacy plans based on current and practical knowledge, organizations can be better positioned to achieve their overall missions in a way that maintains their good reputation and also enhances compliance.

# Cybersecurity

Security is a critical aspect of the entire lifecycle of any system, from design and architecture through to implementation, testing, deployment, maintenance and retirement. Today, organizations and individuals are confronting heightened risks as cybersecurity threats continue to grow and evolve with great speed.

At IBM, we carefully consider cybersecurity challenges when conceiving, developing and marketing our technology solutions. We also recognize it is important to collaborate with public and private organizations that build market awareness of these issues and implement policy governing them. We understand the benefit of providing education as well as technology.

In support of that understanding, IBM takes part in the annual Safer Internet Day event. In 2012 the event's theme was "Connecting generations and educating each other." IBM released free Internet safety training tools for students and deployed thousands of volunteers around the world to help educate consumers and businesses on Internet safety and digital awareness. The kits are designed to help teach teenagers how to protect their personal data and reputation online, to give teachers or adults working with children information on Internet safety and common Internet activities that young people engage in, and to help adults recognize and prevent cyberbullying among youth.

## Secure, smart and social computing programs

IBM recognizes the value that social computing can bring to a company, both for internal employee interaction and for building stronger relationships with customers, providers and partners. But the use of social media can also introduce risk. We realize that if not managed correctly, individuals' engagement with social and other computing technologies can work against an organization's relationship-building efforts and pose significant security threats.

In 2012 we continued our internal Social Business Management Council, a cross-company group of senior leaders charged with aligning the company's social business strategies with risk mitigation priorities, to address social media and risk issues as they arise and sponsor enterprise-wide policy enhancements in this area. We again reviewed and updated the IBM Social Computing Guidelines to stay current and address labor and other requirements. And we deployed mandatory employee security education and continued to enhance the "Digital IBMer Hub," an interactive set of resources available for employees to learn social computing skills and reinforce secure social computing. We continued to refine our social recruiting guidelines that outline how social media can and should be used by employees during the recruiting process, and we created an employee guide for managing digital reputations that stresses the importance of individuals taking responsibility for their own online personas.

Recognizing the risk environment in which all organizations now operate, we continue to review and improve our process for reporting suspicious incidents involving data or IT systems, and we continue to devote resources to support expert response efforts.

# Enterprise Risk Management

At IBM, we believe that innovation and leadership are impossible to achieve and maintain without taking risks. Since almost all business decisions contain elements of both risk and opportunity, they must be managed prudently.

IBM's business decisions affect our key stakeholders—shareholders, clients, business partners and employees—and thus by extension affect society and the communities where we do business. Senior management is responsible for assessing and managing the company's various exposures to risk on a day-to-day basis, including the creation of appropriate risk-management programs and policies. 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. This approach continues to be refined and various enhancements were introduced to the framework in 2012.

## Leadership

Senior management continued its collaborative process of identifying, evaluating and managing enterprise-level risks in 2012. This included periodic reviews and interaction with the Audit Committee and Board, which oversees the company's enterprise risk management framework, program and associated processes. A key aspect of senior management leadership in risk management is to identify and deploy a governance model and management system that fosters collaboration and transparency in managing risk across the entire enterprise. This enterprise purview enables risk-mitigating actions that are taken in one part of the business to be standardized and applied globally, across other units. Risk management is also an element of executive compensation plans, designed to motivate our leaders to deliver superior business performance without encouraging excessive risk-taking.

## Programs and practices

Throughout the company, the approach to identify and manage risk is based on the ISO 31000 Enterprise Risk Management (ERM) standard. In deploying this standard, IBM considers and assesses potential financial, operational, regulatory and other risks to our business, which could be driven by various factors such as where we do business, how we do business and the nature of our offerings.

IBM continued to enhance its risk identification process in 2012 by reviewing risk information sources, including our peers' 10K filings with the Securities and Exchange Commission and external industry surveys. We also conducted in-depth discussions with leading consultants on emerging risks and conducted a robust internal study that included extensive interviews with key executives. As a result, we updated our enterprise-level risk map and increased senior management focus in early 2013. Benchmarks have shown that IBM's risk management practices exceed typical standards, including more emphasis on collaboration and consideration of risk interdependencies.

## Enablement

One of the most effective ways to manage risk in a global enterprise is to consistently promote a culture of risk awareness, identification, analysis and mitigation. IBM continued to expand its risk education and training in 2012; for example, we held risk workshops with teams in Africa designed to improve local practices. IBM is also focused on applying technology, tools and analytics to support risk management. One example is the Country Financial Risk Scorecard, which combines big-data automation to monitor trends and develop intelligent and actionable insights. By leveraging IBM's analytics solutions, such as Cognos and SPSS, we were able to integrate over 100 internal and external inputs to produce an integrated view of country-level risk on a near-real time basis for over 160 countries. IBM was recognized by *CIO Magazine* with an award for the Country Financial Risk Scorecard's innovation and leadership. Additional internal capabilities have been developed to assist in managing other areas of risk using IBM's advanced risk solutions, such as OpenPages for IT risk and Algorithmics for treasury risk.

## Effectiveness

A risk management framework is most effective when it provides transparency, facilitates communication and monitoring of risks, and demonstrates success in mitigating enterprise-level risks. This level of effectiveness should ultimately lead to improved business performance and help the company protect its reputation while delivering on its social responsibilities. To measure the effectiveness of risk mitigation actions, IBM continued to enhance the way it defines and communicates its key risk indicator metrics across the risk lifecycle in 2012, including leading indicators, and action, effectiveness and outcome metrics.

## External community engagement

IBM has engaged with academia, external risk-management thought leaders and community organizations to advance the risk management acumen of current and future business leaders. For example, we worked with a US university to enhance curricula in risk analytics, in order to help students develop advanced skills in the use of technology to solve complex business and financial risk problems. In another example, IBM hosted a program for CFOs of nonprofit organizations to coach and demonstrate how to leverage commercial risk management practices to address their community challenges.

# Public Policy

As IBM endeavors to improve the social and commercial systems that support our world, we understand the importance of working collaboratively across all of civil society—with lawmakers, regulators, public officials and civic leaders.

Through this collaboration we contribute our expertise, experience and perspective on some of the most urgent issues facing the world today.

One such issue is the worldwide shortage of graduates prepared for careers in science, engineering, technology and math (STEM). The flow of high-skilled workers from nation to nation is one response to the STEM shortage; however, caps and other restrictions have limited the movement of talent even if a sufficient supply existed.

And so, many countries are now developing reforms to improve their global competitiveness:

1. OECD countries have sought improvements in curriculum, teaching skills, use of metrics and other key reforms.

2. The government of China put forward a new law on vocational education and regulations concerning the management of institutions of higher learning.

3. India has amended its constitution to guarantee a fundamental right to education and enacted legislation regarding free and compulsory education.

IBM is focused on addressing these problems by encouraging action on the part of states, localities and the US Congress. We are working to drive education reform, workforce training and immigration/migration legislation and policy, and have used our localized efforts (for example, Pathways in Technology Early College High School or P-TECH) to develop recommendations and demonstrate educational approaches.

To scale up these local initiatives, IBM is working with its US congressional delegations, other employers and trade associations to seek improvements in career and technical education (CTE) programs—in particular, the Carl D. Perkins Act. In the United States, CTE programs—once called vocational education—creates a link between school and career. While federal funding under the Carl D. Perkins Act provides more than $1 billion to schools, IBM is seeking reforms that would:

1. Better align with labor-market needs in high-growth industry sectors.

2. Improve CTE programs with strong collaboration among secondary and post-secondary institutions and employers.

3. Create accountability measures that provide common definitions and clear metrics for performance of CTE programs in order to improve academic outcomes while building the technical skills and employability of participants.

# Awards and Metrics

Many of our corporate responsibility efforts received recognition from others in 2012. The most significant of these are listed in "Awards and Recognition." We rely on a number of metrics to measure our corporate responsibility efforts. Our Key Performance Indicators and other significant metrics can be found in "Performance Summary."

# IBM Awards and Recognition 2012

Every year, our corporate responsibility efforts are rated and recognized by a number of publications, advocacy groups, governments and non-government organizations. We are proud to share some of that recognition here.

## Corporate Responsibility

### Civic 50

IBM was ranked #1 on the Civic 50, which measures S&P 500 companies on how they best use their time, talent, and resources to improve the quality of life in the communities where they do business. The Civic 50 is a partnership among the National Conference on Citizenship, Points of Light and *Bloomberg News*.

### 100 Best Corporate Citizens

IBM was ranked #2 on *CR Magazine*'s "100 Best Corporate Citizens" list, based on the Russell 1000 listing of large public corporations, in March 2012.

### World's Most Admired Companies

IBM was ranked #5 on *Fortune*'s "World's Most Admired Companies" list in 2012, up from #12 in 2011.

### 100 Most Reputable Companies

IBM was ranked #19 on *Forbes*' "World's 100 Most Reputable Companies" list, based on a survey of 47,000 consumers in 15 markets.

### Global 100 Most Sustainable Corporations

IBM was identified as one of the Global 100 Most Sustainable Corporations by Corporate Knights, Inc., a Toronto-based media firm.

### Argentina

IBM Argentina was recognized for the third consecutive year as a company committed to Corporate Social Responsibility (CSR) by the Argentinean Institute for Corporate Responsibility (IARSE).

### China

IBM received the Most Respected Company in China awarded by the *Economic Observer* for 11 consecutive years, the highest recognition for a company being essential to China. IBM is the only IT company among the awardees.

IBM was named as an Enterprise of Excellence in the annual CSR ranking by *China Business News*, for 3 consecutive years, recognizing IBM's thoughtful and comprehensive approach to align CSR with corporate values and maximize impact.

IBM was recognized by *BusinessValue Magazine* for best practices in integrating CSR strategy into business.

IBM was listed in the annual *Fortune China* CSR Ranking Top 25.

### Spain

IBM Spain was honored with the Red Cauces award, which recognizes CSR commitment and programs.

Smarter Cities Challenge was selected as one of the best 100 ideas in Corporate Citizenship by *Actualidad Económica*, a leading business magazine in Spain.

IBM Spain received an award from Fundación Madrina in recognition of its values and social commitment.

### Taiwan

IBM Taiwan received a 2012 CSR award from *Global Views Monthly*.

# Education and Workforce

### Czech Republic

The IBM project "Science has a Future" was recognized by the Minister of Education for the Czech Republic. A letter was issued by the Minister, stating the importance of collaboration between business and schools.

### Hungary

IBM Hungary was presented with an award for supporting the employment of disabled people by AmCham, the Ministry of National Resources and the Salva Vita Foundation.

### Romania

IBM was awarded a diploma by Junior Achievement for its active support of the "eskills 2012" campaign.

IBM Romania received a diploma for outstanding contribution for investment in education and a diploma for business volunteer involvement from Junior Achievement Young Enterprise Romania.

### United States

IBM received the National Governors Association Public–Private Partnership Award from Maryland Governor Martin O'Malley for designing and building the Maryland STEM Innovation Network online platform.

IBM was honored with a Corporate Supporter award by the Women's Enterprise Development Center (WEDC) in Westchester, New York. The award was based on IBM support to WEDC in helping women entrepreneurs promote their businesses and increase sales.

# Employees

### Australia

IBM received the Corporate Social Responsibility Award for its Corporate Service Corps program from the Australian Human Resources Institute.

## Brazil

Alcely Barroso, IBM Brazil Corporate Citizenship & Corporate Affairs executive, received the Diploma de Merito Feminino for her contributions to Brazil. This award, in celebration of International Women's month, was presented by the Brazilian Academy of Art, Culture & History.

IBM Brazil was recognized by the Dorina Nowill Foundation as a company committed to the inclusion of people with visual impairment.

## Canada

IBM Canada received the Canadian Women in Communications (CWC) Employer of the Year award. CWC is a national organization that champions women's advancements in the technology and communications sectors.

## China

IBM was recognized for the Best CSR Program for IBM Executive Service Corps Nanjing, awarded by *Philanthropic Time*, a CSR media outlet managed by the Ministry of Civil Affairs.

## Hungary

IBM Hungary received the Hewitt Award for "Best Employer 2012."

## India

IBM India won the "Best CSR Practice Award" for the Corporate Service Corps program at the first ever Responsible Business Awards event.

## Malaysia

IBM Malaysia won the Prime Minister's CSR Award 2011 for Family Friendly Workplace, which recognizes companies that have contributed significantly towards the development of policies and procedures that foster family friendly workplaces.

## Vietnam

IBM Vietnam received the Certificate of Excellence 2012 from the Danang People's Committee for its extensive contribution to socio-economic development, especially through the Executive Service Corps.

# Environment

### 2012 Gold Medal, World Environment Center

IBM received the World Environment Center's (WEC) 28th Annual Gold Medal for International Corporate Achievement in Sustainable Development, becoming the first and only company to earn the award twice. We were recognized with our first WEC Gold Medal in 1990.

### EU Data Center CoC 2012 Corporate Level Participant of the Year

IBM received recognition as the EU Data Center Code of Conduct (CoC) 2012 Corporate Level Participant of the Year. The award recognizes IBM's achievement in registering 27 data centers to the CoC and its work to improve the efficiency of the cooling operations at the registered data centers.

# Canada

IBM Canada's Bromont site received an Industrial Energy Technology Conference (IETC) Energy Award for its ongoing energy conservation initiatives. From 2008 to 2012, the site completed more than 145 energy conservation projects reducing or avoiding annualized energy use of 76,000 MWh/year and saving $3.1 million.

# China

IBM received the International Institute for Advanced Purchasing & Supply (IIAPS) Sustainable Supply Chain Award at the IIAPS Asian Supply Chain Excellence Forum in Shanghai, China, for its Supply Chain Social and Environmental Management System.

# India

IBM India received the 2012 Golden Peacock Environment Management Award. The Award is designed to promote best strategy and management of environmental issues by organizations.

# Ireland

IBM was recognized in The Chambers Ireland President's Awards for Corporate Social Responsibility for Excellence in Marketplace for its Integrated Supply Chain Social and Environmental Management System.

# Netherlands

IBM Netherlands was awarded the International Union for Conservation of Nature prize for sustainability.

# Singapore

IBM Singapore Limited received the Singapore Environmental Achievement Award (Services) from the Singapore Environment Council for its outreach to the community on environmental issues, meeting its own environmental goals and data center energy efficiency.

# United States

### 2013 (and 2012) Climate Leadership Award
IBM received a 2013 Climate Leadership Award from the US EPA, the Association of Climate Change Officers, the Center for Climate and Energy Solutions, and The Climate Registry. The award recognized IBM for its ambitious greenhouse gas emissions reduction goals and for being at the leading edge of setting requirements for suppliers to measure, disclose and reduce their emissions. This is the second Climate Leadership Award for IBM, having received one in 2012, the first year the awards were given.

### #1 Ranking of World's Greenest Companies, *Newsweek*
IBM was the #1 company in *Newsweek*'s 2012 Green Rankings. This is the second year in a row that IBM was recognized as top-rated in this annual listing. The methodology behind this annual ranking assesses the environmental performance, management (policies, initiatives, controversies) and transparency of the 500 largest public companies in America.

### White House Champion of Change Award for Leadership in Corporate Sustainability
IBM received a White House Champion of Change award for leadership in corporate sustainability in recognition of IBM's environmental leadership. Only eight awards were given, and IBM was the only company to receive one.

**Most Valuable Pollution Prevention Award**

IBM East Fishkill, New York, won a Most Valuable Pollution Prevention Award (MVP2) from the National Pollution Prevention Roundtable for its On-site & Off-site Waste Solvent Accomplishments Project. The project eliminated 200 tons per year of n-methyl-2-pyrrolidone and photo resist stripper chemical use and 300 tons per year of hazardous waste solvent and enabled the beneficial reclamation of 500 tons per year of waste solvent.

**2012 Environmental Excellence Award**

IBM East Fishkill also received a 2012 Environmental Excellence Award from the New York State Department of Environmental Conservation. The site was recognized for its catalytic hydrogen peroxide treatment system that demonstrates the environmental, economic and health and safety benefits that can be achieved as a result of pollution prevention and green chemistry technologies.

**Vermont Governor's Award, US**

IBM Burlington, Vermont, received a 2013 Vermont Governor's Award for Environmental Excellence for its energy outreach efforts with two non-profit organizations (Howard Center and Vermont Technical College) and multiple Vermont-based companies. IBM shared its innovations in energy management to help them achieve energy, associated $CO_2$ emissions and operational cost reductions. This marks 20 consecutive years that IBM has been recognized with at least one of these awards—which is every year the competition has been held.

**Most Valuable Pollution Prevention Award**

IBM facilities in Burlington, Vermont, received the National Pollution Prevention Roundtable's Most Valuable Pollution Prevention Project of 2012 in recognition of IBM's Centennial Energy Outreach Project.

**Earth Charter Sustainable Business Award**

Earth Charter US (ECUS) Sustainable Business Coalition, in partnership with the University of Tampa's Center for Ethics, recognized IBM Tampa Bay, Florida, with its Sustainable Business Award, large business category. IBM was recognized for its Smart Building Technology as well as the company's annual corporate responsibility report.

# Supply Chain

**ISO 14001 Certification**—IBM's Social & Environmental Management System, which encourages IBM's supply chain partners to adopt a more responsible approach to social and environmental issues, received significant recognition during 2012 including ISO 14001 certification.

IBM's Social & Environmental Management System also received an award from the International Institute for Advanced Purchasing & Supply in Asia.

IBM/Supplier Connection won the Best Collaboration Award from the Supply Chain Awards North America.

## Ireland

IBM's Social & Environmental Management System also received the President's Award for Excellence in Marketplace at the Chambers Ireland President's Awards for CSR.

## United Kingdom

IBM received Corporation of the Year designation by the Minority Supplier Development Council-UK.

## United States

IBM was named a Top Corporation by the Women's Business Enterprise National Council.

IBM received the National Minority Supplier Development Council International Committee's Global Link Award.

IBM was named a 2012 Corporate One recipient by the Michigan Minority Supplier Development Council.

IBM was named Corporation of the Year by the Women's Business Enterprise Council of Pennsylvania-New Jersey-Delaware.

IBM was named Corporation of the Year by the Minority Supplier Development Council of Pennsylvania-New Jersey-Delaware.

IBM was recognized as a Top Corporation by *DiversityBusiness.com*.

# Volunteerism

### Canada

The IBM Ottawa Adopt-a-Family Centennial volunteer team received the 2011 Community Builder Award from the City of Ottawa.

### China

IBM received a Gold Award for Volunteer Service from the Director of Social Welfare, Hong Kong Government for accumulated service hours in the 2011 Centennial Year.

### Poland

Responsible Business Forum selected IBM's Celebration of Service and Mentor Place volunteering (mentoring of NGO leaders by IBM managers) for publication in its CSR Best Practices Annual Report.

### Portugal

IBM Portugal was awarded the OCI Award 2011 for Excellence in Internal Communications in recognition of its Celebration of Service campaign.

### Russia

IBM RCIS was awarded "Volunteering Company of the Year 2011" by the Moscow government under the Corporate Volunteering category. It recognizes the Celebration of Service initiative, the use of skills-based volunteering, innovative practices and the development of long-term partnerships with NGOs.

### Spain

IBM Spain was recognized with the CODESPA Foundation Award in the category of Corporate Volunteering for its On Demand Community program.

### Uruguay

IBM's On Demand Community in Uruguay received the DERES Best Practices award in the Community Support category. DERES is an Uruguay organization of businesses that promotes the conceptual and practical development of CSR.

# Work with NGOs and communities

### Argentina

IBM Argentina won the Scouts of Argentina Association "Siempre Listo" Award 2012, which recognizes companies that contribute their time and talent to the community.

### Chile

IBM Chile received the Chilenter Award, recognizing IBM for the invaluable commitment, contribution and environmental responsibility in the reduction of the digital divide.

### China

IBM China Limited was awarded for the 10th consecutive year the Caring Company Award by Hong Kong Council of Social Service. The Caring Company Award is specifically geared to build strategic partnerships among businesses and nonprofit organizations.

### Ireland

IBM won the "Excellence in Community - Partnership with Charity (Multinational Corporation)" award at the "Chambers Ireland President's Awards for CSR" in recognition of the cloud-based Care to Drive Centennial grant project with the Irish Cancer Society.

### Korea

IBM Korea won a CSR award granted by The Republic of Korea National Red Cross to honor the outstanding social service responsibility for individuals and companies.

### Peru

IBM Peru received the Socially Responsible Company award from the NGO Fundades, which works to improve the education and social integration of people with disabilities.

### Philippines

IBM Philippines won an ANVIL Award for "Making Our Communities Work Better."

### Thailand

IBM was recognized by Thailand's HRH Princess Soamsawali for supporting HIV prevention through a grant of IBM software and IBM volunteers working with the Thai Red Cross AIDS Research Centre.

# 2012 Performance Data Summary

Over the course of a year, IBM uses a series of metrics to measure our corporate responsibility efforts. Below is a summary of the data in several important areas. Our Key Performance Indicators (KPIs) for various parts of the business are also noted, along with some explanation.

**KPI** Denotes Key Performance Indicator.

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## Employees

### Learning

At IBM, we focus on allowing IBMers to flourish by providing guidance and opportunities for career and expertise growth, allowing IBM and IBMers to succeed in this rapidly changing world. IBM blends traditional, virtual, and work-enabling learning and development activities to accomplish this. This strategy enables us to provide timely, comprehensive, and targeted learning while achieving more efficient, effective learning delivery.

| | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| Learning Investments Worldwide ($M) **KPI** | 648 | 490 | 547 | 466 | 477 |
| Learning Hours Worldwide (M) | 23.2 | 25.5 | 28.6 | 27.4 | 33 |
| Learning Hours Per Employee **KPI** | 61 | 64 | 67 | 63 | 78 |

### Women in the Workforce

For over 100 years, IBM has shown a dedication to addressing the specific needs of women in our workforce and to creating work-life and career development programs that address their needs. We are committed to the progress and leadership development of women in our workforce and providing opportunities across the more than 170 countries where we do business.

| | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| **Women in the Workforce %** **KPI** | | | | | |
| Global Workforce | 28.9 | 28.7 | 28.1 | 28.5 | 30 |
| Global Executives | 21.2 | 21.2 | 21.4 | 21.5 | 22.3 |
| Managers | 24.5 | 24.6 | 24.8 | 24.6 | 25.6 |

### Global Illness/Injury Rate

| | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| **Global Illness/Injury Rate** | | | | | |
| Total Number (per 100 employees) | 0.3 | 0.27 | 0.27 | 0.33 | 0.29 |

## Volunteering

IBM supports and encourages employees in volunteering in their communities. IBM celebrated its Centennial in 2010–11 and the exceptionally high volunteer hours for 2011 reflect the many special volunteer projects associated with the Centennial. In 2012, volunteering returned to more usual conditions but still showed a rise over pre-Centennial years.

|  | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| **2012 Retiree and Employee Volunteer Hours (k)** | | | | | |
| Asia Pacific | 143 | 118 | 111 | 663 | 116 |
| Europe, Middle East, Africa | 175 | 155 | 198 | 430 | 216 |
| Latin America | 41 | 43 | 44 | 152 | 39 |
| North America | 1,170 | 954 | 1,110 | 1,956 | 1,210 |

# Giving

IBM tracks global corporate contributions by issue, geography and type of grant. Giving by issue is important as our goal is to maintain education as our primary focus. Giving by geography is important to understand the alignment of our resources to our global operations. The type of giving—services, technology (including software) and cash—is important as we focus on providing the best of our company's technical services and technology to address key social issues.

While education is our highest priority, we currently intend to maintain some investment in human services, culture, health and the environment. Additionally, we want to keep flexibility for new initiatives and to meet extraordinary external conditions, such as disaster relief. Our contributions in 2012 met these goals. Our overall contributions rose by about $1 million and education remained our largest area of activity.

The percentage growth of our contributions in 2012 over the prior year was lower than average. However, in 2011 contributions grew over the prior year by a larger percentage than average due to special contribution initiatives associated with our Centennial. 2012 marked a return to contribution levels consistent with the pattern of the past five years.

IBM is a globally integrated enterprise operating in nearly 170 countries. This is reflected in the distribution of our contributions by geography. Some of our contributions are given on a globally competitive basis, so geographical distribution may vary due to the number and quality of applications. By type of contribution, technology and services as a percentage of total contributions increased in 2012, consistent with our focus on providing solutions.

We do not set goals for percentage change in contributions year over year, nor for giving by geography or by type of contribution. We focus instead on increasing the quality of our work with organizations on projects that successfully use IBM solutions and that have significant impact on key social issues. Current trends in contributions will not necessarily continue, but rather will be determined within the framework of increasing the effectiveness of our contributions.

## 2008–2012 Global Contributions

|  | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| **Global Corporate Contributions by Issue ($M)** KPI | | | | | |
| K–12 Education | 45.4 | 44.0 | 34.7 | 28.8 | 24.7 |
| Higher/Other Education | 82.6 | 92.4 | 116.8 | 113.0 | 118.3 |
| Culture | 10.5 | 5.7 | 3.2 | 3.8 | 3.7 |
| Human Services | 15.3 | 15.0 | 7.7 | 17.9 | 16.9 |
| Health | 4.0 | 4.2 | 4.3 | 4.5 | 3.5 |
| Other | 19.3 | 19.9 | 16.1 | 22.7 | 24.8 |
| Environment | 2.2 | 4.7 | 6.4 | 5.4 | 5.2 |
| Total | 179.3 | 185.9 | 189.2 | 196.1 | 197.1 |
| **Global Corporate Contributions by Type ($M)** KPI | | | | | |
| Cash | 42.9 | 40.3 | 39.3 | 46.9 | 42.6 |
| Technology | 93.8 | 102.2 | 105.3 | 91.3 | 99.2 |
| Services | 42.6 | 43.4 | 44.6 | 57.9 | 55.3 |
| Total | 179.3 | 185.9 | 189.2 | 196.1 | 197.1 |
| **Global Corporate Contributions by Geography ($M)** | | | | | |
| United States | 94.6 | 77.1 | 75.8 | 70.8 | 69.9 |
| Asia Pacific | 24.4 | 45.4 | 34.8 | 36.3 | 35.9 |
| Canada | 3.4 | 8.4 | 6.8 | 6.8 | 7.1 |
| Europe, Middle East, Africa | 44.4 | 35.2 | 54.3 | 60.2 | 64.4 |
| Latin America | 12.5 | 19.8 | 17.5 | 22.0 | 19.8 |
| Total | 179.3 | 185.9 | 189.2 | 196.1 | 197.1 |

# 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. The goals identified here as KPIs are based on stakeholder interest and materiality. IBM considers all of its goals to be important metrics of the company's performance against its commitment to environmental protection.

## Energy Conservation

IBM's goal is to achieve annual energy conservation savings equal to 3.5 percent of IBM's total energy use. In 2012, IBM again achieved this goal, attaining a 6.5 percent savings from its energy conservation projects.

|  | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| **Energy Conservation** KPI |  |  |  |  |  |
| As % of total electricity use | 6.1 | 5.4 | 5.7 | 7.4 | 6.5 |

## CO$_2$ Emissions Reduction

Between 1990 and 2005, IBM's energy conservation actions reduced or avoided CO$_2$ emissions by an amount equal to 40 percent of its 1990 emissions. To further extend this achievement, IBM set an aggressive "2nd generation" goal: to reduce the CO$_2$ emissions associated with IBM's energy use by 12 percent between 2005 and 2012 through energy conservation and the procurement of renewable energy.

As of year-end 2012, IBM's energy conservation results and procurement of renewable energy yielded a 15.7 percent reduction in its energy-related CO$_2$ emissions since 2005—achieving and exceeding our 12 percent reduction goal.

|  | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| **CO$_2$ Emissions Reduction** KPI |  |  |  |  |  |
| % reduction against the 2005 base year | −1.6 | −5.7 | −16.7 | −16.0 | −15.7 |

## Product Energy Efficiency

IBM's product energy goal is to continually improve the computing power delivered for each kilowatt-hour of electricity used with each new generation or model of a product. Performance is tracked by product line: Servers and Storage Systems.

**Product Energy Efficiency** KPI                                       Please see the Product Energy Efficiency table on page 79.

## Recycled Plastics

In 2012, 25.5 percent of the total weight of plastic resins procured by IBM and its suppliers through IBM's corporate contracts for use in IBM's products were resins that contained between 25 and 100 percent recycled content. Comparing only the weight of the recycled fraction of these resins to the total weight of plastics (virgin and recycled) purchased, 12.6 percent of IBM's total weight of plastic purchases in 2012 was recycled plastic versus the corporate goal of 5 percent recyclate.

|  | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| **Recycled Plastics** | | | | | |
| % of total plastics procured through IBM contracts for use in its products that is recyclate | 10.3 | 13.2 | 11.5 | 12.4 | 12.6 |

## Product End-of-Life Management (PELM)

IBM's goal is to reuse or recycle end-of-life IT products such that the amount of product waste sent by IBM's PELM operations to landfills or incineration for treatment does not exceed a combined 3 percent of the total amount processed.

In 2012, IBM's PELM operations sent only 0.3 percent of the total processed to landfill or incineration facilities for treatment.

|  | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| **Product End-of-Life Management** KPI | | | | | |
| % of total processed sent by these operations to landfill or incineration for treatment | 0.6 | 0.5 | 0.6 | 0.4 | 0.3 |

## Hazardous Waste Management

IBM's goal is to achieve year-to-year reduction in hazardous waste generated from IBM's manufacturing processes indexed to output. IBM's hazardous waste generation indexed to output increased 2.9 percent in 2012.

There were two primary factors for this year-to-year increase: 1) an increased use of a solvent in a photolithography process, and 2) a mechanical problem that resulted in additional water entering a hazardous waste stream before the situation could be addressed.

|  | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| **Hazardous Waste Reduction** | | | | | |
| % change in hazardous waste generated from manufacturing operations indexed to output | −10.9 | +8.4 | −21.6 | −3.5 | +2.9 |

## Nonhazardous Waste Recycling

Our voluntary environmental goal is to send an average of 75 percent of the nonhazardous waste generated at locations managed by IBM to be recycled. In 2012, we recovered and recycled 87 percent of our nonhazardous waste.

|  | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| **Nonhazardous Waste Recycling** | | | | | |
| % recycled of total generated | 76 | 76 | 79 | 78 | 87 |

## Water Conservation

IBM's goal is to achieve annual water savings equal to 2 percent of total annual water usage in microelectronics manufacturing operations, based on the water usage of the previous year and measured as an average over a rolling five-year period. In 2012, new water conservation and ongoing reuse and recycling initiatives in IBM's microelectronics operations achieved an annual 2.2 percent savings in water use, resulting in a rolling five-year average of a 2.2 percent savings versus the 2 percent goal.

| | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| **Water Conservation** | | | | | |
| % annual water savings in microelectronics manufacturing based on previous year usage and measured as an average over a rolling five-year period | 4.6 | 3.1 | 2.8 | 2.6 | 2.2 |

# Supply Chain

2012 total supplier spend was down $1.2 billion as the result of: divestiture of IBM's Retail Store Systems business, marketplace dynamics, a reduction in labor subcontractor usage, and non-repeatable spend in 2011 for IBM's Centennial and Watson promotional activities.

Supplier diversity provides IBM a competitive advantage through gains in market share and client satisfaction by giving global opportunities to diverse owned businesses. IBM's Global Supply strategic goals and objectives are supported by diverse suppliers around the world that deliver value in areas such as flexibility, innovation and sustainability, thereby helping to contribute to a Smarter Value Chain.

| | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| **Supplier Spending by Category** | | | | | |
| Services and General Procurement (%) | 68 | 69 | 64 | 64 | 64 |
| Production Procurement (%) | 29 | 28 | 33 | 33 | 33 |
| Logistics Procurement (%) | 3 | 3 | 3 | 3 | 3 |
| Services and General Procurement ($B) | 26.1 | 22.6 | 22.1 | 23.4 | 22.8 |
| Production Procurement ($B) | 11.4 | 9.3 | 11.6 | 12.0 | 11.5 |
| Logistics Procurement ($B) | 1.0 | 0.9 | 1.0 | 1.1 | 1.0 |
| **Supplier Spending by Location** | | | | | |
| North America (%) | 39 | 39 | 35 | 34 | 35 |
| Asia Pacific (%) | 30 | 29 | 35 | 34 | 35 |
| Europe, Middle East, Africa (%) | 25 | 25 | 22 | 23 | 21 |
| Latin America (%) | 6 | 7 | 8 | 9 | 9 |
| North America ($B) | 14.9 | 12.8 | 12.3 | 12.5 | 12.4 |
| Asia Pacific ($B) | 11.4 | 9.4 | 12.2 | 12.5 | 12.4 |
| Europe, Middle East, Africa ($B) | 9.8 | 8.1 | 7.5 | 8.3 | 7.4 |
| Latin America ($B) | 2.4 | 2.5 | 2.7 | 3.2 | 3.1 |

| | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| **First-Tier Spending** KPI | | | | | |
| Total US ($B) | 12.5 | 10.9 | 10.7 | 10.6 | 10.7 |
| Diverse US ($B) | 1.5 | 1.4 | 1.5 | 1.7 | 1.7 |
| Diverse non-US ($M) | 745 | 806 | 742 | 881 | 939 |

IBM's supplier social responsibility assessment protocol requires that all audited suppliers create and submit a Supplier Improvement Plan (SIP) for all non-compliance, with priority given to major non-compliances. The SIP forms a conduit, linking initial audit findings to supplier-generated improvements geared toward resolution of root causes with verification taking place through a re-audit scheduled following the completion of all improvement actions. The reduction in 2012 Supplier Improvement Plans was the result of a higher degree of supplier code compliance during full audits in 2011–2012.

| | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| Supplier Improvement Plans Completed and Accepted KPI | 169 | 84 | 316 | 473 | 311 |

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