SUSTAINABILITY REPORT 2019

Leading solutions for a sustainable future

ABB at a glance

ABB is a technology leader that is driving the digital transformation of industries. With a history of innovation spanning more than 130 years, ABB has four customer-focused, globally leading businesses: Electrification, Industrial Automation, Motion, and Robotics & Discrete Automation, supported by the ABB Ability™ digital platform. ABB's Power Grids business will be divested to Hitachi in 2020. ABB operates in more than 100 countries with about 144,000 employees.

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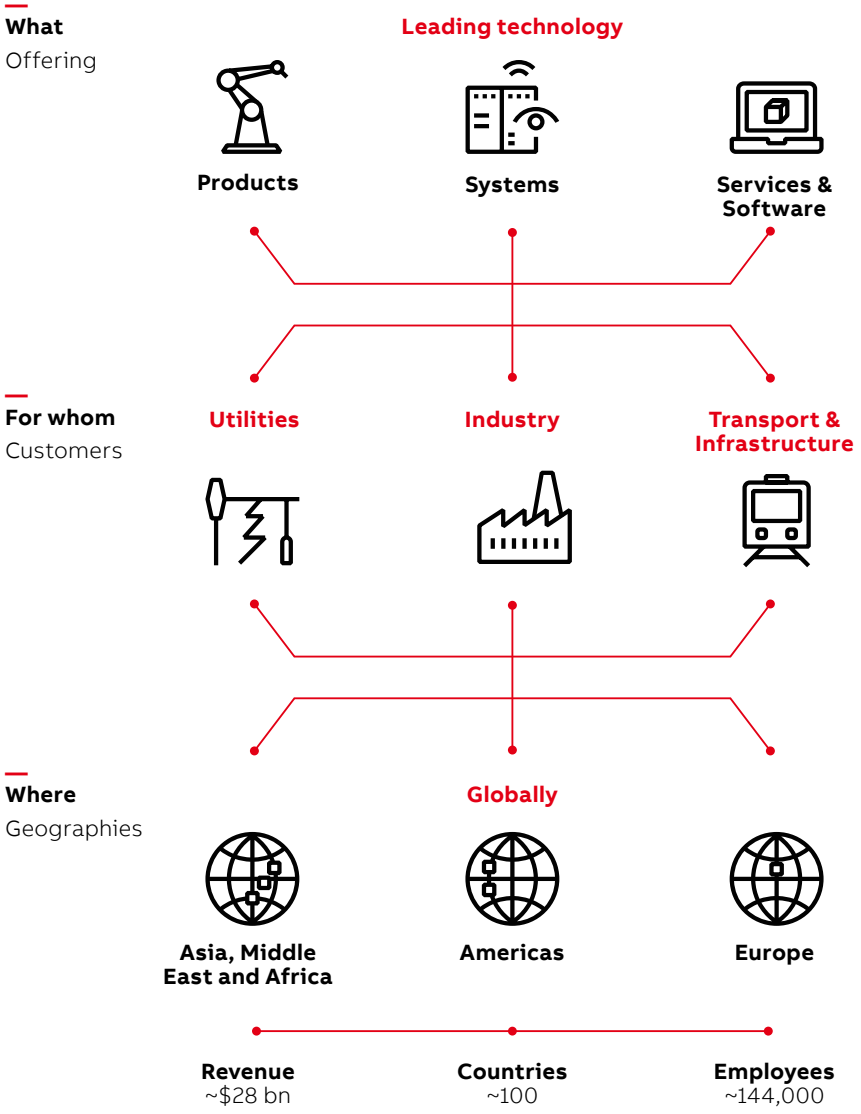

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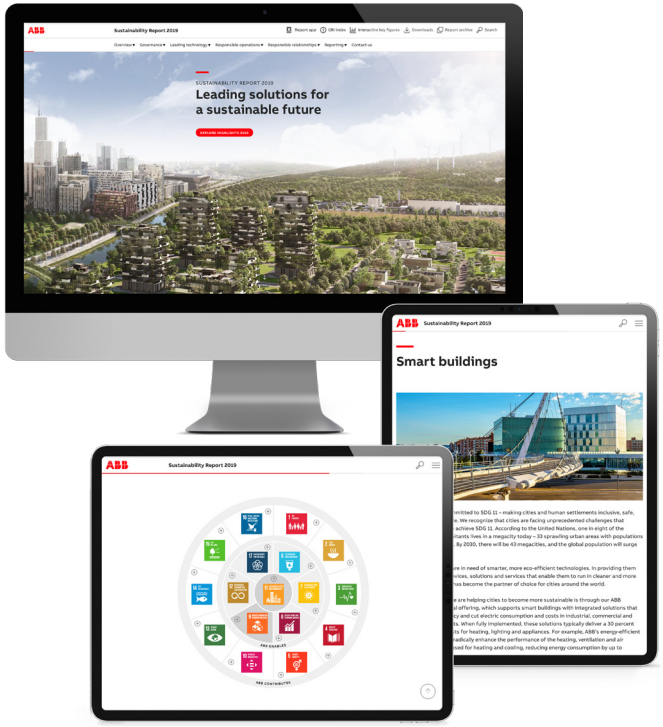

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01 Introduction

CHAIRMAN AND CEO MESSAGE

Sustainability driven by technology, cooperation and clear goals

ABB delivers solutions that enable the sustainable cities, industry and transport systems that the world needs to mitigate climate change and conserve non-renewable resources

Dear Stakeholders,

Two centuries ago, the First Industrial Revolution set the planet on a long-term path toward accelerated global warming. Now, the advanced technologies enabling the Fourth Industrial Revolution are our best hope of addressing the climate emergency.

Around the world, expanding cities are under growing pressure to reduce pollution and congestion, while providing clean energy and water, as well as the necessary jobs, goods and services for their inhabitants to have a good standard of living. The only way to achieve this is to build smarter cities, using advanced technologies and systems that enable urban areas to accommodate swelling populations without overwhelming infrastructure or services.

A similar challenge is confronting industry, which must reduce its environmental footprint while at the same time becoming more productive and providing affordable power, goods and services to a growing global population. Here, renewable energy and digitally enabled automation and robotics solutions hold the key to sustainable power, manufacturing and production.

As a company that helped to make possible the Second and Third Industrial Revolutions, ABB today is driving the development of smart cities and the digital transformation of industries, and it is transforming itself in the process. In 2019, we undertook a wide-ranging internal reorganization to bring our businesses closer to our customers and enable us to respond more quickly to their needs.

ABB today is driving the development of smart cities and the digital transformation of industries, and it is transforming itself in the process, bringing our businesses closer to our customers.

Peter Voser – Chairman and CEO

Today, our businesses are leaders in their respective markets, and they are designed to help our customers continuously improve productivity and efficiency while reducing waste and emissions and extending the lifecycles of their equipment. Our focus on driving productivity and sustainability means that our business supports, directly or indirectly, the achievement of all 17 of the United Nations' Sustainable Development Goals (SDGs), particularly SDG 11, making cities and human settlements inclusive, safe, resilient and sustainable, and SDG 9, building resilient infrastructure, promoting inclusive and sustainable industrialization and fostering innovation.

In the next stage of our transformation, we are further developing our company culture to create an environment where people have the confidence to take risks and aim at delivering results for sustainable high performance. As a first step in 2019, we encouraged open and inclusive dialogue across the company through CEO webcasts for employees, a new internal social networking channel and a global employee engagement survey, which was filled out by more than 95,000 colleagues.

The results showed high levels of engagement among employees – we received more than 40,000 comments on the topic of sustainability alone – but our people also delivered a clear message that they want to have a better understanding of where the company is heading. To answer this need, we have launched a project to identify the company purpose. As part of this project, we are asking multiple stakeholder groups how they perceive our company and what

they think ABB should aspire to in the future. We are open to any and all stakeholder suggestions about our company purpose with the only given being that it must drive sustainability – because this is part of our license to operate and a requirement for building a business over the long-term.

In tandem with this effort, we have been working on new diversity and inclusion targets for 2025. These targets are being developed in conjunction with a special report, commissioned from Catalyst, a global nonprofit that helps organizations accelerate progress for women at work.

We continue to demonstrate our commitment to sustainability in other ways. This autumn, we began our third season as title partner to the ABB FIA Formula E Championship racing series, the world's first fully electric international FIA motorsport series. Since ABB is a world leader in electric vehicle charging solutions, we view Formula E as the ideal event to demonstrate that e-mobility works. As such, it provides us with a unique opportunity to engage with customers around the world while building a sustainable future.

ABB is equally committed to the sustainability of its own operations. With the long-term ambition of making our company fully carbon-neutral, we inaugurated our first carbon-neutral factory in Lüdenscheid, Germany, as an example of what can be done to make industry truly sustainable. Equipped with a solar power station and other state-of-the-art technologies, the factory is on its way to becoming energy self-sufficient and demonstrating all the advantages of intelligent, digitally controlled industrial ecosystems.

Reaffirming that ABB is prepared to speak out on climate change and take action to help solve the technical challenges it presents, I joined with other global CEOs in December 2019 to sign a statement calling on the United States to remain within the Paris Agreement. I strongly believe that it is to the advantage of the United States and the world as a whole to meet the goals of the Paris Agreement. The benefits to be realized are economic, social, environmental and more. As a digital technology company at the forefront of industrial modernization, ABB is pleased to be at the center of the effort to safeguard our planet.

In March 2020, I am handing over the CEO role to my successor Björn Rosengren. Björn will continue to drive our transformation with the ultimate goal of making ABB the No. 1 choice for industrial customers seeking to drive the productivity and sustainability of their businesses.

Sincerely,

Peter Voser
Chairman and CEO

February 2020

AWARDS AND ACHIEVEMENTS

Recognized across the world for its accomplishments

ABB's offerings, operations and people continue to receive plaudits for their role in building a better world for future generations

Leading technology

ABB ranked No. 61 on Corporate Knights magazine's list of **World's 100 Most Sustainable Corporations**

ABB named **Global E-mobility Leader 2019** by the Polish Presidency of COP24 and the Polish Alternative Fuels Association

ABB honored with an **Electrical Review Excellence award for TXplore™**, its free-swimming ABB Ability™-enabled submersible transformer inspection robot

The National Association of Electrical Distributors presented ABB with the **Industry Award of Merit**

iF International Forum Design GmbH recognized ABB's innovative ABB-free@home® thermostat with a **Technology Design Award**

ABB i-bus® KNX sensor PEONIA® and ABB tacteo® KNX sensor received two prestigious **Red Dot Awards** for outstanding design

Nine of ABB's local companies placed on Electric Age's **China Top 100 Electric Companies** annual rankings

Responsible operations

ABB presented with the **Contribution to Skills and Training Award** at the Motor Control Industry Awards 2019

ABB recognized for the **fifth consecutive year for the responsible sourcing of minerals** by an independent benchmark study from the Responsible Sourcing Network

Security & Risk Magazine presented ABB with Honorable Mention for **Safe Organization of the Year** at the 2019 Finnish Security Awards

ABB recognized as a **top supplier and subcontractor** by Bechtel during its 2019 Supply Chain Awards

In Mexico, ABB's Nogales and Matamoros sites were awarded **Clean Industry certifications** by PROFEPA, Mexico's Federal Agency of Environmental Protection

ABB ranked No. 12 in the **Corporate Knights Clean200 list of the world's most significant publicly traded firms** according to the size of "clean revenue" from products and services that provide solutions for the planet

Responsible relationships

2019 **Ethisphere Compliance Leader** and **Anti-Bribery Management System Verification**

ABB awarded the **Excellent Organization in Building Happy Enterprise** 2019 award in China for its talent cultivation, corporate culture practices and CSR commitment

ABB was recognized in Colombia for its **Healthy Body Healthy Mind** program which includes several health initiatives, including the Global Health Challenge

Universum ranked ABB as the **most attractive employer among young professionals** in Italy

ABB India recognized as an exemplar of inclusion and **among the 100 best companies for women in India** by Working Mother magazine

ABB Canada Ranked No. 6 on Corporate Knights magazine's 2019 list of **Top Foreign Corporate Citizens** and as one of **Canada's Best Employers** by Forbes magazine

External accreditation

2019 FTSE4Good Index Series

2019 ISS ESG Prime Status

2020 EcoVadis Platinum

2019 Ethibel Sustainability Index Excellence Global

2019 Ethibel Sustainability Index Excellence Europe

2019 Corporate Knights Global 100 Index

PROGRESS TOWARDS TARGETS

Approaching the finish line

ABB on track to meet 2020 targets

We use 11 measures and targets to quantify ABB's progress toward nine sustainability objectives, which were established in 2014. We made progress on our measures in 2019 and remain on track to meet or exceed our targets in 2020.

The objectives cover three areas: leading technology, responsible operations and responsible relationships. Each area has a direct or indirect impact on ABB's business success. Our Executive Committee and external stakeholder panel reaffirmed that our measures and targets remain material to ABB's business.

In 2019, ABB underwent an extensive organizational transformation, initiating the carve-out of Power Grids and the simplification of our structure and business model. The ABB that will emerge will continue to not only be a technology leader, but also an exemplary corporate citizen contributing to a more sustainable world.

In 2019, we reviewed our 2013 baseline data to be able to track the environmental performance internally of each of our businesses individually, to reflect the changes at the company and maintain the consistency of the reported information. 2013 baselines in this report are unchanged.

As we prepare to close out our current measures and targets at the end of 2020, we have begun the work of developing new measures and targets for the years ahead. Our external stakeholder engagement process and the results of the 2019 Global Employee Engagement Survey will inform this process.

Leading technology

Objective	Measure	2020 Target	2013 Baseline	2019 Performance		Page
Products, solutions and services	Increase share of ABB eco-efficiency portfolio	**60%** of $ revenue	**53%**	**57%**	→	16

Responsible operations

Objective	Measure	2020 Target	2013 Baseline	2019 Performance		Page
Safe operations	Reduction in employee injuries	**<0.7**	**1.09**	**0.47**	√	24
Climate action	Reduce greenhouse gas (GHG) emissions	**by 40%**	**1,552 kt**	**41%**	√	26
Resource efficiency	Reduce water consumption in water stressed areas	**by 25%**	**3,157 kt**	**18.5%**	→	28
	Reduce share of waste sent for disposal	**by 20%**	**19.6%**	**13.5%**	→	28
Right materials	Reduce emissions of VOCs	**by 25%**	**1,210 t**	**24%**	→	30
Responsible sourcing	Closure of identified risks from supplier assessments	**>65%**	n/a	**78%**	√	32

Responsible relationships

Objective	Measure	2020 Target	2013 Baseline	2019 Performance		Page
Integrity	Employees trained in integrity	**>96%**	n/a	**98%**	√	35
Human rights	Training for specific job roles exposed to human rights risks	**2 campaigns** p.a.	n/a	**2**	√	37
Our people	Increase in % of females in senior management[1]	**by 30%** (vs 2017)	10% (2017)	**11.7%**	x	39
	Employees covered by the ABB well-being program	**>70%**	n/a	**77%**	√	39

1 Hay grades 1-7

Definitions and methodology of targets

√ Achieved → On track: target likely to be achieved x Not on track: behind schedule to meet target

BUSINESS MODEL

Smart and sustainable growth

ABB creates value for stakeholders while fostering sustainability

We are committed to building long-term relationships with all ABB stakeholders. These include customers, shareholders, suppliers, partners, employees and communities.

Our business model is founded on three pillars:

- Leading technology that enables sustainability
- Responsible operations
- Responsible relationships

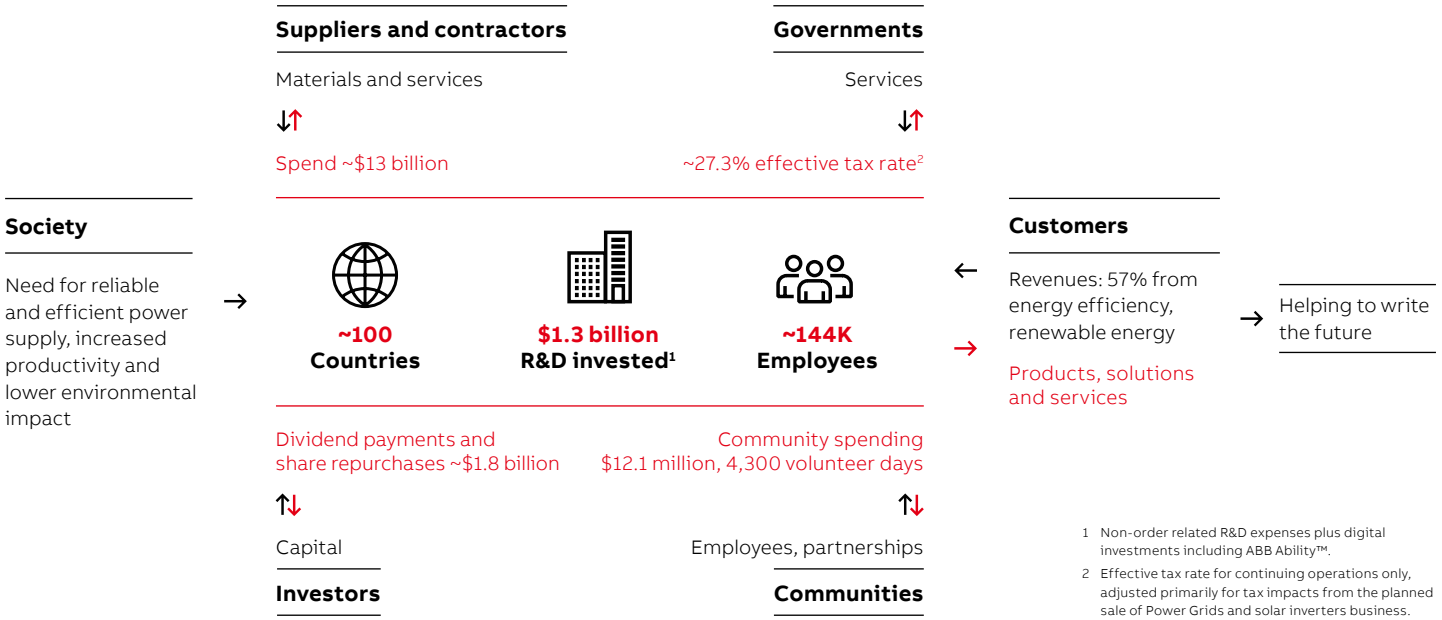
Our **leading technologies** are developed to enable sustainable growth for our customers. We strive for all of our technologies to have a positive impact. We seek not just to create value, but to enable sustainable growth. Each of ABB's businesses works to move society away from outmoded products and toward smart solutions that leverage the power of digitalization, incorporating sustainability as a central feature. The result will be smarter buildings, cities, industry and transport that help the world achieve a better future.

ABB's approach to **responsible operations** relies on frequent reassessments of our production processes and product designs. We give due consideration to governance, legal, environmental, and health and safety requirements. Our Group's tax position complies with applicable laws and follows international best-practice guidelines, including the OECD Guidelines for Multinational Enterprises. In Switzerland, ABB has elected to provide voluntary country-by-country reporting.

We place a high value on transparency. Details on our tax policy are available on our website.

We cultivate **responsible relationships** with our stakeholders. We seek out suppliers who respect international standards of quality, operational excellence, social and environmental responsibility and business ethics. To achieve this, we rely on ABB's Supplier Sustainability Development Program. We engage with our shareholders in ways that emphasize reputation, proper behaviors and good governance, with a priority on value creation and sustainable growth. We listen to our employees and work to strengthen our capacity to attract, develop and retain talent. In the broader community, we seek to engage with diverse segments of society. ABB endeavors to have a positive impact on the complete environment in which we operate.

ABB value chain



1 Non-order related R&D expenses plus digital investments including ABB Ability™.

2 Effective tax rate for continuing operations only, adjusted primarily for tax impacts from the planned sale of Power Grids and solar inverters business.

CONTRIBUTION TO SUSTAINABLE DEVELOPMENT

Geared to help solve humanity's most pressing challenges

ABB's smart technologies are helping to meet many of the underlying targets of the Sustainable Development Goals (SDGs)

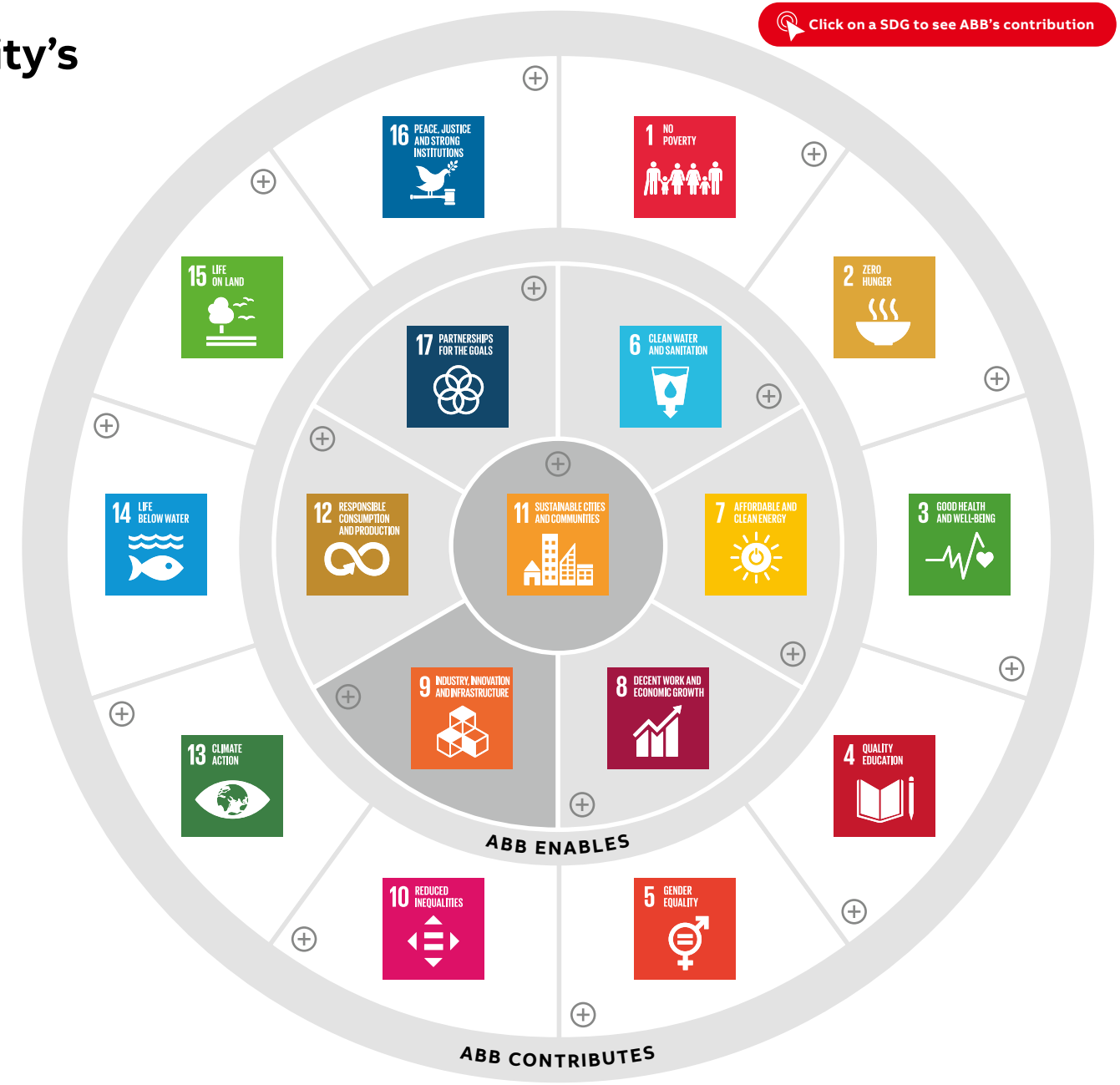
Adopted by the member states of the United Nations in 2016, the 17 SDGs are a blueprint for achieving peace and prosperity by 2030. ABB is cognizant these goals cannot be met without support from the global business community. Our approach to supporting the SDGs is to focus on the goals where we can have the most impact, while screening and implementing actions that contribute to the other goals as well.

While there is a moral imperative to support the SDGs, there are also material incentives. SDG-related opportunities involving building solutions, urban infrastructure, clean energy, energy efficiency and mobility are estimated to exceed $5 trillion.

To identify the SDGs where ABB can make the most difference, we used the GAPFRAME framework to identify five "grand challenges" (waste, equal opportunity, clean energy, innovation and carbon) in response to our materiality mix.

These challenges point to the seven SDGs where we can have the most impact: SDG 7 (energy), 11 (cities), 9 (industry and infrastructure), 6 (water), 8 (work) and 12 (production). And through our behavior and values, we contribute to SDG 17 (partnerships).

Click on the icons on this page for stories about how we contribute to the SDGs.



02 Governance

SUSTAINABILITY GOVERNANCE

ABB's integrated governance enables it to meet expectations

Sustainability lies at the core of ABB's business strategy, informing what we manufacture, how we operate and the way we work with stakeholders

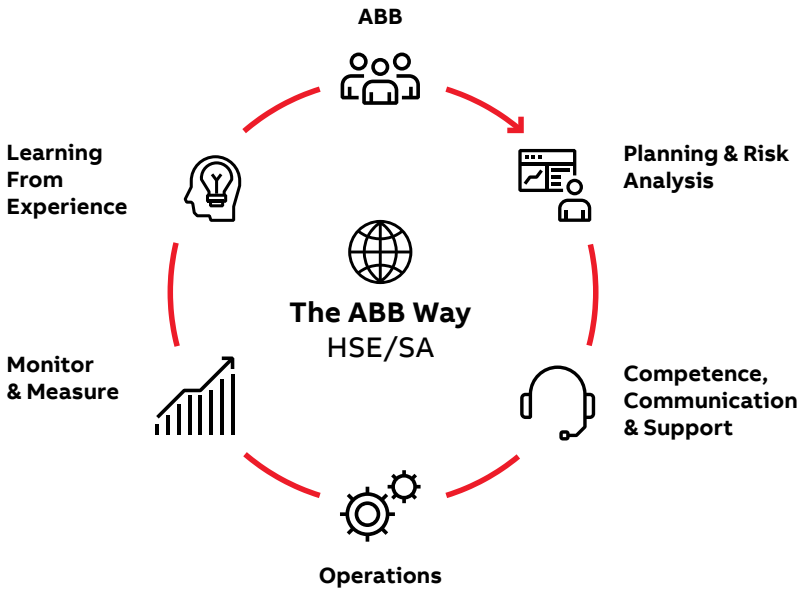
Structures and responsibilities
The Board of Directors is responsible for the stewardship of the ABB Group, and its duties include oversight of sustainability and corporate responsibility. The board is charged with ensuring that our products and people are safe, the environment is protected and human rights are respected. As such, it is ultimately accountable for bringing ABB's 2020 sustainability strategy to fruition.

The ABB Sustainability Board, which comprises the Executive Committee and is chaired by the CEO, is accountable for sustainability within ABB. Meeting semi-annually, this board ensures our sustainability policies and programs are aligned with our business goals and aspirations, monitoring progress against ABB's nine sustainability objectives. The Chief Human Resources Officer (CHRO) is a Member of the Group Executive Committee and is responsible for ABB's health, safety, environment, security and sustainability (HSE/SA) performance and the successful implementation of ABB's sustainability strategy. The Group General Counsel, also a Member of the Group Executive Committee, is responsible for ABB's integrity performance.

The Senior Vice President Global HSE and Sustainability Affairs (SVP HSE/SA) reports to the CHRO and is responsible for all sustainability deliverables. The HSE/SA Leadership Team, comprised of the heads of HSE for the businesses and the functional heads from corporate HSE/SA, meets at least three times a year to align on business needs and strategy, chaired by the SVP HSE/SA. That function also leads the HSE/SA Management Team, which meets every two months. This team is focused on operations and is responsible for making sure HSE/SA's strategies, plans and actions are in sync with ABB's business needs and corporate strategy. To this end, the HSE/SA Management Team initiates and directs sustainability policies, strategies, plans, actions, budgets and resources, adopting remedial measures when required. Its members include the Head of Health, Head of Safety, Head of Environment, Head of Security, Head of Sustainability and Head of Corporate Responsibility. The Sustainability Affairs annual plan coordinates all programs, processes and resources across all of these functional areas to support the businesses, improve performance, diminish risk and generate value.

ABB has established Country Sustainability Boards at the local level to maintain good governance and ensure compliance with local legislation, ABB's standards and customer expectations. A team of roughly 800 full-time and part-time employees support ABB's sustainability network.

A global HSE/SA management system
In 2018, we began implementing the ABB Way. This global management system updates our management and control standards for health, safety, the environment, security, sustainability and corporate responsibility. The ABB Way establishes shared expectations across our global businesses. Our goal is for all of our sites to be aligned with this new management system by January 2020. As of December 31, 2019, the implementation process was 65 percent complete. The ABB Way, which sets the minimum standards that must be implemented across all ABB operations and activities, features a far-reaching global audit assurance program. The structure of ABB's HSE/SA management system is based on internationally recognized sustainability standards, principles and commitments, including ISO 45001 and 14001:2015.



STAKEHOLDER ENGAGEMENT

Engaging and collaborating with stakeholders at all stages

We continuously seek to meet the expectations of our stakeholders via multiple channels and processes

We work to engage in meaningful dialogue and close cooperation with our stakeholders, with the object of delineating ABB's positions and policies, as well as of comprehending other perspectives.

As announced in the 2018 report, in 2019 we initiated a comprehensive stakeholder engagement process, involving external stakeholders of all categories. The process is being conducted via one-on-one interviews. All stakeholders are associated with one of ABB's businesses. Each business identified its key stakeholders in several categories, including customers, civil society, government representatives, analysts, suppliers, local communities and others. The goal of this exercise is to review stakeholder expectations and develop a qualitative basis for each business' materiality matrix. This process will conclude in the first half of 2020 and contribute to the definition of our future priorities and ambitions. The results are also being used to shape our activities in 2020. The engagement process additionally considers internal stakeholders. Our day-to-day activities also enable stakeholder interaction. Key areas of engagement with our stakeholders in 2019 included the following:

Customers
We meet regularly with customers to discuss the sustainability of ABB's offerings and how they can be used to meet specific sustainability requirements. We seek to make detailed information available on these issues and others and to maintain our standing as a trusted supplier.

Investors
In 2019, ABB engaged in one-on-one meetings with managers and analysts focused on sustainable investing. The ranks of socially responsible investors with an interest in our ESG performance continued to grow. Topics of interest included growth prospects for our eco-efficiency portfolio.

Suppliers
ABB maintains frequent contacts with our suppliers, taking precautions to ensure they measure up to our standards for sustainability. These efforts are managed through our Supplier Sustainability Development Program (SSDP). The program assesses conditions at our suppliers' sites and enables us to work with them to improve their performance.

Employees
In 2019 we held our first Global Employee Engagement Survey in 10 years, involving more than 95,000 ABB employees and resulting in an engagement score of 71. Their input is being used to help develop a groupwide culture of collaboration and dialogue. In our current transformation, we are working to ensure that our people understand our strategy and their roles. In our ongoing communications program, we held town hall meetings at various sites and published regular updates on internal news portals.

Public policy
In 2019, ABB participated in the UN Climate Change Conference (COP25) in Madrid, continuing our yearly engagement with the conference since COP21 in Paris. In other areas, we expanded our global activities in government relations in 2019, working with policymakers on issues including climate change, energy efficiency, industrial policy, digitalization, artificial intelligence and e-mobility.

Community
In 2019, ABB contributed to more than 580 charitable institutions and community projects around the globe. Education, diversity and healthcare were among key areas of focus. Our employees and businesses donated an estimated $12.1 million and volunteered roughly 4,300 person-days of time to charitable causes. More information is available in the Community Engagement chapter.

External partnerships
ABB worked with a range of external partners on solutions to major global challenges. These included the World Economic Forum, the ABB FIA Formula E Championship, the World Business Council for Sustainable Development's Low Carbon Technology Partnerships initiative, the International Committee of the Red Cross' Corporate Support Group, United for Efficiency and several of Sustainable Energy for All's accelerator programs, among others.

MATERIAL ISSUES

Priorities, actions and initiatives

Each of our businesses takes careful stock of its actions, operations, supply chains and interactions with stakeholders to assess their impact on sustainability

2019 materiality matrix Click issues to reveal

Identification of key stakeholder issues
The process of determining the materiality of stakeholder issues has included review, particularly on the part of our external stakeholder panel. The current framework was based on surveys carried out in 2010 and 2011, supplemented with additional reviews in 2013 and 2014 and an annual stakeholder panel review. 2020 will be the last year in which to deliver on that framework.

Our key sustainability focus areas are regularly benchmarked against standards provided by industry organizations such as the World Business Council for Sustainable Development (WBCSD). ABB updates its benchmarks continuously in multiple ways. These include tracking the key sustainability focus areas of peer companies and mapping regulatory risks and macroscopic trends. These practices enable us to establish a comprehensive approach to current sustainability issues and adjust our strategies and modes of implementation accordingly.

We are presently developing an updated materiality matrix for each of our five businesses. These will be used to shape the Group's materiality matrix, targets and focus areas for our post 2020 sustainability strategy. Until that process is complete, our current materiality matrix is still in use, with only minor adjustments.

ABB's external stakeholder panel
Our external stakeholder panel was first formed in 2015. Since that time, it has provided advice and input on sustainability issues and has regularly reviewed our materiality matrix and our annual Sustainability Report.

The members of the panel are selected to represent our key stakeholders and are chosen on the basis of their expertise in matters of sustainable development. They are also selected to reflect issues of gender balance and geographical balance. In 2019, the six serving panel members had all served in previous years. The regular meetings of the panel are conducted by means of conference calls and are chaired by an external facilitator. Most of the panel participates in any given meeting and any member who is unable to do so is subsequently interviewed individually.

In 2019, the panel's feedback played an important part in providing direction for our Sustainability Report and influenced the continuing development of our sustainability programs. The statement released by this year's panel may be found online.

03 Leading technology

LEADING TECHNOLOGY

Making the world's cities and industries smarter and more efficient

ABB provides products, solutions and services that are enabling the cities and industries of the future to be cleaner, safer, more resilient and less resource intensive

For more than 130 years, ABB has created technologies that stimulate economic growth and improve people's lives. Today, we remain focused on delivering leading-edge solutions for our customers and are working to further enhance the eco-efficiency of these offerings to support the fight against climate change. Our extensive portfolio of products, solutions and services contributes to the economy and raises people's standard of living, while contributing to delivering the energy efficiency and resource conservation the world needs to achieve the goals of the 2015 Paris Agreement.

In 2014, we set a target to increase our revenues from energy efficiency and eco-efficiency related products, services and solutions by 20 percent. In 2017, we made this target more ambitious, aiming for our eco-efficiency portfolio to account for 60 percent of ABB's total revenue by 2020. This portfolio delivers positive use-phase impacts in three areas: energy efficiency, renewable energy and resource efficiency. Our eco-efficiency portfolio accounted for 57 percent of ABB's revenue in 2019, remaining on track to achieve our target by the end of 2020.

We continue to tailor our portfolio in line with the changes that are rapidly reshaping the world, while making progress toward our target.

Case study
CO_2-neutral and energy self-sufficient factory of the future

Read more

Case study
Smart lighting for the Shijiazhuang Metro

Read more

Urbanization, population growth and economic expansion are surging even as the public, private and civil sectors are nearing consensus on the need to significantly reduce our reliance on the outdated technologies that contribute to climate change. For utilities and the construction, mobility and industrial sectors, among others, climate change and the responsible use of resources have moved to the top of the global agenda.
In addressing these new priorities, sustainable operations and products increasingly represent a competitive advantage in and of themselves.

The global consensus on climate change is driving demand for products, solutions and services that increase energy efficiency and reduce consumption of non-renewable resources. Technological innovation will play a critical role in meeting these needs – improving people's living standards while simultaneously reducing their impact on the environment. With this in mind, we believe ABB's mission is fully aligned with global efforts to bring the Sustainable Development Goals (SDGs) within reach by 2030.

Energizing SDGs 11 and 9

The ABB Sustainability Report this year largely focuses on how ABB's technologies contribute to SDG 11, which calls for sustainable and resilient cities and communities, and SDG 9, which calls for resilient infrastructure and inclusive and sustainable industrialization.

SDG 11 encourages the transition to smart cities, which leverage innovations in transport, renewable energy, waste management and digital technologies to manage resources more efficiently. The smart cities of tomorrow should be more livable, attractive and affordable, as well as sustainable.

Today, half the world's population lives in towns and cities. According to the International Energy Agency, urban areas, which are at the center of most economic activity, account for 64 percent of global energy consumption and are responsible for 70 percent of global carbon dioxide emissions. The smart, energy-efficient and low-carbon technologies required to significantly reduce the environmental impact of cities already exist, and they must be rapidly deployed on a wider scale to achieve the underlying targets associated with SDG 11 by 2030.

SDG 9 emphasizes the urgent need for industry and infrastructure to become cleaner and more efficient, even while contributing to economic growth and inclusivity. According to the Intergovernmental Panel on Climate Change, industry generates about 21 percent of global greenhouse gas emissions – not just from burning fossil fuels, but also from chemical processes, waste management and other production related activities. The advanced solutions required to make industry smarter and cleaner have also already been developed.

Cleaner industries can be located closer to urban areas, which can in turn provide manufacturers with access to the deep talent pools that will be needed to operate and maintain the digital factories of the future. Moving production sites closer to cities would also enhance employment opportunities for rural-to-urban migrants.

With respect to cleaner and more efficient infrastructure, existing technologies can be used to optimize water and waste treatment, energy services and other resources of critical importance to cities. New solutions can reduce the amount of electricity and water that is lost, either in transmission or due to extreme differences between peak and off-peak demand.

At ABB, we understand that SDGs 9 and 11 are interlocking and mutually supporting goals. Sustainable and resilient cities not only need buildings, transportation options and infrastructure that minimize emissions and conserve energy and non-renewable resources, but also need local industries that can provide residents with economic opportunities and an accessible supply of essential goods. Cities that are cleaner, safer and less polluted improve the quality of inhabitants' lives, and are thus in everyone's interest.

ABB supplies many of the products, solutions, services and systems that serve these needs. In fact, a large part of ABB's technologies relate directly to matters of sustainability, so it would not be practical to provide a comprehensive listing of them in this report. Nonetheless, in this chapter we highlight some of the key technologies that contributed in 2019 to achieving the targets associated with SDGs 9 and 11. These include smart and sustainable technologies for buildings, electric vehicles, water, power, and waste infrastructure, data centers and factories.

Underpinning nearly all of these solutions is our comprehensive digital offering, ABB Ability™, which drives substantial gains in efficiency. Solutions under the ABB Ability™ brand collect and analyze data from across the industrial internet and provide our customers with automated insights into their processes and equipment in order to increase the uptime, speed and yield of their operations. ABB Ability™ connects one of the world's largest installed bases of industrial devices – around 70 million of them – to industry-leading digital solutions in a wide range of sectors, including utilities, transportation, energy, construction and industry.

But while ABB Ability™ ties together many of our company's innovations through connectivity and the digital cloud, it represents just one aspect of what can be done to make the future a brighter place for us all. We recognize that policy is just as important as technology in paving the way for successful smart cities, infrastructure and industries.

Accordingly, ABB collaborates with policymakers around the world to realize a collective vision for modern smart cities that can combine data, people and technology. ABB is also working towards inclusive and sustainable solutions as an Associate Partner of the Smart Cities Council, a collaboration among technology companies that is developing a policy framework for the future, including the Smart Cities Readiness Guide.

To help further develop smart infrastructure and industry, ABB is closely cooperating with other leading, global companies. ABB has entered into strategic partnerships with digital market leaders Dassault Systèmes, Ericsson, Hewlett Packard Enterprise, Huawei, IBM and Microsoft to drive the digital transformation and enable customers to unlock unprecedented improvements in performance and productivity. Each strategic partnership brings ABB together with a world-class organization to create an unmatchable combination of technological expertise and domain knowledge focused on developing enhanced digital solutions.

Smart buildings

ABB remains firmly committed to SDG 11 – making cities and human settlements inclusive, safe, resilient and sustainable. We recognize that cities are facing unprecedented challenges that threaten their ability to achieve SDG 11. According to the United Nations, one in eight of the world's 7.6 billion inhabitants lives in a megacity today – 33 sprawling urban areas with populations of more

Case study
Upgrade of landmark buildings for smart city project in Zaragoza, Spain

Read more

than 10 million. By 2030, it is predicted that there will be 43 megacities, and the global population will surge to 8.6 billion.

As they expand, cities are in need of smarter, more eco-efficient technologies. In providing them with digital sensors, devices, solutions and services that enable them to run in cleaner and more sustainable ways, ABB has become a partner of choice for cities around the world.

One of the ways that we are helping cities to become more sustainable is through our ABB Ability™-branded digital offering, which supports smart buildings with integrated solutions that achieve energy efficiency and cut electric consumption and costs in industrial, commercial and residential environments. When fully implemented, these solutions typically deliver a 30 percent reduction in energy costs for heating, lighting and appliances. For example, ABB's energy-efficient motors and drives can radically enhance the performance of the heating, ventilation and air conditioning systems used for heating and cooling, reducing energy consumption by up to 50 percent.

For smart homes, our offering is centered on the ABB-free@home® platform. This complete automation platform enables occupants to centrally manage power consumption and cut costs. With up to 60 functions, ABB-free@home® can integrate up to 150 devices per system. Via a touch control panel, smartphone or wall-mounted switch and motion sensors, one can control everything from blinds, heating and air conditioning, to door communication and lighting.

Critically, this system is flexible. It can be easily integrated not only with ABB's video door entry system, but also with third-party products and services, such as smart home appliances, smart lighting systems, door entry systems, home entertainment devices and cloud-based voice services, not to mention a variety of solar-thermal and photovoltaic energy systems. This smart home solution leverages the Microsoft Azure cloud computing platform.

For smart buildings, ABB's offering is based on the widely used KNX open standard. Our ABB i-bus® KNX system gives occupants and building managers the ability to control lights, window shades and heating/cooling systems for improved temperature management and to program strategies that will optimize a building's energy demand and deliver maximum levels of comfort and safety.

ABB research and development paves the way for cities and industries of the future to become more sustainable, efficient, productive, cleaner, safer, resilient and less resource intensive.

Bazmi Husain – Chief Technology Officer

ABB technology is also being deployed in support of the Netherlands 2019 National Climate Agreement, in which the Dutch government committed to sustainably transforming the Netherlands' existing built environment and adapting the country's 7 million homes and 1 million buildings so that they are all well insulated and use or even generate clean energy. ABB is working together with Factory Zero, a company that builds homes that incur zero energy bills, to help the country create some of the 1.5 million zero-emission homes the Netherlands aims to construct by 2030.

Each of the new structures will use one of our smart energy management modules (SEMs) to coordinate and balance their energy demand and use, controlling a heat pump, ventilation and an ABB solar panel converter and reading energy meters. Energy generated by a home's solar panels and heat pump is monitored, kept within the home and optimally adjusted to consumption. This innovative solution uses data generation and visualization to provide residents with insights into their energy consumption. By continuously measuring and adjusting the amount of energy consumed by a home, SEMs reduce energy costs.

Smart mobility

In an effort to be more sustainable, cities today are looking for ways to get polluting internal combustion engines off the streets without disrupting the daily flow of people and goods. Going forward, e-mobility is the clear, clean choice. That is why ABB is active across the entire e-mobility value chain, offering a complete range of solutions for the electrification of buses, commercial vehicles, trucks, autonomous vehicles, automobiles, ships and railways. We have rapidly become a world leader in fast charging solutions, which are increasingly in demand as urban areas shift away from fossil fuels.

According to the International Energy Agency, the number of electric and plug-in hybrid electric cars on the road reached 5.6 million at the beginning of 2019 and is expected to rise to 125 million by 2030. ABB is supporting this trend in sustainable mobility by providing not only electric vehicle (EV) charging stations, but also critical EV charging network components, such as substations, energy storage systems and eco-friendly switchgear. These technologies are designed so that EV charging stations, once erected, will be both future-proof and scalable.

Case study
Electric fast chargers in Gothenburg, Sweden

Read more

One of the EV solutions developed by ABB is the DC 50 kW Terra 54 fast-charging station, which provides charging on the go for the most common battery sizes within 30 to 45 minutes. The ABB Terra uses open standards to enable connectivity, remote monitoring and remote assistance functions via an ABB Ability™ solution, reliably connecting public EV charging stations to the power grid. Around 13,000 ABB fast chargers have now been sold in more than 80 countries, making ABB a global leader in DC fast-charging technologies.

ABB's Terra HP 350 kW next-generation fast chargers provide a more powerful solution, capable of adding 200 kilometers of range to an electric car in just eight minutes. ABB has already installed 200 of these units for Electrify America, the largest EV infrastructure project to date in the United States. In many other countries, including Germany, Switzerland and Iceland, ABB is the key technology supplier for sustainable mobility infrastructure.

ABB has also been selected as the main technology partner and supplier of fast-charging systems by IONITY, a consortium of major automakers that has opened 202 fast-charging stations across 18 European countries since 2018. Fastned, a Dutch startup that aims to create a European network of 1,000 fast-charging stations, also uses the Terra series of fast chargers, which run on the ABB Ability™ Connected Services Platform. This platform employs Microsoft Azure's cloud services to enhance uptime, scalability and speed of development, as well as to provide real-time remote support services.

For mass transit, ABB offers solutions for the electrification of buses. And for the electrification of railways, ABB supports sustainable mobility with power and automation technologies for customers ranging from train manufacturers to rail operators. We design, engineer and commission solutions to deliver safe, reliable and cost-effective rail freight and passenger transportation solutions. Our product offering includes traction transformers, motors and converters to move vehicles quickly and reliably. This includes leading integrated and collaborative digital solutions with ABB Ability™.

To further enhance our portfolio of EV charging solutions, ABB has invested some $10 million in a new e-mobility research and development facility in Delft, Netherlands, which opened mid-2019. The center focuses on EV charger interoperability and also incorporates large testing areas to accelerate the development of charging solutions for the rapidly growing electric bus segment.

Sustainable infrastructure

ABB contributes directly to the achievement of SDG 9 by developing advanced products, solutions and services that are changing the way facilities and systems deliver essential services to towns, cities and industries.

Since infrastructure comprises the foundation of any properly functioning city, we believe our SDG 9-related products, solutions and services are vital to the success of smart city initiatives. Indeed, ABB technology and leadership are behind many of the major projects that keep our cities and nations running. In cities around the world, ABB's sensors and systems provide real-time information and control for utilities and transport systems, enabling them to save energy, reduce losses of water and power and enhance management processes. And ABB's measuring and detection technology enables city managers to closely monitor and react to dangerous spikes in emissions.

The efficient and reliable distribution of renewable power is critical to any sustainable city and will be a prerequisite for industrial facilities in the future. ABB technology is perfectly suited to this application, as evidenced by our latest installation in Brazil. There, Enel Green Power chose our ABB Ability™-powered digital substation to deliver emission-free solar power from the São Gonçalo solar photovoltaic plant to Brazil's 500 kV transmission network. This solution will eliminate 600,000 tons of carbon emissions a year and make Brazil's grid stronger, greener and smarter.

In the city of Västerås, Sweden, ABB Ability™ digital solutions and expertise are being applied to good purpose in close cooperation with Microsoft. There, ABB is working in partnership with Swedish energy company Mälarenergi. Mälarenergi operates a broad range of essential services for the city of 150,000, including hydropower plants, the local power grid, a waste-to-energy plant, heating and cooling networks, water and wastewater treatment plants, a water distribution network and a fiber-optic network. For the management of all of these core functions, they rely on ABB Ability™ Collaborative Operations to make more information about these services available faster.

In Vietnam, Ho Chi Minh City's local utility, SAWACO, uses the ABB Ability™ Symphony® Plus supervisory control and data acquisition system (SCADA), reducing water leakage from 30 percent to 10 percent while supporting long-term growth. The smart collection of digital data offers real-time insights into the water network's status, enabling quality improvement of its drinking water and better living conditions for millions of people in the Vietnamese city.

Hospitals are also categorized as fundamental infrastructure assets, and ABB is at the forefront of efforts to empower them with smart technologies. The healthcare sector is now being challenged to keep pace with advances in the diagnosis and treatment of disease while coping with an aging population, increasing costs and a growing worldwide shortage of medical staff. In response, in 2019 we opened the first ABB global healthcare research hub, on the Texas Medical Center campus in Houston, Texas. The goal is to develop robots for repetitive, delicate and mundane processes, leaving highly skilled medical and laboratory staff free to take on more valuable roles, and ultimately treat more patients.

At the research hub, we will use our experience in industrial and collaborative robotics to create flexible automation solutions for healthcare. Cutting-edge robotics have the potential to reduce the number of manual procedures performed by medical staff, improve the accuracy of laboratory work and enhance patient satisfaction and safety. The hub will feature a number of concept technologies, including a mobile YuMi® robot, which will be designed to assist with laboratory and hospital logistical tasks. Additional YuMi® robots could be used for centrifuge tending and test tube handling systems, while an IRB 1200 robot may be used to execute liquid transfers in a pipetting application.

Innovative industry

ABB is developing advanced products, solutions and services that are radically reshaping the production landscape by making smart and sustainable factories of the future possible. Our portfolio enables manufacturers to respond to the increasing pressure for shorter product design cycles, the rise of mass customization, and increased environmental, safety and compliance regulations.

Case study
Energy savings enabled by intelligent motion solutions

Read more

As a technology leader in the fields of industrial automation, electrification, robotics, discrete automation and motion, ABB's work contributes directly to the achievement of SDG 9. Our suite of ABB Ability™ digital solutions and services uses sensors, network connectivity and data analytics to provide a real-time view into operations, enabling predictive maintenance, improved safety and reduced operating costs. And because ABB Ability™ uses the Microsoft Azure cloud as its integrated connectivity platform, our customers benefit from access to enterprise-grade cloud infrastructure.

Moreover, ABB is a world leading provider of automated control solutions that can increase output while reducing energy usage and waste of raw materials. We recently launched our first cloud application for original equipment manufacturers (OEMs). The new ABB Ability™ Asset Performance Monitor collects data on production rates, energy consumption and temperature and provides a continuous overview of an OEM's entire installed base, enabling more informed business decisions. The ABB Ability™ Asset Performance Monitor displays data on a digital dashboard, giving OEMs the necessary insights to initiate machine upgrades and advanced services. State-of-the-art security standards and transfer protocols ensure data integrity.

This is just one of the flexible, scalable and secure solutions that ABB offers to facilitate the shift to smart factories. Digitalizing production processes increases system reliability and throughput, reduces raw material and energy use and improves product quality. For instance, the virtual commissioning of drives and programmable logic controllers (PLCs) can cut project costs significantly while making more efficient use of engineering personnel.

To power the smart factories of the future, ABB offers a wide range of solutions for secure and efficient energy distribution. For example, our cloud platform can connect all of the electrical devices in a facility to the industrial internet, enabling precise information and control functions. Our compact, intelligent circuit breakers deploy integrated connectivity to link smartphones, tablets and PCs with data analysis tools in the ABB Ability™ suite in real time.

ABB believes the digital transformation of global industry – with AI at the center – will rise to the challenge of providing the clean and plentiful food, water, energy and mobility the future demands.

Guido Jouret – Chief Digital Officer

The ABB Ability™ Digital Powertrain solution also leverages digitalization to improve factory operations. This solution consolidates sensor and drive data with cloud-based analysis of all components in an industrial system within a single unit – covering everything from frequency converters and motors to pumps and bearings. The deep data insights it can provide enables customers to make better decisions to ensure safe, reliable and efficient operations.

Robotics and other factory automation solutions increase efficiency and reduce waste and energy consumption. This is particularly true in the fast-evolving field of collaborative robots, or cobots. ABB has been introducing new robotics breakthroughs that enable human-machine collaboration, allowing robots to share working spaces with people to achieve optimal efficiency.

The new robotics manufacturing and research facility we are building in Kangqiao, near Shanghai, China will be a perfect example of what the digital factories of the future will be like. Production in this complete digital manufacturing ecosystem will be based on cells of automation rather than on a fixed assembly line, which will allow robots to move from station to station for greater customization and flexibility than in traditional, linear production systems. Automated guided vehicles (AGVs) will deliver parts to the production robots just in time, while the latest collaborative technologies will ensure that humans and robots can work safely side by side, bringing greater flexibility and agility to production processes and combining the advantages of robots with the unique capabilities of people.

ABB's solutions for industry, just like its solutions for cities and infrastructure, leverage the latest digital technologies to deliver unprecedented levels of resource efficiency. Our world is a fragile one, with limited resources. These resources must be used sustainably and in a manner that minimizes the impact of their use on the environment itself. Intelligent technologies offer the key to protecting the earth while enabling continued economic growth. ABB is committed to developing the products, solutions and services required to make a brighter future possible for future generations.

04 Responsible operations

SAFE OPERATIONS

Working to eliminate workplace incidents worldwide

ABB's license to operate depends on its ability to meet the highest safety standards

The safety of our people and assets is ABB's first priority, embedded in our core values. We remained focused on this priority even while undertaking the transformation of the ABB business model in 2019, using it as an opportunity to enhance the principles of our safety programs.

In 2019, ABB's safety performance showed clear, sustained improvements, fully supporting and mandating the HSE/SA global management system entitled "The ABB Way". Our HSE/SA global management system is a key element of our sustainability governance framework, as it enabled us in 2018 to reduce our more than 300 independently certified HSE/SA management systems down to one standard system for everyone.

Implementing "The ABB Way" clarified and simplified our expectations for performance, while enhancing awareness and knowledge of performance requirements across the organization. Once this single management system was firmly established, we were able to increasingly define and consolidate health, safety, environment, security, sustainability and corporate responsibility performance standards. In 2019, "The ABB Way" received third-party certification (two certificates, for ISO 14001:2015 and ISO 45001:2018), demonstrating we are well on our way to obtaining a single global multisite certification for our management system.

In parallel with this project, we continued to successfully implement further global applications from our new single Management Information System (MIS) for HSE/SA. In 2019, we formed a team of specialists to work with our businesses to enhance the MIS. Together, they further developed ABB's modules for crisis and incident management, trained more than 1,500 people in incident management alone and introduced a governance model for MIS that reinforces the principle of business-led responsibility.

The MIS now reflects ABB's business structure and is fully integrated with ABB systems, providing strong support for our continued drive towards zero safety incidents. This includes a new Report Portal, which all ABB employees can use to analyze trends and indicators to inform decisions on safety. Data reported in the system is used in measuring HSE performance; more than 300,000 hazards were reported via the system, with 97 percent of them resolved.

A further safety highlight in 2019 was the formal launch of ABB's Group Life Saving Rules, which are eight simple actions for everyone across ABB to consistently and fairly apply.

Our target for safety was to reduce the employee total recordable injury frequency rate (TRIFR) to less than 0.7 by the end of 2020. We performed well in 2019, with our employee TRIFR in the workplace ending the year at 0.47, down from 0.58 in 2018. This continued progressive improvement to industry standards represents 134 fewer recordable injuries than the previous year. While we are currently ahead of our 2020 target, we are fully aware that past performance is no guarantee of future results. That is why we are committed to maintaining our strong positive momentum and to working toward achieving a TRIFR of zero.

Regrettably, ABB recorded one employee fatality and one contractor fatality in 2019. Both incidents were comprehensively investigated to understand their root causes and take action to mitigate risks of similar incidents in the future.

ABB's global independent HSE/SA audit and assurance program continued to be a valuable means of enhancing the company's knowledge and skills. In 2019, the second full year of the program, we reviewed more than 180 separate sites within our organization, using the process to assist ABB's businesses in identifying over 1,500 opportunities for improvement. Through our audits, we identified ABB's main challenges – the consistent application of risk assessment and electrical safety principles – and we reinforced our improvement programs in both of those areas.

With respect to risk assessment, in 2019 we prepared new corporate standards that seek to simplify and standardize our approach and increase its positive impact. In 2020, we will launch new processes that will initially focus on activity-based risk assessments, supported by a standardized module within the MIS.

With respect to electrical safety, although we successfully reduced all recordable electrical incidents and injuries from 75 in 2015 to 13 in 2019, in our eyes even a single electrical incident remains one too many. To better address the challenge of electrical safety, in 2019 we prepared for the introduction of a specific Electrical Competency Authorization Program (ECAP). This program defines four levels of electrical competency and will require local business line managers to authorize employees to perform work defined at each level of competency. The development of ECAP is complete and ABB's businesses view its implementation as a priority in 2020.

In 2019, we also trained over 130 people to carry out safety audits within our businesses in advance of launching the second phase of our global assurance arrangements in 2020, which involves self-assessments.

While ABB has undergone transformation, our commitment to eliminating all workplace injuries has never changed. With a clear focus and understanding of our safety priorities, we are working to ensure every ABB employee returns home safely at the end of the day.

Case study
Small actions can have a big impact
Read more

CLIMATE ACTION

Committed to reducing emissions

ABB strongly supports international and national measures to mitigate climate change

After a concerted, multi-year effort, we are pleased to note that, in 2019, we achieved our climate action goals for 2020.

ABB supports the 2015 Paris Agreement and sees it as the linchpin of all efforts to limit global warming and allay the potentially devastating consequences of climate change. Within our own operations, we are working to reduce GHG emissions from fossil energy and transportation, as well as from the handling of sulfur hexafluoride gas (SF_6).

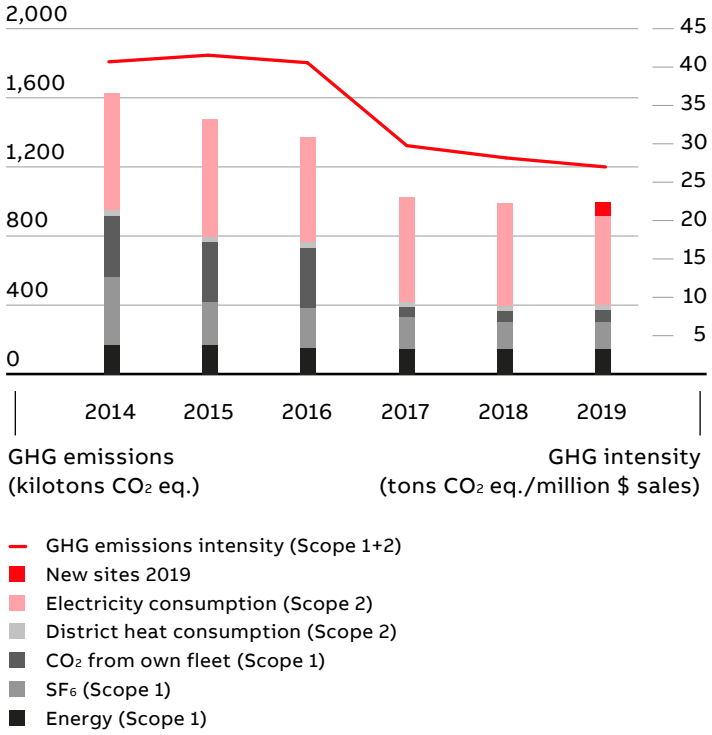
Externally, ABB actively collaborates with businesses, governments and non-governmental and civil society organizations around the world to raise awareness of society's need to transition to low- or zero-carbon energy systems. We participate in the Sustainable Energy for All initiative, the World Economic Forum's Alliance of CEO Climate Leaders and the Science Based Targets (SBT) initiative, among many others. For the SBT initiative, ABB has committed to establishing a science-based GHG emissions target for our post-2020 sustainability objectives and is currently working to calculate what this target should be. As a company with around 9,000 technologists and plans to invest some $23 billion in innovation between the date of the Paris Agreement and 2030, our advanced technologies represent ABB's main contribution to the global effort to mitigate climate change. Nearly 60 percent of ABB's global revenues are derived from technologies that directly address the causes of climate change by facilitating increased energy efficiency, the integration of renewables into the energy mix and the conservation of natural resources. Importantly, these technologies can enable circular economy principles and practices.

ABB's current target for climate action is to reduce our GHG emissions by 40 percent by the end of 2020 from a 2013 baseline. In 2019, ABB's total GHG emissions (Scope 1 and 2) amounted to 998 kilotons, representing an 8.7 percent reduction from 2018 and a 41 percent reduction from 2013.[1] Our progress to date is attributable in part to an improved methodology for monitoring emissions from our vehicle fleet. On its own, this new methodology accounted for 19 percentage points of the GHG emissions reduction we reported in 2017.

During 2019, we expanded our assessment of Scope 3 emissions to more completely understand the climate impact of ABB's supply chain. The results obtained indicate that our upstream Scope 3 emissions are roughly six times as large as our Scope 1 and Scope 2 emissions. Thanks to this assessment, we will be able to have more meaningful conversations with our suppliers on the topic of climate action.

1 Total GHG emissions from all ABB sites was 998 kilotons; total GHG emissions for all ABB sites except for the 39 new sites added in 2019, for which no 2013 baseline data exists, was 915 kilotons. The latter number is used in the evaluation of progress.

Total GHG emissions (Scope 1 and 2) and GHG intensity



In several European countries, all of our electricity is supplied from renewable sources. In 2019, 348 GWh, or 21 percent of all electricity used by ABB, was purchased as certified “green” electricity, an increase of 6 percentage points over 2018.

Importantly, the measures we took last year to strengthen the ability of our businesses to track their resource efficiency are starting to pay dividends. In 2019, for example, our Motion business started on its journey toward using 100 percent green electricity; Motion has already assured that 38 percent of its electricity use is green. This effort alone has cut ABB’s GHG emissions by 63 kilotons and contributed to reducing Motion’s GHG emissions by 49 percent from our 2013 baseline. The results delivered by Motion’s program enabled us to hit our 2020 emissions reduction target. We continue to install on-site photovoltaic power plants at our facilities, which resulted in ABB’s production of solar power for its own use increasing by 47 percent in 2019.

At present, more than 250 energy efficiency projects underway at ABB sites around the world are projected to deliver more than 39 GWh of annual savings.

At ABB’s Busch-Jaeger site in Lüdenscheid, Germany, we are proving that the energy transition can be sustainably achieved via digital energy management. ABB’s first carbon-neutral and energy-self-sufficient production site in the world, the Busch-Jaeger facility features a solar power plant that will deliver around 1100 MWh of climate-neutral solar power a year. Its installed ABB technology, which includes ABB’s scalable energy management system OPTIMAX® at its core, will generate enough power to cover 100 percent of the factory’s power requirements on sunny days and reduce the site’s CO_2 emissions by 630 tons per year. For context, the average citizen of an industrialized nation generates about 10 tons of CO_2 per year.

Also in 2019, ABB Real Estate’s energy savings program reported a total of US$8.7 million annual savings from 260 completed, ongoing and planned energy-saving projects in ABB buildings, cutting our greenhouse gas emissions by 23 kilotons per year. In addition, ABB Real Estate launched the global initiative “EV charging infrastructure at ABB sites” in cooperation with the Global Solutions Team for e-Mobility. A goal for 2020 is to increase the number of ABB sites equipped with EV-charging infrastructure from 17 to 35 percent.

Case study
All-electric delivery fleet
Read more

RESOURCE EFFICIENCY

Managing the environmental impact of our operations

ABB sites around the world are working to conserve resources

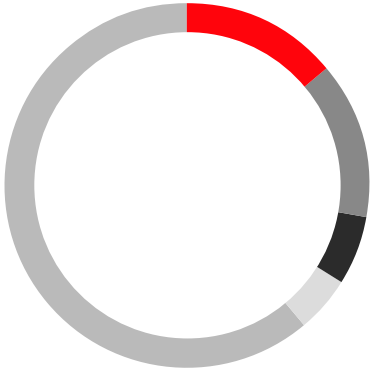
Over the past decade, we have successfully implemented a wide range of waste reduction and recycling initiatives to reduce ABB's environmental impact and bring cost savings to our business.

In the area of resource efficiency, we remain on track to meet the two targets we established for 2020. The first target is to reduce absolute water withdrawals by 25 percent from 2013 to 2020 at facilities located in watersheds with medium to extremely high baseline water stress. While the majority of our manufacturing processes are not water-intensive, we are highly motivated to minimize the water impacts of ABB's operations. We use the World Resources Institute's Aqueduct global water risk tool to assess our facilities according to the level of baseline water stress of the local watershed. Of the 573 ABB locations mapped in 2019, 74 face an extremely high level of water stress, 96 face a high level and 76 face a medium-to-high level.

For all ABB sites in stressed watersheds, total water withdrawals in 2019 amounted to 2,711 kilotons, representing a 2.4 percent[2] reduction from 2018. The overall reduction in water from water stressed sites (excluding GEIS sites acquired in 2018) since 2013 is 18.5 percent. While this overall result is good, our analysis revealed that ABB's water withdrawals in extremely stressed watersheds more than doubled this year; two of the highly stressed watersheds where our operations are water-intensive were reclassified as facing an extremely high level of water stress. In 2019, ABB's total water use went down by 4.9 percent, to 8,401 kilotons.[3] Both of these reductions were mainly due to structural changes at several ABB sites in Europe.

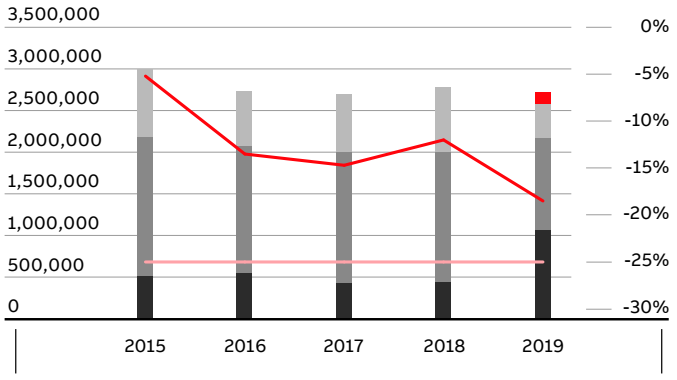
Closed-loop processes and other projects to recycle or reuse water comprise our primary water-saving practices; in 2019, such processes and projects saved 74 percent of all industrial water use and 45 percent of all cooling water use at ABB sites worldwide. There are more than 20 projects running to improve water management across ABB, with expected annual savings of 97 kilotons, or 1.2 percent of all the water we use. At our site in Auburn, Maine, United States, a rapid-impact project to better control the flow of water during a manufacturing process

Distribution of water withdrawal in 2019 (2013)



- Extremely high 14% (5%)
- High 14% (20%)
- Medium to high 6% (8%)
- Low to medium 5% (21%)
- Low 61% (43%)

Water withdrawal in water-stressed areas 2015–19



For details see indicator 303-1 on page 45.

2 Total water withdrawals in stressed watersheds, for all ABB sites was 2,711 kilotons; total water withdrawals for all ABB sites except for the 39 GEIS sites acquired in 2018, for which no water data exists prior to 2019, was 2,575 kilotons. The latter number is used for measuring target progress against the 2013 baseline.

3 Excluding the 39 new sites we added in 2019, ABB's total water use went down by 9.5 percent.

delivered water savings of 8,000 tons of water and annual cost savings of $300,000.

Our second resource-efficiency target is to reduce the share of waste ABB sends to final disposal – both hazardous and non-hazardous – by 20 percent from 2013 to 2020. Using the criteria established when our measures and targets were developed, we met this target one year ahead of schedule, having achieved a 21 percent reduction in the proportion of all waste we sent to final disposal in 2019, compared to the 2013 baseline.[4] In-house recycling and reuse, mainly of packaging materials and thermoplastics, reduced the amount of waste by 2,100 tons.

To increase transparency and drive improvement, in 2019 we started asking our sites to be more specific about how their general waste was disposed. This approach revealed that more than 40 percent of the general waste ABB sent for disposal was subject to incineration with energy recovery (the conversion of non-recyclable waste materials into usable heat, electricity or fuel through a variety of processes). We also found a difference in how ABB sites around the world have been reporting on waste sent for incineration with energy recovery: In 2018, around 75 percent was reported as disposed and some 25 percent as recycled. We believe this practice has been the same since we started measuring this statistic in 2013. Using the new, more precise method of reporting of waste disposed as the basis for the KPI would give a 13.5 percent reduction, as shown by the solid line in the "Waste and recycling" graph.

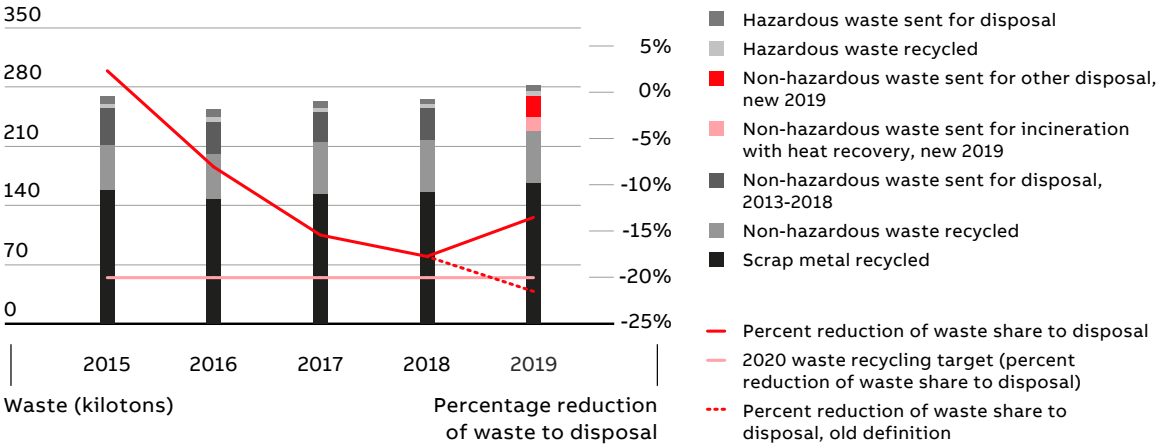
More than one hundred recycling and waste reduction projects were underway at ABB in 2019, bringing huge benefits to our operations.

For example, ABB Composites in Sweden saved 76 tons of silicone by reducing the scrap rate, which cut our costs by $550,000 per year. And our site in Schaffhausen, Switzerland, started recycling plastic granulate in their molding process, reducing material use by 10 tons and saving $80,000 per year. Steel, copper, aluminum, oil and plastics make up the majority of materials used in our products. Most of these materials are reclaimable at the end of a product's life, and we deliberately design ABB products to be recycled; almost all of our products come with recycling instructions and can be dismantled easily.

In addition, our facilities across the world take it upon themselves to innovate and improve manufacturing processes and recycling to address waste reduction. All ABB sites are required to analyze their waste management practices and work with their waste management vendors to optimize recycling options. In 2019, our High Voltage Direct Current (HVDC) power transmission business, while reviewing its environmental policies, boosted this waste management effort as it began pursuing a "Lean HVDC" concept that will reduce the use of materials and waste in the design of its converter stations. Across ABB, we have also taken steps to implement the principles of the circular economy to reduce waste. Using this approach, the Motion business in 2019 entered a new collaboration with Stena Recycling that will recycle end-of-life motors in a way that enables better separation of metals. By recycling aluminum, copper and iron, we save up to 95 percent of the energy it takes to produce those metals conventionally. These recycled metals will also be sold locally if possible, to further reduce carbon emissions.

The application of ABB's digital sensors to existing electric motors can further support the circular economy by enabling predictive maintenance that keeps them in use, optimizing energy efficiency and fostering an understanding of the real cost of ownership. To support the achievement of our waste reduction target in 2019, we continued to share best practices across ABB and provided further guidance on how to reduce waste generation and increase recycling rates.

Waste and recycling



4 This includes all ABB sites except for the 39 new sites we added in 2019, for which no 2013 baseline data exists.

RIGHT MATERIALS

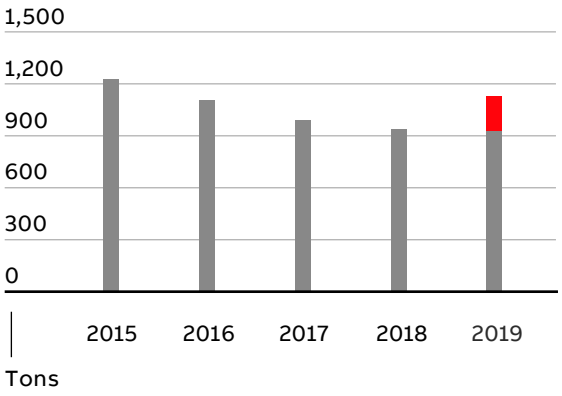
Removing hazardous substances from our operations

Wherever possible, ABB is eliminating unsafe materials from its products, processes and supply chain

The ABB List of Prohibited and Restricted Substances was developed as a clear guide to enable us to reduce and eliminate the use of hazardous materials. It applies to all our operations, including sourcing of goods, product development, production processes, products, packaging materials, service activities and construction sites, and is updated regularly in keeping with international regulations.

ABB's Global Terms and Conditions for suppliers and our ABB Supplier Code of Conduct address this issue in the context of regulatory compliance.

Emissions of volatile organic compounds (VOC)



To assist suppliers in meeting their obligations, we have developed a companion guide to the list. These obligations include partnering with us to identify restricted substances and conflict minerals and prevent them from entering ABB's supply chain.

ABB is strongly focused on avoiding the use of conflict minerals, as outlined in the ABB Policy on Conflict Minerals. We have taken action to support responsible mineral sourcing, establishing our Conflict Minerals Program in line with the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas. Under the Dodd-Frank Act, we annually report to the United States Securities and Exchange Commission on our use of conflict minerals. In May 2019, we provided our sixth report, which identifies products and components likely to contain tin, tantalum, tungsten and gold (also known as "3TG") and links them to their relevant suppliers. To date, 302 smelters and refiners of 3TG used by our extended supply chain have been identified. In addition, we continue to engage in the Responsible Minerals Initiative.

Our 2020 target for hazardous substances is to reduce ABB's emissions of VOCs by 25 percent from 2013 levels. This target further sharpens our strong focus on reducing the use of substances that are harmful to human health and the environment.

Since 2013, we have reduced ABB's VOC emissions by 24 percent,[5] and we are committed to making even greater reductions in the years ahead. The result was achieved through such measures as utilizing low-VOC paints and varnishes and installing active carbon filters and other equipment at our production facilities.

From 2015, we have made substantial progress in our efforts to reduce ABB's use of hazardous materials. In that time, we have reduced our use of chlorinated paraffins by 100 percent, dimethyl phthalate by 100 percent, asbestos-containing materials in our buildings by 32 percent, boric acid by 90 percent and aluminosilicates by 41 percent. Among the major initiatives underlying these achievements was a screening program developed by ABB's Electrification business with its suppliers. Its task is to monitor and eliminate hazardous substances from components supplied to ABB. In 2019, this program gathered data on more than 125,000 product components and worked with more than 5,000 suppliers to satisfy our mutual obligations under the European Union's REACH and RoHS regulations.

In 2019, our cross-functional material compliance team expanded the webinar training program launched in 2018. The program informs employees about our obligations under REACH, RoHS and the ABB List of Prohibited and Restricted Substances.

5 This includes all ABB sites, except for the 39 new sites added in 2019, for which no 2013 baseline data exists.

In 2019, we established a dedicated, Group-level program for product material compliance management, in addition to the cross-functional material compliance team and material compliance network. Our objective is to reinforce ABB's standardized and systematic approach to the increasingly complex material compliance regulations we face in our global markets. To this end, we promote and introduce business-wide best practices to help accelerate full product compliance with these regulations.

In 2019, 55 projects were underway to reduce and phase out hazardous substances and VOC emissions. Due to the variety and specialized nature of ABB's products and processes, hazardous substance reduction is typically addressed on a site-by-site basis.

In Xiamen, China, we installed a filtration device for our site's silicone injection process and reduced its VOC emissions by 720 kg, or 96 percent. In Athens, Tennessee, United States, we improved our manufacturing site's wastewater treatment process to clean the hazardous wastewater sludge resulting from alkaline zinc electroplating with a trivalent chromium conversion coating. Our annual savings from cleaning this hazardous wastewater are $120,000. And in Nogales, Mexico, we added an inhibitor to the varnish of our site's dip process; this helped save 25 tons of solidified varnish – thus eliminating the need to dispose of cured resin, which is a hazardous waste. This measure will deliver $70,000 in annual management cost savings for materials and hazardous waste.

RESPONSIBLE SOURCING

Ensuring sustainable supply chains

ABB's procurement processes help minimize social and environmental impacts

ABB is committed to improving the sustainability of our supply base. The ABB Supplier Code of Conduct (SCoC), which is published in 16 languages, lays out the standards that we require of our existing and potential business partners. The SCoC forms part of our suppliers' contractual obligations, highlighting expectations with regard to areas such as human rights, fair labor conditions, business ethics, health & safety and environment & material compliance, as part of ABB's general terms and conditions.

To further enhance responsible sourcing, we continue to deploy the ABB Supplier Sustainability Development Program (SSDP), which proactively screens and prioritizes (using a combination of geographical, category and economic factors) sustainability risks posed by suppliers, evaluates their adherence to the SCoC and engages them when necessary. The SSDP includes supplier trainings and onsite assessments on 42 parameters related to general management, labor rights, social benefits, health and safety and environment.

For every area of non-compliance identified by our supplier assessments, we launch a supplier support action to systematically address each issue in turn. Our support actions include capacity building, customized participatory workshops, sharing best practices, jointly implemented collaborative programs and the transfer of knowledge and expertise. We have found this proactive approach results in better supplier responses and improved performance standards.

Every year, ABB trains, coaches and assesses hundreds of suppliers on their sustainability practices. This is a continuous process, in which old risks are closed and new ones are identified each year. The time required to close a sustainability risk can range from one month to over a year, depending on its complexity. Since 2015, we have identified an average of 723 new risks each year. Due to the ongoing identification of new risks and the time required to mitigate them, our closure rate for identified risks can never be 100 percent.

Our 2020 target is to close 65 percent or more of identified risks from supplier assessments. In 2019, ABB continued to exceed this target, closing 78 percent of identified risks in 2019, up from 76 percent in 2018. We achieved this strong result thanks to our focused program management, continued engagement with our suppliers, onsite support, pre-assessment training and focused workshops for our suppliers.

While ABB believes in working with suppliers to improve their performance, there are consequences for suppliers who are unwilling to align their performance standards with our requirements. During 2019, ABB terminated business with three suppliers due to unsatisfactory progress on their respective corrective action plans.

In 2019, we analyzed supplier assessments conducted from 2014 to 2018 and found the most frequent major non-conformance issues observed were unsafe working practices, lack of environmental management system compliance, no health & safety risk analysis and no environmental risk analysis. To address these shortcomings, we continued to raise awareness through initiatives such as our specially designed workshops on health, safety, environmental and labor requirements of the SSDP.

Among other key initiatives in 2019, we designed and implemented multiple workshops in China on various sustainability compliance concerns that were identified during supplier assessment.

Top ten sustainability non-conformance issues in 2019[6]

General management	• Procedures not in place to evaluate and select sub-suppliers and sub-contractors based on their ability to meet ABB sustainability requirements
Labor and human rights	• Excessive working hours and overtime
Health and safety	• Unsafe/unhealthy working conditions • Inadequate first aid and firefighting equipment • Lack of health and safety risk assessment • Insufficient emergency preparedness, e.g. fire, evacuation, first aid • Ineffective programs for management and reduction of hazards in high risk areas • Inadequate communication of health & safety hazards
Environment	• Non-compliance with relevant environmental regulations/parameters • Improper waste management processes

6 Includes critical, serious and minor non-conformances.

More such workshops will be organized in other countries in 2020. We also continued our collaboration with suppliers to find solutions for some of the chronic challenges they face regarding working conditions. On the technical side, we supported suppliers with operational data analysis and visits to their factories to identify potential areas for intervention.

To address sustainability in our procurement activities, ABB assesses hundreds of suppliers on their sustainability practices and provides training on improvement actions. This engagement helps ABB to strengthen our supply base and gives our customers confidence in the sustainability of their extended supply chain.

Timo Ihamuotila – Chief Financial Officer

In 2019, we assessed 168 suppliers, identifying 574 risks. We mitigated 562 risks during this period. In other activities to support responsible sourcing, we trained 245 ABB employees and 195 suppliers during the year. Click here to learn more about how ABB defines risk.

Case study
Implementing sustainable process improvements

Read more

05 Responsible relationships

INTEGRITY

Emphasizing responsibility and ethics in our business

ABB does not tolerate violations of the law or the ABB Code of Conduct

Everyone who works for or with ABB must meet our integrity standards. These standards, which are made clear in our ABB Code of Conduct and our ABB Supplier Code of Conduct, are backstopped by a robust set of internal policies and instructions.

These include the five value pairs that serve as the backbone of our business, established to help create long-term value for all ABB stakeholders. The “Safety & Integrity” value pair is the foundation of our organization. It affirms that ABB does not conduct business in a way that puts people at risk or involves unethical practices.

In 2019, we continued to implement “Integrity Starts with You,” a training course on the ABB Code of Conduct. Launched during Q1 2018, the course achieved a completion rate of nearly 98 percent. In addition to our integrity e-learning curriculum, during Q2 2018 we began training our employees on global data protection; at the end of 2019, this course had achieved a completion rate of nearly 96 percent. Our 2018/19 integrity training campaign covered employees with company email accounts only. Both courses were rolled out to just over 103,000 employees, and we are encouraged by their high completion rates.

Case study
Anti-Bribery Management System Verification™
Read more

Due to long-term absences, organizational changes and timing issues, among other reasons, it is not possible to achieve a completion rate of 100 percent.

Integrity training has always been a key metric for us, as we believe raising awareness of integrity risks is a vital preventative measure. In addition to our efforts to prevent ethical lapses, our detection and resolution mechanisms continue to be central to our integrity program.

Integrity is the cornerstone and backbone of how ABB does business. This will continue to be the case and it will be even more essential as we transform and simplify our company's operations and governance model for the future.

Maria Varsellona – General Counsel

ABB's integrity program continues to be recognized externally for its excellence. In 2019, we retained our Ethisphere Compliance Leader Verification seal of recognition for the seventh consecutive year, as well as the Ethisphere Anti-Bribery Management Systems Verification seal of recognition.

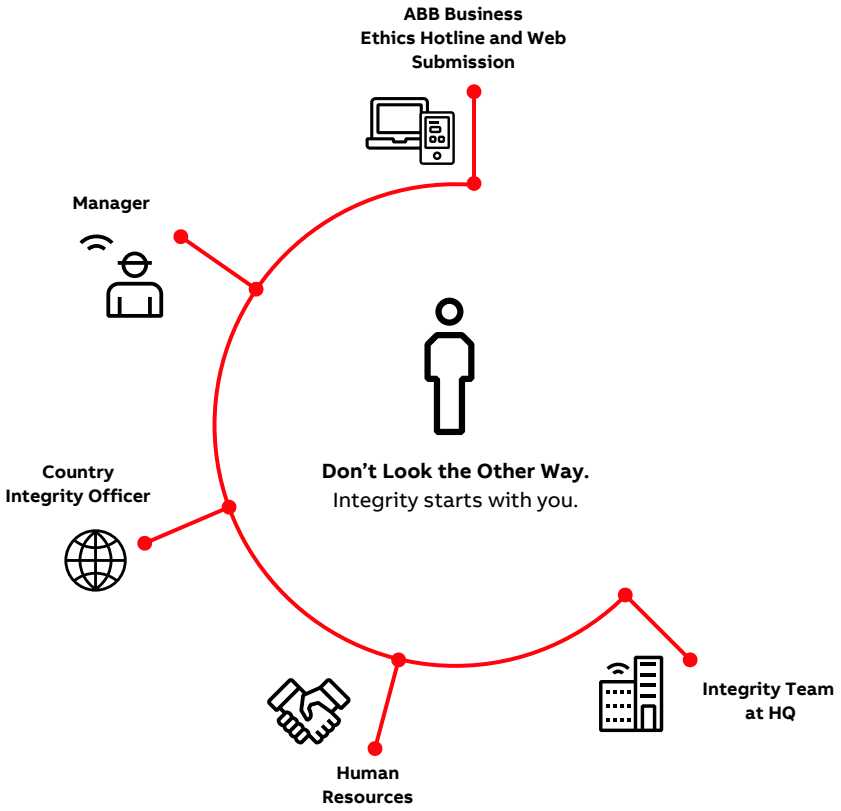
In 2019, we created another way for our people to report integrity concerns, adding a new web portal to the many other reporting channels we make available. The new portal, ABB EthicsPoint, is available in 10 of the major languages utilized within ABB and was designed to provide an alternative for those who would rather use the internet than our business ethics telephone hotline, which is run by a third party and available at all hours in over 180 languages. All reported concerns are treated confidentially, reviewed and appropriately investigated; exposures are mitigated, and disciplinary actions are taken as applicable and appropriate, including termination of employment. ABB enforces a strict, zero-tolerance policy for violations of the law or the ABB Code of Conduct.

In our requirements for a healthy workplace, harassment – be it face-to-face, written, electronic or verbal – is not tolerated. Our goal is to make all employees feel welcome and comfortable at ABB; to achieve this, we are constantly working to ensure that our employees, their coworkers and those who do business with ABB are not harassed.

In 2019, we eliminated our legacy matrix structure and provided our businesses with full ownership of their operations, subject to best practices in governance.

The simplification of ABB's business model inspired us to consider how we can further develop and adapt our existing integrity program, which is fully supported by senior management and the Board of Directors. As befits a leading technology company, ABB is committed to deploying data analytics and other advanced tools to help us more precisely target our integrity initiatives. Such measures will help ABB's integrity program to evolve in lockstep with our businesses as they grow and change.

In 2019, the company did not face any significant fines or sanctions for non-compliance with laws and regulations. For further information, please refer to the Commitments and Contingencies note in the Notes to the Consolidated Financial Statements contained in the ABB Group Annual Report.



HUMAN RIGHTS

Respecting human rights is integral to our business

As a prerequisite for its license to operate, ABB is committed to respecting human rights along the value chain

We expect everybody who works for ABB, either directly as an employee or indirectly in our supply chain, to respect each individual's human rights.

ABB fully acknowledges its responsibility to respect human rights as expressed in the International Bill of Human Rights and is committed to implementing the United Nations Guiding Principles on Business and Human Rights (UNGP) throughout its operations. The ABB Supplier Code of Conduct, the ABB Policy Combating Trafficking in Persons and the ABB Human Rights policy and statement make clear that there is no place in ABB or within the operations of our contractors and suppliers for modern slavery or human trafficking.

In maintaining our social license to operate, it is vital for us to engage with stakeholders on labor and human rights issues. ABB interacts with a wide variety of stakeholders to understand their expectations and improve our performance. Major human rights issues of interest to our external stakeholders include conflict minerals, child labor, human trafficking and modern slavery, and diversity and inclusion.

Case study
Human Rights Champions Network

Read more

Our goal is for human rights to be well understood and managed in all ABB operations along the value chain and integrated into ABB's daily business by the end of 2020. To achieve this goal, we have undertaken initiatives focused on capacity building, risk identification, performance improvement in our supplier base and limiting exposure to conflict minerals.

Capacity building underpins our ability to identify risks and improve performance. So we set a target to run at least two training campaigns per year, focused on employees whose roles specifically expose them to human rights risks. We met this target in 2019 with a pair of initiatives that focused on developing our human rights champions network and providing human rights awareness training for senior managers.

The human rights champions network aims to ensure we have qualified employees who can advise our businesses on how to identify, mitigate and avoid human rights risks. In 2019, a total of 83 champions representing all of ABB's global business lines completed a detailed curriculum. Additional champions will be selected and trained in 2020.

Our second training campaign of 2019 was designed to help ABB's senior managers more readily identify human rights risks at an early stage of the business process and consult with qualified advisors, when needed. During the year, the program trained the management teams of 13 out of 17 global business lines. It will train ABB's remaining management teams in early 2020.

In 2019, we also developed further training materials specific to functions with more exposure to human rights risks: procurement, sales & marketing and operations.

Human rights champions will be trained to deliver these sessions, and all business lines will be required to roll out this training in 2020.

This training complements our continuing work to map internal processes related to risk identification and risk assessment. At ABB, human rights specialists carry out due diligence to help us understand risks and avoid causing or contributing to negative human rights impacts. This due diligence – a cornerstone of the UNGPs – ranges from desktop research to site visits and the commissioning of third-party reports, as needed. In conducting this work, we emphasize internal risk assessment processes and research into potentially high risk projects or operations in high risk countries.

Human rights criteria are already included in the risk review process for screening major ABB projects, in prequalification and assessment work with ABB suppliers and in our process for examining potential ABB mergers and acquisitions. However, the training sessions for our human rights champions network gave us the opportunity to better understand how effectively human rights considerations are embedded in our business decisions. When ABB's new organizational structure is fully implemented in 2020, we will use the lessons learned to guide improvements that will make our processes even more robust and responsive to increasing reporting and legislative requirements.

Our new organizational structure will not affect the multiple reporting channels we already make available to employees and external stakeholders for reporting suspected violations of the ABB Code of Conduct or applicable laws. Channels include a web portal and telephone hotlines in multiple languages. All reports of suspected violations are reviewed and appropriately investigated.

In 2019, these mechanisms were used to report 19 substantiated cases of harassment and eight of discrimination, resulting in varying levels of corrective action, including five terminations of employment.

In ABB's 2018 Sustainability Report, we reported an instance of modern slavery at an electronics supplier in Malaysia. ABB revisited this facility twice during 2019 to ensure that the appropriate corrective actions had been completed and are being maintained.

The main initiative to promote respect for human rights in our supplier base is the ABB Supplier Sustainability Development Program (SSDP). The program focuses on improving the sustainability performance of high-risk suppliers in 17 countries. During 2019, an on-site SSDP assessment at a key supplier in Malaysia identified a case of modern slavery involving retention of migrant workers' passports. ABB has obtained the supplier's commitment to performing corrective actions and will monitor the supplier to ensure compliance.

We also continue our work to understand and limit ABB's exposure to conflict minerals. For the fifth consecutive year, ABB's work on responsible sourcing of minerals was recognized by an independent benchmark study from the Responsible Sourcing Network.

OUR PEOPLE

ABB believes in its people and invests in them

We value our employees and support them through many initiatives

We believe that our people are our most important asset. That is why ABB invests in personal and professional development. We seek to provide the best available tools, programs and opportunities. By doing so, we empower them to build rewarding careers, enjoy their personal lives and strengthen their health, resilience and sense of well-being.

For 2020, our targets are to increase the number of women in senior management positions (Hay grades 1-7) by 30 percent from 2017 and to increase the proportion of employees covered by ABB's well-being program to 70 percent. Gender diversity and the health, well-being and resilience of our workforce are strategic priorities for ABB. They carry significant implications for our overall performance.

We made modest progress toward these targets over the past year. At present, 11.7 percent of the senior managers at ABB are women, up from 10.5 percent in 2018. We recognize that we can do more to raise this proportion going forward. Additionally, at the end of 2019, 77 percent of our employees were covered by ABB's well-being program, up from 67 percent in 2018. We achieved these results through a combination of continuing and new initiatives.

People

To promote gender balance in our workforce, ABB relies on the gender diversity framework implemented in 2017. Actions called for by this framework include shortlisting women during recruitment drives, increased focus on the Diversity Dashboard findings at the ABB Executive Committee meetings, creating opportunities for women to be mentored by senior leaders, conducting internal and external awareness campaigns and adopting flexible working practices.

While we made solid progress with new appointments, attrition diminished the total impact of the new hires. We also sought to identify 100 female candidates for senior leadership positions. Almost every business identified five or more women for this purpose.

Case study
The 2019 Global Summit of Women

Read more

Altogether, 188 nominations were submitted – exceeding our goal. Additionally, in 2019, we met our goal of 30 percent of our early talent hires being female, i.e., recent university graduates. However, many of these hires have been in the functions, so we are increasing our efforts to meet this target for business roles as well. The year also saw the establishment of a global female mentoring program, which has now been rolled out to three of our businesses.

In 2018 we signed the EmbraceDifference pledge developed by the European Roundtable for Industrialists. To follow up on the pledge, we linked our 2019 initiatives to the six focus areas identified by the pledge: Inclusive Culture, Inclusive Leadership, Aspiration & Goal Setting, Clear Responsibility, Equal Opportunities & Societal Engagement and Responsibility.

We carried out unconscious-bias training, utilizing more than 65 trained, in-house facilitators. To date, more than 900 managers have participated in workshops held under this program. This year we also rolled out global guidelines for flexible working practices, offering six different options supported by a comprehensive toolkit and online learning program for managers. Furthermore, we refined our HR dashboard and metrics to ensure greater clarity on our targets and quarterly progress.

Health and well-being

Health initiatives and preventive occupational health are fundamental pillars of ABB's health programs, which are offered to all of our employees and their eligible dependents. Our well-being programs target stress reduction and positive working environments. These programs support our employees' efforts to develop their skills, knowledge and self-confidence, enabling them to manage their own health and work activities productively.

In 2019, we exceeded our 2020 objective of providing at least 70 percent of all ABB employees with access to one or more ABB well-being programs. Over the past year, the top three globally reported programs were fitness and physical activities, voluntary medical checks and healthy nutrition.

In the course of ABB's organizational transformation in 2019, our resilience-building program, launched in 2017, represented an important asset to support our employees. The program helps our employees manage stress, enhance health and improve productivity. It also builds a culture of flexible thinking and positive attitudes and behaviors. By the end of 2019, more than 53,000 employees had received training in 67 countries around the globe since the start of the program.

In 2019, we placed a stronger focus on mental well-being by enabling access to employee assistance programs that support those affected by personal or professional issues. Additionally, we released a medical travel risk management standard. The new TravelReady form (TRF) has become mandatory for employees traveling to 37 countries where there is a risk of malaria or yellow fever. The tool was developed to make our travelers and their line managers aware of the medical requirements associated with these destinations.

To address the important issue of workplace ergonomics, e-learning modules were made available for use by the businesses. Furthermore, we continued our partnership with Virgin Pulse for the third year to manage our company's Global Health Challenge, a company-wide program promoting physical activity, healthy eating, stress management and better sleep habits.

In 2020 one of our focus areas will be to assist our managers in understanding their roles in our health agenda, particularly with respect to work-life balance, sick leave management and resilience building.

Case study
ABB receives 2019 Changemaker Award
Read more

COMMUNITY ENGAGEMENT

A tradition of social engagement

As an integral part of society, ABB contributes to economic and social progress in many ways

ABB has a long history of working with communities to support education, healthcare and diversity and inclusion. Our approach is to combine strategic corporate partnerships with projects that focus on local needs in places where our businesses operate. Engaging with communities in this way improves people's lives and reinforces ABB's reputation.

ABB's major social engagement programs include the Jürgen Dormann Foundation, which assists financially disadvantaged engineering students, our corporate-level agreement with the International Committee of the Red Cross, which supports innovative water and habitat projects, and our Nobel International Partnership, which promotes knowledge of and interest in scientific education, sustainability and other important global issues.

Supporting healthcare, diversity and inclusion can have positive social and economic impacts among key company stakeholders, including our employees, suppliers and customers, as well as the communities around our facilities. In 2019, ABB contributed to more than 580 community projects and charities worldwide. A total of 44 countries out of the 69 reporting on their social activities supported community projects. Employees and ABB's businesses donated approximately $12.1 million to these projects and provided about 4,300 person-days of volunteer work.

Our global and local support for educational programs and institutions enhances learning, raises our company's profile and helps recruit qualified ABB staff. ABB works with students, schools and universities in a variety of ways, improving research, especially in science, technology, engineering and mathematics (STEM), and extending educational opportunities to more people.

ABB promotes STEM education and careers for girls and women in a variety of ways, including targeted scholarships and mentoring programs in Hungary, India, Poland, Sweden and other countries. In the United States, ABB is piloting a program with the Girl Scouts in Arkansas, Oklahoma and Texas in support of a "Girls Write the STEM Future" patch. This program aims to inspire girls to embrace scientific discovery in their lives and also creates volunteer opportunities for ABB employees involving the Girl Scout STEM badge curricula.

In many of our educational collaborations, volunteers from ABB play a vital role, inspiring, sharing experiences and encouraging students to pursue careers in technology. We are actively engaged in the United States, Brazil, Italy, Estonia, India, China and Zambia, among many other countries, and are proud to provide a wide variety of support for children, graduate students, recent graduates, disadvantaged students and other young talent.

Around the world, our businesses also support local education initiatives that promote diversity and inclusion. Among such initiatives, ABB in Australia launched the Reconciliation Action Plan in 2013 to help close the gap between indigenous and non-indigenous communities. Under the plan, ABB has partnered with the University of Technology Sydney on an outreach program called the Galuwa Engineering and IT Experience; the program aims to encourage indigenous high school students to continue their education and training. In 2019, the outreach program provided indigenous students with opportunities not only to see ABB robots in action, but also to program them.

Other ABB inclusion programs are focused on the differently abled, including a significant sponsoring partnership with the Special Olympics in Germany. Since the partnership was established in 2000, more than 3,300 ABB employees from sites across Germany have volunteered, dedicating their holidays to assist athletes with intellectual disabilities to participate in local and countrywide sporting competitions.

Case study
Digital substation donated to Zambia's School of Engineering
Read more

06 Reporting indicators

APPROACH TO SUSTAINABILITY REPORTING

Reporting that matters to stakeholders

ABB aims to provide simple, clear, comprehensive information on how it measures and discloses its environmental, social and governance impacts

The Global Reporting Initiative (GRI) Standards and the EU directive on non-financial reporting provide the framework for ABB's sustainability reporting. We report on ABB's material economic, environmental and social impacts and how we manage them. Omission from the material issues ad-dressed in our report does not mean an issue is not managed. ABB reports annually; the report for 2018 was published on March 15, 2019. The reporting period for the information provided in this report is from January 1 to December 31, 2019.

Reporting boundaries
ABB's formal sustainability reporting system covers all ABB Group companies worldwide, including wholly owned subsidiaries and majority-owned joint ventures. ABB's 2019 Annual Report contains a list of the Company's significant indirect subsidiaries (Appendix: page 224).

Changes in 2019
Entities acquired in 2018 – such as GE Industrial Solutions (GEIS) – are reflected in ABB's environmental and social reporting for the year. All entities acquired in 2019 will be reflected in the 2020 report. The divestment of ABB's Power Grids business is expected close in the first half of 2020. Power Grids is included in our sustainability reporting for 2019. Through the ongoing changes, ABB will seek to maintain alignment between its sustainability reporting and international best practices – including the GRI Standards. In line with ABB's 2018 commitment to the Science Based Targets initiative, in the second half of 2020 ABB will announce its post 2020 GHG emissions targets.

Data collection processes
To measure and gather data from across ABB, we rely on three online data reporting systems: a global system to report on hazards and sustainability observation tours; a system to collect annual social data from every country and environmental data from every production and service site, as well as a majority of our office locations; and a global system used by HSE professionals to report on incidents at ABB entities. As of Q2 2020, the first two systems are being combined to collect all key safety, social and environmental data, simplifying collection and facilitating greater transparency.
Data in this report relating to health, safety and our social performance covers 99 percent of ABB employees. Data relating to our environmental performance was sourced from 578 ABB sites and offices, covering approximately 93 percent of employees. Data on the environmental performance of all remaining employees, who are located at non-manufacturing sites with limited impacts, is generated by estimating energy, water and waste parameters pro rata.

Calculation of energy and greenhouse gas data
ABB uses a market-based method to calculate and report Scope 2 GHG emissions. For purchased electricity and district heat, we have obtained local emission factors from suppliers. For data prior to 2017, where necessary, we have sourced factors from the International Energy Agency's "CO_2 Emissions from Fuel Combustion 2013" database or from national or regional inventories. Emission factors for fuel used at ABB sites are sourced from the GHG Protocol's "Emission Factors from Cross-Sector Tools" (March 2017). From 2017, emissions from ABB's vehicle fleet are based on lease contract distances and CO_2 per kilometer factors per vehicle.

Scope 2 GHG emissions for electricity have also been calculated using the location-based method (source: IEA) and are provided for comparison below.

Scope 2 GHG emissions from electricity	Kilotons CO_2e
Market-based:	569
Location-based:	544

GHG emissions from air travel are calculated using emission factors published by the UK Department for Business, Energy & Industrial Strategy (BEIS) in its "2018 Government GHG Conversion Factors for Company Reporting."

Independent assurance summary
DNV GL Business Assurance Services UK Limited ("DNV GL") has been engaged by ABB Ltd to provide independent assurance for ABB's 2019 Sustainability Report. The assurance was completed using DNV GL's assurance methodology, VeriSustain™, and the report was evaluated for adherence to the principles of stakeholder inclusiveness, materiality, sustainability context, completeness and reliability. Performance data's scope was evaluated against the reliability principle. DNV GL's full Assurance Statement, including Opinion, Observations and Basis of opinion, is available on ABB's website.

SUMMARY OF GRI INDICATORS

ABB Group Sustainability Indicators 2019

Environmental

GRI ref.	Indicator description	Data assured in 2018	2019	2018	2017	2016	2015	2014
	Hazardous materials							
	Phthalates (tons)	√	102	99	106	191	878	258
	Brominated flame retardants (tons)	√	0	0.0	0.0	0.0	0.0	1.9
	Lead in submarine cables (tons) [1]		-	–[1]	0.017	8,246	8,376	7,842
	Organic lead in polymers (tons)	√	0.0	0.0	0.29	1.0	1.4	0.1
	Lead in other products (tons), e.g., backup batteries and counterweights in robots	√	2,316	2,686	2,548	3,321	1,684	1,884
	Cadmium in batteries (tons)[2]	√	15	113.3	71.3	53.0	98.3	79.5
	Cadmium in lead alloy and other uses (tons)	√	0.3	0.3	0.4	7.3	6.4	6.0
	Mercury in products (tons)	√	0.001	0.001	0.001	0.002	0.007	0.071
	SF_6 insulation gas (inflow to ABB facilities) (tons)[3]	√	1,211	1,286	1,425	1,653	1,658	1,483
	SF_6 insulation gas (outflow to customers) (tons)[3]	√	1,204	1,279	1,417	1,644	1,648	1,466
	No. of transformers with PCB oil in ABB facilities	√	14	6	0	0	0	0
	No. of capacitors with PCB oil in ABB facilities	√	89	0	0	0	0	0
	Mercury in instruments in ABB facilities (tons)	√	0.0570	0.2150	0.2150	0.2380	0.2250	0.3200
302-1	**Energy consumption (gigawatt-hours – GWh)**							
	Biofuels[4]	√	52.9	51.6	64.4	52	46	44
	Oil (11.63 MWh/ton)	√	49.0	48.5	58.5	71	79	85
	Diesel (11.75 MWh/ton)	√	4.4	4.8	5.8	9	8	11
	Coal (7.56 MWh/ton)	√	0.0	0	0	0	0	0
	Gas[5, 6]	√	728	658	647	658	737	708
	District heat consumption[5]	√	208	201	209	198	181	198
	Electricity consumption[5, 6]	√	1,635	1,571	1,561	1,620	1,608	1,628
	Total energy used	√	**2,677**	**2,535**	**2,546**	**2,607**	**2,658**	**2,675**
	Electricity sold	√	2	2	5	2	1	2
302-3	**Energy intensity (MWh/million $ sales)[7]**	√	72	72	74	77	75	67

Environmental continued

GRI ref.	Indicator description	Data assured in 2018	2019	2018	2017	2016	2015	2014
303-1	**Water withdrawal (kilotons)**							
	Purchased from water companies[5]	√	3,896	3,721	3,678	3,800	4,000	4,200
	Groundwater extracted by ABB	√	2,066	2,499	2,726	2,300	3,200	3,100
	Surface water extracted by ABB	√	2,406	2,561	2,849	3,000	2,400	2,800
	Collection of rainwater	√	9.8	<100	<100	<100	<100	<100
	Waste water from external source	√	21.7	<100	<100	<100	<100	<100
	Water withdrawal from areas of water stress[8]	√	2,711	2,778	2,694	2,730	2,993	2,951
	Total water withdrawal	√	**8,401**	**8,827**	**9,280**	**9,100**	**9,700**	**10,100**
303-3	**Water recycled and reused**							
	Volume of water reused and recycled (kilotons)		8,051	7,449	7,807	10,600	5,200	5,200
	As percentage of total water withdrawal (%)		96	84	84	116	54	51
Greenhouse gas (GHG) emissions[9] (kilotons CO_2 equivalent)								
305-1	**Scope 1**							
	CO_2 from the use of energy[6]	√	162	148	149	155	173	170
	SF_6 (in CO_2equivalents)[10]	√	159	164	180	228	244	394
	$CO_2$from transport by own fleet[11]		75	63	63	350	350	350
305-2	**Scope 2**							
	District heat consumption	√	33	30	28	31	29	35
	Electricity consumption[6]	√	569	597	606	614	684	682
	Total scope 1 and 2 GHG emissions	√	**915** [33]	**1002**	**1,026**	**1,378**	**1,480**	**1,631**
305-3	**Scope 3**							
	Air travel[12, 13]	√	148	138	150	164	158	171
	Waste generated in operations[34]		12	–	–	–	–	–
	Energy-related activities not in scope 1/2 [34]		70	–	–	–	–	–
	Purchased goods and services[34]		4104	–	–	–	–	–
	Employee commuting[34]		249	–	–	–	–	–
	Up- and downstream transportation[34]		1150	–	–	–	–	–
	Up- and downstream leased assets[34]		219	–	–	–	–	–
305-4	**GHG emissions intensity (tons CO_2 equivalents/million $)**[14]							
	Tons CO_2 equivalents per million $ sales, scope 1+2	√	27	28	30	41	42	–

Environmental continued

GRI ref.	Indicator description	Data assured in 2018	2019	2018	2017	2016	2015	2014
305-7	**Emissions of volatile organic compounds (tons)**							
	Volatile organic compounds (VOC)[15]	√	1,128	936	987	1,105	1,223	1,291
	Chlorinated volatile organic compounds (VOC-Cl)[16]	√	2	4	3	6	13	20
	Emissions of NO_x and SO_x (tons SO_2 and NO_2)							
	SO_x from burning coal		0	0	0	0	0	0
	SO_x from burning oil and biofuels		77	72	89	82	97	97
	NO_x from burning coal		0	0	0	0	0	0
	NO_x from burning oil and biofuels		57	54	67	72	73	73
	NO_x from burning gas		156	142	140	142	159	153
306-1	**Water discharge by quality and destination (kilotons)**							
	Public sewer		3,591	3,649	3,039	4,200	3,100	3,000
	treated (percentage)		36%	36%	38%	21%	28%	30%
	untreated (percentage)		64%	64%	62%	79%	72%	70%
	Recipient[17]		1,123	761	444	4,500	2,600	2,900
	treated (percentage)		84%	90%	81%	15%	90%	90%
	untreated (percentage)		16%	10%	19%	85%	10%	10%
	Hazardous treatment company		140	47	45	300	360	400
	treated (percentage)		81%	47%	13%	71%	90%	75%
	untreated (percentage)		19%	53%	87%	29%	10%	25%
	External use		0	1	0	0	<100	<100
	treated (percentage)		0%	100%	–	–	63%	50%
	untreated (percentage)		100%	–	–	–	37%	50%
306-2	**Waste (kilotons)**							
	Scrap metal recycled	√	167	156	153	148	158	162
	Non-hazardous waste recycled[5]	√	61	62	61	53	53	49
	Non-hazardous waste sent for disposal[5]	√	41	37	36	37	44	44
	Hazardous waste recycled[18]	√	7	5	5	7	5	5
	Hazardous waste sent for disposal[18]	√	7	6	8	8	10	13
	Total waste (generated)	√	**283**	**266**	**263**	**254**	**270**	**273**

Environmental continued

GRI ref.	Indicator description	Data assured in 2018	2019	2018	2017	2016	2015	2014
306-3	**Numbers of significant spills**[19]							
	Oil spills		9	15	19	17	11	7
	Chemical spills		4	9	10	6	1	0
	Emissions to air		6	5	3	6	11	3
	Others		7	14	12	9	0	0
	Total number of significant spills		**26**	**43**	**44**	**38**	**23**	**10**

Social

GRI ref.	Indicator description	Data assured	2019		2018		2017		2016		2015		2014	
401-1	**Total number and rates of new employee hires and employee turnover**													
	Total workforce by region (ABB employees)[20]													
	Europe		68,400		68,300		63,000		61,400		61,600		63,000	
	The Americas		35,200		35,600		28,800		29,000		30,900		32,200	
	Asia, Middle East and Africa		40,800		42,700		43,000		41,900		43,300		45,200	
	Total		**144,400**		**146,600**		**134,800**		**132,300**		**135,800**		**140,400**	
	Employee turnover													
	Turnover of all employees[21]													
	Europe		9,732	14%	6,509	10%	7,105	11%	6,063	10%	5,891	9%	5,877	9%
	The Americas		5,443	16%	3,986	11%	3,148	11%	5,338	17%	5,409	17%	5,379	17%
	Asia, Middle East and Africa		6,860	17%	5,127	12%	3,749	9%	4,430	11%	4,946	12%	5,701	13%
	Total employee turnover: ABB Group		**22,035**	**15%**	**15,622**	**11%**	**14,002**	**10%**	**15,831**	**12%**	**16,246**	**12%**	**16,957**	**12%**
	Turnover of all female employees[21]													
	Europe		2,871	4%	2,053	3%	2,097	3%	1,571	2%	1,498	2%	1,370	2%
	The Americas		1,553	4%	1,154	3%	940	3%	1,265	4%	1,418	5%	1,307	4%
	Asia, Middle East and Africa		1,399	3%	967	2%	855	2%	882	2%	1,093	3%	1,311	6%
	Total female employee turnover: ABB Group		**5,823**	**4%**	**4,174**	**3%**	**3,892**	**3%**	**3,718**	**3%**	**4,009**	**3%**	**3,882**	**3%**
	Employee hires													
	Hires of all employees[21]													
	Europe		11,560	17%	7,848	11%	6,888	11%	5,656	9%	5,672	9%	6,195	10%
	The Americas		4,221	12%	3,525	10%	3,905	13%	3,354	11%	3,573	11%	4,142	13%
	Asia, Middle East and Africa		6,121	15%	5,281	12%	4,403	11%	2,920	7%	3,777	9%	5,493	13%
	Total employee hires: ABB Group		**21,902**	**15%**	**16,654**	**11%**	**15,196**	**11%**	**11,930**	**9%**	**13,022**	**10%**	**15,830**	**12%**
	Hires of all female employees[21]													
	Europe		3,898	6%	2,442	4%	2,161	3%	1,681	3%	1,520	2%	1,597	3%
	The Americas		1,357	4%	950	3%	1,030	3%	937	3%	769	2%	1,010	3%
	Asia, Middle East and Africa		1,275	3%	1,076	3%	900	2%	586	1%	761	2%	1,308	3%
	Total female employee hires: ABB Group		**6,530**	**4%**	**4,468**	**3%**	**4,091**	**3%**	**3,204**	**2%**	**3,050**	**2%**	**3,915**	**3%**

Social continued

GRI ref.	Indicator description	Data assured	2019	2018	2017	2016	2015	2014
403-2	**Occupational health and safety: Injuries, lost days, diseases and fatalities**							
	Employee work-related fatalities[22,24]	√	1	0	1	0	0	1
	Incident rate[23]	√	0.01	0.00	0.00	0.00	0.00	0.00
	Employee business travel fatalities[22, 25]	√	0	1	1	1	0	0
	Incident rate[23]	√	0.00	0.00	0.00	0.00	0.00	0.00
	Contractor work-related fatalities[24]	√	1	3	2	5	2	2
	Contractor business travel fatalities[22, 25]	√	0	0	0	2	0	0
	Members of the public fatalities[22]	√	0	0	0	0	1	0
	Employee total recordable incident number[24, 26]	√	744	830	1,049	1,140	1,310	1,500
	Injury rate[23]	√	0.47	0.58	0.73	0.79	0.87	0.99
	Contractor total recordable incident number[24,26]	√	149	203	205	277	343	333
	Injury rate[23]	√	0.46	0.58	0.52	0.70	0.80	0.78
	Employee lost time incident number[24]	√	372	386	472	441	531	652
	Injury rate[23]	√	0.23	0.27	0.33	0.30	0.36	0.43
	Contractor lost time incident number[24]	√	96	97	95	118	163	200
	Injury rate[23]	√	0.29	0.28	0.24	0.30	0.38	0.47
	Employee lost days due to industrial incidents[29]		6,757	6,650	7,331	6,905	7,831	8,415
	Days lost rate[23]		4.26	4.63	5.11	4.78	5.26	5.52
	Employee occupational health illness[24]	√	16	30	35	65	46	17
	Employee occupational health illness rate[23,24]	√	0.01	0.02	0.02	0.05	0.03	0.01
	Sustainability Observation Tours (SOT) conducted[28]	√	83,859	144,738	182,265	178,473	139,124	–
	SOT rate[28,30]	√	5.52	1.01	1.27	1.24	0.92	–
	Hazards reported[24]	√	336,747	389,733	585,627	621,849	520,942	–
	Hazards reporting rate[27]	√	2.12	2.72	4.08	4.31	3.51	–
	Data by region							
	Employee work-related fatalities: ABB Group[22,24]	√	1	0	1	0	0	1
	Europe	√	0	0	0	0	0	0
	The Americas	√	1	0	1	0	0	0
	Asia, Middle East and Africa	√	0	0	0	0	0	1
	Employee business travel fatalities: ABB Group	√	0	1	1	1	0	0
	Europe	√	0	0	0	0	0	0
	The Americas	√	0	0	0	1	0	0
	Asia, Middle East and Africa	√	0	1	1	0	0	0

Social continued

GRI ref.	Indicator description	Data assured	2019	2018	2017	2016	2015	2014
	Contractor work-related fatalities: ABB Group	√	1	3	2	5	2	2
	Europe	√	1	0	0	0	0	0
	The Americas	√	0	1	1	0	0	0
	Asia, Middle East and Africa	√	0	2	1	5	2	2
	Contractor business travel fatalities: ABB Group	√	0	0	0	2	0	0
	Europe	√	0	0	0	0	0	0
	The Americas	√	0	0	0	2	0	0
	Asia, Middle East and Africa	√	0	0	0	0	0	0
	Employee total recordable injury rate: ABB Group	√	0.47	0.58	0.73	0.79	0.88	0.10
	Europe	√	0.53	0.66	0.86	0.96	1.02	1.16
	The Americas	√	0.68	0.97	1.17	1.18	1.40	1.57
	Asia, Middle East and Africa	√	0.16	0.19	0.24	0.27	0.31	0.39
	Contractor total recordable injury rate: ABB Group	√	0.456	0.58	0.52	0.70	0.80	0.78
	Europe	√	1.38	1.52	1.38	1.69	1.88	1.97
	The Americas	√	0.42	0.74	0.96	1.47	1.54	1.40
	Asia, Middle East and Africa	√	0.20	0.26	0.24	0.35	0.37	0.35
	Employee lost time injury rate: ABB Group	√	0.23	0.27	0.33	0.30	0.36	0.43
	Europe	√	0.37	0.39	0.48	0.47	0.56	0.66
	The Americas	√	0.20	0.30	0.34	0.29	0.33	0.40
	Asia, Middle East and Africa	√	0.07	0.07	0.09	0.08	0.08	0.12
	Contractor lost time injury rate: ABB Group	√	0.29	0.28	0.24	0.30	0.38	0.47
	Europe	√	1.15	0.91	0.73	0.93	1.03	1.38
	The Americas	√	0.19	0.29	0.35	0.81	0.84	0.86
	Asia, Middle East and Africa	√	0.07	0.08	0.10	0.07	0.12	0.15
	Employee days lost rate: ABB Group		4.26	4.63	5.11	4.78	5.26	5.52
	Europe		5.95	6.19	6.95	5.98	7.32	8.25
	The Americas		4.20	6.46	6.43	7.81	6.02	8.28
	Asia, Middle East and Africa		1.71	1.05	1.49	0.99	1.74	1.72
	Employee occupational health disease rate: ABB Group	√	0.01	0.02	0.02	0.05	0.03	0.01
	Europe	√	0.02	0.04	0.05	0.09	0.06	0.02
	The Americas	√	0.01	0.00	0.00	0.02	0.02	0.03
	Asia, Middle East and Africa	√	0.00	0.01	0.00	0.05	0.00	0.00

Social continued

GRI ref.	Indicator description	Data assured	2019	2018	2017	2016	2015	2014
	SOT rate: ABB Group	√	5.52	1.01	1.27	1.24	0.92	–
	Europe	√	5.34	0.92	0.84	0.76	0.51	–
	The Americas	√	6.14	1.09	1.71	1.87	1.41	–
	Asia, Middle East and Africa	√	5.40	1.10	1.61	1.53	1.17	–
	Hazard rate: ABB Group	√	2.12	2.72	4.08	4.31	3.51	–
	Europe	√	2.04	2.38	3.37	3.65	2.67	–
	The Americas	√	1.61	2.66	4.81	4.78	4.25	–
	Asia, Middle East and Africa	√	2.82	3.28	4.64	5.03	4.19	–
406-1	**Non-discrimination**							
	Total number of incidents of discrimination		8	0	0	0	0	1
	Total number of incidents of harassment		19	25	9	5	8	10
415-1	**Public policy**							
	Financial and in-kind political contributions		$1,260	$11,500	$300	$10,400	$12,600	$13,000
404-1	**Training and education**							
	Training per year per employee (average hours)							
	China		17	16	17	25	22	26
	Finland		12	13	13	15	17	19
	Germany		18	18	18	18	18	18
	India		10	12	5	3	2	12
	Italy		16	16	12	10	12	12
	Mexico		7	134	98	15	16	23
	Poland		10	35	20	12	10	11
	Sweden		12	12	12	10	10	12
	Switzerland		12	14	14	15	14	16
	USA		16	16	24	24	27	32
404-3	**Employees receiving regular performance and career development reviews**[31]							
	Top and senior managers		73%	89%	94%	92%	85%	87%
	Middle and lower managers		89%	93%	96%	94%	90%	91%
	Other employees		89%	91%	91%	91%	87%	88%
	Total workforce		**89%**	**91%**	**91%**	**92%**	**87%**	**88%**

Social continued

GRI ref.	Indicator description	Data assured	2019	2018	2017	2016	2015	2014
405-1	**Diversity and equal opportunity**							
	Composition of governance bodies							
	Board of Directors							
	Women in Board (percentage)		18%	18%	10%	18%	13%	13%
	Age group diversity (percentage)							
	<30 years old		0%	0%	0%	0%	0%	0%
	30–50 years old		9%	18%	0%	0%	0%	0%
	>50 years old		91%	91%	100%	100%	100%	100%
	Number of nationalities		7	7	8	10	8	7
	Executive Committee							
	Women in Executive Committee (percentage)		16%	9%	9%	9%	9%	9%
	Age group diversity total (percentage)							
	<30 years old		0%	0%	0%	0%	0%	0%
	30–50 years old		8%	0%	27%	18%	27%	36%
	>50 years old		92%	100%	73%	82%	73%	64%
	Number of nationalities		8	8	8	7	8	8
	Employees in senior and middle management[32]							
	Women in senior and middle management		18%	17%	16%	18%	17%	15%
	Men in senior and middle management		82%	83%	84%	82%	83%	85%
	Total workforce (ABB employees)							
	Women in total workforce		24%	23%	23%	23%	23%	22%
	Men in total workforce		76%	77%	77%	77%	77%	78%

1 Reporting on lead in submarine cables is discontinued from 2018 due to the divestment of our high-voltage cables and cable accessories businesses in Q1 2017.

2 From 2018 we report all cadmium in batteries in one category. Data from 2013–2017 on cadmium in industrial and rechargeable batteries, respectively, have been summed up and are included here.

3 Data on inflow and outflow of SF_6 insulation gas have been restated for 2017, due to an error in the reporting from one site.

4 Biofuels were reported as a separate category in 2017. Biofuel consumption, total energy used and energy intensity have been restated for 2014–2016, since the use of biofuels was previously not reported at one of our large facilities.

5 Results for these indicators are based on reported data covering 94% of employees in 2018, 93% in 2017, 97% in 2016, 95% in 2015 and 93% in 2014, plus energy use per employee for the remaining employees pro rata. See the Approach to reporting section for more details.

6 Gas and electricity consumption and the associated greenhouse gas (GHG) emissions have been restated for 2014–2017, due to the correction of earlier conversion factor errors at one of our large facilities.

7 Includes sales from Power Grids division.

8 Water withdrawal from areas of water stress have been restated for 2013-2017, due to earlier errors in reporting of water for remediation projects at two sites.

9 See Approach to reporting chapter for more details on GHG emission calculation.

10 In 2019, we updated the factor used to convert SF_6 emissions to CO_2 equivalents to 23,500 kg CO_2e/kg SF_6, as recommended by the IPCC 2013 (Fifth Assessment Report), and we have applied that factor to SF_6 data reported for all years. SF_6 emissions for 2018 were restated from 155 kilotons to 164 kilotons due to a reporting error at a large manufacturing site.

11 For 2018 we use the same data as for 2017. For 2017 data see Approach to reporting; 2014–2016 data was estimated.

12 The air travel indicator included data from ABB Bulgaria, Croatia, Greece, Kazakhstan and Romania for the first time in 2016 and from ABB China and Thomas & Betts for the first time in 2014.

13 Data for air travel is calculated using the emission factors published by the UK Department for Business, Energy & Industrial Strategy in its "2018 Government GHG Conversion Factors for Company Reporting – Methodology Paper for Emission Factors – Final Report."

14 The GHG emissions intensity includes Scope 1&2 emissions. Includes sales from Power Grids.

15 VOC emissions for 2018 were restated from 882 tons to 936 tons due to a reporting error at a large manufacturing site.

16 Emissions of Chlorinated volatile organic compounds (VOC-Cl) are included in the Volatile organic compounds (VOC) reported in the line above.

17 Cooling water quality remains unchanged by its use at ABB and is discharged without treatment. Data for 2016 exceptionally included discharge of cooling water to recipient.

18 Hazardous waste as classified in the country where it is generated.

19 An environmental incident is regarded as significant if at least one of the following criteria applies to the incident: obligation to inform local authorities or a governmental agency about the incident and/or regulatory violation; inspection by an environmental agency results in a formal complaint; environmental Notice of Violation, a Consent Order or a Potential Responsible Party (PRP) notification; imposition of a penalty or fine; significant impact on an ecosystem; costs related to the incident exceed, or may exceed, $10,000.

20 Includes GE Industrial Solutions acquired in 2018.

21 Includes part-time employees. Turnover rate calculated as number of ABB employees (full- and part-time) leaving during the year/total number of ABB employees (full- and part-time) as at December 31, 2020. For the purpose of this calculation, employees and external workforce who leave the organization voluntarily or involuntarily whether due to dismissal, retirement, end of fixed-term contract or death in service or any other reason, are included. However, involuntary turnover arising out of divestments is excluded from the definition.

22 Fatalities include deaths occurring within one year as a result of injuries sustained and commuting is excluded.

23 Incident rates are according to the rate per 100 employees.

24 Data covers incidents that happened at workplace (ABB facility, customer site, project site) and excludes incidents that occurred during business travel.

25 Includes incidents during business travel by road. Air and rail travels are excluded.

26 Recordable incidents include fatal, lost time incidents, serious injury incidents, medical treatment injuries, occupational diseases and restricted work day cases.

27 Rate is calculated per employee.

28 SOT conducted by manager in 2019, in previous years by employees. Sustainability Observation Tour in 2019 and Safety Observation Tour previously.

29 Days lost are calendar days and are counted from the day after the incident.

30 Rate per manager in 2019 and per employee previously.

31 Eligible employees included in ABB HR system. Data covers previous year's cycle with completion by Q1 of the reporting year.

32 This indicator focuses on senior and middle management and includes employees in hay grades 1 to 10.

33 Does not include GE Industrial Solutions acquired in 2018. Total GHG emissions including GE Industrial Solutions was 998 kilotons.

34 Calculated for the first time for 2019.

CONTRIBUTION TO SUSTAINABLE DEVELOPMENT

ABB enables seven of the United Nations' Sustainable Development Goals

The following case studies illustrate just some of the many ways ABB is enabling the global community to meet many of the underlying SDG targets. To read more, visit the online version of this report at www.sustainabilityreport2019.abb.com

Clean water and sanitation
At the ABB Ability™ Collaborative Operations Center in Genoa, Italy, experts are on call 24/7 to provide water utilities with data-driven insights. These insights enable utilities to keep water stress levels as low as possible and to ensure their water facilities are operating in line with all relevant regulatory, load, environmental and cybersecurity requirements.

Affordable and clean energy
The Indian Institute of Technology Madras (IITM) partnered with ABB to develop and pilot a model solar-based village microgrid to generate and augment power availability and resiliency, as well as to conduct joint R&D in the fields of rural electrification, utilization of natural, non-fossil resources, battery energy storage and their connections to loads and the main grid. Thousands of Indian villages are still off the grid and rely on expensive diesel fuel for power; ABB's decentralized microgrids are a viable solution for these communities and can serve as the starting point for additional development activities in villages. This project is a part of ABB's "Access to Energy" community initiative in India.

Decent work and economic growth
ABB is donating software solutions and pulp and paper automation expertise to the Sappi Skills Centre, based in Umkomaas, South Africa, near Sappi's Saiccor Mill – the world's largest single site dedicated to dissolving wood pulp. The donation supports the Skills Centre, which was established by Sappi in 2018 to equip local youth with the basic technical skills needed to prepare them for meaningful employment.

Industry, innovation and infrastructure
ABB is piloting its new ABB Ability™ Data Center Automation solution with a leading colocation data center in Singapore. Designed to help meet the challenges related to the rapid growth of data centers, ABB's new solution makes it possible to view and monitor power, cooling and environmental metrics from data centers, thus enabling the identification of opportunities for improvement.

Sustainable cities and communities
Aiming to achieve the full electrification of its bus fleet by 2030, German public transport operator Hamburger Hochbahn AG has asked ABB to install a turnkey solution that will supply 44 of its high-power 150C chargers for the network. This will allow 44 buses in the fleet, each with a range of up to 150 km under normal conditions, to be charged overnight in the central bus depot.

Responsible consumption and production
ABB is supplying the new voestalpine BÖHLER Edelstahl steel plant in Kapfenberg, Austria, with its ABB ArcSave® electromagnetic stirrer technology. This technology, which will be installed on an energy-efficient 55-ton electric arc furnace, will reduce the environmental impact of the steel manufacturing process by reducing electricity usage, process additions such as alloys and lime and consumables such as electrodes.

Partnerships for the goals
ABB is a founding partner of United for Efficiency (U4E), a public-private multi-stakeholder collaboration partnership led by the United Nations Environment Programme. U4E helps governments develop and implement national and regional strategies for improved energy efficiency, and ABB is sharing its know-how in motors and transformers, policies, regulations and standards, as well as potential applications for the best available technologies.

CONTRIBUTION TO SUSTAINABLE DEVELOPMENT

ABB contributes to 10 of the United Nations' Sustainable Development Goals

The following case studies illustrate just some of the many ways ABB is enabling the global community to meet many of the underlying SDG targets. To read more, visit the online version of this report at www.sustainabilityreport2019.abb.com

No poverty
For more than 20 years, Instituto ABB, a project funded exclusively by our company, has been leveraging the power of education to transform the lives of children in the impoverished neighborhoods near our facilities in São Paulo, Brazil. The project is impactful, as Lucas Azevedo can attest. He was once an underprivileged youth participating in our "Mais Energia" two-year vocational program. Today, he is a proud ABB employee, thanks in part to the hands-on experience the program provided him at ABB facilities, together with technical courses at a renowned educational center located nearby.

Gender equality
Early in the academic careers of young girls, ABB in Switzerland raises their interest in technology by carrying out "Girls Technician Days" and by taking part in the annual national Future Day, which addresses pupils of both genders. In partnership with the Lila Poonawalla Foundation, ABB provides scholarships for talented but financially disadvantaged women to earn undergraduate engineering degrees. The program not only provides financial support, but also skills development training and mentoring to empower the women and build self-confidence and independence. ABB contributes financial resources, mentoring and industrial visits to ABB factories and locations.

Peace, justice and strong institutions
ABB has maintained a decade-long partnership with the International Committee of the Red Cross (ICRC) that was renewed for three years at the end of 2017. Regular exchanges between ABB and ICRC staff have helped identify focus areas to improve ICRC's energy efficiency. We will expand our exchanges to include human resources challenges related to leadership development and diversity and inclusion.

Zero hunger
The Akshaya Patra Foundation's new centralized kitchen in the Mohan Cooperative Industrial Area of New Delhi was inaugurated in 2019. Sponsored by ABB India, the kitchen has the capacity to cater to the nutritional needs of students by serving 25,000 midday meals across various government schools in the surrounding area. Initially it will serve over 21,000 children at 24 government schools in the national capital and will gradually extend its reach.

Good health and well-being
In October 2019, ABB opened its first global healthcare research hub on the Texas Medical Center (TMC) campus, in Houston, Texas. Together with its partners at TMC, ABB will work to develop cutting-edge robotics solutions that will reduce the number of manual procedures performed by medical staff, improve the accuracy of laboratory work and enhance patient satisfaction and ultimately patient safety.

Quality education
ABB started its first youth apprenticeship program in the United States in Fort Smith, Arkansas, in June 2019. In partnership with the University of Arkansas at Fort Smith and the local school district, ABB hosted nine local apprentices as part of its long-term effort to strengthen the area's pipeline of young talent. ABB is keen to continue to promote the benefits of the Swiss-style vocational system for the countries in which it works.

Climate action
The United States has begun its formal withdrawal from the Paris Agreement after stating its intention to do so in 2017. That is why, in December 2019, ABB's CEO Peter Voser added his voice to more than 70 CEOs in the US who came together to call for the country to remain within the landmark climate agreement.

Reduced inequality
Students from the Warsaw University of Technology, with support from ABB, engineered an electric racing car for a 10-year old boy who suffers from muscular dystrophy. This project demonstrated how e-mobility can help us create a more inclusive society. During the project, the students consulted with ABB on how to integrate components in a way that would make them compatible with the ABB Wallbox charger in the future.

Life on land
ABB and Sweden's Stena Recycling have forged a long-term partnership focused on the recycling of old electric motors. While outdated low-voltage motors are responsible for massive energy losses, they also contain large quantities of recyclable valuable metals. When recycled, aluminum, copper and iron deliver energy savings of between 75 and 95 percent, compared to new production of these metals. ABB and Stena will work together to take old motors out of service, recycle them and then replace them with advanced, high-efficiency motors.

Life below water
ABB won a contract from Arctic Offshore Farming to power its first-ever remote-controlled, submersible, offshore salmon farm in the Arctic Ocean. ABB will provide a comprehensive package of its leading electrical, automation, instrumentation and telecom technologies that ensure maximum efficiency and minimal environmental impact. The submerged fish pens are less prone to sea lice, which have been linked to a decline in salmon production in Norway – one of the top salmon exporters in the world.

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