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## SAFE OPERATIONS

# Leveraging clarity of accountability and lessons learned to eliminate incidents

ABB's paramount concern is to provide for the safety and security of its people and its assets

Health and safety is at the center of everything we do. Our first priority is to assure the health and safety of all ABB employees; this priority is embedded into our core values.

A significant area of focus for the company in 2018 was the implementation of the ABB Way. This new HSE/SA global management system is a key element of our sustainability governance framework, and its implementation has enabled us to reduce our more than 300 independently certified HSE/SA management systems down to one standard system for everyone.

**As an investor, we're interested in the connection between a company's sustainability efforts and the health of the business**

Laura Kunkemueller – Mellon  
[ABB Stakeholder Panel](#)

Implementing the ABB Way has 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 our health, environment and security performance standards. In parallel with

this project, we successfully implemented further global applications from our new information systems (IS) platform for HSE/SA management.

Together, the common standards and the IS platform provide the strong foundations for ABB's performance and will support our continued drive towards zero incidents.

Our target for safety and security is to reduce the employee total recordable injury frequency rate (TRIFR) to less than 0.7 by 2020. We performed well in 2018, with our employee TRIFR ending the year at 0.58, down from 0.75 in 2017. This continued progressive improvement to industry standards represents 251 fewer lost time 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, even though the indicators are all positive, ABB also sustained four fatalities in 2018. Under ABB's new, improved common standards for investigations and revised processes for the training and assignment of lead investigators to all levels of incidents, these unfortunate incidents were thoroughly investigated to understand their root causes, take action to mitigate them, and derive all possible lessons learned. For example,







we are now working to improve our initial evaluation processes for contractors and approved service providers; our goal is to maintain high levels of competence among all those engaged to work on ABB's behalf.

ABB's global independent HSE/SA audit and assurance program is also proving to be a valuable means of enhancing the company's knowledge and skills. In 2018, the first full year of this program, we completed nearly 200 individual standardized assurance audits across our businesses and global operations. These audits, which provided excellent opportunities for engagement and learning for local teams, are well received, and all action items are recorded, followed up, and tracked to completion.

Throughout the year, we continued to enhance our global safety programs, including those related to key risks, project safety, contractor management and electrical safety. In these areas, our Center of Expertise was able to gather knowledge from specialists around the world and leverage it to develop solutions and efficiently run our programs. A newly introduced program of particular note in 2018 was the ABB Life-Saving Rules. These issue-based rules complement our existing safety commitment and represent another aspect of our drive to bring clarity, simplicity and enhanced learning to all employees and contractors working on behalf of ABB.

In the coming years, we expect our sharp focus, strong programs and dedicated teams will continue to increase the safety of ABB's operations and reduce the number of incidents across the organization.

## CLIMATE ACTION

# Contributing to climate goals with pioneering technologies

International and national measures to mitigate climate change are essential business drivers for ABB

In partnership with our stakeholders, we are getting closer to achieving each of our climate action goals.

ABB supports the Paris Agreement, which came into force in November 2016, and considers it a critical opportunity to limit global warming and mitigate the potentially devastating consequences of climate change. We are committed to reducing the greenhouse gas (GHG) emissions that stem from our use of fossil energy and transportation and from the handling of sulfur hexafluoride gas (SF<sub>6</sub>).

## Setting a Science-Based Target is an important step for ABB; one that will provide the financial sector with hard data

Eva Axelsson – Swedbank Robur  
ABB Stakeholder Panel

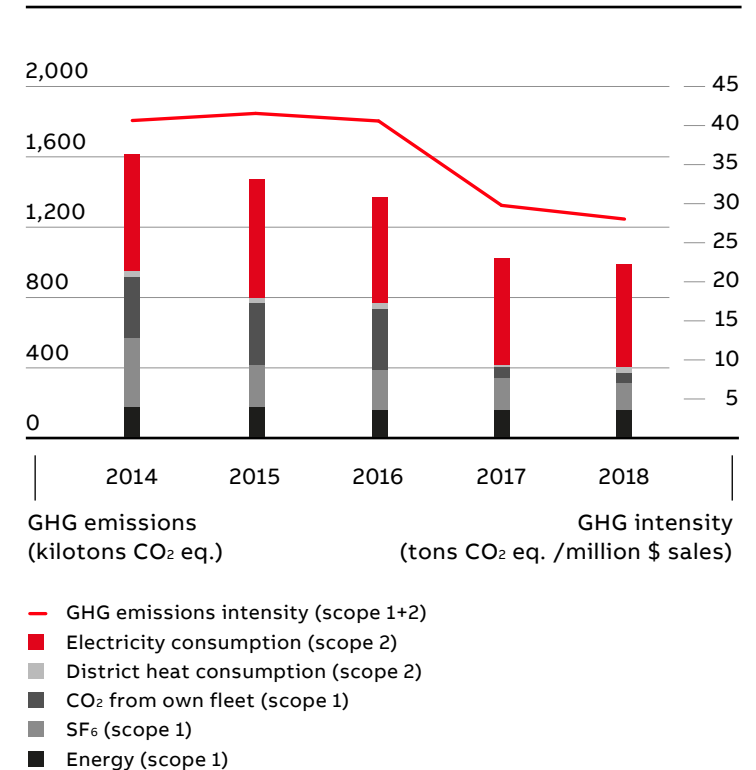
ABB also engages in initiatives and partnerships with businesses, governments and non-governmental organizations around the world to raise awareness of the need to further decarbonize society. Among many others, we are active participants in the United Nations driven “Sustainable Energy for All” initiative, the Alliance of CEO Climate Leaders, and the Science Based Targets (SBT) initiative. 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. Our primary contribution to the mitigation of climate change is via the development of pioneering technologies that enable utilities, industry and customers in transport and infrastructure to improve their performance and energy efficiency while reducing emissions.

ABB’s current target for climate action is to reduce our GHG emissions by 40 percent by 2020 from a 2013 baseline. We performed well against this target in 2018, as ABB’s total GHG emissions (Scope 1 and 2) decreased to 988 kilotons, representing a 3.2 percent reduction from 2017 and a 36 percent reduction from 2013. Our achievements to date are due 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 on in 2017.

All of our organizational units are obliged to assess their respective opportunities to cut emissions and energy consumption. In 2018, we provided the sites with comprehensive guidance and upgraded the quarterly HSE/SA dashboard for management teams across ABB; it now displays a straightforward climate KPI to help drive progress.

**Total greenhouse gas (GHG) emissions (Scope 1 and 2) and GHG intensity**





Emissions of SF<sub>6</sub> gas from our operations continued to decline in 2018, amounting to a nearly 50 percent reduction from 2013. Groupwide measures to improve the handling of SF<sub>6</sub> are serving to reduce accidental leakage, thereby further shrinking our carbon footprint.

We achieved further emissions reductions thanks to initiatives to reduce the carbon intensity of our energy sources. Compared to 2013, we have reduced our use of fossil-fuel oil and diesel by more than 40 percent, while our use of biofuels has nearly doubled and now constitutes a similar share of our energy as fossil-fuel oil and diesel.

In several European countries we purchase all of our electricity from renewable sources. In 2018, 237 GWh, or 15.1 percent, of all electricity used by ABB, was purchased as certified “green” electricity, an increase of 4.5 percentage points over 2017. More of our facilities are also installing on-site photovoltaic power plants; ABB’s production of solar power for its own use nearly doubled in 2018.

At present, the more than 230 energy efficiency projects underway at ABB sites around the world are projected to deliver more than 50 GWh of annual savings, or 2.0 percent of ABB’s total energy use.

We are progressively introducing energy monitoring and management systems at several ABB sites. The number of sites with certified energy management systems has more than doubled over the last two years. For example, in 2018 ABB Finland implemented a certified energy management system and installed ABB Ability cpmPlus Energy Manager software packages at all its sites. The system, which can track the progress of energy initiatives on live dashboards, paid for itself in less than four months by lowering ABB Finland’s energy bills.



Also in 2018, ABB Real Estate’s energy savings program reported a total of US\$6.3 million annual savings from 190 completed, ongoing and planned energy saving projects in ABB buildings. ABB Real Estate’s next step will be to work with our Integrated Facility Management (IFM) suppliers to reduce the consumption of energy at all ABB IFM sites around the world.

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Case study  
**ABB boosts renewables  
and power reliability at  
its own facilities**

[Read more](#)

## RESOURCE EFFICIENCY

# Making our operations smart and sustainable

ABB is progressively reducing the environmental footprint of its sites around the world

In our drive to reduce ABB's environmental impact, we are optimizing our use of resources, minimizing waste from our operations, increasing the share of waste that is reused or recycled, and ensuring that the products we produce and the materials we use comply with our own and our stakeholders' standards.

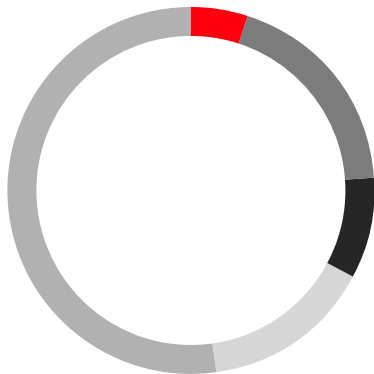
In the area of resource efficiency, we have established two targets. The first target is to reduce absolute water withdrawals by 25 percent from 2013 to 2020 at facilities located in

watersheds with medium to extremely high baseline water stress. Even though most of our manufacturing processes do not consume significant amounts of water, ABB remains committed to reducing the water impacts of its operations. We use the World Resources Institute's Aqueduct global water risk tool to map our facilities and classify them according to the level of baseline water stress of the local watershed. Of the 554 ABB locations mapped in 2018, 73 face an extremely high level of water stress, 109 face a high level, and 94 face a medium-to-high level.

insulation material site in Roigheim, Germany, saved 144 kilotons of freshwater in 2018, 50 percent more than was saved in 2017.

One important water-related initiative in 2018 was to significantly simplify the way we report on ABB's use of water. This change will make it easier to monitor ABB's water use and track our progress against our targets. Another important step was improving the ability of our business lines to track their performance regarding resource efficiency, and our business leaders

## Distribution of water withdrawal in 2018 (2013)

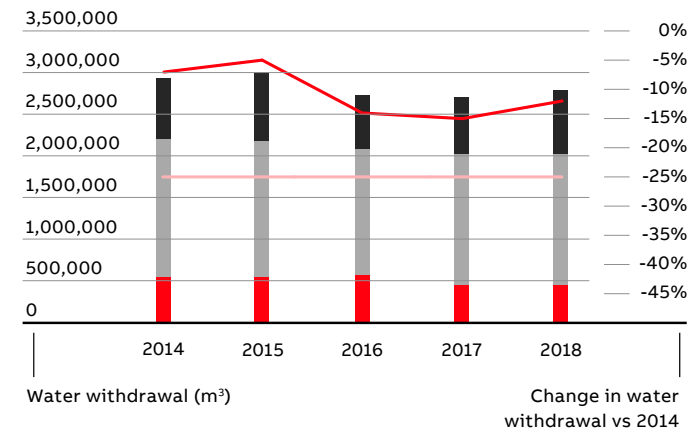


■ Extremely high 5% (5%) ■ Low to medium 15% (21%)  
 ■ High 19% (20%) ■ Low 52% (43%)  
 ■ Medium to high 9% (8%) □ No data 0% (3%)

For all ABB sites in stressed watersheds, total water withdrawals in 2018 were 12 percent lower than the 2013 baseline. The addition of new ABB sites in China and the Middle East contributed to a 3 percent increase to ABB's withdrawals in stressed watersheds compared to 2017. Thanks to structural changes at several ABB sites in Europe, in 2018 ABB's total water use went down by 5 percent, to 8,800 kilotons.

Our primary water-saving practice is the use of closed-loop systems, which saved 75 percent of all industrial water use and 47 percent of all cooling water use at ABB sites worldwide. There are more than 20 ongoing water reduction projects running across ABB in 2018. For example, by improving the closed loop technology for its board and paper machine, ABB's transformer

## Water withdrawal in water-stressed areas 2014–18



— Reduction % ■ Extremely high ■ Medium to high  
 — Target % ■ High

For details see indicator 303-1 on [page 44](#).



have been fully briefed on the reasons why resource efficiency, water management, waste reduction and recycling are important to ABB.

This improvement has significantly increased, at all levels, our business lines' accountability for the environmental impacts of their operations. It has not only contributed to our achievements related to our 2020 water target, but also to our second resource-efficiency target, which is to reduce the share of waste ABB sends to final disposal – both hazardous and non-hazardous – by 20 percent from 2013 to 2020.

In 2018, we reduced the proportion of waste sent to final disposal to 16 percent, compared to 20 percent in 2013. In-house recycling and reuse, mainly of packaging materials and thermoplastics, reduced the amount of waste by 1,800 tons. Compared to 2017, we reduced the amount of hazardous waste ABB sends for final disposal by more than 20 percent to 6,200 tons. More than 90 recycling and waste reduction projects were underway at ABB in 2018.

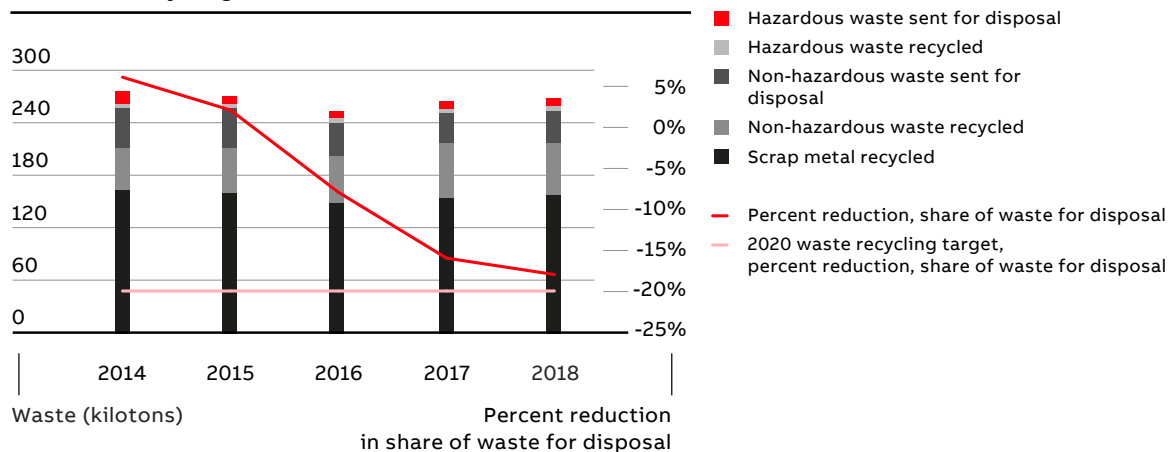
For example, ABB's manufacturing site for solar inverters in Terranuova Bracciolini, Italy, started recycling the metal parts from inverters taken back from customers; this initiative saves roughly 100 tons of metal and more than US\$450,000 every year.

### It is critically important for industry to work toward the creation of a circular economy

Prof. Dr. Volker Hoffmann – ETH Zurich  
ABB Stakeholder Panel

To support the achievement of our waste reduction target in 2018, we shared best practices across ABB and provided further guidance on how to reduce waste generation and increase recycling rates.

#### Waste and recycling



Case study  
**Eliminating waste  
at ABB facilities**

[Read more](#)

## RIGHT MATERIALS

## Eliminating unsafe substances

ABB is phasing out hazardous substances from products and processes wherever possible

To expedite the reduction of hazardous substances in our operations, we have compiled the ABB List of Prohibited and Restricted Substances. This list, which is updated regularly in line with international regulations, applies to all our operations, including sourcing of goods, product development, production processes, products, packaging materials, service activities and construction sites.

As regulatory compliance is also part of ABB's Global Terms and Conditions for suppliers and our Supplier Code of Conduct, we have developed a companion guide to the list to support suppliers'

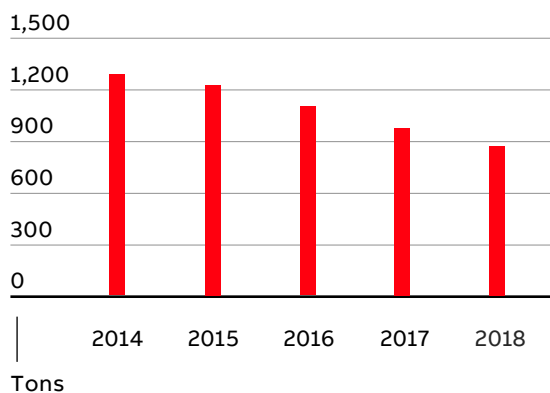
understanding of their obligations. These obligations include their ongoing partnership with us to identify and prevent restricted substances and conflict minerals from entering ABB's supply chain, as outlined in the [ABB Policy on Conflict Minerals](#).

For hazardous substances, our 2020 target is to reduce ABB's emissions of volatile organic compounds (VOCs) by 25 percent from 2013. This target further sharpens our strong focus on reducing the use of substances that are harmful to human health and the environment.

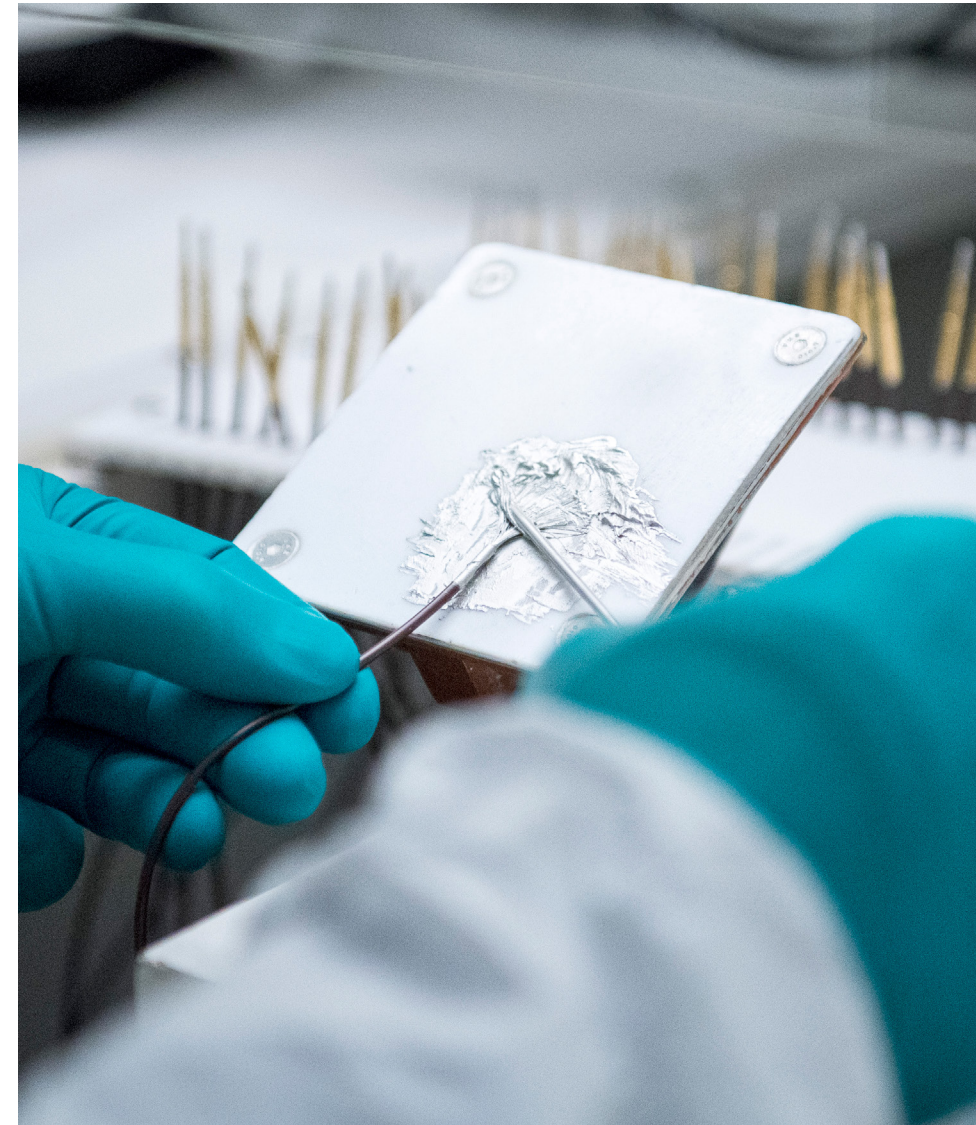
We performed well against our 2020 target over the past year, as our VOC emissions decreased by 11 percent compared to the year before. This means ABB has surpassed the 25 percent reduction target we set for 2020. Since 2013, ABB has reduced its VOC emissions by 27 percent, and we are committed to achieving even greater reductions in the years to come. We achieved this result through measures such as switching to paints and varnishes with less VOCs and the installation of more active carbon filters and other such equipment at our sites.

Since 2015, we have made tremendous progress in our effort to phase hazardous materials out of ABB's production processes. We have reduced our use of chlorinated paraffins by 100 percent, dimethyl phthalate by 100 percent, lead chromate pigments

### Emissions of volatile organic compounds



■ Total volatile organic compounds (tons)





by 87 percent, boric acid by 83 percent, amines by 61 percent, and aluminosilicates by 46 percent. Major initiatives, such as the screening program ABB's Electrification Products division set up in 2018 with its suppliers to monitor and eliminate hazardous substances from components supplied to ABB, are key to our continued success in this important endeavor.

In 2018, we strengthened the cross-functional material compliance team that we formed in 2017 by adding new members to its roster. The team's mission is to facilitate a standardized and systematic approach to the increasingly complex material compliance regulations we face in our global markets, based on best practices. In 2018, the team launched a newly updated material compliance portal to better spotlight business-critical information. The team also conducted the first set of live trainings using a new webinar training package to educate employees on the REACH regulation, RoHS directive and the ABB List of Prohibited and Restricted Substances. Feedback on this webinar, titled "REACH, RoHS and ABB List at a glance," from ABB's business units was positive. The company-wide release of this webinar is part of ABB's HSE/SA business plan for 2019.

Additional initiatives include the introduction of new control standards for R&D and product development, a new approach to supporting supplier communication processes that enable ABB to perform active due diligence, and simplifying reporting processes for hazardous substances and VOCs used in ABB's operation. This last initiative will markedly improve the quality of our reported data.

In 2018, 37 projects were underway to reduce and phase out hazardous substances and VOC emissions. Due to the variety of products and

manufacturing processes across our organization, hazardous substances are generally reduced on a site-by-site basis.

For example, our electric motor factory in Weaverville, North Carolina, USA, redesigned its Sleeveoil bearings offering so they could use tin instead of lead in this product. This step reduced the annual amount of lead ABB sells and distributes around the world by 58 tons, while reducing the amount of lead-bearing hazardous waste at the Weaverville site by 4.5 tons.

Case study  
**Phasing out lead at  
ABB Sweden**

[Read more](#)



## RESPONSIBLE SOURCING

## Forging a sustainable supply chain

ABB's robust policies and procedures ensure we address the social and environmental impacts of our procurement processes

ABB closely monitors the sustainability performance of its suppliers. The Supplier Code of Conduct (SCoC), published in 16 different languages, communicates our expectations and performance standards to existing and potential business partners. It is one of our suppliers' contractual obligations, as part of ABB's general terms and conditions. In 2018, we updated our routine procurement processes to include sustainability parameters at the stage of qualification and performance evaluation.

### True partnerships rely on responsibility, transparency and a "one team approach"

Barbara Myrczek – Fideltronik  
[ABB Stakeholder Panel](#)

We continue to deploy a special intervention, the Supplier Sustainability Development Program (SSDP), to proactively screen and prioritize (using a combination of geographical, category and economic factors) the sustainability risks posed by suppliers, evaluate their adherence to the SCoC, and engage with them where necessary. The SSDP involves supplier trainings, onsite assessments and collaboration with suppliers to find sustainable solutions. The SSDP assesses supplier performance on 42 parameters across

general management, working conditions, safety, environment, and associated local regulatory requirements.

Every year, ABB trains, coaches and assesses hundreds of suppliers on sustainability topics. In a continuous process, old risks are closed and new ones are identified each year. The time required to close these risks typically ranges from eight months to over a year, in the case of complex issues that may require a collaborative effort to resolve. Since 2015, we have identified an average of 760 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 2018, ABB is on track to exceed our target, closing 76 percent of identified risks by Q4 2018, up from 72 percent in 2017. We achieved this strong result by using all of the expertise, knowledge, resources and best practices at our disposal to support our suppliers. For every area of noncompliance identified during our supplier assessments, we launch a major 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 transfer of knowledge and





expertise. In 2018, this proactive approach resulted in a better supplier response and improved performance standards.

Among other key initiatives in 2018, we designed a participatory workshop for ABB suppliers in India, China, Saudi Arabia and Indonesia on the local legal requirements that correspond with ABB's SSDP requirements. We also launched support programs in China, India, Turkey, Bulgaria and Poland to work hand-in-hand with suppliers to find innovative solutions for some of the chronic challenges they face regarding working conditions. On the technical side, an ABB pilot project used a business intelligence tool to reduce the manual intervention in our data reporting processes. We will deploy this tool across ABB in 2019.

During our supplier assessments in 2018, a supplier audit uncovered one instance where a large supplier in Malaysia routinely retained the passports of its migrant workers. When these workers applied for the return of their passports, a third-party employment agency would retain one month's salary until the worker returned to the supplier. Further details on this incident and the corrective measures taken by ABB can be found in the case study featured on page 36 of this report.

In 2018, we assessed 190 suppliers, identifying 676 risks. We mitigated 674 risks during this period. In other activities to support responsible sourcing, we trained 136 ABB employees and 415 suppliers during the year. [Click here](#) to learn more about how ABB defines risk.

Case study  
**Sustainability measures  
improve efficiency**

[Read more](#)

