04
Responsible operations

SAFE OPERATIONS

Uncompromising in pursuit of zero harm

ABB's four Business Areas are committed to reducing lost time injuries to employees and contractors alike

Making ABB a safer place to work is our highest priority. Our goal is that everyone who works at ABB returns home safely every day. Keeping our people safe is not only a moral obligation, it is vital to our long-term success; it underlies our reputation and standing as the right partner for our customers and other stakeholders.

2020 target

In 2020, we exceed our target of reducing ABB's employee total recordable injury frequency rate (TRIFR) to less than 0.7. We ended the year with a TRIFR of 0.31, down from 0.47. I terms of actual injuries, we improved from 744 recordable incidents in 2019 to 410 in 2020.

ABB has built up an extremely robust safety program over the past decade, and our Business Areas have been implementing programs that have proven to be extremely effective in terms of significantly reducing or eliminating conditions that can lead to incidents. For these reasons, we not only achieved our 2020 safety target three years

ahead of schedule, but also consistently reduced ABB's incident rate over the past eight years. Given the strength of our safety program and the depth of our commitment, we believe that it will soon be possible for ABB to record zero incidents every calendar year. Everything we do is calibrated to achieve this uncompromising result.

Regrettably, ABB recorded one employee fatality and one contractor fatality in 2020. Both incidents were comprehensively investigated to understand their root causes, with action taken to mitigate the risk of similar incidents in the future.

It should be noted that the number of recorded incidents in 2020 was almost certainly impacted by the COVID-19 pandemic. Travel restrictions and social distancing requirements meant that far fewer people were on site, limiting the likelihood of injuries. Those who did work at ABB or customer sites had to comply with the more stringent measures and safety precautions that were put in place to prevent people from either contracting or transmitting COVID-19; these measures and precautions also served to limit the possibility of injury.

HSE/SA Management System

In 2020, we focused our efforts on reviewing and streamlining ABB's Health, Safety and Environment (HSE) and Security policies, requirements and guidance. Over the year, we worked to simplify the standards within this set of documents – referred to internally as the The ABB Way for HSE and Security Management System – so that they could be quickly and easily consulted by our employees and contractors.

At the end of our revision process, we had produced a complete set of clear and simple one- and two-page documents detailing the mandatory HSE requirements for all of our Business Areas around the world, which came into force on January 1, 2021. These requirements will be distributed in 2021 together with a guide to their implementation.

Additionally, in 2020 the different standards of the HSE/SA Management System that comply with the requirements of the ISO 14001 and 45001 standards were translated into 17 languages; this will facilitate the interpretation and implementation of these standards by ABB staff around the world.

HSE/SA Management Information System

In 2020, we continued to introduce new mobile and desktop applications for our single Management Information System (MIS) for ABB's health, safety, environment and security function and for its Sustainability function. Accessible around the globe, the MIS can be used by ABB employees and contractors to report information and assign actions related to these functions. This streamlines reporting and enables us to view data on the MIS in charts, graphs and other formats so that we can better analyze risks and trends before taking remedial actions.

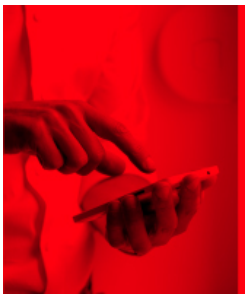
We also launched a new app for incident reporting and management at the beginning of 2020. Available to all ABB employees around the globe, it enables our people to more comprehensively file reports on health and safety, environmental and security incidents. Reported incidents are then verified and classified by an ABB HSE/SA professional and, depending on their severity, investigated.

These apps significantly improve our incident reporting and management process by helping us to better identify underlying causes of incidents, learn from them, and take action to eliminate them. By investigating all errors that contribute to an incident, we can understand, support and educate persons involved in incidents where human error is identified as one of the contributing factors.

Creating a positive HSE & Security and Sustainability culture in ABB

90
Countries

290,000
Hazards reported



14%
Hazards reported via mobile app

All Divisions
Used the MIS

80,000+
Employees used the MIS

75,000
Sustainability Observation Tours conducted by Managers

17,000+
Actions created

83%
Actions completed

76%
Hazards closed upon reporting

Overall, our single MIS system continues to be a huge success; in 2020, its apps were used by more than 80,000 people in all four Business Areas in every country where we operate.

Electrical safety

In 2020, our Global Electrical Safety Program (GESP) continued to deliver exceptional results. Since its inception in 2015, we have reduced the total recordable electrical injuries by 87 percent. Over the same five-year period, we have also reduced the number of serious electrical incidents by 85 percent.

Electrical safety incidents are in our top three of causes of serious incidents and a reminder of the high consequence danger our personnel face when working with electricity on a daily basis. In response to a rise in the total number of electrical incidents last year, we took action by implementing the final stage of a core part of our GESP, called the Electrical Competency Authorization Program (ECAP). This program includes a formal

assessment of an employee's technical competence, which considers their electrical education, training, experience and qualifications as set forth on their pre-assessment CV. When evaluating employees, our ECAP assessors conduct one-on-one interviews before making a recommendation to the respective local responsible manager. The manager then provides written authorization to certify that the employee can carry out work activities involving electrical risk at one of four defined levels of electrical competence (Level 1, Electrical Trainee; Level 2, Electrically Competent Person; Level 3, Electrically Authorized Person; and Level 4, Senior Authorized Person).

While ECAP serves to prevent personnel from being exposed to electrical risks beyond their capacity, it also permits ABB employees to advance from level to level based on subsequent experiences, courses, trainings, and qualifications. We firmly believe that the ECAP is an industry-best practice that will eventually enable us to eliminate electrical incidents at ABB.

Assurance & risk

Because the COVID-19 safety restrictions prevented most of our on-site visits in 2020, we were only able to conduct 41 confirmed audits – substantially fewer than the 180 audits we performed in the previous year. Nevertheless, we identified 169 incidences of non-conformance reporting (NCR), 205 opportunities for improvement and 69 good practices. In 2020, our on-time closure rate for NCRs was 97 percent. Since the training of our auditors is conducted in classrooms, not remotely, we were only able to train 33 persons in this discipline over the past year, down from 130 last year.

In 2020, our four Business Areas began the process of conducting detailed audits of their own operations. In all, they performed around 1,899 "self-assessments" over 383 separate programs.

Regarding risk, we have launched the Activity Based Risk Assessment (ABRA) course, process and module in MIS. This process unifies and improves the way in which we identify, classify and control operational risks from our activities. So far we have remotely trained 85 people, with 33 passing the course; 190 more colleagues are scheduled to take the course in the first few months of 2021.

Training and competence programs

Due to the COVID-19 pandemic and internal restructuring, it was not possible to run our corporate HSE/SA training and competence programs to the extent we had originally planned. To address this challenge, we began to adapt, pilot and deliver our existing programs virtually to priority target groups.

These actions brought us faster to our long-term goal to shift from face-to-face to more hybrid and virtual training and competence programs. In 2020, we mainly focused on virtually delivering our resilience and incident investigation programs, as well as the Actions-based Risk Assessment Training and Safety Master Class. For our new virtual resilience program, we trained nearly 50 trainers in 2020. In addition, more than 100 managers had joined a virtual Safety Master Class by the end of 2020, while the global community of Safety Master Class trainers successfully participated in virtual train-the-trainer sessions.

Lessons learned

During the 2020 sustainability reporting cycle, we learned the value of setting an extremely aggressive target for safety. Our aggressive target, in combination with our clearly stated goal for there to be zero incidents at ABB, raised the bar for all employees. This enabled us to achieve our target in advance and, ultimately, to exceed our target.

Another lesson we learned during the previous cycle was related to business continuity. During the process of managing ABB's response to the COVID-19 pandemic, we realized that ABB's decentralized divisions must collaborate at the country level to ensure a unified and consistent approach to the health and safety of all ABB employees. We are confident that the lessons we learned over the course of 2020 will serve us well in the years to come.

Finally, in 2020 we learned the true value of sharing best safety practices from one business to another. The ABB Business Areas that were first affected by COVID-19, such as our operations in China, were able to advise our operations in other countries on best practices for protecting our people and ensuring business continuity during lockdowns. This greatly reduced the time they needed to develop new health and safety measures in response to the pandemic.

CLIMATE ACTION

Cutting emissions across our value chain

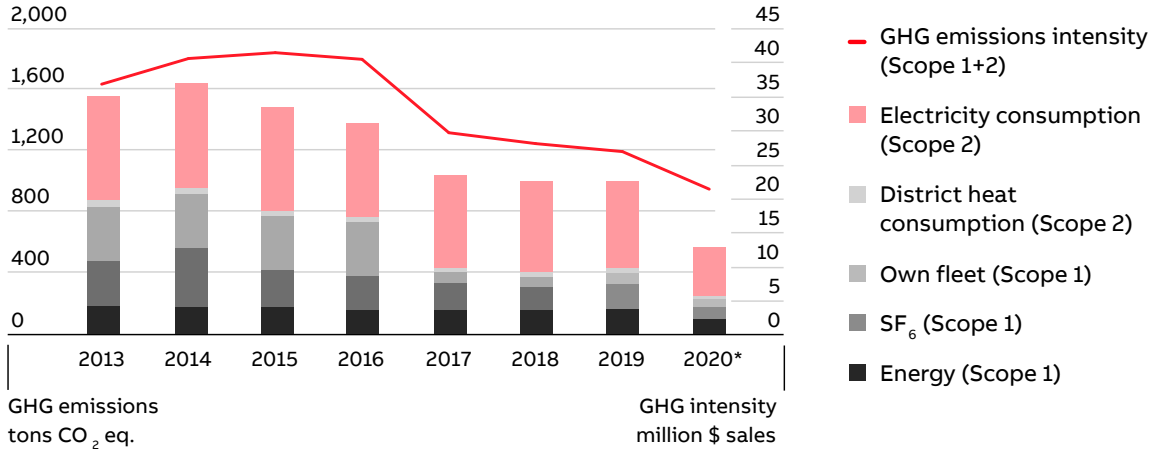
Over the past seven years, ABB has focused on reducing its carbon footprint

Our work to reduce ABB's carbon footprint during the current reporting cycle has been highly successful. This achievement forms the foundation for our ongoing ambition to make even greater contributions to the global effort to realize the climate goals enshrined in the Paris Agreement, which is fundamental to limiting global warming. That is why, despite achieving our climate action target a year ahead of schedule, in 2020 we pushed to achieve further reductions in greenhouse gas (GHG) emissions in ABB's operations.

Target status

ABB's 2020 target for climate action was to reduce its GHG emissions by 40 percent from a 2013 baseline. In 2020, ABB's total GHG emissions (Scope 1 and 2) amounted to 561 kilotons. To measure our progress, we have re-baselined our target by removing the contribution from our divested Power Grids business to the 2013 baseline. We have also excluded the emissions of the 39 new sites added in 2019, for which no 2013 baseline data exists. This shows we have achieved a 58 percent reduction from 2013. Our progress to date is mainly attributable to an increased proportion of green electricity (+27 percent since 2019) and improved methodology for monitoring emissions from our vehicle fleet.

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



* PG not included for 2020

While it is critical to continue reducing ABB's own GHG emissions, our leading technologies represent ABB's main contribution to the global effort to mitigate climate change. Many of ABB's products, services and solutions 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.

Minimizing our own carbon footprint

Within our own operations, our focus over the past seven years has primarily been on reducing GHG emissions from fossil energy and transportation, as well as from the handling of sulfur hexafluoride gas (SF_6). In addition to these efforts, in 2020 all of our Business Areas and divisions worked to assess potential measures to cut their emissions in preparation for the ambitious new GHG targets in ABB's 2030 sustainability strategy. A corporate-led climate-change program supported these assessments in 2020; during this time we built and sometimes transferred expertise to the divisions because, in line with ABB's new operating model, our divisions are now fully accountable for their own GHG

performance. The seminars and focused discussions we held with our 20 divisions were notably granular, addressing specific issues at our most important sites and suggesting potential improvement strategies.

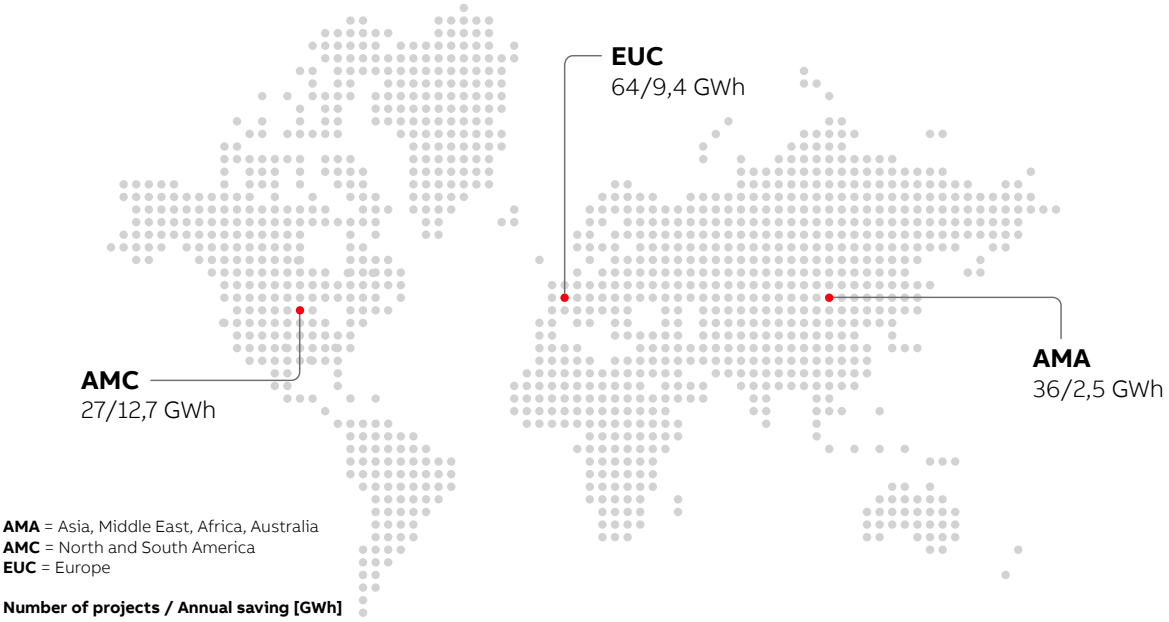
In several European countries, all of our electricity is supplied from renewable sources. In 2020, 320 GWh, or 32 percent, of all the electricity used by ABB, was either purchased as certified green electricity or generated by our own solar power plants. These results represent an increase of 9 percentage points from 2019.

In 2019, our Motion Business Area launched a program to ensure it buys 100 percent green electricity well before 2025. In 2020, Motion made significant progress towards its goal, working to procure 100 percent green electricity for its production facilities in Finland and for all of its operations in Estonia and Switzerland. Through this effort and the continuous improvement of energy efficiency at its facilities, Motion slashed its GHG emissions by 64 percent from its 2013 baseline.

We continue to install on-site photovoltaic (PV) power plants at our facilities. As a result of our progress this year, ABB's production of solar power for its own use increased by 36 percent in 2020. For example, Motion's variable speed drives factory in Beijing is now listed as a national "green factory" by China's Ministry of Industry and Information Technology. This listing recognizes ABB's commitment to sustainability through the use of innovative processes to achieve low-carbon, energy-efficient manufacturing. The solar PV system on the factory's roof generated more than 94 megawatt-hours in 2020. ABB's own drives and high efficiency motors are also incorporated into the site's heating, ventilation and air conditioning (HVAC) system, constant pressure water supply system and air compressors, reducing power usage by at least 50 percent. Waste heat from the motor test room is used to heat the factory in winter.

At present, there are more than 120 energy-efficiency projects underway at ABB sites around the world. We anticipate that these projects will reduce our annual energy consumption by more than 24 GWh, saving more than $3.5 million in energy costs each year.

Projects underway to increase energy efficiency

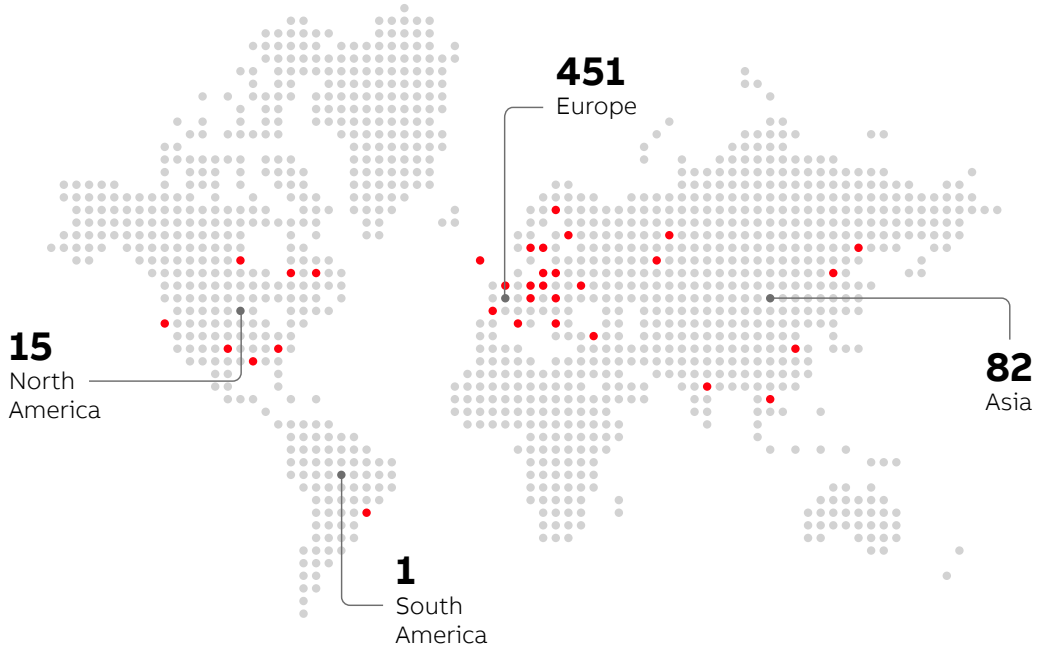


AMA = Asia, Middle East, Africa, Australia
AMC = North and South America
EUC = Europe

Number of projects / Annual saving [GWh]

We continue to install EV-charging infrastructure at our sites. In 2020, the number of ABB sites equipped with EV-charging infrastructure increased to 24 percent, up from 17 percent in 2019. Out of 487 ABB sites in 39 countries, 115 sites in 25 countries are equipped with at least one EV-charging station; a total of 545 EV chargers have been installed to date. These figures include our work to prepare for the launch of ABB's new e-fleet program, which will gradually introduce fully electric vehicles for our sales fleet and as benefit vehicles. This program will be kicked off in Germany in the first half of 2021.

Number of EV chargers at ABB sites



Also in 2020, the ABB Real Estate function's energy savings program reaped a total of $8.1 million in savings between 2018 and 2020 from 174 completed, ongoing and planned energy-saving projects in ABB buildings; these projects enable us to cut our greenhouse gas emissions by 19.5 kilotons per year.

ABB Real Estate also works with our integrated facility management (IFM) suppliers to reduce the consumption of energy at all ABB IFM sites around the world. In 2020, we introduced an effective new tool called Rapid Energy Review, which enables us to quickly identify opportunities to save energy at ABB sites. With the help of energy specialists from our ABB IFM suppliers, we can then implement measures that are customized to each ABB site. Through this new, targeted approach we can reduce on-site energy consumption by as much as 5 percent. The energy-saving measures we take typically pay for themselves in one year or less. They also qualify us to receive an ISO 50001 company-level certification, which is awarded to companies that deploy an energy management system for the primary purpose of using energy more efficiently.

Our strong focus on climate change and on reducing our customers' GHG emissions is reflected in the steadily improving scores we have received from the Carbon Disclosure Project. In prior years, ABB consistently received a grade of "C," before receiving a "B" in 2019. We are very proud that in 2020 our focus and dedication was recognized with an "A-."

Reducing the impact of our supply chain

This past year, for the first time, we conducted an evaluation of all relevant categories of Scope 3 emissions.

Since our last sustainability reporting cycle began in 2013, we have increasingly engaged with our suppliers on sustainability performance. In 2019, our expanded assessment of emissions in our supply chain showed that our upstream Scope 3 emissions are roughly six times larger than our own Scope 1 and Scope 2 emissions, offering a clear opportunity for emission reductions.

Accordingly, we took action in 2020 to help our suppliers reduce the climate impact of their operations. The Supplier Sustainability Rating program, created by ABB's Smart Power (ELSP) division in 2019, is a good example of our proactive approach to cutting ABB's upstream Scope 3 emissions and should have an impact from 2021. Aimed at improving the carbon footprint of ELSP's suppliers and turning their attention to circular economy principles, this program – among other, similar division-led initiatives – enabled us to have more substantive conversations with our high-impact suppliers on climate action and related topics.

Engaging customers on climate change

Our comprehensive Scope 3 assessments also clearly show that the use of sold products (category 11) represents the category that has by far the most impact on our total Scope 3 emissions. This highlights the importance to systematically engage and cooperate with

our customers on the topic of climate change. Every day, we work to show them how our technologies can reduce their GHG emissions and energy costs. Many of our customers have a larger impact on the environment than we do, and our technologies can help them achieve their environmental goals. In particular, ABB specializes in providing technologies that enable utilities, industry and transport & infrastructure customers to deploy clean energy and improve energy efficiency while extending the lifecycles of their equipment and reducing waste. Our leading technologies are the reason why our four Business Areas are partners of choice for the efficient electrification of consumption points, robotics, intelligent motion solutions and process automation.

CASE STUDY

Plan pays off for ABB factory with 30 percent energy savings

At Frosinone, a global production hub for ABB's low-voltage circuit breaker technologies, we are using a combination of digital energy management systems and renewable energy to achieve cost savings and reduce the site's carbon footprint. Because the technologies it manufactures help customers save energy, we decided that its production processes should also be as sustainable as possible. The ultimate goal of our project there is to enable Frosinone to operate as a resilient, autonomous microgrid.

The facility, which produces around 3 million units a year, is a Lighthouse Plant, selected by the Italian government as a model for digital transformation and Industry 4.0 strategies.

To make the site more sustainable, our first step was to upgrade its switchgear. By using a low-impact system architecture, the Frosinone team was able to retain 100 percent of the site's existing patchwork of different breakers and switchgear assets with zero interruption to production during the installation work.

With the electrical network connected to an ABB Ability™ Electrical Distribution Control System (EDCS), the system was able to monitor more than 120 electrical distribution points at the Frosinone facility. Insights from this EDCS have enabled the team to not only identify hidden drains on the site's energy but also to calculate the payback period for any investment in new equipment. Targeted updates to the HVAC equipment, data-driven

temperature management and technology upgrades to the site's lighting are predicted to improve energy efficiency by around 30 percent. With annual power consumption of 9,000 MWh and an energy bill in the region of €1.2 million, the savings will be significant.

This approach can work for any commercial facility, keeping older hardware in service and using the EDCS to identify energy savings that are easy to implement and good for the bottom line. The system also makes integration of renewable sources simpler.

To demonstrate this point, in 2021 the factory will integrate renewable energy sources and storage systems. With the upgrades to the switchgear and the EDCS driving its energy management, the site will be ready to operate as a fully autonomous microgrid.

Read more:
Plan pays off for ABB factory with 30 percent energy savings

Lessons learned

In our previous sustainability reporting cycle, which began in 2013, we set a single "energy efficiency target", which combined energy and emissions reductions as well as cost savings. Later, we revised this target to focus on greenhouse gas emissions only to be more in line with stakeholder expectations.

ABB has long been recognized for its leading technologies that help to reduce energy consumption and emissions of industries, transport and infrastructure. Our stakeholders appreciate that sustainability is a key part of our company Purpose and the value that we create.

By setting targets in line with our Purpose, we balance the needs of society, the environment and the economy, leading to a healthier and more prosperous future.

RESOURCE EFFICIENCY

Steadily reducing our environmental footprint

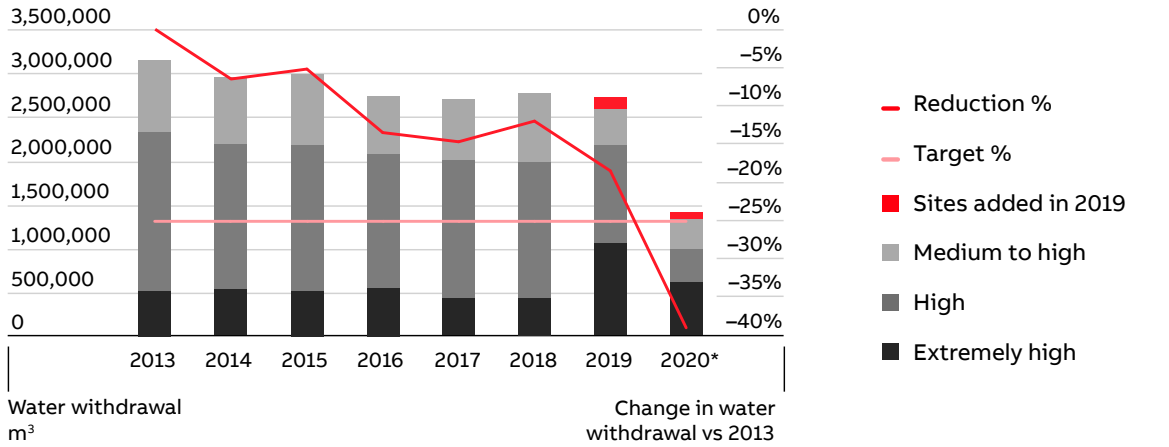
ABB is making a concerted effort to use natural resources more efficiently

Since 2010, we have launched a large number of waste reduction and recycling programs at our sites around the world. These initiatives are steadily reducing ABB's impact on the environment and, as an added benefit, are delivering cost savings to our Business Areas.

2020 targets

In the area of resource efficiency, we effectively met the two targets we established for 2020. The first target was 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 know that clean water is an increasingly scarce resource. As such, we keep a close eye on how water is managed across ABB's operations.

Water withdrawal in water-stressed areas

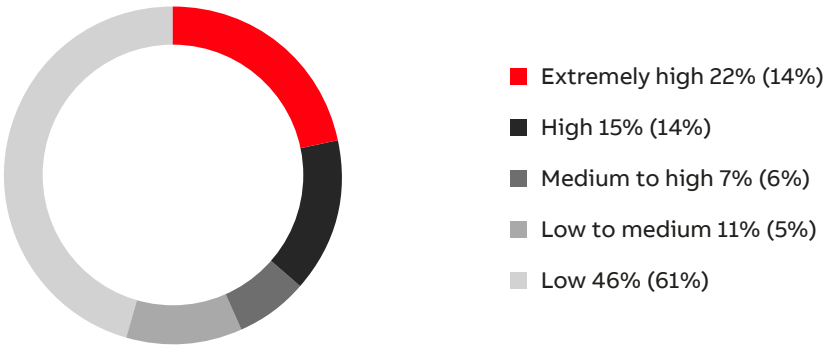


* PG not included for 2020

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 446 ABB locations mapped in 2020, 59 face an extremely high level of water stress, 76 face a high level, and 61 face a medium-to-high level. The tool not only helps us assess water stress at our sites, but also the levels of groundwater depletion, flood risk and seasonal variability of water availability at our sites; this data is extremely useful for our work in managing water risk.

For all ABB sites in stressed watersheds, total water withdrawals in 2020 amounted to 1,178 kilotons, representing an 18 percent reduction from 2019 and a 39 percent reduction from 2013, in both cases excluding the impact of the Power Grids divestment and of new sites added in 2019, for which no 2013 baseline data exists.[1]

Distribution of water withdrawal 2020 (2019)

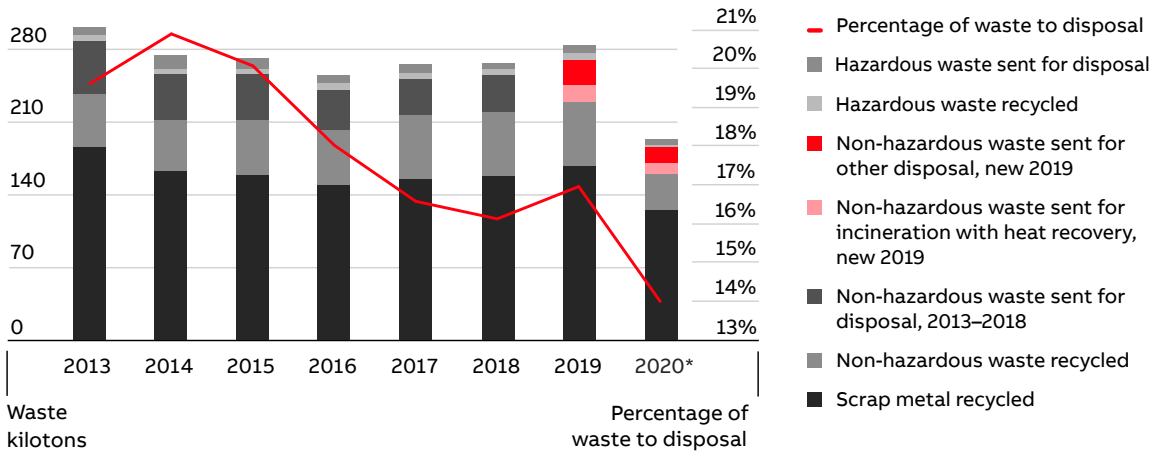


1 Total water withdrawals in stressed watersheds, for all ABB sites, was 1,273 kilotons; total water withdrawals for all ABB sites except for the 39 new sites added in 2019, for which no 2013 baseline data exist, was 1,178 kilotons. The latter number is used to calculate our progress versus our target.

The divestment of Power Grids reduced ABB's total water use in 2019 by 58 percent. In 2020, ABB's water use went down by an additional 12 percent, to 3,224 kilotons. Closed-loop processes and other projects to recycle or reuse water comprise our primary water-saving practices; in 2020, such processes and projects saved 30 percent of all industrial water use and 53 percent of all cooling water use at ABB sites worldwide. There are 25 projects running to improve water management across ABB, with expected annual savings of 24 kilotons, or 0.75 percent of all the water we use. As an example of the type of projects we implement, consider the work we did over the past year at our site in Bad Berleberg, Germany. Because the site is located in an area of high water stress, we installed a closed loop system for its cooling water. This system, which is expected to reduce the site's freshwater use by roughly 65 percent compared to a 2019 baseline, has already reduced the site's water consumption by 20 percent since becoming operational.

Our second resource-efficiency target was to reduce the share of waste ABB sends to final disposal – both hazardous and non-hazardous – by 20 percent from 2013 to 2020.

Waste and recycling



* PG not included for 2020

In 2020, the divestment of Power Grids changed the waste generating and waste recycling structure of ABB. Back in 2013, the share of waste sent to final disposal by the Business Areas that presently remain in ABB was already lower than the 20 percent target we set for ourselves at that time. From that level, we have reduced the share of waste we send to final disposal by another 3 percent. The share is now down to 14 percent.

In 2020, ABB reduced the amount of total waste it generates by 25 percent and reduced its disposed waste by 27 percent compared to 2013.[2] Over the past year, in-house recycling and reuse, mainly of packaging materials and thermoplastics, reduced the amount of waste ABB generates by 1,700 tons.

2 We have re-baselined our waste data and removed the contributions of Power Grids to the 2013 baseline. This includes all ABB sites except for the 39 new sites we added in 2019, for which no 2013 baseline data exists.

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 that year was subject to incineration with energy recovery (i.e., the conversion of non-recyclable waste materials into usable heat, electricity or fuel through a variety of processes).In 2020, this share was 38 percent.[3]

Major initiatives in 2020

We implemented more than 60 recycling and waste reduction projects in 2020. These projects trimmed the amount of waste we generate each year by nearly 400 tons, while delivering annual savings of some $260,000. More than 80 percent of these projects have a payback period of less than two years.

To illustrate the type of projects we favor, consider our site in Westville, Oklahoma, USA, where ABB's Motion Business Area manufactures AC and DC industrial electric motors. There, we adopted the practice of mixing paint directly at the paint booth, instead of pumping it across the factory from the storage facility. This adjustment, which reduced the site's paint waste by more than 15 tons and delivered over $40,000 in annual savings, also reduced the amount of paint thinner used for viscosity adjustments and cleaning.

Another example of how we work to reduce waste comes from ABB Electrification's Protection and Connection site in Vaasa, Finland. There, we have started to dismantle faulty or otherwise returned products and parts. We reuse the copper we recover, together with select parts, and send the remainder for recycling. This new process saves $55,000 per year. Also in Finland, our MOMG Espoo subsidiary purchased a second-hand cardboard shredder so it could reuse received packaging as padding for outgoing packages. The shredder, which cost $1,700, will pay for itself in less than one year.

In a particularly interesting example of how waste can be reduced even through the simplest of measures, one of ABB's large office buildings in Baden, Switzerland, stopped using disposable cups. Previously, the 800 employees at the building used some 1 million disposable cups per year. By ending this wasteful practice, the building significantly reduced the amount of plastic garbage it generated, while saving $61,000 per year. With the help of strong change ambassadors, the building's management team was able to effect a major change in the habits of the people working there.

Steel, copper, aluminum, oil and plastics make up the majority of the raw materials used in our products. Most of these materials are reclaimable at the end of a product's life, and ABB deliberately designs its products to be recycled; almost all of our products come with recycling instructions and can be easily dismantled.

3 The new definitions for reporting the disposal of non-hazardous waste, revealed a difference in how our sites around the world have reported 'non-hazardous waste sent for incineration with energy recovery' in the past. Our analysis shows that in 2018, roughly 75 percent was reported as disposed and roughly 25 percent as recycled.

Across ABB, we have also taken steps to implement the principles of the circular economy to reduce waste. To drive this process further, in 2020, ABB joined the Ellen MacArthur Foundation, whose mission is to accelerate the transition to a circular economy.

A product sustainability competence team was formed in Dalmine, Italy, in 2020; the team will provide ABB's Distribution Solutions business with assessments of the impact of its products' lifecycles.

CASE STUDY

ABB makes manufacturing more sustainable by recycling and remanufacturing thousands of old robots

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Over the last 25 years, ABB's remanufactured robot teams have given new life to thousands of robots. These previously owned robots, along with peripheral equipment such as controllers and manipulators, are refurbished to "like-new" conditions at one of ABB's Global Remanufacture & Workshop Repair Centers.

Through these efforts, as of 2020, we have one of the largest inventories of pre-owned and reconditioned robots across the world, with 400 robots of various types in stock for sale. Currently the demand for refurbished robots is so high that we have more than one robot leaving our Ostrava facility (in the Czech Republic) every working day.

We support sustainability solutions throughout the robot lifecycle, whether through digital tools that improve quality or reduce waste in a process, to extending the service of old robots through remanufacturing and upgrading. Our network of global remanufacturing centers upgrades old robots, so they don't have to be scrapped, as part of our long-term commitment to create more sustainable manufacturing across the world.

This involves not only fixing faulty parts, but also completely remanufacturing robots using original ABB design plans, specifications and dimensional data. This guarantees that the robots offer the same levels of quality, performance, durability and safety as a new ABB robot.

Before being labelled as an ABB-certified remanufactured robot, every second-hand unit undergoes rigorous checks, including a detailed inspection and a minimum 16-hour

functioning test. Each remanufactured robot comes with a two-year warranty, and buyers of refurbished equipment enjoy the same level of support from local service teams, including installation and training, as they would with the purchase of a new ABB robot.

Each remanufactured robot can also be upgraded to the latest controller, which unlocks new functionalities such as ABB Ability™ Connected services or the latest version of RobotStudio®, ABB's simulation and offline programming software. Upgrades can also unlock the potential of collaborative robotics, with ABB's SafeMove software providing businesses with the opportunity to enable robots to work alongside operators without the need for extensive guarding, which helps to cut both the cost of an installation and the overall footprint, ideal for locations where space is at a premium.

Customers across the world are benefiting from giving old robots a new lease of life. Updating their robots with the latest technologies has helped boost flexibility and productivity, and by extending the lifetime of their robots, has helped maximize their return on investment. We've also helped our robot customers who wanted to add additional robots to their existing production line but found that the specific model they needed had been discontinued. By sourcing and installing a remanufactured model, we helped their businesses continue to benefit from long-term efficiencies in maintenance, spare parts and staff training.

ABB's network of global remanufacturing facilities includes centers in Ostrava in the Czech Republic, Auburn Hills in Michigan and Shanghai in China, as well as local remanufacturing service centers in Brazil, Mexico, Germany and Vietnam.

Lessons learned

During the sustainability cycle ending in 2020, we learned the value of setting targets that can be easily understood. Our targets, to take less water from stressed watersheds and to generate less waste, were concrete and measurable. It was not difficult to convince our people of the importance of these targets, and thus our water and waste recycling programs were readily accepted and implemented. As with our GHG emissions reduction target, our waste and water targets generated pride across ABB. They confirmed our people's belief that the work they do is geared towards building a sustainable future for future generations. We realized that our environmental targets serve, in fact, to back up our company's claims with hard numbers regarding our own performance improvements in key areas over time. In a sense, our environmental targets contributed to the formation of an implicit purpose for our company. We are thus pleased to see that ABB's environmental contributions have been incorporated into our company's new Purpose statement.

Finally, we learned that our work to use resources efficiently was not only a risk mitigation strategy, but also a significant business opportunity. This important lesson will translate well into our new sustainability strategy.

RIGHT MATERIALS

Eliminating unsafe materials from our operations

ABB continues to remove hazardous substances from its products, processes and supply chain

We rely on the **ABB List of Prohibited and Restricted Substances** to guide the process of reducing and, where possible, eliminating hazardous materials. This list applies to all our operations, including procurement, product development, production processes, products, packaging materials, service activities and construction sites, and is updated twice per year in keeping with international regulations, in particular the EU REACH regulation.

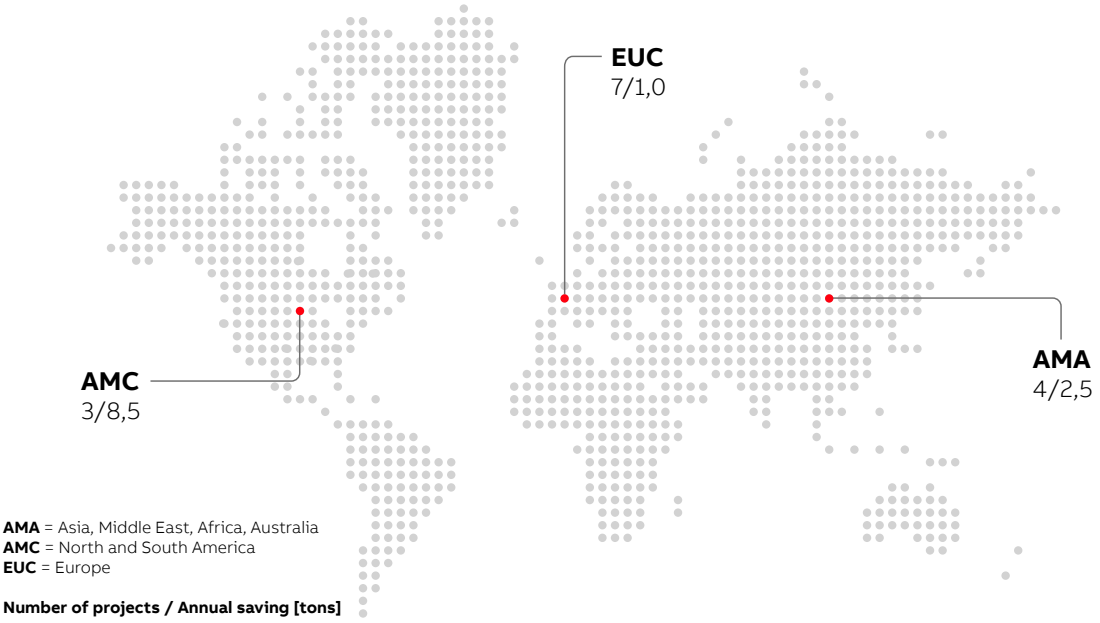
ABB's General Terms and Conditions for suppliers and our **Supplier Code of Conduct** cover prohibited and restricted substances in the context of regulatory compliance. To help suppliers meet their obligations – which include partnering with us to identify restricted substances and conflict minerals and prevent them from entering ABB's supply chain – we have developed a **companion guide** to the above-mentioned list.

Our 2020 target for hazardous substances was to reduce ABB's emissions of volatile organic compounds (VOCs) by 25 percent from 2013 levels. Since 2013, ABB has reduced its VOC emissions by 29 percent by using low-VOC paints and varnishes and installing active carbon filters and other equipment at our production sites[4].

In 2020, 14 new projects got underway to reduce and phase out hazardous substances and VOC emissions. Due to the variety and specialized nature of our Group's products and processes, the reduction of hazardous substance is typically handled on a site-by-site basis.

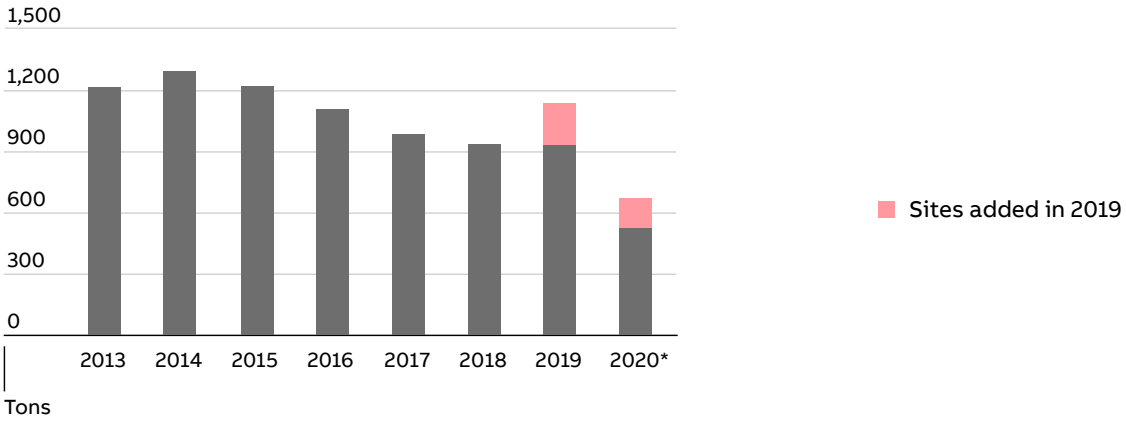
4 We have re-baselined our VOC data and removed the contribution of Power Grids to our 2013 baseline. The baseline includes all ABB sites except for the 39 new sites we added in 2019; no 2013 baseline data exists for these new sites.

Projects underway to reduce and phase out hazardous substances and VOC emissions



Among the major initiatives underlying these achievements was a screening program that our Electrification Business Area developed with its suppliers. The program monitors and eliminates hazardous substances from components supplied to ABB. In 2020, this program gathered data on more than 275,000 product components and worked with more than 8,500 active suppliers to satisfy our mutual obligations under the European Union's REACH and RoHS regulations.

Emissions of volatile organic compounds (VOC)



* PG not included for 2020

The dedicated, corporate-led Product Stewardship & Material Compliance program we created in 2019 continued to deliver results in 2020. The program worked closely with our four Business Areas and 20 divisions to provide expert support on the increasingly

challenging regulations and standards for chemical substances used in products and industrial operations. It also coordinated our cross-functional material compliance team and our material compliance network to help ABB comply with EU requirements regarding those chemicals and products listed in the Substances of Concern in Products (SCIP) database. This support included providing guidance to ABB's Business Areas, sites and R&D to minimize the environmental impact of our products and our production facilities.

This support helped our Business Areas assume full ownership of their respective product material compliance duties while maintaining effective, cross-Business Area collaboration. In 2020, we assigned and transferred dedicated specialists to work directly within the structures of our four Business Areas and our 20 divisions. From this new vantage point, our specialists are at once closer both to ABB's customers and to its suppliers.

CASE STUDY

Reducing VOC emissions

A decade ago, ABB took strong measures to check its emissions of volatile organic compounds (VOCs). We are now working to tie up the loose ends by implementing measures at those sites that still emit VOCs and do not yet meet ABB's high expectations.

To this end, our NEMA Motors Division is working to reduce VOC emissions from painting operations at five of its U.S. manufacturing facilities. ABB is the largest manufacturer of industrial electric motors in the United States.

While our VOC emissions at these sites are not at unsafe levels, our goal is to minimize the air pollutants that escape from our facilities and potentially impact the communities in which we live and operate.

In the first quarter of 2020, we began a technical validation process by submitting samples for laboratory testing. We will continue with this testing process, together with production line trials and usage validation tests, through the second quarter of 2021. At that time, we will review our results and choose a path forward.

Based on the data we have in hand today, our plan is to begin implementing improvements during the second half of 2021. We project that these improvements will be in place and delivering results by the first half of 2022.

Lessons learned

During the current sustainability reporting cycle, we learned that our work to use the "right materials" was becoming increasingly complex over time. In particular, the process of managing and/or eliminating hazardous substances from our processes has been so complex that only the most experienced and skilled of our people are qualified to oversee this task.

Furthermore, we learned that effective product stewardship demands systems, processes and standards. Again, the increasing complexity of this topic has meant a strong framework is essential to success. Another lesson we learned was that the expertise and knowledge gained at one of our sites through a piloted "trial-and-error" approach could readily be systematized and then transferred to other sites.

RESPONSIBLE SOURCING

Raising the bar for our suppliers

The sustainability of ABB's supply base is integral to the long-term success of our enterprise

ABB works closely with its suppliers to ensure that its sustainability expectations, ambitions and targets are understood and met. Our suppliers are an extension of our enterprise; as such, they are integral to our sustainable growth. To clarify our expectations, we issued the "**ABB Supplier Code of Conduct** " (SCoC). This policy document, which is published in multiple languages, reflects the **10 principles** of the UN Global Compact and the essence of the **ABB Code of Conduct** . In 2020, we reinforced the SCoC with the release of the updated ABB Code of Conduct, which further clarified our expectations for our employees when dealing with suppliers.

New suppliers are required to go through ABB's supplier qualification process, during which we assess the sustainability performance of potential business partners at the initial selection stage, along with other business parameters. To become qualified to do business with ABB, new suppliers must commit to our SCoC. This aspect of our routine supplier evaluation process reinforces our commitment to responsible sourcing.

Over the past year, we continued to run our comprehensive Supplier Sustainability Development Program (SSDP). This program enables us to proactively identify, assess and address sustainability issues, including general management, labor rights, social benefits, health and safety and environment, at our high-risk suppliers. The SSDP involves supplier screening, training, on-site assessment, monitoring and follow up until the closure of all non-conformances. We prioritize suppliers to participate in the SSDP according to a risk matrix, which includes the criticality of the supplier, country risk, commodity risk based on operational characteristics, and spend volume. The program operates in 16 focus (high-risk) countries.[5]

In 2020, the COVID-19 pandemic made it extremely difficult for us to conduct on-site visits as travel and physical meetings were prohibited, restricted or limited. In addition, some of our suppliers' factories remain closed in line with local pandemic management guidelines. Even though many factories started opening up with limited manpower during the second half of the year, visitors were not allowed on-site. While we were able to perform some on-site assessments in certain countries during the second half of the year, we mainly conducted virtual trainings and assessments when doing so was technically feasible.

5 The SSDP operates in Argentina, Brazil, Bulgaria, China, Colombia, India, Indonesia, Malaysia, Mexico, Peru, Poland, Saudi Arabia, South Africa, Thailand, Turkey, Vietnam.

2020 target

Our 2020 target was to close 65 percent or more identified risks[6] from supplier assessments. Despite the challenges presented by the pandemic, we achieved our target with a 79 percent closure rate[7] for identified risks by the end of 2020.

In 2020, we assessed 112 suppliers, identifying 427 risks and mitigating 364 risks during this period. In other activities to support responsible sourcing, we trained 128 ABB employees and 285 suppliers during the year. Due to the COVID-19 pandemic, we were not able to conduct as many assessments and follow up audits as were originally scheduled for 2020.

In addition to our pre-assessment training for suppliers new to our program, we also developed customized training courses to address the root causes of common instances of non-compliance that we had observed in 2019. These courses, which we delivered to 117 suppliers in China, Indonesia, Malaysia, Thailand and Vietnam, covered topics such as recognizing forced labor and modern slavery, best practices for workplace safety and environment, and updates on safety and environmental regulations (see case study for more details).

6 Risk is defined as the danger posed to ABB by the non-compliant operations of the supplier. Risk level is assigned as extremely high, high, medium, or low, depending upon the severity of instances of supplier non-compliance identified during audits. To reflect the degree of severity of the supplier's non-compliance, we multiply the total number of instances of extremely high risk by a factor of 5, the total number of instances of high risk by a factor of 3, the total number of instances of medium risk by a factor of 1, and the total number of instances of low risk by a factor of 0. The total risk identified is the sum of the weighted risks assigned to each supplier who has completed an on-site assessment and has outstanding corrective actions. Satisfactory completion of corrective actions by a supplier results in an increase in risks mitigated.

7 ABB continue to train, coach and assess selected high-risk suppliers on sustainability topics. Every year new risks are identified and earlier ones are closed. Closure timeline of such risks varies from a month to a year depending on the severity of findings. Some complex issues may require a joint effort to resolve with longer timeline. Due to the ongoing identification of new risks and the time required to mitigate them, the closure rate of identified risks can never be 100 percent, despite our best efforts.

CASE STUDY

Developing a systematic approach to non-compliance

During our 2019 on-site supplier assessments, we realized that the same types of non-compliance issues kept occurring at many of the sites we visited. In response, our teams started working together to develop a systematic approach for addressing these common areas of non-compliance.

We quickly saw that many of the problem areas were related to knowledge gaps on certain topics among our small- and medium-scale suppliers. The solution was clear: targeted training programs would need to be developed. After analyzing all of our findings from previous assessments and then grouping them geographically, we cooperated with external experts to develop a new set of training modules.

Delivered online and/or on-site in collaboration with external experts, our new training modules are filled with case studies, discussions and quizzes, among other materials. Our suppliers are reporting that these modules are helping them to effectively address a range of common challenges. To date, we have delivered six of these trainings in Malaysia, Thailand, Vietnam, Indonesia and China. We invited participants in ABB's Supplier Sustainability Development Program (SSDP) as well as new suppliers that were not yet a part of our program to attend these sessions, and trained 117 supplier teams.

As part of our overall supplier capacity building efforts, we opted to include new suppliers in these training sessions. This opportunity gave them the ability to identify a set of common issues, learn how to address them, and then implement the remedial actions on their own recognizance.

The sessions covered local regulatory requirements related to safety, environment and labor standards, and highlighted any recent updates. Best practices in fire protection, first aid, identifying work-place hazards and environmental management were included, according to identified needs. There was also a heightened emphasis on social standards and recognizing forced labor and modern slavery, particularly for the program in Malaysia, where we had previously identified, and addressed, instances of modern slavery.

While the focus of our supplier development process is on working with suppliers to improve their performance, there are also consequences for suppliers who are unwilling to align their performance standards with our requirements. During 2020, ABB terminated business with 18 suppliers due to unsatisfactory progress on their respective corrective action plans. Due to the unusual conditions during 2020, we did not update our analysis of top 10 non-conformances. Results of the 2019 analysis can be found here .

Major initiatives

The virtual management of ABB's Supplier Sustainability Development Program was the most important initiative of 2020. We conducted most of our SSDP trainings via online platforms and worked to adjust course materials accordingly. As the year progressed, we learned to compensate for the lack of face-to-face contact and ensure that program participants were suitably engaged and had absorbed the key points of each course.

At the same time, we carried out virtual assessments via Microsoft Teams and other digital tools. We developed different methods to check documentation, undertake site tours and interview key personnel and workers. After piloting these new methods in a number of different locations, we reviewed our experiences and developed a new guideline for remote assessments. We also consulted with a range of peer organizations to share learnings and good practices. In particular, we learned that it was vital to perform a feasibility check at the supplier's site ahead of time, with the actual assessment scheduled for a later date. Conducting confidential worker interviews also presented challenges. All of these considerations significantly extended the timeframe required for each supplier assessment.

Our other major initiative was the development of an expanded approach to supplier sustainability and an updated governance approach that conformed with the ABB Way, our company's new, decentralized operating model. As a result, in 2021 the Supplier Sustainability Development Program (SSDP) will become the Sustainable Supply Base Management (SSBM) approach. With the SSBM, we are significantly expanding the scope of our supplier assessments to cover more supplier categories and, in time, more countries.

The SSDP was a centrally managed, program-based approach focused on working with existing suppliers. The new SSBM approach will more extensively integrate sustainability principles into ABB's supplier selection and qualification processes; it will be backed up by risk-based monitoring plans for a wider range of suppliers. While there will be common standards and targets, the management and implementation of the SSBM approach will be handled by ABB's four Business Areas, with options for business-specific programs and processes. The approach will be governed by a steering committee and a working group comprised of representatives from our Business Areas and corporate sustainability function.

CASE STUDY

Reinforcing human rights due diligence processes

Due diligence to prevent forced labor and discrimination against vulnerable groups in ABB's supply chain has been a key aspect of our Supplier Sustainability Development Program (SSDP). In 2020, we further enhanced these due diligence processes.

As part of the enhancement, we upgraded the pre-assessment supplier training materials, pre-assessment questionnaire, on-site assessment checklist and the training materials for our SSDP lead assessors in China. Suppliers were also trained on our SSDP requirements related to forced labor and discrimination as well as other SSDP parameters. In addition, ABB SSDP lead assessors were calibrated to make sure they were properly equipped with the enhanced techniques required to identify forced labor and discrimination issues during assessments.

In China, while reviewing the pre-assessment questionnaires (which are always filled out by our suppliers), we noticed that roughly 17 percent of one supplier's employees were ethnic minorities; apparently, this was a relatively high percentage compared to peer companies in the same city. This raised some concerns about the potential for the exploitation of vulnerable groups on their worksites.

Consequently, a special assessor team comprised of an ABB lead assessor and a senior supply chain sustainability expert was formed for this assessment. During their comprehensive, two-day on-site assessment, the assessors followed all SSDP protocols with a special focus on forced labor and discrimination. All the required documents were reviewed, site tours were made to all areas where employees were present, including the shop floor, security room and canteen. The lead assessor team also interacted with randomly selected shop floor employees. These interactions were always made without the presence of supplier management or their representatives to ensure that participants could speak freely.

Our team observed that the supplier was treating ethnic minority employees on par with other employees. Working places were in acceptable conditions and employees were able to leave the campus freely when off duty and enjoy their personal life. Employees were fairly compensated and were able to resign at will with a reasonable notice period.

In summary, the assessors found no evidence of forced labor during their on-site assessment of the supplier. They also established a credible explanation for the high proportion of ethnic minorities in the workforce. We were satisfied that our upgraded pre-assessment questionnaire was detailed enough to highlight issues that were of potential concern and provided a good basis for focused on-site due diligence.

Conflict minerals

We also continue our work to understand and limit ABB's exposure to conflict minerals, as defined by section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act. ABB filed its annual Conflict Minerals Report with the U.S. Securities and Exchange Commission and, for the fifth consecutive year, ABB was recognized for the responsible sourcing of minerals by an **independent benchmark study** from the Responsible Sourcing Network.

ABB continues to work with the Responsible Minerals Initiative (RMI) to encourage smelters and refiners to undergo Organization for Economic Cooperation and Development (OECD) aligned audits. ABB continues to engage with suppliers to ensure our products do not contain conflict minerals that have been sourced from mines that support or fund conflict within the Democratic Republic of Congo or adjoining countries and Conflict Affected High-Risk Areas (CAHRAs).

We plan to perform due diligence on our cobalt supply chain in 2021. Similar to our approach for products and components likely to contain tin, tantalum, tungsten and gold (also known as "3TG"), ABB will work with our suppliers to responsibly source smelters and refiners of cobalt.

While we are establishing internal processes that comply with the OECD five-step framework requirements, ABB will also cooperate with various RMI working groups that directly engage smelters and refiners. Currently ABB leads the RMI Asia Smelter Engagement Team and also the gold outreach in India. We continue to work with gold refiners in India to educate and encourage them to undergo OECD-aligned responsible sourcing audits.

Together with our industry peers, ABB will participate in the RMI cobalt working group to encourage our cobalt smelters and refiners to undergo OECD-aligned responsible sourcing audits. We also plan to visit these smelters and refiners where necessary to educate, train and guide them to undertake the Responsible Minerals Assurance Program by RMI.

Moreover, ABB will work with its industry peers to raise awareness of the **EU's new conflict minerals regulation**, which came into force in January 2021.

Lessons learned

During the implementation of our sustainability strategy 2020, one of our key lessons learned was that the commitment of senior management and strong linkages to business targets were essential to triggering action on responsible sourcing initiatives. Like all of our programs, the Supplier Sustainability Development Program succeeds best when our people fully understand the reasons for and benefits of their activity and can clearly see that what they do is linked to the success of our business.

At the same time, we also realized that changes to the external environment in which we operate significantly impact our ability to effectively run the SSDP. In particular, over the past seven years we noted that the heightened interest from customers and investors in the sustainability of our suppliers – in combination with increasing regulatory requirements regarding human rights in the supply chain – served to reinforce the value of our supply chain program and justify the allocation of resources we require to not only continue with but also to expand our program.

The value of making strong connection across functions also became apparent during the implementation of our sustainability strategy 2020. Not surprisingly, strong connections between ABB's procurement teams and sustainability personnel were critical to success. More interestingly, we learned that it was extremely useful to build strong relationships with our customer-facing colleagues to ensure they could promote the due diligence that we perform on our suppliers as another benefit of doing business with ABB.

The last and perhaps the most important lesson we learned was that the SSDP's top-down approach did not fully embed sustainability principles in ABB's day-to-day supply chain processes. Rather, the SSDP was often viewed as a corporate exercise. Given the importance of this lesson for our operations, in 2020 we reviewed the SSDP. After the review, we elected to transition from a top-down program approach (the SSDP) to a business-led management approach (the SSBM), with our four Business Areas managing, implementing and being ultimately accountable for the sustainability of their respective supply chains.