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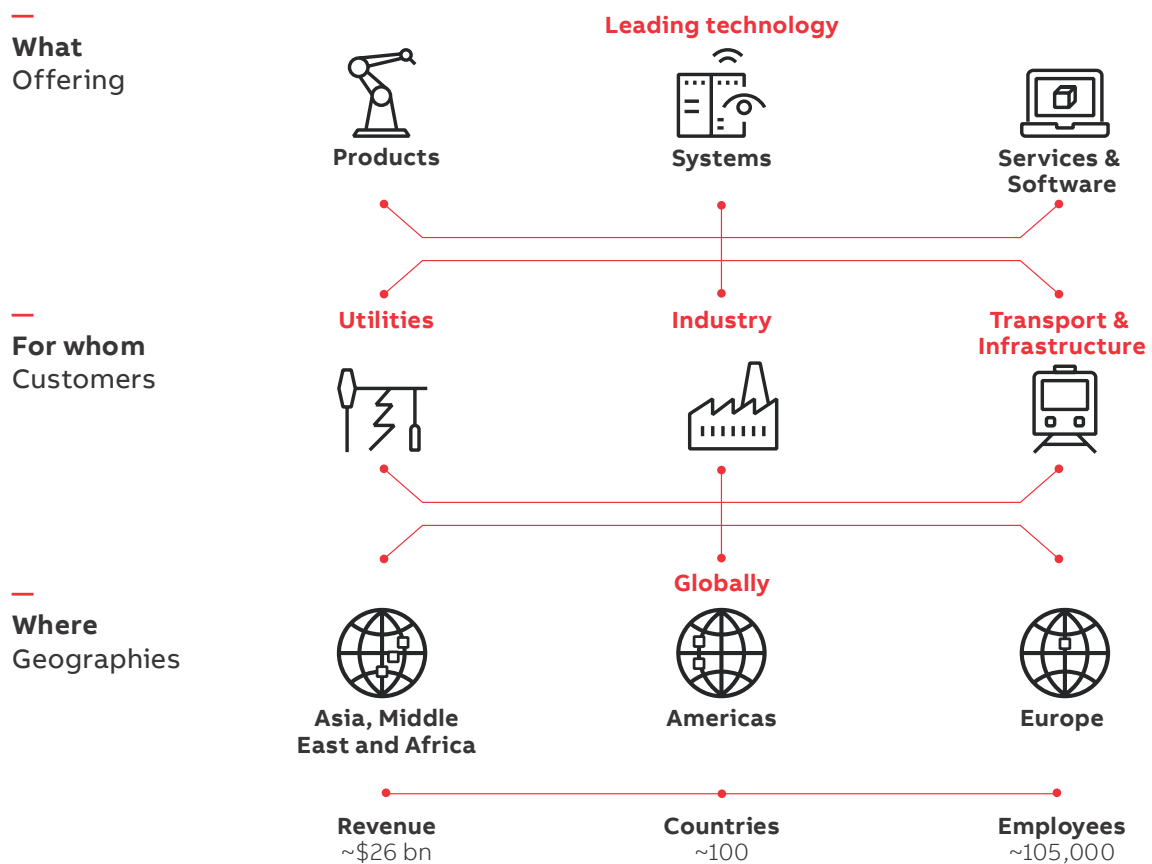
SUSTAINABILITY REPORT 2020

# A solid foundation for new ambitions

# ABB at a glance

ABB is a leading global technology company that energizes the transformation of society and industry to achieve a more productive, sustainable future. By connecting software to its electrification, robotics, automation and motion portfolio, ABB pushes the boundaries of technology to drive performance to new levels. With a history of excellence stretching back more than 130 years, ABB's success is driven by about 105,000 talented employees in over 100 countries.

[abb.com](https://www.abb.com)





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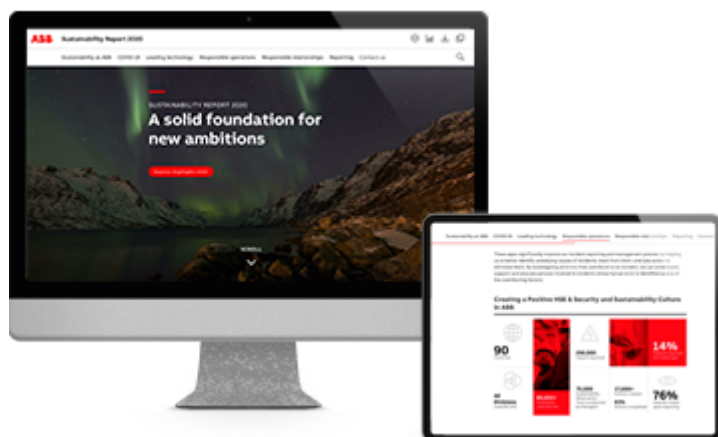
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Experience our interactive microsite



# 01 Introduction

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# CEO message

Dear stakeholders,

The year 2020 will go down as a turning point in history – not just because of the COVID-19 pandemic that has disrupted all of our lives, but because it has focused further attention on issues that the world must address in the years and decades to come. In particular, the year’s events have crystallized people’s attitudes toward many of the most important aspects of sustainability.

This was only natural during a time when each of us was compelled to examine such basic questions as how we earn a living, how we rely on each other and our environment, and how corporations, governments and civil society should work together for the greater benefit of present and future generations. In our virtual meeting rooms and home offices around the world, we have all devoted considerable time, thought and discussion to how we can create a healthier and more prosperous world.



Having taken over as CEO on March 1, 2020, I am extremely proud of how our people handled the COVID-19 crisis so far. We took care of each other, keeping ourselves safe, while working tirelessly to support our customers, partners and suppliers. We also worked closely with customers to maintain power supplies and other critical services. And we launched a Group-wide, global effort to support communities most vulnerable to COVID-19.



ABB's handling of COVID-19 reflects our long history of sustainable and responsible business practices, which we began reporting on in 1994. I am pleased and proud to say that, in 2020, we delivered a good performance against our environmental, social and governance (ESG) targets and exceeded most of them.

Thanks to our strong focus on safety, the number of serious work injuries among employees and contractors continued to decline. Tragically, however, two people lost their lives working for ABB in 2020. Moving forward, we will drive continuous progress on health and safety, including measurable improvements year after year. We are equally committed to respecting human rights through responsible partnerships and conduct regular training with employees and suppliers. Finally, with our leading technologies, we have helped many of our customers implement eco-efficient solutions in their operations.

In terms of our own environmental performance, we exceeded our target of reducing our greenhouse gas emissions, achieving a reduction of 58 percent compared with a 2013 baseline, against a target of 40 percent. Another notable achievement was the reduction in water consumption in water-stressed areas. We also improved gender diversity, increasing the number of women in senior management roles to 13.5 percent. Diversity and inclusion will be a key focus going forward.

## **Sustainability strategy 2030**

Last November, we introduced our 2030 sustainability strategy, based on our company Purpose. Our Purpose answers the “why” we are in business, which first and foremost is to create superior value for all of our stakeholders. To achieve that goal, we must balance the needs of society, the environment and the economy in our own operations and across our value chain. In 2020, we engaged with key stakeholder groups, which enabled us to review our material sustainability topics.

As a technology leader with operations in more than 100 countries, we are focusing on those areas in which we can make the biggest impact – enabling a low-carbon society by reducing greenhouse gas emissions, preserving resources and promoting social progress. In this way, we also contribute to the United Nations' Sustainable Development Goals, of which ABB has always been a strong advocate. We measure progress through our comprehensive governance framework, based on integrity and transparency – the foundation of everything we do.

With our skilled people and leading technologies, we can make a strong contribution to a low-carbon society. Our 2030 commitment is to help our customers reduce their annual CO<sub>2</sub>e (carbon-dioxide equivalent) emissions by at least 100 megatons, equivalent to the annual emissions of 30 million combustion cars. This is where we make the biggest impact, with technologies that improve energy efficiency and enable the electrification of industries, infrastructure and transport. We will also lead by example by reaching carbon neutrality in our own operations by 2030 by continuing to transition to renewable sources of energy, improving energy efficiency across our factories and sites, and converting our vehicle fleet to electric or other non-emitting alternatives.



To preserve natural resources, our approach is to systematically reduce waste, increase recycling and reusability, and improve product durability. We aim to have at least 80 percent of our products and solutions covered by a circularity approach by 2030 and will systematically improve circularity in our supply chain through our supplier sustainability framework, which focuses on ESG performance.

Finally, we will promote social progress through our own operations and in our communities around the world, including championing human rights across the value chain. Within ABB, we are creating safe, fair, equitable and inclusive working environments in which our people can succeed and develop, as well as reinforcing our long-standing commitment to community engagement around the world.

To ensure we reach our sustainability targets, we have firmly integrated them into ABB's decision-making processes and have accountabilities and incentive plans in place to drive action.

With our great people, leading technologies and the support of our stakeholders, I am confident that we will meet our targets for 2030 and be a leading contributor to sustainable development. Thank you for your trust and support.

Best regards,

**Björn Rosengren**

Chief Executive Officer



## AWARDS AND ACHIEVEMENTS

# Prize-winning sustainable value creation

ABB continues to be recognized around the globe for its work towards a more productive, sustainable future

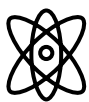


## External accreditation

- 2020 Corporate Knights Global 100 Index
- 2020 FTSE4Good Index Series
- 2020 EcoVadis Platinum
- 2020 Ethibel Sustainability Index Excellence Global
- 2020 Ethibel Sustainability Index Excellence Europe
- 2021 ISS ESG Prime Status



FTSE4Good



## Leading technology

- ABB Smart Buildings won three prestigious **Red Dot Awards** for outstanding design: for the RoomTouch® device, the IP touch 7" visualization panel, and the ABB-free@home® app
- ABB Smart Buildings won a prestigious **German Design Award** for the IP touch 7" visualization panel
- ABB's Baldor-Reliance **EC Titanium** [↗](#) motors won a Silver in the HVAC/R Systems & Equipment category of Consulting-Specifying Engineer magazine's **Products of the Year awards**
- ABB Electrification was presented with four prizes at the **2020 China Automation and Intelligent Manufacturing Market Seminar**
- The new all-electric Maid of the Mist vessels for touring Niagara Falls, which run on a comprehensive integrated power and propulsion solution supplied by ABB Marine & Ports, were named "**Boat of the Year**" by the American Ship Review
- ABB was included in the Clarivate list of Top 100 Global Innovators™ 2020, which recognizes companies and institutions that contribute new ideas, solve problems and create new economic value.
- ABB was presented with **seven awards in five different categories** at the China Automation



Industry Annual Conference 2020

- ABB's Large Motors division's wind generator technology won **Technology of the Year Award** in the generator category at the 2020 India Wind Energy Forum



## Responsible operations

- ABB received an **"A-" at the Leadership Level** for its 2020 CDP Climate Change disclosure
- ABB ranked No. 4 in the **most sustainable Swiss companies** ranking 2020 in Handelszeitung newspaper
- ABB was selected as a member of the **FTSE4Good Index Series**, marking the 20th consecutive year of recognition for its sustainability performance
- ABB's Office of Finance won a **Vetana Research Digital Leadership Award**
- ABB India's power distribution products factory in Nashik received **Gold certification** from the Indian Green Building Council (IGBC)
- At the Elmässan trade show in Sweden, ABB Electrification won the **Best Electricity News award** for its use of recycled plastic packing for the manufacture of electrical installation boxes
- ABB Electrification in China won the 2020 China Finance Summit **Corporate Social Responsibility Model award**
- In the United States, ABB received the **South Carolina 2020 Safety Award** from the South Carolina Department of Labor, Licensing and Regulation
- ABB's site in Nogales, Mexico, received a state-level **Green Industry certification** and a federal **Clean Industry certification**
- 65% of our manufacturing and service sites are covered by a certified **environmental management system** (ISO 14001 or equivalent)
- 74% of our employees at manufacturing or service sites are covered by a certified **occupational health and safety management system** (OHSAS 18000 or equivalent)



## Responsible relationships

- ABB Finland named as **second-most attractive employer** by engineering students in Finland's Most Attractive Employers Report 2020, released by Universum
- ABB named as **second-most attractive employer** by engineering students in Switzerland's Most Attractive Employers Report 2020, released by Universum
- ABB ranked in the **Top 20 US Talent Communications** Rankings for 2020
- ABB Canada was recognized by The Electro-Federation Canada for its commitment to the **Young Professionals Network**
- ABB India won **three different awards** from Working Mother & Avtar and People Konnect for its **diversity and inclusion** initiatives
- ABB Italy was ranked among the **best employers in Italy** by Corriere della Sera
- ABB Estonia named a **Family-friendly Employer** by the Ministry of Social Affairs
- In Mexico, ABB's Nogales site received a federal **Inclusive Company certification** and its Matamoros site received a federal **Family-responsible Company** certification



## PROGRESS TOWARDS TARGETS

# Delivering on our promises

ABB delivered a good performance against 2020 targets and exceeded the majority of them



2020 marked the concluding year of the sustainability strategy adopted by ABB for the previous decade. We used 11 measures and targets to quantify ABB's progress toward the nine sustainability objectives we set for ourselves in 2014. As an organization, we are pleased to report that by year-end 2020, we met or exceeded nearly all of our quantitative targets.

Notably, we exceeded our targets for greenhouse gas (GHG) and volatile organic compounds (VOC) emissions, water consumption in water stressed areas, employee safety, and the closure of identified supplier risks. While these targets seemed ambitious at the time they were set, we have demonstrated that we have the capacity to outperform in these areas. We also exceeded our targets for integrity and human rights trainings and recognize that it is now time to adopt new ways of measuring our performance in these areas. Similarly, while we performed well against our gender diversity target, not only can we do more to drive progress in this area, we must also expand our work to encompass diversity in all its forms. This knowledge has been utilized in the design of targets for our next reporting cycle.



Our 2020 sustainability objectives covered three areas: leading technology, responsible operations and responsible relationships. Each area has a direct or indirect impact on ABB’s business success. For the final year of our sustainability strategy, the measures and targets associated with these objectives were once again deemed material to ABB’s business by our Executive Committee and reaffirmed by our external stakeholder panel.


In 2020, we reviewed our 2013 baseline data in order to track internally the environmental performance of each of ABB’s present divisions over the current reporting cycle, in a manner that reflects the organizational changes at our company, while maintaining the consistency of the reported information. The 2013 baselines for the environmental indicators have been updated in the target table to exclude the Power Grids business to provide a comparable basis with 2020 performance. Power Grids is not included in our sustainability reporting for 2020, except where specified. Given the impact of the COVID-19 pandemic on some of our 2020 data, our 2019 data will form the baseline for the next reporting cycle.

Over the past year, we continued the extensive stakeholder engagement process that was launched in 2019 in anticipation of the closing of our measures and targets at the end of 2020. This engagement process guided the creation of our sustainability strategy and its associated targets for 2021–2030. For more information about ABB’s 2030 sustainability strategy, please go [here](#).

 Achieved       Not achieved



### Leading technology

Objective	Measure	2020 Target	2013 Baseline	2020 Performance		Page
Products, services and solutions	Increase share of ABB eco-efficiency portfolio <sup>1</sup>	60% of \$ revenue	53%	58%		<a href="#">Leading technology</a>

<sup>1</sup> Includes Power Grids in 2013 baseline and 2020 performance



## Responsible operations

Objective	Measure	2020 Target	2013 Baseline	2020 Performance		Page
Safe operations	Reduction in employee injuries <sup>1</sup>	<0.7	1.09	0.31	✓	<a href="#">Safe operations</a>
Climate action	Reduce greenhouse gas (GHG) emissions <sup>2</sup>	by 40% absolute vs 2013	1,167 kt	58%	✓	<a href="#">Climate action</a>
Resource efficiency	Reduce water consumption in water stressed areas <sup>2</sup>	by 25%	1,930 kt	39%	✓	<a href="#">Resource efficiency</a>
	Reduce % waste sent for disposal <sup>2</sup>	by 20%	14.5%	3%	✗	<a href="#">Resource efficiency</a>
Right materials	Reduce emissions of VOCs <sup>2</sup>	by 25%	736 t	29%	✓	<a href="#">Right materials</a>
Responsible sourcing	Closure of identified risks from supplier assessments <sup>2</sup>	>65% cumulative since 2013	n/a	79%	✓	<a href="#">Responsible sourcing</a>

1 Includes Power Grids in 2013 baseline and 2020 performance

2 Does not include Power Grids



## Responsible relationships

Objective	Measure	2020 Target	2013 Baseline	2020 Performance		Page
Integrity	Employees trained on integrity	>96%	n/a	98%	✓	<a href="#">Integrity</a>
Human rights	Training for specific job roles exposed to Human Rights risks	2 targeted campaigns/year	n/a	3	✓	<a href="#">Human rights</a>
Our people	Increase in % of females in senior management (includes PG) <sup>1</sup>	by 30% (vs 2017) = Target 13%	10% (2017)	13.5%	✓	<a href="#">Our people – culture, diversity &amp; inclusion</a>
	Increase in % of females in senior management (does not include PG) <sup>1</sup>	by 30% (vs 2017) = Target 14%	10.8% (2017)	13.5%	✗	<a href="#">Our people – culture, diversity &amp; inclusion</a>
	Employees covered by the ABB well-being program	>70%	n/a	86%	✓	<a href="#">Our people – health &amp; well-being</a>

1 Hay grades 1-7





# Sustainability in our business

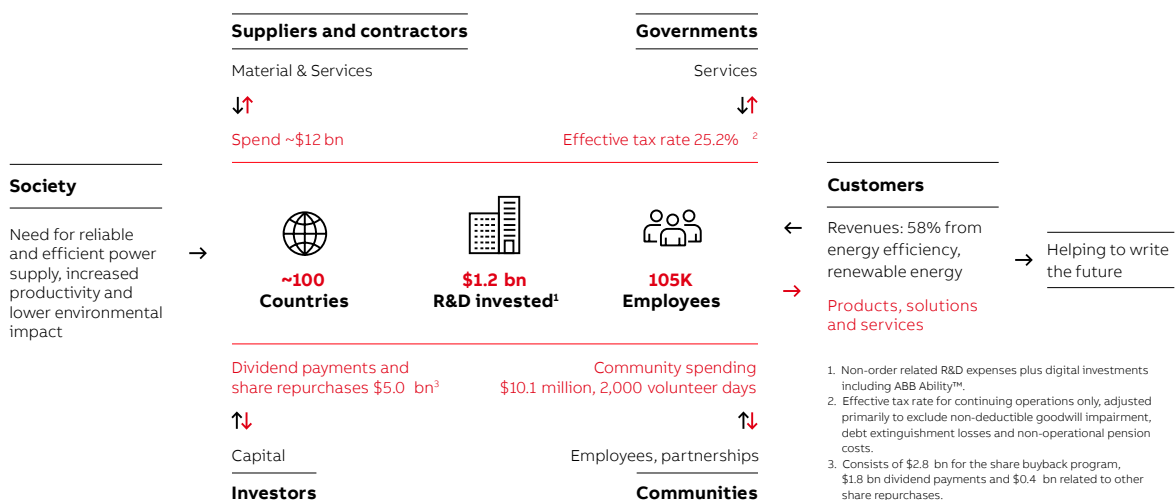
## Business model

At ABB, our approach has always been to seek a balance between the needs of society, the environment and the economy. By endeavoring to achieve this balance across our value chain, we create superior value for all our stakeholders.

Consistent with our sustainability strategy for the past decade, our work to attain this equilibrium in 2020 fell into three main categories: delivering leading technologies; operating responsibly; and building and maintaining responsible relationships.

In July 2020, our Group adopted a new operating model called “the ABB Way.” It is important to note that this new operating model is in no way related to the global HSE/SA management system of the same name that we introduced in 2018. The name for the HSE/SA management system was subsequently phased out at the end of 2020. The introduction of ABB’s new operating model positively impacted our approach to sustainability in the latter half of 2020. In line with this operating model, ABB’s four Business Areas were intensely active and involved in the process of determining ABB’s new ambitions and action plans for all sustainability topics related to their scope of work. The positive change created by our new operating model was particularly evident during the stakeholder interviews as well as the process of determining materiality and the subsequent definition of targets. The new ABB Way will embed sustainability even more deeply within our business. In 2021, our Business Areas and divisions will take ownership of the rollout of our 2030 sustainability strategy and of the deployment of resources to achieve that strategy’s targets. Furthermore, through their participation in ABB’s sustainability council, they will participate in the process of determining how to implement ABB’s new sustainability strategy across their Business Areas and within their divisions.

## ABB value chain



## Contribution to sustainable development

Adopted by the member states of the United Nations in 2016, the 2030 Agenda for Sustainable Development contains 17 Sustainable Development Goals (SDGs) to lead the planet and its people to peace and prosperity by 2030. ABB continues to align its sustainability strategy with the SDGs that address issues where we can have the greatest impact, while screening and implementing actions that contribute to the other goals as well.

For more information, please refer to <https://global.abb/group/en/sustainability>.

## Sustainability governance

ABB’s governance structure enables our business to deliver sustainable growth every year.

As part of its overall responsibility for the company’s strategy and targets, in 2020 ABB’s Board of Directors oversaw the company’s sustainability strategy.

Over the past year, ABB's Sustainability Board, comprising the Group Executive Committee, was the operational body that oversaw sustainability policies and programs, reviewed developments, and monitored progress toward our targets.

In 2020, the ABB Sustainability Affairs and HSE (health, safety & environment) and Security functions were responsible for the development and coordination of Group-wide policies and programs related to their scope of work.

ABB’s global management system for HSE and Sustainability Affairs (The ABB Way for HSE and Security Management System, formerly known as 'The ABB Way'), which sets the minimum standards that must be implemented across all ABB operations and activities, included a comprehensive global audit assurance program. The structure of ABB’s HSE/SA management system was based on internationally recognized sustainability standards, principles and commitments, including ISO 45001 and 14001:2015.



We are reviewing our sustainability governance model to ensure it is aligned with the ABB Way operating model; it will be operational during 2021. The framework, will encompass ABB's four Business Areas and support our work to achieve ABB's 2030 sustainability ambitions.

For more information, please refer to <https://global.abb/group/en/sustainability/sustainability-governance-> [↗](#).

## Stakeholder engagement and materiality

We work together with our stakeholders to develop ABB's priorities and related actions in consideration of the full range of their perspectives.

Determining the materiality of stakeholder issues is a process that involves frequent review, particularly on the part of our external stakeholder panel. The framework used for our 2013–2020 sustainability reporting cycle 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 was the last year in which to deliver on that framework. The material issues that are relevant to ABB's 2020 Sustainability Report are covered in the [materiality matrix](#) [↗](#) that was presented in our 2019 report.


As reported in the 2019 ABB Sustainability Report, in 2020 we conducted a comprehensive external stakeholder engagement process to understand their view of the relative priority of ABB's material issues. Based on these conversations, we developed an updated materiality matrix for each of our four Business Areas. These matrices were then used to reconcile our Group's materiality matrix, as well as the targets and focus areas for ABB's new 2030 sustainability strategy. This process was completed in the first half of 2020.

In addition to working closely with our stakeholders on the development of our new sustainability strategy, we routinely interacted with them during the course of 2020 to stay current with their interests and concerns. We met regularly with customers to discuss how ABB's offerings can be used to reduce their annual CO<sub>2</sub> emissions, preserve resources, and meet other specific sustainability requirements. Our teams conducted one-on-one meetings with investors to identify and understand the main ESG criteria they value and expect us to deliver on. We stayed in regular close contact with our suppliers under the aegis of our Supplier Sustainability Development Program. More than 95,000 ABB employees responded to our 2020 Engagement Survey; the almost 280,000 comments they submitted will inform our efforts to make ABB a better place to work.

On the international stage, we actively collaborated 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. In line with ABB's 2018 commitment to the Science Based Targets initiative, we will announce ABB's 2030 GHG emission targets in the first half of 2021.



We contributed to more than 340 charitable institutions and community projects around the world; our employees and Business Areas donated an estimated \$10.1 million and volunteered roughly 2,000 person-days of time to charitable causes.

For more information, please refer to our [website](#) .

## **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.

Panel members represent our key stakeholders. They have been selected on the basis of their level of knowledge and skill in areas that are relevant to ABB, as well as to reflect gender and geographical balance.

ABB's external stakeholder panel met in February 2020 to review the 2019 ABB Sustainability Report, with the knowledge that their comments would be taken into consideration for the development of ABB's new 2030 sustainability strategy.

The panel reconvened in November 2020 to deliver their recommendations for the overall thrust of ABB's new strategy and to advise on the selection of targets that would best guide and measure ABB's progress toward its sustainability objectives. Overall, the panel was gratified that our new strategy, objectives and targets were aligned with their previous recommendations. In particular, they were pleased by the structure and clarity of the new strategy, and agreed that the targets, which covered all aspects of ABB's materiality matrix, represented a significant step forward for ABB. The panel also remarked on the clear value of broadening the scope of ABB's targets to encompass our customers and suppliers. The strategy's systematic approach to integrity through the ABB Code of Conduct was also commended by the panel. Finally, the panel expressed support for our plans to more deeply embed sustainability within our four Business Areas; to this end, they recommended that we take care to roll out our strategy in a coordinated way from the very beginning, leveraging specific initiatives and governance measures.

As 2020 marked the end of ABB's 2013–2020 sustainability strategy cycle, the panel was consulted in November 2020 to confirm that ABB's new sustainability strategy, objectives and targets were in line with their expectations.

For more information, please refer to our [website](#) .





# 02 COVID-19

**18** Going beyond the call of duty

COVID-19

# Going beyond the call of duty

As a global company with operations in more than 100 countries, we recognize that ABB has an important role to play in tackling the COVID-19 crisis around the world



## Safeguarding our people

When the pandemic broke out, our first priority was to safeguard the health and safety of all stakeholders, and above all our employees. We continuously monitored the evolving situation around COVID-19 and took all necessary precautions in line with local government and WHO (World Health Organization) guidelines to protect our people.

These measures included restricting access to ABB premises, promoting physical distancing, restricting travel, and promoting good personal hygiene practices. Wherever possible, we made appropriate arrangements for employees to work from home.

From the start of the outbreak, our leaders and teams went beyond the call of duty to safeguard the health of our people and communities and to maintain business continuity in challenging circumstances. In our factories, we spared no effort to ensure that our people were safe and protected from the risk of infection.

ABB also stepped up its response to help employees and their families who were impacted by the crisis, as well as to support relief efforts in the world's most vulnerable



communities. To this end, the ABB Board of Directors, the CEO and many other senior managers decided to voluntarily take a 10 percent reduction of their compensation. The donated funds have been used to help ABB employees whose jobs and livelihoods were impacted by the crisis.

## **Keeping critical infrastructure up and running**

While our top priorities during 2020 were health and safety, we also did everything in our power to support our customers, partners and suppliers.

ABB serves society by supplying and maintaining critical infrastructure for many essential goods and services. During the pandemic, we worked with our customers and partners to maintain power supplies and services deemed critical by local governments. Our teams across the globe also helped our customers and partners leverage our existing digital services to keep critical services running safely; at the same time, we found new ways to connect with each other and our stakeholders virtually.

To support our customers further, we decided to make some of our software services available for free to ensure uninterrupted power for critical healthcare applications and to strengthen the management of commercial and industrial facilities. We also found new ways to drive efficiency for our customers and partners. We successfully introduced virtual and remote Factory Acceptance Testing (FAT) across many of our divisions. FAT now serves a vital role in our delivery process, which, in most cases, had previously required a physical visit by the customer to our factories.

## **Answering the call for our technologies**

In 2020, we worked with governments to assess where ABB could use its technology and expertise to support the manufacture of critical equipment, such as ventilators and masks, as well as to support other aspects of the pandemic response.

In New York City, we partnered with long-time customer Boyce Technologies to rapidly retool and upgrade their production line for the manufacture of emergency “bridge” ventilators. We are currently working with Boyce to equip an automated production line for the manufacture of N95 masks. In Singapore, we supplied four IRB 910 SCARA robots, including simulation and programming support, to help enhance the nation’s COVID-19 testing capabilities. And in the laboratory of Sweden’s Karolinska University Hospital, one of ABB’s collaborative robots is now helping technicians process the millions of medical samples that are handled there every year.



## Providing aid where it is most needed

As well as protecting our people and supporting our customers, we helped efforts to limit the spread and impact of COVID-19 in communities around the world. Among our many initiatives, we used our global resources to procure and deliver hundreds of thousands of masks and respirators to hospitals and frontline workers in China and Italy, among other countries.

We also launched a Group-wide, global effort to support communities that are most vulnerable to COVID-19. ABB made an initial contribution of CHF 1 million to the COVID-19 prevention and support effort of the International Committee of the Red Cross (ICRC). Additionally, ABB employees from 72 countries made contributions to the initiative, which were matched by the company on a one-to-one basis. Altogether, ABB donated CHF 2 million to the ICRC.

More than 90 percent of donations made to the ICRC are used directly for its work in the field. The money raised by ABB is being used to provide infrastructure for healthcare centers, sanitation infrastructure and crucial goods such as soap and masks in countries such as Nigeria and South Sudan.

In December 2020, we also made a donation of CHF 1 million to the World Childhood Foundation (Childhood). This will go towards helping vulnerable children worldwide, whose lives have been made even more difficult by the pandemic, which has placed many of them at greater risk of abuse, exploitation and neglect. Childhood is a global children's rights organization, founded by Queen Silvia of Sweden. It promotes better living conditions for vulnerable and exploited children all over the world, focusing primarily on preventing violence and sexual abuse directed at children.

Finally, at the local level, our employees made many valuable contributions to help their communities manage this crisis. It is not possible to cover everything that our people did over the course of 2020, but the following examples illustrate the nature of their contributions:

- In Italy, employees donated the value of some of their working hours to support the Abita la Cura ("Live the Recovery") initiative. All told, 1,069 of our people donated over 6,600 working hours to help stem the tide of the pandemic. ABB matched their contributions in cash, resulting in donations of more than €300,000.
- In the U.S., employees donated to local food banks across the country, with ABB matching their donations.
- In China, our teams helped with COVID-19-related infrastructure, such as hospitals, in Hubei province.



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# 03

## Leading technology

**22** Leading technology

**25** Electrification

**32** Process Automation

**42** Motion

**46** Robotics & Discrete Automation



## LEADING TECHNOLOGY

# Transforming society and industry to achieve a more productive and sustainable future

ABB provides solutions and technologies that are enabling society to preserve resources, become cleaner, more efficient, resilient and flexible

ABB's history stretches back to the late 19th century, when electricity was first harnessed to serve the needs of manufacturing, mobility and infrastructure. Since then, we have continued to advance the technologies that improve people's lives and drive economic prosperity.

Today, we take pride in developing clean and efficient solutions for our customers that enable them to reduce their ecological footprint. Our extensive portfolio of products and services enables them to be more energy-efficient while conserving natural resources.

According to the International Energy Agency, industry generates about 24 percent [↗](#) of global greenhouse gas (GHG) emissions – not just from burning fossil fuels, but also from chemical processes, waste management and other production-related activities. 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. The transport sector is also poised to be revolutionized by new developments in e-mobility, non-emitting vehicles and energy storage. Many of the advanced solutions required to make our cities and industries cleaner and more efficient have already been developed.

For buildings, transport and industry, among other sectors, reducing emissions and the responsible use of resources are now firmly at the top of the agenda. In addressing these new priorities, sustainable operations and products increasingly represent a competitive advantage in and of themselves. Consequently, demand is strong for products, services and solutions that increase energy efficiency and reduce consumption of non-renewable resources.





Many of ABB's technologies meet these demands. In this chapter, we have highlighted some of the key technologies that contributed in 2020 to progress toward the achievement of the targets associated with the Sustainable Development Goals (SDGs) established by the United Nations in 2016 to serve as a shared blueprint for achieving peace and prosperity throughout the world.

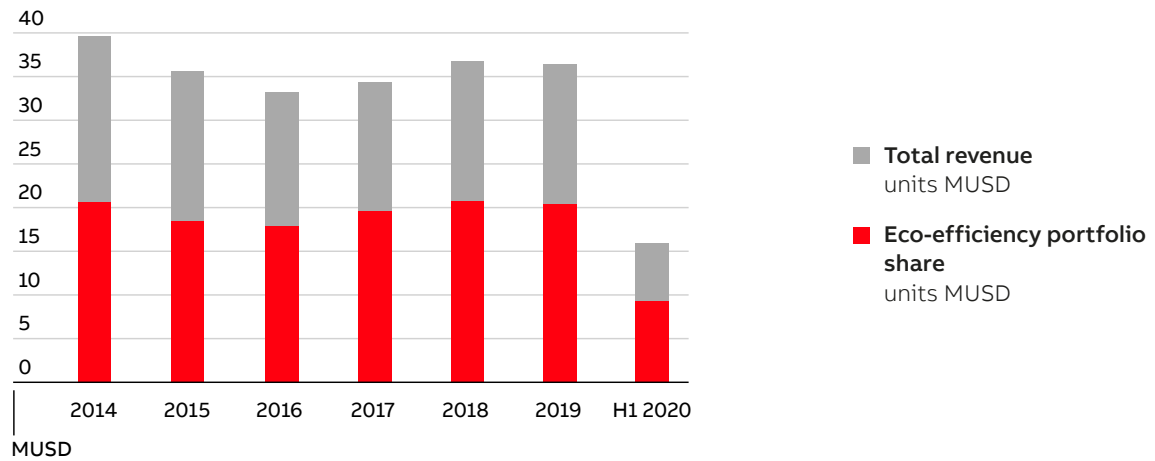
While ABB's activities can be linked to all of the SDGs, our products, services and solutions contribute directly to SDGs 6 (clean water and sanitation), 7 (affordable and clean energy), 8 (decent work and economic growth), 9 (industry, innovation and infrastructure), 11 (sustainable cities and communities), 12 (responsible consumption and production) and 17 (partnerships for the goals). Technological innovation will play a critical role in meeting these needs – improving people's living standards while reducing their impact on the environment. That is why we believe ABB's Purpose is aligned with the global effort to achieve the SDGs by 2030.

The ABB Sustainability Report's chapter on leading technology this year spotlights the latest contributions to sustainability made by our four Business Areas: Electrification, Process Automation, Motion, and Robotics & Discrete Automation. In concluding the sustainability reporting cycle that we began in 2013, each Business Area lays out lessons learned from the pursuit of our 2020 target – which was to expand our eco-efficiency portfolio to account for 60 percent of ABB's total revenue.

We completed the final measurement of our progress towards achieving this target in mid-2020. Including the contributions of our Power Grids business, our eco-efficiency portfolio at mid-year accounted for 58 percent of ABB's total revenue. This continued our trend of overall increases in revenues from our eco-efficiency portfolio, achieving a strong result which was very close to target. This target will not be carried forward as such or updated for our next sustainability reporting cycle. For these reasons, we did not re-baseline our 2013 data or recalculate our progress towards the target without the contributions of Power Grids. Our future targets, linked to the impact our products and solutions have for our customers, will bring an even higher level of ambition in how we support customers to deliver positive impact on environment.



## Eco-efficiency portfolio development



Underpinning many of the technologies presented by our Business Areas in this report is our comprehensive digital offering, ABB Ability™, which enhances gains in efficiency. For example, solutions under the ABB Ability™ brand collect and analyze data and provide our customers with insights into their processes and equipment in order to increase the safety, productivity and energy efficiency of their operations. Even as it helps our customers optimize their business performance, ABB Ability™ also enables them to reduce their consumption of energy, water and other vital resources, while minimizing their impacts on air quality and the environment.



RESOURCE-EFFICIENT AND ENVIRONMENTALLY SOUND SOLUTIONS IN

# Electrification

In ABB's Electrification Business Area, we recognize that new solutions are needed to manage the pressures being placed on our environment. Our aim is to help make a safe, smart and sustainable world possible with technologies that reduce energy consumption, eliminate emissions in industry, infrastructure and transport, and improve quality of life.



## Mission to Zero

We are committed to showing the world that the energy transition can be achieved sustainably through our digital energy-management solutions. The necessary steps are outlined in "Mission to Zero," the carbon-neutral and energy self-sufficient blueprint we introduced in 2019 for industry, homes and cities. To demonstrate our confidence, we are using our own facilities as test beds for our comprehensive zero-emission concept.

ABB's flagship Busch-Jaeger site in Lüdenscheid, Germany, is our first carbon-neutral and energy-self-sufficient production site in the world. The ABB technology it relies on, which has our scalable energy management system OPTIMAX® at its core, generates enough climate-neutral solar power to cover 100 percent of the factory's power requirements on sunny days and has reduced the site's CO<sub>2</sub>e emissions by some 680 tons per year. For Lüdenscheid, we developed a zero-emission solution that is scalable, flexible and suitable for a wide range of applications. We are now rolling out our Mission to Zero concept at other Electrification sites and will share our learnings with customers and key stakeholders.



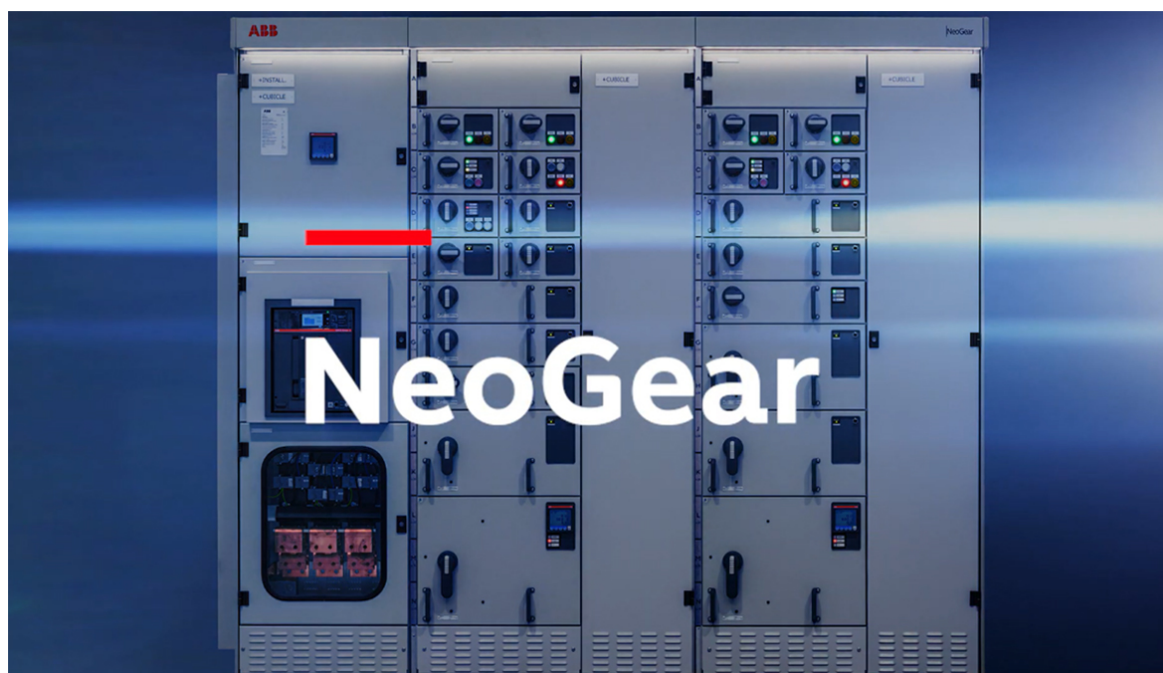
## Solutions to reduce power losses

According to the International Energy Agency (IEA), the hypothetical implementation of all of the currently available energy-efficient technologies would deliver 40 percent of the emissions reductions needed to meet the requirements of the Paris Agreement. ABB is a leader in the development of energy-efficient technologies that enable the achievement of global climate targets.

### Energy-efficient solutions for data centers

By 2030, hyperscale data centers are projected to account for 15 to 30 percent of total electricity demand in some smaller countries. Our MegaFlex DPA™ uninterruptible power supply (UPS) is designed for exactly this kind of challenge. Compact, flexible, safe and easy to install, it enables data center operators to track energy consumption precisely. Its default operating mode enables efficiency of up to 97.4 percent, with an ECO option to attain 99 percent efficiency. This solution is designed to work with the rest of ABB's power infrastructure products to ensure a continuous flow of clean power to a data center. MegaFlex DPA was awarded the Solar Impulse Foundation's "Efficient Solution" label, an important recognition from an external agency of our work to reduce power losses.

### Energy-efficient solutions for switchgear



Watch the video at <https://youtu.be/o0u8CDYXWsU>

Industry is under constant pressure to reduce injuries, energy consumption and overall costs. To meet these needs, we developed the first real innovation in low-voltage switchgear since the 1980s. NeoGear's bus plate system is fully protected against arc



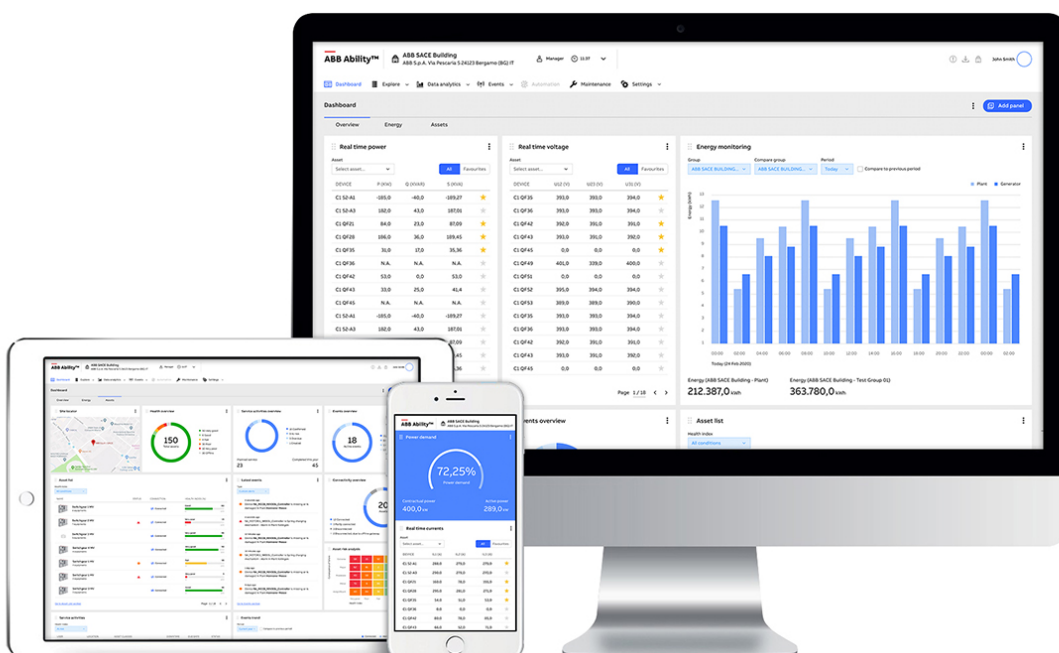
ignition, so it is substantially safer than any previous switchgear system. Furthermore, NeoGear needs less copper, emits 20 percent less heat, requires less energy for cooling, and takes up to 25 percent less space. Underpinned by our ABB Ability™ platform for better energy management, condition monitoring and predictive maintenance, it can reduce operational costs by up to 30 percent. NeoGear is superior to any other switchgear solution, and we are confident it will ultimately replace conventional switchgear almost entirely.

## Solutions to optimize energy use

Growing urbanization and digitalization and concerns about climate change are driving the need to think beyond energy-saving measures and shift towards energy optimization. At ABB Electrification, we are facing this challenge head on, helping our customers adapt and thrive with our advanced technologies.

## Energy optimization solutions for companies

It has become essential for companies to reduce energy costs and shrink their carbon footprints as their stakeholders become increasingly concerned about sustainability. To meet this need, we developed a suite of ABB Ability™ plant- and enterprise-level applications, called ABB Ability™ Energy Manager. This scalable solution can pull together real-time and historical data from energy providers and a company’s commercial and industrial systems to help customers optimize their energy usage, saving up to 30 percent on operational costs. ABB Ability™ Energy Manager enables reduced energy consumption by comparing actual consumption against targets and identifying, in real time, the areas where improvement is required. It can also help companies optimize their energy consumption with planning and scheduling applications that let them get the best pricing for the energy they require.





## Energy-optimization solutions for buildings

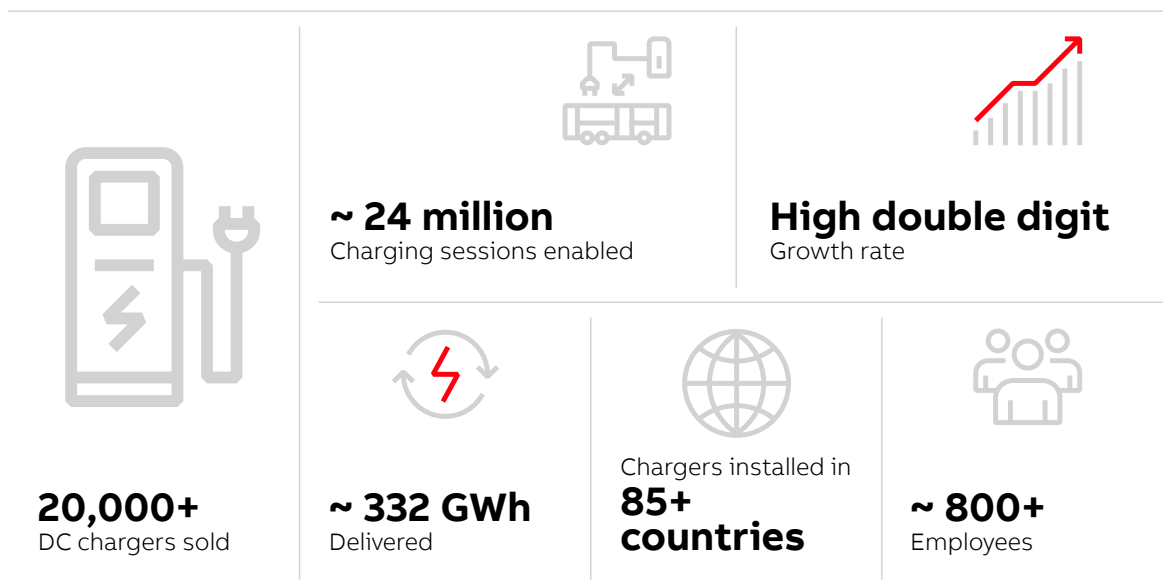
Buildings consume more than 30 percent of the world’s energy and generate nearly 40 percent of annual global GHG emissions. ABB Electrification has developed a wide range of smart solutions for buildings that can significantly reduce their total carbon footprint.

Smart buildings are not new. For decades, architects and developers have been installing separate systems to control lighting, heating and ventilation, among others. What is new, however, is the addition of web-based platforms, such as our range of ABB Ability™ building automation solutions. Our smart building technologies seamlessly integrate all of these systems, providing building managers with a single view of how efficiently a building is operating, so they can make better decisions. And with the right systems, buildings today can make autonomous decisions to adjust lighting, heating, air conditioning and other systems to reflect the time of day, outside weather or any other variable. When fully implemented, our building automation solutions typically deliver up to a 30 percent reduction in energy costs for heating, lighting and appliances.

## Emission-free alternatives

The world needs to adopt approaches and technologies that can reduce global GHG emissions. In ABB Electrification, we are committed to providing the world with emission-free solutions that will enable future generations to pursue economic growth without contributing further to climate change.

## Emission-free mobility








Active across the e-mobility value chain, ABB is the world leader in fast-charging solutions, which are increasingly in demand as the world works to shift away from polluting internal combustion engines. We have sold more than 400,000 electric vehicle chargers across more than 85 markets, including those sold through Chargedot, our subsidiary in China. Our DC fast chargers run on the ABB Ability™ Connected Services Platform, which employs Microsoft's Azure cloud services to enhance uptime, scalability and operational efficiencies, as well as to provide real-time remote support services. ABB provides not only EV charging stations, but also critical EV charging infrastructure components, such as substations, energy storage systems and eco-friendly switchgear. These technologies are designed so that EV charging stations, once installed, will be both future-proof and scalable.

For mass transit, ABB offers solutions for the electrification of buses. And for the electrification of railways, we support sustainable mobility with power and automation technologies for customers ranging from train builders 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 that move vehicles quickly and reliably. It also encompasses leading integrated and collaborative digital solutions with ABB Ability™.

#### CASE STUDY

### ABB fast chargers powering bus fleet in the Netherlands



In 2020, we began working with one of the Netherlands' largest public transport operators, Qbuzz, to supply more than 100 chargers to [electrify part of its bus fleet](#) .

In helping the Netherlands to meet its commitment that all new buses will be emission free by 2025, we installed 62 100kW high-power charging stations across Qbuzz depots in the northern part of the country. With a voltage range of 150–850VDC, the chargers will be used to charge the fleet overnight.

In the country's southwest, we installed 38 Terra 54 50kW depot fast chargers with a voltage range of 150–920V. We also supplied six HVC-300 Pantograph Down smart



charging solutions for en-route charging, as required in the regional network around the city of Dordrecht. This solution charges a bus for 3 to 6 minutes, depending on the power it needs to finish its route. It can then make it to the end of the line to receive a full charge, without slowing down its schedule.

ABB's solutions for industry, cities and infrastructure leverage the latest 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. Intelligent technologies offer the key to protecting the environment 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.

### **Emission-free solutions for the power industry**

The production and consumption of energy is responsible for roughly two-thirds of global GHG emissions. To enable our power industry customers to reduce their emissions, we have developed AirPlus™, a groundbreaking eco-efficient gas mixture that will enable electric utilities to avoid using sulfur hexafluoride (SF<sub>6</sub>) in gas-insulated switchgear (GIS) applications. SF<sub>6</sub> is one of the most potent GHGs – 23,000 times more damaging to the climate than CO<sub>2</sub>, with an atmospheric lifetime of 3,200 years, according to the Intergovernmental Panel on Climate Change. While SF<sub>6</sub> has been used as a reliable insulation gas in switchgear for over 50 years, AirPlus is equally reliable – with almost zero global-warming impact and no compromise to the footprint or performance of the switchgear.

While our medium-voltage (MV) GIS uses AirPlus, we have also developed another solution, Dry Air, a natural gas replacement for SF<sub>6</sub> that is suitable for 12kV applications. Both of these SF<sub>6</sub> -free technologies allow our switchgear to be operated at a lower tank pressure.

In 2020, we launched our latest primary GIS, PrimeGear ZX0. Designed for use in MV networks, it builds on ABB's digital monitoring and diagnostic solutions and incorporates our proven SF<sub>6</sub>-free switchgear technology. PrimeGear ZX0 is the world's first switchgear designed to enable customers to transition easily from SF<sub>6</sub> to our SF<sub>6</sub>-free alternative at any point in the switchgear's lifetime.



## Lessons learned



Over the past seven years of ABB's sustainability reporting cycle, we have increasingly learned to appreciate the value of collaborating across functions within our Group, while working closely with customers, suppliers, startups and academia to achieve ABB's sustainability objectives.

We have also determined that small actions, like changing the material we use to manufacture a simple product or part, can have a tremendous impact on the sustainability of our business in mature markets. Similarly, we have recognized the importance of understanding the true drivers of our CO<sub>2</sub> footprint within the product lifecycle.

Based on our experiences over this period, we have also learned that we can make our operations more circular by collaborating with suppliers to find ways to achieve the "closed-loop" recycling of plastic waste from our own manufacturing processes. At the same time, we have determined that we can improve ABB's Scope 3 emissions and the carbon footprint of our solutions by working with our suppliers to reduce their carbon footprints and by focusing on low-carbon logistics.



RESOURCE-EFFICIENT AND ENVIRONMENTALLY SOUND SOLUTIONS IN

# Process Automation

In ABB's Process Automation Business Area, we are dedicated to equipping our customers in the process and maritime industries with products, systems and solutions that make their operations safer, smarter and more sustainable. Our offerings are based on ABB's leading technologies – such as distributed control systems, marine propulsion, turbocharging, measurement and analytics – as well as deep domain expertise and industry-specific products. Each solution is supported by a range of remote services for the duration of the asset's lifetime.

## Reducing emissions through better marine technologies

Automation, electrification and digitalization are central to the energy transformation in the process and maritime industries. ABB plays a major part in reducing the environmental impact of the shipping industry with leading technologies that include Azipod® electric propulsion, the latest generation of turbochargers continuous emissions monitoring and the electrification of ferry services.

Azipod® is a gearless, steerable propulsion system that deploys an electric motor, placed in a submerged pod extending outside a ship's hull. Azipod® units rotate 360 degrees to increase maneuverability and operating efficiency, with a proven ability to cut fuel consumption by up to 20 percent compared to traditional shaftline propulsion systems. In addition to hardware, we provide fuel-saving software solutions to the marine industry. ABB Ability™ Tekomar XPERT diagnostic software enables large-vessel operators to reduce fuel consumption and manage their fleets more efficiently, collecting data from a wide range of sensors and other indicators in and around a ship's engines and recommending optimal settings for engine operation.



## CASE STUDY

## Technologies for cutting shipping emissions by 50 percent by 2050



Meeting the International Maritime Organization's goal of halving greenhouse gas emissions from ships by 2050 represents a critical step toward sustainability. ABB continued to work hard in 2020 to help the shipping industry meet it, providing a number of currently available technologies that can reduce fuel consumption and lower emissions, such as hybrid and electric vessel systems.

Our technology will be at the heart of P&O Ferries' sustainability program, as it transitions to the zero-emission future envisaged for shipping. Our contribution consists of supplying Guangzhou Shipyard International Ltd with a full scope of integrated solutions for P&O Ferries' two new vessels. The hybrid propulsion solution we are providing will use electric power from 8.8MWh batteries and diesel generators, cutting fuel consumption on P&O Ferries' Dover-Calais route by 40 percent. Equipped with four Azipod® propulsion units per vessel, each rated at 7.5MW, the 230-meter-long vessels will be the largest passenger and freight ferries ever to operate on this route when they enter service in 2023. In addition to Azipod® propulsion and energy storage, the new ships will feature a comprehensive scope of ABB solutions to cover power and propulsion, automation and power management.

We are also partnering with the American shipbuilding company Vigor Fab LLC as the hybrid-electric propulsion and energy storage system provider for the newest additions to the fleet of Washington State Ferries, setting the largest U.S. ferry system on course to zero-emission operations. The new "Olympic Class" ferries, which will have the capacity to carry 144 cars and 1,500 passengers each, herald a new era for the state of Washington as it seeks to shift toward technologies that enable significant reductions in GHG emissions and fuel use.

Upon delivery in 2024, the initial vessel of the class will be the first new build in Washington State Ferries' fleet to feature hybrid-electric propulsion and a high-capacity energy storage system. The new vessels will be able to operate fully on battery power and have the capability to revert to hybrid mode, if required. This landmark project supports the state's goal for 2050 to reduce emissions by 57.5 percent from a 2019 baseline.



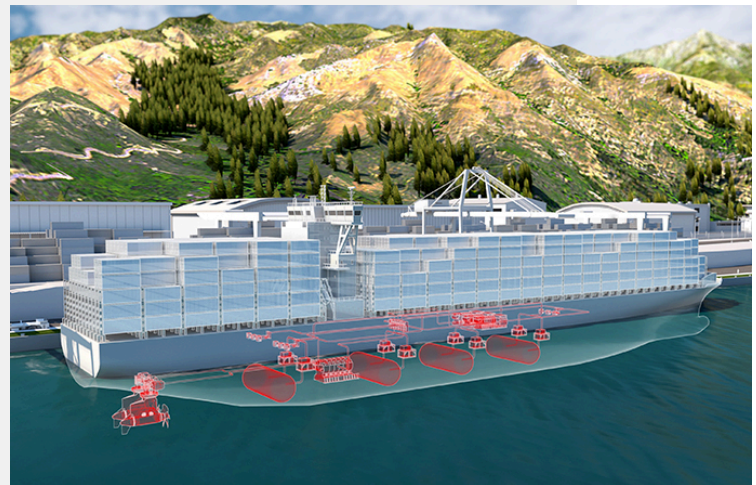
In January 2020, emission limits in International Maritime Organization (IMO) regulations became effective worldwide. To help customers comply, ABB expanded its extensive continuous emission monitoring portfolio with a marine-specific system called CEMcaptain. Our intention is that its measurement and digital capabilities increase on-board safety, provide process optimization, and substantially reduce ownership costs by requiring less maintenance.

We also offer zero-emission technology to the marine industry, and recently equipped a new generation of fully electric ferries that replaced the diesel vessels on the iconic Maid of the Mist tour at Niagara Falls. The two new 28-meter catamaran ferries are powered solely by high-capacity battery packs, making them the first fully electric vessels ever built in the United States.

Our solutions are also used in large, shaftline propulsion ships to increase engine efficiency. Our turbocharging portfolio comprises single- and two-stage turbocharging solutions. The latter is capable of producing high pressures at efficiencies of 75 percent or more, reducing fuel consumption, extending service intervals, and helping customers reduce environmental impact and comply with IMO regulations.

#### CASE STUDY

## ABB brings fuel cell technology closer to powering large ships



With the ever-increasing demand for solutions that enable sustainable, responsible shipping, ABB's Marine & Ports division has made an important step towards powering oceangoing vessels with fuel cell technology.

In 2020, we signed a memorandum of understanding with hydrogen technologies specialist Hydrogène de France (HDF) to closely collaborate on the assembly and production of a fuel cell power plant for marine applications. This builds on an existing collaboration announced in 2018 with Ballard Power Systems, the leading global provider of proton exchange membrane fuel cell solutions. Our goal is to optimize fuel cell manufacturing capabilities to produce a megawatt-scale power plant for marine vessels. The new system will be based on the megawatt-scale fuel cell power plant jointly





developed by ABB and Ballard, and will be manufactured at HDF's new facility in Bordeaux, France.

With shipping responsible for about 2.5 percent of the world's total GHG emissions, there is increased pressure for the maritime industry to transition to more sustainable power sources. The International Maritime Organization, a United Nations agency responsible for regulating shipping, has set a global target to cut annual emissions by at least 50 percent by 2050 from 2008 levels.

Fuel cells turn chemical energy from hydrogen into electricity through an electrochemical reaction. By using renewables to produce the hydrogen, it is possible to create an entire energy chain based on clean technologies. ABB is proud to be working with HDF on a solution that could enable the global shipping industry to meet the emissions reduction target set by the International Maritime Organization (IMO).

## **Improving environmental performance with smarter industrial processes**

ABB's automated control solutions are designed to increase output while reducing energy usage and waste of raw materials. Our suite of ABB Ability™ solutions and services uses sensors, network connectivity and data analytics to provide a real-time view into operations, enabling predictive maintenance, improved safety and better environmental performance.

This includes our first cloud application for original equipment manufacturers (OEMs), the ABB Ability™ Asset Performance Monitor. Launched in 2020, it 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. Data is displayed 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 many flexible, scalable and secure solutions that we offer to facilitate the shift to smart industrial processes. Digitalizing production processes increases system reliability and throughput, reduces raw material and energy use, and improves product quality.

With these goals in mind, ABB Process Automation has been deeply involved in laying the groundwork for an all-electric mine concept, developing several solutions focused specifically on the electrification, automation and digitalization of mines. One example is the ABB Ability™ Ventilation Optimizer, a modular system that maximizes the efficiency of mining ventilation systems. While maintaining proper air quality in a mine, this solution delivers energy savings of up to 50 percent per year.



## CASE STUDY

## Pilot project for the electrification of mining transport in Sweden



ABB has designed, delivered and commissioned electrical infrastructure capable of powering several electric mine trucks at Boliden AB's Aitik mine, Sweden's largest open-pit copper mine. The lane is ~700 meters and is expected to save ~830 m<sup>3</sup> diesel per year. This infrastructure will ultimately enable Boliden to carry up to 70 million tons of rock every year at the mine, and reduce its greenhouse gas emissions from transportation by up to 80 per cent along those routes where the technology can be implemented.

Given that demand for copper is expected to continue to rise, driven by increased production of electric vehicles and the widespread use of renewable energy, ABB's electrification project at Aitik is a significant milestone. By enabling Boliden to increase productivity and safety at the site, we are helping the mining company to meet the high demand for copper in a sustainable manner.

To execute this project, we provided a digital substation, including a 4.8MW rectifier, connected to the ABB Ability™ System 800xA control system. This solution is our first-ever application for heavy-duty trucks in the mining industry. Our rectifier will efficiently convert alternating current to direct current, ensuring maximum availability and productivity. The substation will incorporate digital communications utilizing fiber optic cables to replace traditional copper cables, significantly reducing costs. It will also ensure safety, as systems are monitored digitally without requiring manual intervention.

The project is based on the ABB Ability™ MineOptimize offering, which provides mine operators with a suite of digitally connected solutions, products and collaborative services. The MineOptimize connected solutions at Aitik will send early alerts when the equipment needs servicing, provide remote assistance with real-time guidance, and offer remote monitoring to ensure optimal performance. The project is supported by the Swedish Energy Agency and is being executed by a number of collaborating parties.

ABB has been deeply involved in laying the groundwork for an all-electric mine concept and provides numerous solutions involving electrification, automation and digitalization – three key elements that are transforming the mining sector. Boliden is already partnering with ABB to develop automated solutions that can keep mine production running around the clock while improving safety. Building on our 90-year relationship, we have worked



together to achieve unprecedented levels of automation and control, both below and above ground, to optimize mine performance.

## Driving the energy transition

ABB Process Automation is developing technologies to facilitate the energy transition for our industrial customers. As a member of the European Clean Hydrogen Alliance, ABB is helping to scale up the hydrogen value chain across Europe. Hydrogen has several uses, from storing renewable energy to fueling heavy transport, and as a feedstock in energy-intensive processes. Most importantly, hydrogen only emits water and heat when used as a fuel, releasing no carbon. In fact, if hydrogen is produced from renewable sources, the whole hydrogen value chain is carbon-free. Hydrogen thereby serves as an excellent complement to electricity and offers a solution to decarbonizing industrial processes and economic sectors where reducing carbon emissions is both urgent and difficult to achieve. Hydrogen is crucial to achieving the objectives of the European Green Deal and ensuring Europe's transition to clean energy.

To help hasten the energy transition, we are working with Hydrogen Optimized on the development of large-scale, environmentally friendly hydrogen production systems. In 2020, the two companies signed an MOU to make green hydrogen a financially viable option for our customers. We have also been cooperating with ABB's Electrification Business Area on the transformation of ABB's Busch-Jaeger production site in Lüdenscheid, Germany, into an example of how the energy transition can be successfully accomplished with currently available technology. We are exploring the possibility of using hydrogen as a clean source of energy at the site, which already has a solar plant that generates enough power on sunny days to meet all of its power requirements.

In the Asia-Pacific region, ABB is supporting the Hydrogen Energy Supply Chain (HESC) project. HESC aims to safely and efficiently produce hydrogen in Australia and transport it to Japan, in one of the world's first efforts to commercialize hydrogen liquefaction and transportation. The project is poised to position Australia as a leader in hydrogen production, and with the world's fifth-largest energy consumption, yet low fossil fuel resources, Japan considers hydrogen key to meeting future energy requirements. ABB won orders in both countries: an electrification and instrumentation contract in Australia, and an automation contract in Japan from Kawasaki Heavy Industries.

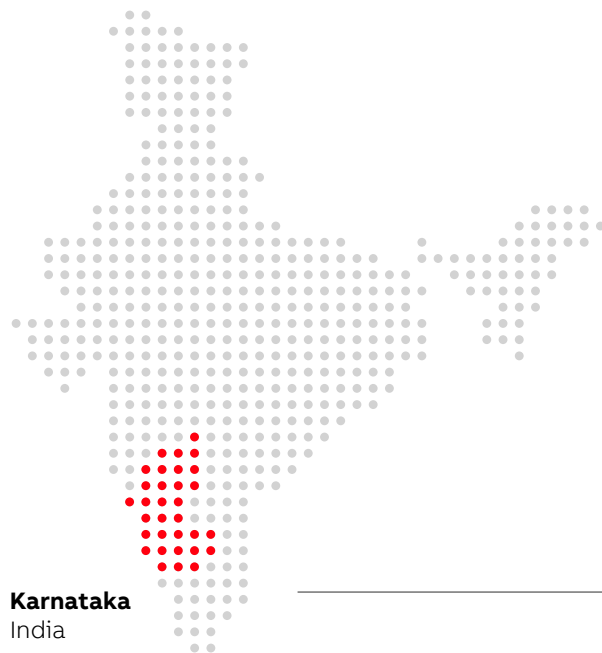


## Conserving resources through advanced digital solutions

ABB Process Automation is a key provider of technologies and solutions that help conserve valuable resources such as clean water and natural gas.

We designed our ABB Ability™ Symphony® Plus SCADA to maximize the reliability and availability of water plants and networks. The control solution deploys integrated information management, the integration of equipment, and process optimization based on data from an entire water network. ABB's AquaMaster 4 electromagnetic flowmeters, which can run on battery power, provide reliability even in low flow conditions and in areas where most mechanical flowmeters would fail. ABB flowmeters are used across India in urban, semi-urban and rural settings. For example, in the Koppal district, a drought-prone region in southwestern India, we provided end-to-end digital water management solutions to help the local water authority not only track, measure and optimize water use, but also pump and distribute treated river water to homes. Equipped with ABB Ability™ Symphony® Plus SCADA and ABB's AquaMaster 4 flowmeters, the district is effectively monitoring water flow, managing leaks and delivering overall productivity improvements to its widely dispersed network.

## ABB supports India's Koppal district to ease water shortages with digital water management solutions



**600,000**

of Kushtagi and Yelbargi Taluka villages currently rely on local wells and face regular water shortages.



**620 tanks & 16 reservoirs**

will bring clean treated river water to their homes in a new end-to-end solution.



ABB Ability™

**Symphony Plus SCADA**

will analyze flow and consumption by sharing real-time data with a central control room.



**AquaMaster 4**

electromagnetic flowmeters will track how much water is passing through the network.

We also offer solutions to rapidly detect and locate gas leaks, which is not only critical to the security and resilience of gas infrastructure, but also to reducing GHG emissions. Our complete Gas Leak Detection Platform makes it possible to find leaks in any natural gas infrastructure – upstream, midstream, downstream or utilities – with far higher reliability and speed than ever before by combining sophisticated measurement technologies with advanced data analytics. The innovative platform uses advanced laser absorption technology to provide fast, sensitive measurements that distinguish between naturally released methane and gases leaking from a buried pipe or other potentially dangerous source.



## CASE STUDY

## Guarding gas lines to make clean energy sources safe



Leaking natural gas pipelines are health and environmental hazards which, if undetected, can result in wasted resources, unwanted emissions, and even personal and ecological harm. Governments around the world are improving gas leak detection abilities to ensure public safety, conserve energy and reduce environmental impact. ABB gas leak detection technology can help.

The new portable ABB MicroGuard™ detection device enables surveyors to quickly find leaks on foot, and can be used stand-alone or with ABB's MobileGuard™ vehicle-based detection system, to precisely identify leak locations.

These offerings employ laser absorption for fast, highly sensitive measurements that identify gases leaking from a buried pipe or other source. The technology continuously measures emissions, wind velocity and local coordinates to pinpoint leaks. Software eliminates false positives, reducing search areas and guiding technicians to locations. Digital reports are generated in real time, helping crews to prioritize resources and repairs. Regulatory compliance is easier because data is digitally available, immediately.

A leading Asian oil company monitors its extensive pipeline network with MobileGuard, significantly expanding speed and range of detection, and reducing safety risks and environmental impact, all while conserving gas and cutting monitoring costs. These benefits helped the customer achieve important business objectives in a difficult year. Similarly, more than 30 cities in China use MobileGuard to monitor pipelines to improve health and safety.

This technology can be used on aircraft and drones (ABB HoverGuard™), to survey locations inaccessible on ground, as well as on fixed locations (ABB EverGuard™) to continuously monitor high-risk areas in well pads, gathering lines, pipelines, factories, distribution stations and storage facilities.

ABB gas leak detection helps find leaks upstream, midstream and downstream. These technologies help utilities and service providers to improve safety, conserve energy and reduce environmental impact. They are important components in a comprehensive industrial or municipal sustainability strategy.





In Western Australia, our gas measurement technologies will soon also be used to help convert waste into sustainable energy. In 2020, three ABB ACF5000 analyzers were selected to monitor, measure and analyze the composition of exhaust gases at the new, large-scale East Rockingham Waste-to-Energy facility near Perth. ABB Ability™ Condition Monitoring for measurement devices will enable us to monitor these analyzers remotely throughout their lifecycle.

## **Lessons learned**

Over the past decade, the oil & gas, mining and marine sectors have dramatically changed, and our business has adapted to serve their needs. Increasingly, our customers are turning to ABB to help them save energy, increase safety, reduce costs and achieve their own, wider sustainability goals. Because our customers face increasing regulatory obligations across all of their markets, an investment in automation technologies that improves environmental performance is frequently viewed not only as the right thing to do, but also as a sound business decision that can drive overall safety, efficiency and productivity.

Based on our experiences during the previous sustainability reporting cycle, we have learned that we need to elevate the profile of our contributions to sustainability. While our customers have always known and recognized ABB for the safety and efficiency of our portfolio, we see an opportunity to emphasize how our solutions can contribute to reducing their environmental footprints. This will involve educating our salesforce, raising awareness of our contributions among all of our employees, and building a stronger understanding of our offering in the market.



## RESOURCE-EFFICIENT AND ENVIRONMENTALLY SOUND SOLUTIONS IN

# Motion

Building on more than 130 years of experience, ABB's Motion Business Area provides leading technologies that enable our customers to increase their energy efficiency, improve their safety and reliability, and maintain precise control of their processes. Like ABB's other Business Areas, we are proud to provide solutions that contribute to the ongoing energy transition and deliver major reductions in emissions and environmental impacts. Our Business Area offers the world's leading portfolio of industrial electric motors and the variable-speed drives that ensure they perform at optimum efficiency. Connecting products with our digital solutions and services further optimizes performance, system efficiency and energy savings.

We believe the environmental potential of our products and services has not yet been fully appreciated. An estimated 45 percent of the world's electricity is used to power electric motors in buildings and industrial applications. Electric motors have been in use for 150 years, and they have steadily improved over time. Yet for the past decade, they have undergone a renewed period of technological advancement. The latest wave of improvements has opened the door to significant reduction of the carbon footprint of industrial electric motors. An expanding range of highly energy-efficient electric motors and variable-speed drives that can be used to run them will underlie much of the ongoing effort to meet the goals of the Paris climate Agreement.

### **Reducing emissions through more efficient motors**

While motors of all sizes have been embedded in great quantities into nearly every built environment, the majority of electric power consumed by motors is used by mid-sized motors. Many of these are larger than necessary for the applications at hand and are often run at full speed, even when that extra power is not needed. Roughly 75 percent of the industrial motors in operation are used to run pumps, fans and compressors, a variety of machinery that is ripe for major efficiency improvements. At ABB Motion, we equip our customers with innovative, practical and highly efficient solutions that are both smart and optimized for their intended applications. We continue to push the limits of technology, searching for innovations that will take our solutions to the next level.

In 2020, we launched the ultra-premium ABB IE5 SynRM, a synchronous reluctance motor that offers the performance advantages of permanent magnet technology with the simplicity and service-friendliness of an induction motor. SynRM motors do not use magnets or rare earth materials. Instead, they achieve a maximized reluctance torque from a simple but robust rotor design. Researchers estimate that replacing 80 percent of world's installed motors with IE5 ultra-premium-efficiency motors like SynRM would save



160 terawatt-hours of energy per year, equivalent to more than the annual power consumption of Poland. Recognized by the World Economic Forum as a sustainable energy innovation in a 2020 special report, SynRM motors offer up to 50 percent lower energy losses and significantly lower energy consumption in comparison with commonly used IE2 induction motors. SynRM motors are controlled by variable-speed drives, further maximizing their energy savings.

## CASE STUDY

### ABB IE5 SynRM motor receives Efficient Solution Label



In 2020, our IE5 SynRM (synchronous reluctance) electric motor received the Solar Impulse Foundation's Efficient Solution Label, in recognition of its ability to reduce energy use and CO<sub>2</sub> emissions. The labelling process involves a strict assessment by independent experts and lies at the heart of an initiative to build a portfolio of 1,000 labelled solutions that will be promoted to governments and businesses worldwide, with the aim of accelerating the transition to a sustainable, carbon-free economy. SynRM technology is based on an advanced rotor design with precise variable-speed drive control.

Offering the performance advantages of permanent magnet motors combined with the simplicity of an induction motor platform, SynRM technology does not use magnets or rare earth materials, deploying an environmentally friendly design that also simplifies servicing. Installing just one ultra-premium efficiency IE5 SynRM motor to replace an IE3 motor can reduce CO<sub>2</sub> emissions by as much as 22,000 kilograms per year for an application rated at 315 kilowatts – the equivalent of taking nine fossil-fuel-powered cars off the road. Another benefit of the IE5 SynRM motor is lower operating temperatures than induction motors, which extends the service life of bearings and windings, resulting in better overall reliability. SynRM motors also help improve the working environment with their lower noise levels.



## Achieving greater efficiencies with variable-speed drives

While there are significant efficiency gains to be achieved from upgrading a motor, still greater energy savings are possible when a high-efficiency motor is used in combination with a variable-speed drive.

Variable-speed drives make substantial contributions to the efficient operation of many electric motors, but their role often goes underappreciated. Drives control the speed and torque of a motor to optimize its operation. In this way, the motors run only as fast as is required by the underlying load, leading to significant electricity savings. The highest-impact case of this is seen in pump, fan and compressor applications, which can be found across all industries and in buildings. Adding an ABB drive to an existing motor system without a drive can reduce electricity use by roughly 25 percent.

Ultra-low harmonic drives are a special class of drives manufactured by ABB featuring state-of-the-art technology that mitigates harmful disturbances in electrical networks. Harmonic pollution is a serious, often neglected problem that can cause electrical interference and make equipment connected to the circuit behave erratically, akin to the rogue waves that sometimes swamp boats at sea in a storm. Harmonics can trip circuit breakers, blow fuses and cause capacitor failures. The effects also include overheating, which wastes energy and shortens equipment life. Our ultra-low harmonic drives reduce harmonic content by up to 97 percent, resulting in energy savings and improved performance.

All of ABB's motors and drives are designed to maximize reparability, serviceability and modularity. ABB Motion offers a wide variety of extensions, upgrades and retrofits to lengthen the service life of the equipment.

## Leveraging digitalization to optimize operations

Another technological development that is poised to improve the efficiency of the world's electric motors can be found in digitalization and connectivity – the “industrial Internet of things.” Using wirelessly connected sensors, many of ABB Motion's motors and drives deploy cloud-based condition monitoring solutions to optimize performance and predict maintenance needs.

In 2020, ABB Motion entered a collaboration to modernize the motors of Swedish company Svenska Cellulosa AB (SCA), including the installation of ABB Ability™ Smart Sensors on electric motors in one of its facilities. In this two-year pilot project to reduce energy consumption and increase the efficiency and reliability of the company's paper and pulp production line, old motors have been locally recycled and replaced with more energy-efficient models and new drive systems. This circular collaboration includes Stena Recycling, which entered a local agreement with ABB Sweden in November 2019 to develop a process where all material fractions (iron, copper and aluminum) in electric motors can be recycled and reused in new products.



We offer a suite of advanced digital solutions using smart sensors that help make factory operations more efficient, predictable and safe. The ABB Ability™ Digital Powertrain consolidates sensor and drive data with cloud-based analysis of all components in an industrial system. By assessing the data from variable-speed drives, motors, pumps, bearings and other components, it generates deep data insights that help customers optimize processes and performance, realizing efficiency gains and energy savings.

Our digital solutions also play a key role in a pilot project to create Switzerland's first digital hydropower plant. In partnership with Hewlett Packard Enterprise, ABB worked with Axpo, Switzerland's largest producer of renewable energy, to help realize their Hydro 4.0 initiative. Together, we installed ABB Ability™ Smart Sensors on their motors to capture valuable maintenance and performance data from the plant's equipment. The ABB Ability™ Condition Monitoring digital solution enables Axpo to deploy condition monitoring across the plant, so engineers can identify anomalies, anticipate maintenance needs, and gain real-time insights into operations. The solution results in much more efficient maintenance without incurring any additional risk of unpredicted failure. This increased efficiency allows Axpo to provide sustainable power for its customers at lower cost and with greater reliability.

## Lessons learned

Over the past seven years, we have learned that maintaining a strategic approach to sustainability is fundamental to securing the commitment of senior management, which in turn is critical to making progress on major initiatives. This ensures that we focus on areas where we can have the greatest impact. As the market leader in energy efficient motors and drives technology, we understand that we must also lead by example in our own operations. We have set highly ambitious targets and will maximize the use of our own products, solutions and expertise to achieve them.

We have also learned that cross-functional collaboration is fundamental to the success of sustainability initiatives. For example, the Motion green electricity initiative was made possible only through effective collaboration with ABB's Supply Chain Management, Sustainability, Operations and Real Estate functions. From this solid foundation, we will continue to make a strong, sustained push to raise awareness at all levels. Our goal is to make sustainability a source of pride for employees and a lever in attracting new talent. During the stakeholder engagement process that accompanied the development of ABB's 2030 sustainability strategy, we were pleased by the positive response from our stakeholders, especially customers. It's clear that we all have a critical role to play to contribute to a low-carbon society.

Our role, as ABB Motion, is to provide the most energy efficient products and services to our customers, and to always innovate for more. But we also need to work together with academia, public decision makers, NGOs, customers and partners to change the way society uses electricity. By joining forces, we can make the world more energy efficient.



RESOURCE-EFFICIENT AND ENVIRONMENTALLY SOUND SOLUTIONS IN

# Robotics & Discrete Automation

In ABB's Robotics & Discrete Automation Business Area, we are enabling manufacturers to address demand driven by four megatrends: the rise of individualized consumption; digitalization; labor shortages due to aging populations; and general uncertainty, which can have significant impacts on production. To address these trends, flexibility and simplification have become increasingly important, driving our Business Area to innovate and improve our portfolio of solutions in search of even greater efficiencies.

## Increasing operational efficiency

Among our comprehensive range of solutions that help manufacturers improve efficiency, the robotic order-picking installation at Heemskerk's Rijnsburg production facility in the Netherlands provides a notable example of how advanced solutions improve sustainability. Heemskerk Fresh & Easy is one of the largest vegetable processing companies in Europe, producing 3.5 million to 4 million fresh convenience products every week. These include salads, ready-to-cook meals and pre-cut vegetables and fruit – healthy products with very short shelf lives.

Its central facility's new robotic system was designed to prepare orders according to each food retailer's needs, so that the products can be shipped directly to stores and supermarkets instead of making an intermediate stop at a distribution center. This reduces the amount of time that fresh food spends in the supply chain, resulting in extended shelf life and less wasted food.

The system utilizes an ABB IRB 660 four-axis robot that takes crates containing the orders for a particular market and places them on a conveyor belt. The crates then move to the order picking zone, where six IRB 6700 six-axis robots positioned on a track pick them up and place them in a location designated for that market. Two more IRB 6700 robots consolidate the orders in stable stacks. The crates are then picked up by another IRB 660 and placed on dollies to be transported directly to the supermarket. The system can seamlessly process an endless variety of orders and ensures that 75 percent of the products processed today are on store shelves the following day.

About one-third of all the food produced and packaged for human consumption is wasted every year, according to the UN's Food and Agriculture Organization. The system at Heemskerk currently processes more than 800,000 crates every week, but can handle double or even triple that volume without modification. Its efficiency and flexibility allows Heemskerk to ramp volume quickly up or down based on demand, without added investment and with minimal waste.





## Using every opportunity to reduce GHG emissions

Emissions reduction is an important area in which state-of-the-art robotics have a role to play. PixelPaint is a new process developed to improve the efficiency of robots used to paint vehicles. In conventional processes, approximately 30 percent of the paint is wasted. ABB's new pixel-painting robot paints directly on to the target surface using the printing nozzle head instead of spraying with a conventional atomizer, reducing waste to zero. PixelPaint is available as a cell using two ABB IRB 5500 robots. With no need for masking or de-masking, a customized paint job can be carried out in a single pass, reducing cycle times by around 50 percent. Emissions are reduced because less paint is required, avoiding the CO<sub>2</sub> normally emitted during its production.

ABB's non-overspray PixelPaint solution was recognized as a groundbreaking innovation with a "Technology" award at the SURCAR annual conference in Cannes in June 2019. SURCAR is a forum for the global car body finishing community.

### CASE STUDY

## Robotic recycling sorting systems



While almost everyone understands the importance of recycling, few people understand the process by which plastic bottles, cans, paper and cardboard are sorted once they arrive at a material recovery facility (MRF). Given that MRFs must sort through anywhere from 30 to 900 tons of materials each day, it is clear that workers cannot do the job manually.

That is why Bulk Handling Systems has combined their Max-AI Visual Inspection System with ABB's FlexPicker robots to revolutionize the process of removing designated materials or colored items from recycling streams. The resulting Automated Quality Control recycling systems, AQC-1 and AQC-2, are compact and easy to maintain, and can rapidly identify and pick out selected materials from the line.

With camera-based machine vision and artificial intelligence, FlexPickers can be directed to sort dozens of material types. The faster and more precise identification and



separation of items that can be achieved by this smart system represent a quantum leap from manual sorting processes and offers considerable advantages over the specially designed “dumb” machines and equipment that are commonly used to pull materials out of the recycling stream.

Typically, large spinning discs called “star screens” are used to separate paper and other flat, lightweight materials from the line. Density separators vibrate glass from the recycling stream through fine metal screens. A massive rolling magnet collects all ferrous metals. Optical sorters identify plastics, which are then removed from the line with targeted puffs of air, while rare earth magnets generate eddy currents to push aluminum cans off the line.

These technologies work, and they work well, but they can be easily jammed or rendered ineffective when people put the wrong materials into their recycling bins. Star screens get easily clogged up by plastics bags, coat hangers and other tangling materials; bottle caps and other small objects get mixed up with glass; and if people forget to empty the liquids out of plastic bottles, they are too heavy to be blown off the line by puffs of air.

The combination of FlexPicker robots with other innovative technologies can eliminate these types of line failures, avoiding costly delays and interruptions.

## Reducing waste and energy consumption

By their very nature, robotics and other factory automation solutions serve to 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 at the forefront of robotics breakthroughs that allow humans to work closely and safely with machines. These systems can optimize production efficiency as well as reducing the amount of factory floor space required for a production line.

A number of solutions have been developed to ensure that our robots operate efficiently and reliably. Remote Access allows ABB technicians to deal remotely with problems that may arise in the operation of robots. Condition monitoring helps customers assess energy consumption and respond proactively. Condition monitoring also helps ABB evaluate a problem, making technicians better prepared, with the right spare parts in hand for a customer site visit. Fleet assessment is used to identify stressed robots that may require replacement.



## Fostering the circular economy

Together with Stena Recycling, Combitech, Electrolux and Stora Enso, ABB is a leading member of the Circular Initiative. This collaborative, industry-wide forum for Swedish companies aims to increase the circular flow of materials throughout Swedish industry. ABB, Stena Recycling, Combitech and Electrolux have, for example, worked together on a joint trial/pilot project that aims to improve the efficiency of the recycling process for electrical products. Robotics and shared product data are used to scan waste for specific products and materials. With data provided by manufacturers, the recyclable portions can be identified and then extracted. The end result is higher-quality recycled material with less leftover waste. This pilot project is currently processing unwanted vacuum cleaners; the ultimate goal is for the technology developed to be used for the processing of all types of electronic waste. For ABB, this partnership represents an important opportunity to test new solutions where automation and robotics are key components of a larger self-learning system.

## Reducing waste by refurbishing unwanted robots

Of course, robots are themselves a manufactured product, and we are committed to producing them in a more resource-efficient and environmentally friendly manner. One way to achieve this is through remanufacturing, which allows customers to sell inactive or legacy robots to ABB through our buyback service, rather than scrapping or storing them. Over the last 25 years, we have refurbished and upgraded thousands of robots, giving them a second life. Before being labeled as an ABB-certified remanufactured robot, every second-hand unit undergoes rigorous checks and is guaranteed to offer the same levels of performance, durability and safety as a new ABB robot. ABB's network of global remanufacturing facilities includes centers in Ostrava, Czech Republic, Auburn Hills, Michigan, and Shanghai, China, as well as local remanufacturing service centers in Brazil, Mexico, Germany and Vietnam.



## CASE STUDY

## Transforming plastic waste into designer furniture



A staggering 640,000 tons of fishing nets are dumped into the seas every year, but that represents just a small proportion of the 150 million tons of garbage floating in the world's oceans. Thanks to a clever adaptation, however, one of our robots is now being used to make designer furniture from the plastic that is threatening ocean habitats across the world.

Deployed by the Swedish sustainable design house Sculptur, this specially modified ABB robot is turning the discarded nets and plastic waste into furniture. In an innovative twist, we have tweaked one of our industrial robots so that it functions as an advanced 3D printer.

Because the robot can point the injection molding equipment at any angle as it applies the plastic grains, the equipment is far more versatile than conventional 3D printers and helps save around 50 percent of the required base materials. Our simulation and offline programming software, RobotStudio, provides a complete digital twin of physical assets, and a newly developed add-on for 3D printing enables the printing robot to be programmed in just a few minutes. A complete designer piece can be manufactured in less than two hours.

Sculptur and ABB share a philosophy and a vision – that by using recycled products and cutting-edge technology they can together make the world a better, more sustainable place.



## Lessons learned

Since ABB initiated its last sustainability reporting cycle in 2013, the Robotics & Discrete Automation Business Area has evolved to regard the sustainability of our products, services and operations as a central consideration. The quest for production efficiency has always been at the heart of what we do, but we have increasingly learned to address matters of sustainability, resource conservation, safety and circularity as a conscious and critically important field of activity. This effort is a key aspect of one of our Business Area's most critical improvement programs, which seeks to achieve further quality improvements for the benefit of our customers. The program considers all aspects of the customer journey and aims to achieve quality in every dimension the first time we undertake any action. On this basis, we intend to enhance our overall efficiency, including in our use of resources.

In taking a conscious and comprehensive approach to sustainability, we consider not just the time savings that our portfolio can deliver to our customers, but energy savings, safety improvements and more. By considering all of the impacts of our offerings, we have lowered the total cost of ownership of our solutions and made them more attractive to our customers, while reducing their impacts on the environment.

In many cases, this comprehensive approach has called for greater cooperation and collaboration across ABB's Business Areas and functions, as well as with external technology providers and research institutions. Advances such as stronger recycling processes could not have been achieved without taking an outward-looking, cross-disciplinary approach to our activities. By prompting us to reexamine our approach to R&D, our sustainability targets broadened our Business Area's perspective and led to significant technological refinement of our portfolio. By thinking of ways to use new materials and processes to make our products and services more sustainable, we have also made them better – more efficient, cleaner, more reliable, more compact and more versatile.

Among the other lessons we have learned from this reporting cycle, Robotics & Discrete Automation has embraced the importance of promoting the value of a sustainable approach to our colleagues, our customers and our suppliers. By highlighting the concrete benefits of this approach, we are better able to achieve rapid technological progress and expand our Business Area's contributions to the sustainability and value-creating potential of the industrial sector around the globe.

Finally, our Business Area has embraced the importance of strongly promoting diversity and inclusion within our ranks. Following ABB's announcement of its ambitious new targets in this area, Robotics & Discrete Automation engaged its employees in a global brainstorming process. The point of this exercise was to identify concrete and practical solutions to advance diversity and inclusion in our workplaces and build an even better culture within our Business Area.



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# 04

## Responsible operations

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## 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. In 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



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.

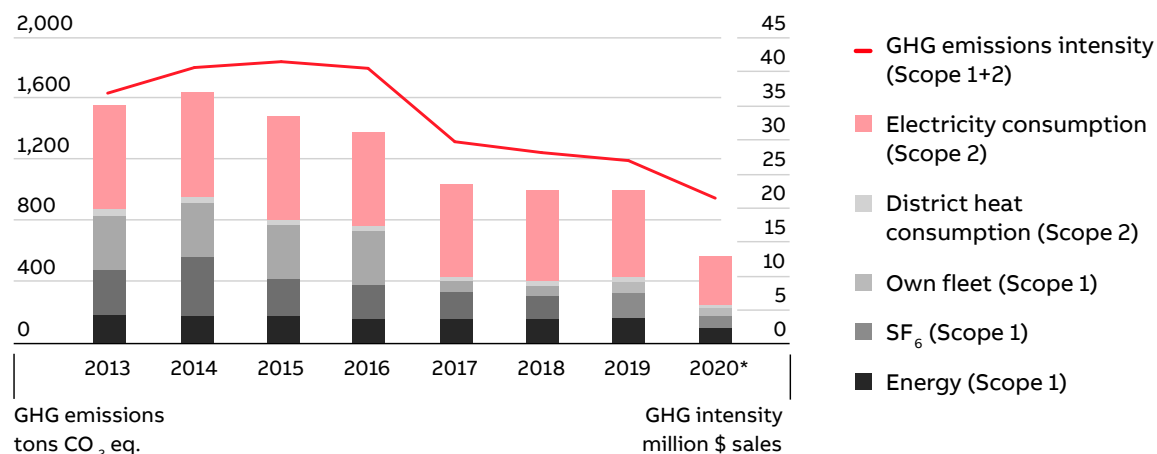




## Target status

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<sub>6</sub>). 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.

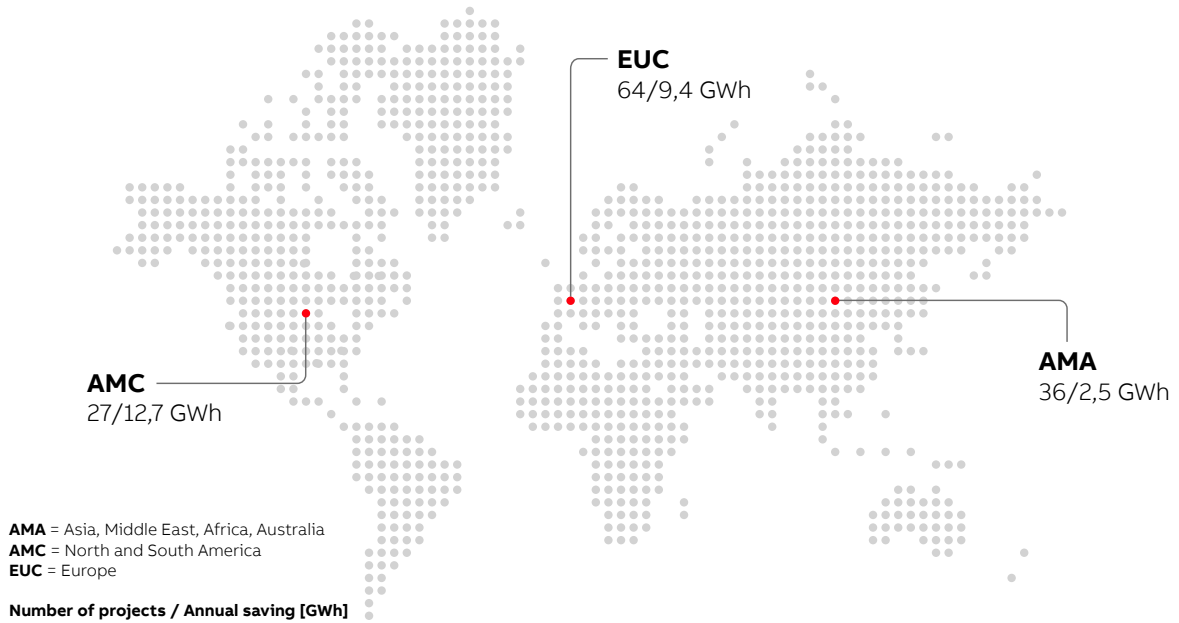
In 2019, our Motion Business Area launched a program to ensure it buys 100 percent green electricity well before 2025. In 2020, Motion made significant progress towards its goal, working to procure 100 percent green electricity for its production facilities in Finland and for all of its operations in 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.

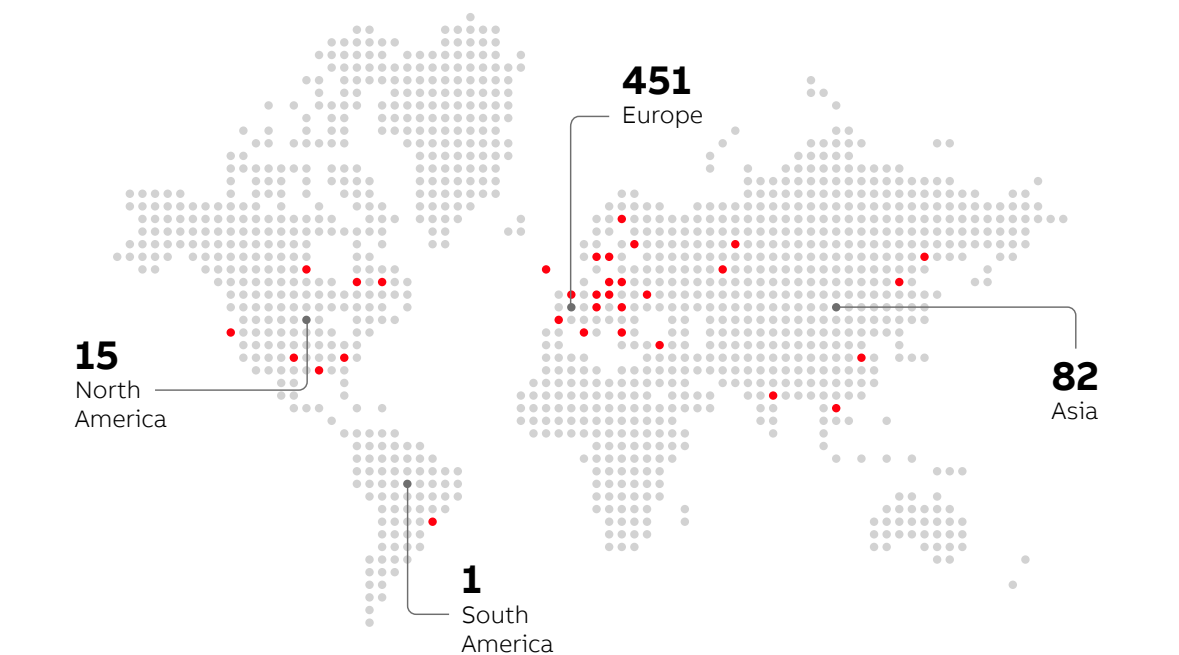


## Projects underway to increase energy efficiency



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

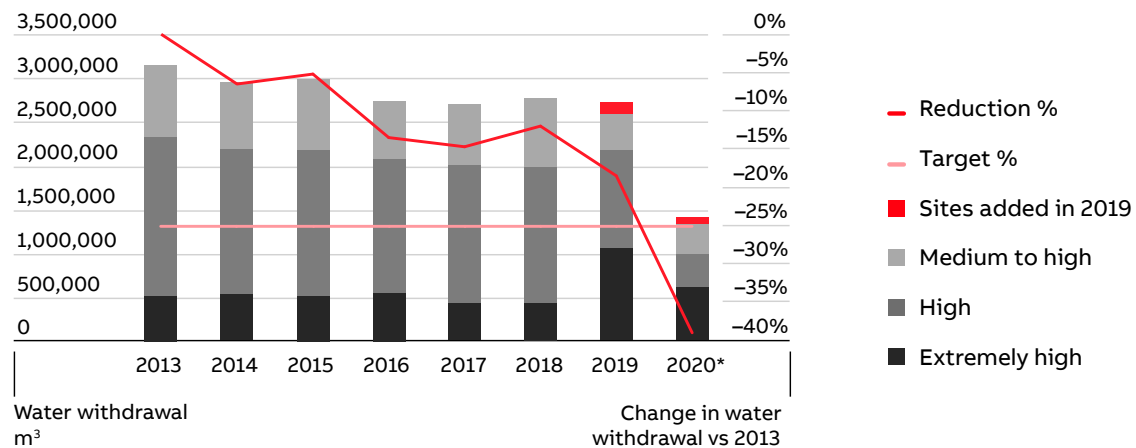


Since 2010, we have launched a large number of waste reduction and recycling programs at our sites around the world. These initiatives are steadily reducing ABB's impact on the environment and, as an added benefit, are delivering cost savings to our Business Areas.

## 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

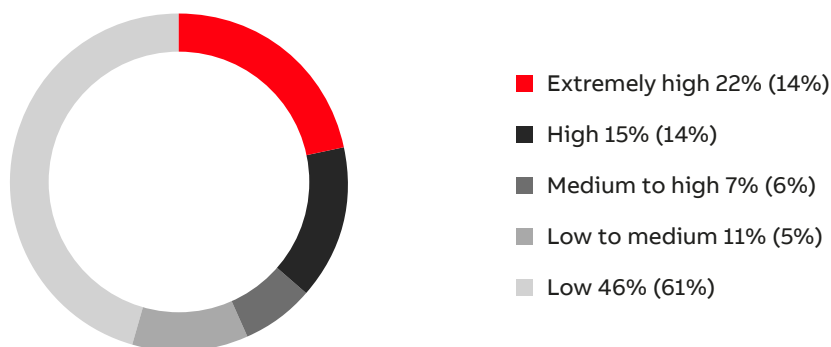


\* PG not included for 2020

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.<sup>1</sup>

## Distribution of water withdrawal 2020 (2019)



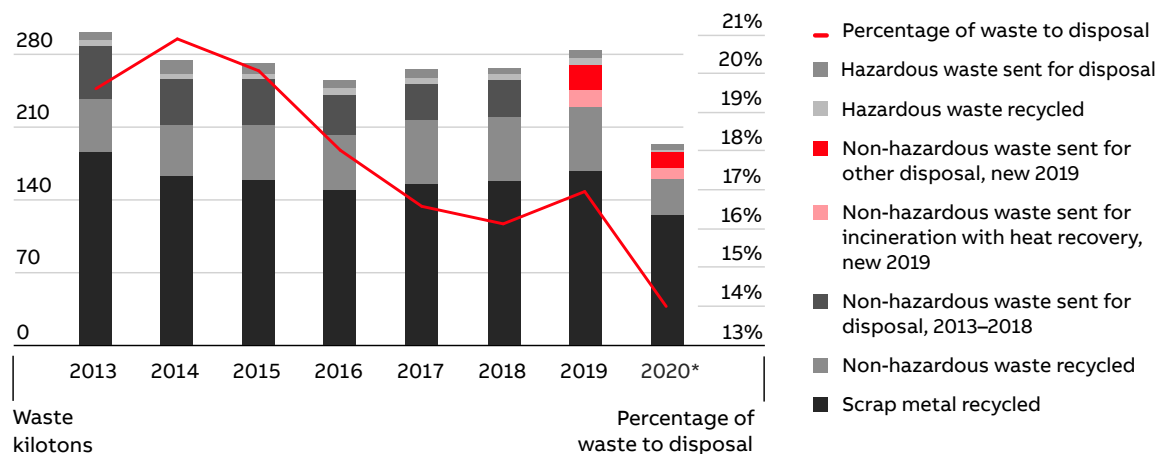
1 Total water withdrawals in stressed watersheds, for all ABB sites, was 1,273 kilotons; total water withdrawals for all ABB sites except for the 39 new sites added in 2019, for which no 2013 baseline data exist, was 1,178 kilotons. The latter number is used to calculate our progress versus our target.



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.<sup>2</sup> 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.

<sup>2</sup> 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.<sup>3</sup>

## 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.

<sup>3</sup> 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**



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.

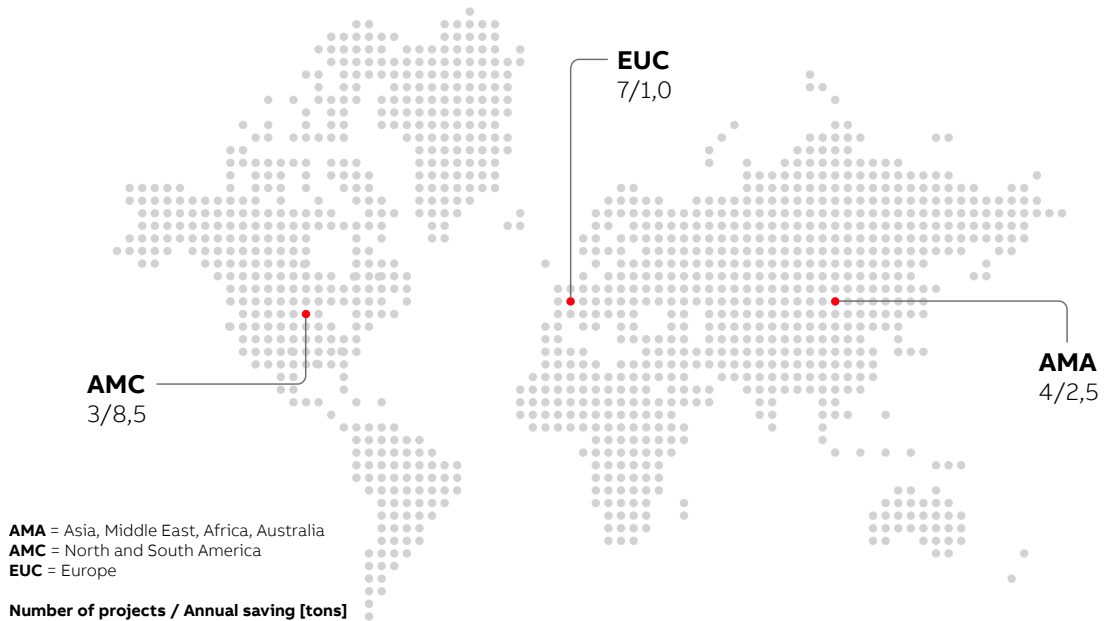
Our 2020 target for hazardous substances was to reduce ABB's emissions of volatile organic compounds (VOCs) by 25 percent from 2013 levels. Since 2013, ABB has reduced its VOC emissions by 29 percent by using low-VOC paints and varnishes and installing active carbon filters and other equipment at our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

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.

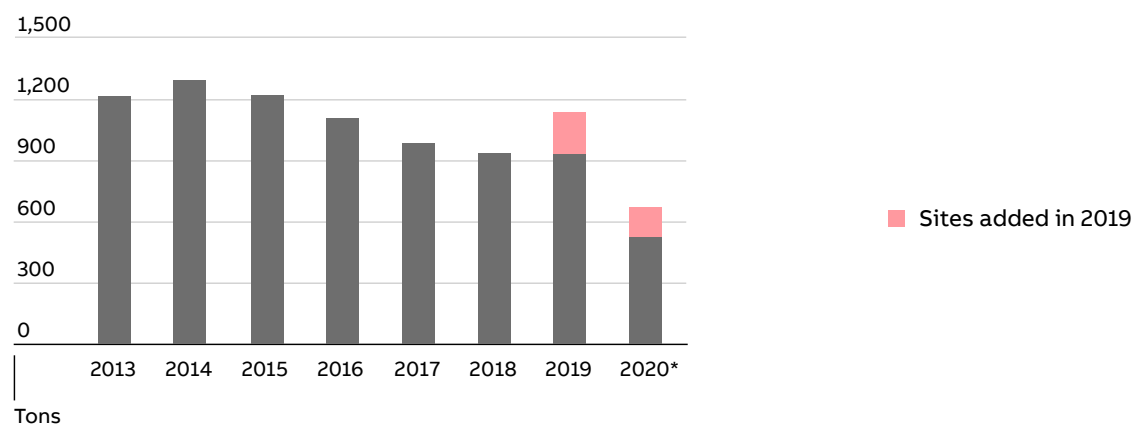


## Projects underway to reduce and phase out hazardous substances and VOC emissions



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.<sup>5</sup>

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.

<sup>5</sup> 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<sup>6</sup> from supplier assessments. Despite the challenges presented by the pandemic, we achieved our target with a 79 percent closure rate<sup>7</sup> 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 recognition.

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.

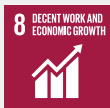
The SSDP was a centrally managed, program-based approach focused on working with existing suppliers. The new SSBM approach will more extensively integrate sustainability principles into ABB's supplier selection and qualification processes; it will be backed up by risk-based monitoring plans for a wider 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.



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# 05

## Responsible relationships

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## INTEGRITY

# Committed to the highest ethical business standards

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

ABB's robust integrity program helps ensure compliance with laws and regulations; its guidance enables our employees to make fair and honest decisions every day. ABB's governance framework, policies and procedures, risk assessment processes, trainings, approach to managing third parties, and our monitoring, investigation and reporting mechanisms are structured to ensure that everyone who works with or for ABB is personally accountable for upholding the highest moral and ethical standards. In our 2020 Engagement Survey, ABB employees said they have pride in our high standards of integrity; critically, our people also said they felt comfortable about stepping forward to raise any integrity concerns.

## Prevent

- Business accountability
- Strong management commitment
- Training
- Awareness raising
- Policies



## Detect

- Reporting channels
- Investigations
- Audits and reviews
- Process and controls
- Risk monitoring



## Resolve

- Resolution
- Zero tolerance
- Ongoing improvement
- Consequence management
- Analysis and response



## Strengthening integrity throughout ABB

In 2020, we launched a program to further strengthen our ability to prevent, detect and resolve any potential integrity concerns across ABB, in line with our ABB Way operating model and values. With the strong support of mid- and senior-level ABB management as well as the Board of Directors, the program is designed to strengthen integrity and trust across our organization, helping to ensure that ABB remains an exemplary corporate citizen.



## The ABB integrity credo

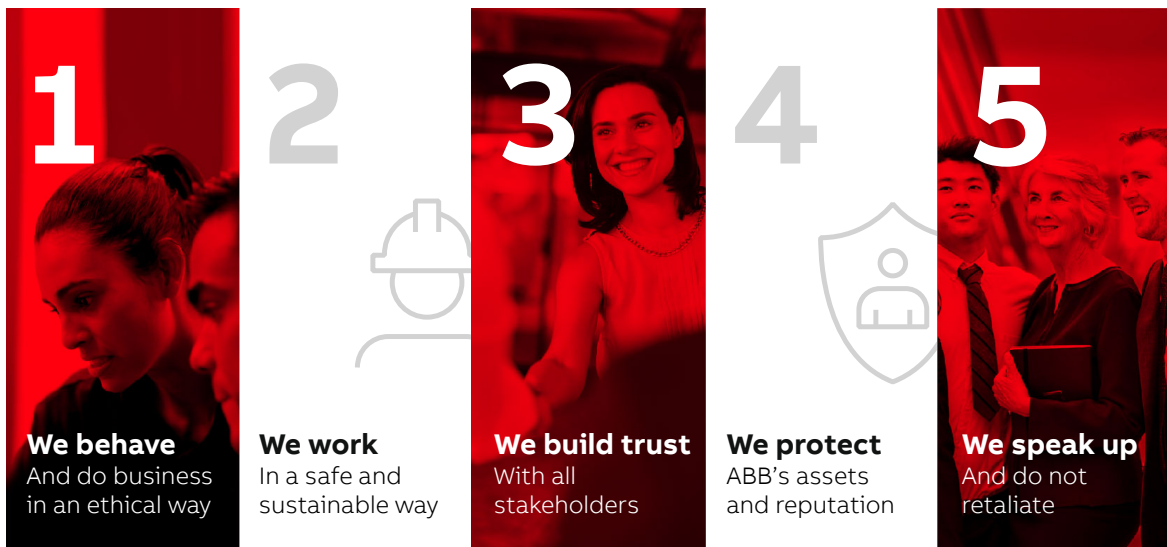
Consistent with our ABB values, we act with **courage** by speaking up and asking for help, show **care** by doing what is right and acting with integrity, show **curiosity** by seeking continuous improvement, and **collaborate** to build on strengths and successes. At ABB, we want to do the right thing and be transparent at every level of our value chain. Performance is measured not only by the results achieved, but also by how results were achieved.

## The ABB Code of Conduct

The ABB Code of Conduct, and related Supplier Code of Conduct, is the linchpin of ABB's governance framework, defining how we work, collaborate and do business across our organization. Revised and simplified in 2020, the Code is available in more than 25 languages and links to underlying policies and procedures.

The Code expresses our strong collective and individual commitment to integrity and provides practical guidance to our workforce, our suppliers and business partners on how we conduct business worldwide. It also empowers our employees to use good judgement in their everyday work and assures them that ABB will protect whistleblowers from retaliation. ABB's non-retaliation policy emboldens our people to speak up across our organization and value chain.

## Our integrity principles





## 2020 initiatives

During our annual fraud risk assessment, we determined that the COVID-19 pandemic has increased the risk of fraud, breaches of internal controls and unethical behaviors. Among our actions to counter this risk, we designated November 2020 “Information Security Awareness Month.”

### CASE STUDY


## Privacy and data protection



In 2020, we continued to strengthen our privacy and data protection controls by introducing new policies, guidance, trainings and communications on data breaches, data retention and data transfers, among other vital information security topics. We made these adjustments in response to advances in digital technologies and changes in the regulatory environment, including new laws, such as the California Consumer Privacy Act and Brazil’s General Data Protection Law, as well as court rulings, such as that of the Court of Justice of the European Union in the Schrems II case.

We further developed our practices regarding the privacy by design approach to incorporating privacy into new technologies and information systems, the maintenance of records of processing activities, and the performance of data protection assessments. We also implemented a performance measurement, metrics selection and reporting tool to better monitor, focus and prioritize these practices.

In line with the ABB Way, we appointed privacy leads in the Business Areas responsible for implementing and sustaining our privacy and data protection standards and controls in the Business Areas and divisions. All internal and external stakeholders continue to be supported by our global privacy team, staffed by full-time privacy professionals.

We apply the same strict privacy and data protection standards and controls across all our global locations. ABB’s global privacy and data protection standards and practices are described on the [ABB Data Privacy Portal](#) .





To raise internal awareness of the integrity risks ABB employees face, we continued to offer the “Integrity Starts with You” training course on the ABB Code of Conduct. We also continued to run a data protection course and our global anti-bribery essentials course, “Don’t Look the Other Way.” There were around 6,000 course completions for each of these courses in 2020, mainly by new joiners, bringing the cumulative completions on these courses since their global roll out to 99, 97 and 98 percent, respectively. Our 2018-2020 integrity training campaign covered employees with company email accounts only. All courses were rolled out to just over 109,000 employees (including the now divested Power Grids division), around 75,000 employees excluding Power Grids. We are encouraged by their high completion rates. 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.

To guard against human rights violations in our supply chains, in 2020 we continued to perform extensive due diligence and improved our supplier self-assessment framework. In 2021, we will strengthen these processes by including automated pan-integrity (including human rights related) screening, weighted risk scoring and ongoing monitoring for medium to higher risk third parties on both the buy- and sell-side of our value chain.

ABB has zero tolerance for any form of retaliation, retribution or wrongful dismissal. To this end, in 2020 we provided employees with discreet, one-click access to the Helpline web portal from ABB’s publicly available Code of Conduct mobile app. This new channel helps employees to more rapidly raise concerns directly to any representative of management, Human Resources or Legal & Integrity via their smartphones. Our wide range of integrity reporting channels includes the ABB Business Ethics Helpline, which provides both employees and stakeholders with web portal and telephone access for reporting suspected violations of the ABB Code of Conduct, the Supplier Code of Conduct, or applicable laws and regulations.

During 2020, the Chief Integrity Officer reported to the Finance, Audit and Compliance Committee and the Board of Directors on our material integrity matters, investigative outcomes and progress on drafting our new integrity plan. We also introduced a monthly reporting cycle to the Executive Committee and frequently discussed material investigation matters with our external auditor.



## Lessons learned

In 2020, we opened 720 new integrity-related cases, slightly down from the 746 cases opened in 2019. ABB internally tracks and reviews a variety of case metrics beyond case volume and utilizes the data to continually improve our culture of integrity and internal controls.

The Integrity function uses a variety of resources to ensure the appropriate investigation and resolution of concerns in a prompt, fair and consistent manner. This includes the initial intake of concerns by an independent third party and the assignment and management of cases to seasoned ABB investigators with legal, law enforcement, forensic accounting, and corporate integrity backgrounds.

We have learned from previous years that, in the spirit of inclusion, employee empowerment and accountability, going forward we will be transparent about real-life ABB cases.

In this regard, in 2021, we are launching an organizational justice campaign to further leverage these metrics, as well as other investigative learnings, for the benefit of our employees, enterprise culture and internal controls. As part of this campaign, we will incorporate lessons learned and new trends into employee learning tools, and associated root-cause analysis into our risk-monitoring activities.

### CASE STUDY

## The ABB Code of Conduct mobile app



In 2020, we launched a new mobile app that makes it easy for employees to refer to the ABB Code of Conduct. The app, which also includes reporting channels, key trainings and links to underlying policies, makes the Code fully accessible to all of our stakeholders.

We created this app because we recognize that on a daily basis our people encounter complex situations that require them to make quick decisions. With access to the complete Code in their pocket, employees can immediately consult their smartphones for



guidance on how to handle any situation, including whether or not what they have just observed or participated in should be reported.

In addition to immediately reporting their concerns via their smartphones, ABB employees have many other options for flagging behavior that appears to violate the Code. They can contact their line manager or dedicated representatives from the Legal, Integrity or HR functions. They can also call the ABB Business Ethics Helpline or file a report online from a desktop computer.

Naturally, we treat all reported concerns confidentially, and we review and thoroughly investigate each and every report. Employees who raise concerns can choose whether or not they wish to remain anonymous. After we complete an investigation, we move to mitigate any risk the violation may have posed to ABB and take disciplinary actions 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 as well as a rigorous non-retaliation policy.



## HUMAN RIGHTS

# Integrating respect for human rights into our business

ABB is committed to respecting and promoting human rights across our value chain



In 2020, we made further advances toward integrating respect for human rights into ABB's business processes, as we continued with our programs to raise awareness of human rights and strengthen best practices, while also responding to regulatory requirements and the increased expectations of our stakeholders.

ABB's commitment to responsible business practices underpins our promise to respect and promote human rights as expressed in the International Bill of Human Rights. Furthermore, we are committed to implementing the United Nations Guiding Principles on Business and Human Rights throughout our operations and along the value chain.

Respect for people, integrity and transparency is the basis of the behaviors we expect from every individual who works for us as a direct ABB employee or who engages with us as a business partner or through our supply chain. We have also made it clear that there is no place in ABB's business or within the operations of our business partners, contractors and suppliers for modern slavery and human trafficking.



In 2020, we reinforced these expectations with the introduction of a new ABB Code of Conduct, a new ABB Purpose, a new set of ABB values, and a new human rights control standard for ABB's HSE/SA management system. The ABB Supplier Code of Conduct, the ABB Policy Combating Trafficking in Persons, our Human Rights policy and our Social policy further reinforce this message.

The main human rights issues of concern can vary by business sector, portfolio, geographic location and the business partners we engage with directly or indirectly. In supply chains, the main human rights issues of interest include child labor, human trafficking and modern slavery, fair employment conditions, and health and safety. In customer-related business, the main issues include modern slavery, fair employment, impact on communities, and business-specific risks. Across ABB's operations, the main issues of interest can include discrimination, fair employment, and health and safety.

Our human rights specialists perform due diligence to help ABB understand its risks and avoid causing or contributing to negative human rights impacts. This due diligence ranges from desktop research and the commissioning of third-party reports to on-the-ground visits. This work emphasizes internal risk assessment processes and research into potentially high-risk projects or operations in high-risk countries.

Human rights criteria are also 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.

### **Primary objective and 2020 target**

Our primary objective for human rights is for this subject to be well-understood and well-managed in all ABB operations along the value chain and integrated into ABB's daily business. To achieve this goal, we have focused on four main activities: building awareness and capacity, identifying risks, improving the performance of our supplier base, and limiting our exposure to conflict minerals.

ABB's 2020 target was to conduct two training campaigns during the year for specific job roles exposed to human rights risks. Given the wide variety of human rights trainings we deliver each year, we once again exceeded this target.



## CASE STUDY

## ABB's human rights training plan



At ABB, our goal is to make sure that human rights are integrated into ABB's day-to-day business considerations and, as such, are well understood and managed in ABB's operations all along the value chain.

To ensure we meet this goal, over the past two years we have worked to revise and reinforce our internal human rights training plan. This involved systematically monitoring participants, their feedback, our course content, and the outcomes we achieved. Our training plan is designed for different target audiences and customized to the needs, roles and responsibilities of participants. Beyond the immediate benefits of raising employees' awareness and knowledge of human rights principles and their relevance for ABB, we have discovered a few other benefits emerging from the training sessions we deliver.

One benefit is that our training programs provide employees with an opportunity to build relationships with colleagues from different functions and Business Areas. In this way, they are able to learn about human rights and other matters from a range of different perspectives. Another benefit is that participants in our programs tend to learn more about ABB through the case studies and human rights dilemmas we present to them for discussion. These experiences serve to increase their engagement with and commitment to the subject matter of our courses. And finally, the homework assignments provide participants with opportunities to engage with senior managers on topics they would not normally discuss during the normal course of their work. These opportunities serve to strengthen their knowledge of ABB's internal processes and expectations.

At the same time, we have gained a greater understanding of the challenges related to our human rights awareness program. Firstly, we came to see that the specialized vocabulary used to discuss human rights issues is new to most members of our organization, and can present a barrier to understanding. Additionally, establishing meaningful business cases that not only describe risks, but also focus on the opportunities provided by respecting and promoting human rights can be challenging. Developing useful indicators to monitor performance will help us to move beyond qualitative measures and better understand the impacts of our programs and of our business.



## Building awareness and capacity

To more deeply integrate human rights principles into all of ABB's business processes, we continued with the advanced awareness and competence building program that we launched in 2019. The program consists of different trainings targeting management and functional roles. These trainings are geared to build understanding of human rights and raise awareness of the human rights risks connected to respective Business Areas and areas of responsibility.

This was reinforced by the continued expansion of our human rights champions network in 2020, as we trained a further 41 candidates from different functions, including HSE, integrity, marketing & sales, human resources and procurement. These internal business experts are charged with supporting ABB's human rights strategy. We continue to develop an internal network of these experts with the aim to ensure there are human rights champions in all parts of our Business Areas who can advise on the best ways to identify, mitigate and avoid human rights risks.

Over the past year, our champions defined human rights plans for their Business Areas and carried out training and communication initiatives to promote and raise awareness of human rights within their Business Area. These champions also supported our most important training initiative of 2020: the launch of customized programs for three specific job roles exposed to human rights risks – marketing & sales, procurement and operations. We trained our champions to deliver these customized courses and then disseminate the training according to their business needs. As a result, 530 managers received general human rights awareness training and 185 marketing & sales managers, 120 operations managers and 142 procurement managers received targeted human rights training. Despite the COVID-19 pandemic, 15 of the targeted 18 divisions received at least three of these customized training sessions from our champions. The remaining divisions will participate in similar programs during 2021.

## Identifying risks

In 2020, we continued to map internal risk identification and risk assessment processes. The training courses for our human rights champions enabled us to expand our understanding of how effectively human rights considerations are embedded in a range of business decision-making processes and to identify gaps. The information we gathered informed our work to draft a five-year plan for human rights activities.

The five-year plan (2021-2025) includes conducting an updated salient human rights risk analysis and reinforcing our due diligence processes, based on the UN Guiding Principles and emerging legislation.

The plan also entails deployment of our new human rights internal audit process in 2021. The aim of this process is to assess aspects of human rights performance at ABB facilities covering both ABB employees and contractors. The internal audit program will consist of a self-assessment that will be rolled out to all sites as part of our HSE/SA





management system and a periodic audit to be conducted by an internal ABB auditor. This program will help to ensure proper assessment, management awareness and implementation of improvement plans where needed.

## **Supplier development and conflict minerals**

To address human rights risks related to our suppliers, we leverage our Sustainability Supplier Development Program (SSDP) and our conflict minerals management program. For more information on these two programs, please refer to the [Responsible Sourcing](#) chapter.

### **Major initiatives**

Aside from the aforementioned awareness and capacity building initiatives and the creation of a five-year plan, one of our most significant initiatives in 2020 was contributing to the development of ABB's sustainability strategy 2030. We used this opportunity to engage our stakeholders, discuss ABB's future positioning on human rights, and consider new ways to more deeply integrate human rights into ABB's corporate strategy and objectives.

### **Engaging stakeholders**

Staying in close contact with our stakeholders on labor and human rights issues is critical to performing at a high level, and maintaining our social license to operate.

ABB speaks to and works with a wide variety of stakeholders, including customers, investors, suppliers, civil society representatives and international organizations to understand their expectations and improve performance. Our Group also engages with and learns from human rights specialists. These activities include peer learning reviews in the Global Business Initiative on Human Rights, lessons drawn from the annual United Nations stakeholder forum in Geneva, the World Business Council for Sustainable Development (WBCSD) and participation in local network meetings of the UN Global Compact.

### **Reporting on incidents and negative impacts**

ABB has different ways of reporting alleged human rights incidents or negative impacts. These range from an internal process to report allegations of abuses to publicly available hotlines for internal and external stakeholders worldwide. These hotlines are for reporting suspected violations of the ABB Code of Conduct or applicable laws and are mostly used by current employees. While hotline contact details for all stakeholders are provided on our website, few external complaints or allegations are registered on them.

As in many large organizations, human rights violations do occur within ABB. There were 39 substantiated cases of harassment and no substantiated cases of discrimination in



2020, resulting in varying levels of corrective action including 16 terminations of employment. We are undertaking a root cause analysis and will implement appropriate actions to continue to enhance our culture, reduce misconduct in the future, and ensure all employees are aware of our zero tolerance approach on these matters

## **Lessons learned**

During the implementation of our sustainability strategy 2020, we have learned a number of critical lessons.

The commitment of senior management to human rights, as well as the creation of links between human rights and business targets, have proven to be the key to triggering action. Programs thrive when participants understand the reasons for and benefits of their actions and can see that these actions are linked to the success of the business.

We also learned that changes to the external environment, and particularly the steadily increasing interest of our customers and investors in human rights issues, significantly reinforced the value of our program. In the same vein, increasing regulatory requirements that explicitly linked human rights to business activities helped ABB employees to understand and properly value our various training programs and the time commitment required to complete them.

The connections we built across ABB's functions and Business Areas were critical to our success over the past seven years, as they enabled us to view our programs and the issues we are charged with promoting from a wide range of perspectives.

Lastly, the most important lesson we learned was that human rights expertise must be embedded within ABB's Business Areas and divisions, as well as at the corporate center, to help deliver meaningful and long-lasting improvements.



## OUR PEOPLE

# Thriving in a purpose-driven culture

We want everyone at ABB to feel safe, secure and empowered to perform their best and achieve their full potential



To fulfil ABB's Purpose and create value, we need people in the right positions at the right time. To this end, people and leadership development are at the center of the ABB Way, our company's new operating model. As well as providing opportunities for learning and personal development, we empower our people to shape their own careers with an open job market across our organization. In this way, we attract, develop and retain capable employees who can run successful businesses, motivate their colleagues with the passion and spirit for success, and who also have the maturity to understand the value of cooperating for mutual accomplishments.

## A shared purpose

ABB's Purpose was announced in June 2020, after we concluded a project to address questions about our Group's identity, core business activities and overall strategic direction.



The need to identify ABB's purpose became apparent in the wake of the series of profound changes undertaken by our Group in recent years. The desire for more direction was especially voiced in the 2019 employee Engagement Survey, which highlighted that colleagues wanted a clear sense of where the Group is headed. With significant empirical evidence from other companies that a strong, lived purpose has a positive impact on business performance, value creation and employee engagement, we formed a purpose project team of some 20 colleagues from across all of ABB's Business Areas, functions and regions.

From January until the end of May 2020, we conducted extensive interviews and listening sessions with all stakeholder groups, including employees, customers, investors, suppliers and multilateral organizations. Our aim was to build up a holistic picture of how ABB is perceived by its stakeholders and to articulate an overall strategic direction for the company, which would energize our employees. From these discussions, we crafted a series of purpose themes, which led to a clear statement of purpose that can be summed up as follows.

- **We succeed by creating superior value.**
- **We push the boundaries of technology to drive performance to new levels.**
- **We energize the transformation of society and industry to achieve a more productive, sustainable future.**

After the introduction of our Purpose, teams across ABB held workshops to discuss how they can bring our Purpose and the ABB Way to life. They discussed how we can work together to truly express what ABB stands for, how we can all identify with our Purpose, and how we can work together to realize it.

## **Becoming an even better company**

Excellence in people is the key to value creation. That is why we are fostering a high-performance, purpose-driven culture.

Our values are the cornerstone of this performance culture: courage, care, curiosity, collaboration. We identified these values in much the same way as our Purpose – through listening to our leaders and people and using their ideas and input to capture the essence of ABB's corporate culture. Our values reflect the attitudes and behaviors we need to drive our decentralized company with its empowered divisions. They are there to guide and shape our actions and interactions with each other, our customers, partners and society as a whole. By living our four ABB values, we lead by example.



In the context of our Purpose and our ABB Way operating model, our Purpose explains “why we are in business,” the ABB Way defines “how we operate,” and our values determine “how we behave.”

CASE STUDY

## Employee resource groups




In 2019, a grassroots effort within ABB’s United States operations spotlighted the power of employee resource groups (ERGs) to shape ABB’s corporate culture, demonstrating how they can foster a diverse, inclusive workplace aligned with organizational missions, values, goals, business practices and objectives. By the end of 2020, it was clear that this effort was a great success: Six ERGs with more than 1,700 active members had been created in just 12 months. These ERGs, which all fall under the umbrella name of Encompass, include Encompass Women, Black Professionals, Hispanic-LatinX, Military & Allies, Pride and Young Professionals.

Each Encompass group welcomes all employees to join. All were active in the ABB community over the past year, sharing their time and talents while raising funds on behalf of organizations that help girls in STEM (science, technology, engineering and mathematics), providing scholarships to underrepresented minorities, offering meals to the less fortunate, and supporting veterans and their families. Our six ERGs also supported ABB’s diversity recruiting and external Diversity & Inclusion brand efforts by remaining active with leading advocacy organizations, including the Society of Women Engineers, the National Society of Black Engineers, the Society of Hispanic Engineers and Out 4 Undergrad.

By fostering an environment where Diversity & Inclusion is at the forefront of our company’s culture, ABB’s U.S. team has set in motion a natural shift towards engagement, “allyship” and professional development within our Group. In 2020, Encompass initiated impactful programming, led communications and networking efforts, and drove important policy changes within ABB. It also established a Diversity & Inclusion executive council that will continue to drive this grassroots transformation of ABB’s culture well into 2021.



For more information on Encompass and their work to create an environment of inclusion, equity and belonging, please look [here](#) .

## 2020 target and related goals

For 2020, our target was to increase the number of women in senior management positions (Hay grades G1–7) 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 were core priorities that we sought to embed in ABB’s people strategy, with the view that these variables will continue to have a significant influence on our overall performance and future success.

To achieve our 2020 target and, more generally, promote gender balance in our workforce, ABB relies on its stated gender diversity ambitions and associated framework. This framework is built on three pillars: talent, career life cycle, and awareness. The talent pillar entails our people processes and practices, including recruitment, development, retention and career planning. The career life cycle pillar covers a wide range of options for supporting the full career arc of our employees. And the awareness pillar encompasses our work to build a diverse and inclusive culture by raising understanding of its benefits externally and internally.

We are proud to have performed well against our 2020 target of a 30 percent increase in the number of women in senior management. By the end of the year, 13.5 percent of the senior managers at ABB were women, up from 11.7 percent in 2019 and 10.5 percent in 2018. This figure represents a 30 percent increase over our 2017 baseline, when 10 percent of our senior managers were women.<sup>8</sup>

Our second gender diversity goal in 2020 was to identify 100 female candidates for succession to senior leadership positions (G1–7). As in 2019, almost every division identified five or more women for this purpose in 2020, enabling us to once again exceed our goal. In total, more than 100 women were nominated for leadership talent pools over the past year.

Our third goal was to ensure that females comprise at least 30 percent of our early talent hires, i.e., recent university graduates. As in 2019, we achieved this goal in 2020, with the proviso that, once again, most of these hires were in functional areas. We made a significant effort to meet this target for business roles at our company in 2020 and will continue our focused efforts as we move into the new strategy cycle.

<sup>8</sup> Data from 2017 – 2019 includes Power Grids. Data from 2020 excludes Power Grids. ABB elected not to restate the baseline and the 2020 target following the completion of the divestment.





## CASE STUDY

## Creating a gender diverse and inclusive workforce within ABB India



Over the past three years, ABB in India has increased the number of female employees in its workforce to 14 percent, up from 9 percent in 2017. To make this promising start in gender diversity, ABB India worked closely with leaders from all of our Business Areas and divisions to identify “Diversity & Inclusion champions” in each business. These champions were assigned to work closely with our business leaders to foster an environment of inclusion across ABB, with a particular focus on enhancing gender diversity within our organization.

This further incentivized managers, teams and Business Areas with the introduction of a “Diversity Reward & Recognition” policy, which makes driving progress on Diversity & Inclusion one of ABB India’s core business goals. ABB India also expanded its training and sensitization initiatives, introducing “Unconscious Bias” training programs to help managers build an inclusive culture; a “Women Excellence Program” to provide female staff in the Global Business Function with new pathways for success; and the “RISE Women Leadership Development Program,” which is designed to identify promising female employees within the organization and provide them with professional development opportunities to be ABB India’s leaders of tomorrow.

To enhance its ability to engage and retain female talent, ABB India introduced policies that make its workplace more open and friendly for women. This included permitting telecommuting, a groundbreaking step for an organization that was overwhelmingly dedicated to manufacturing, which involved optimizing digital tools and systems to increase employees’ ability to connect with the workplace from home. It also revamped its daycare centers for employees’ children and made them more inclusive.

ABB India then successfully increased its gender diversity by focusing on hiring female university graduates. The number of female university graduates recruited and retained by ABB India increased from 42 percent in 2017 to 49 percent in 2019. In 2020, this figure decreased to 45 percent in 2020 due to the COVID-19 pandemic, which reduced hiring throughout ABB India.

To complement its effort to increase the gender diversity of its workforce, ABB India worked with its vendors to encourage them to hire women, and the number of females employed by some of our manufacturing suppliers increased from 4 to 11 percent over





the same three year period. ABB India also launched an innovative “re-boarding program” to connect with former female employees, resulting in the rehiring of 10 of them. Lastly, to monitor this push for gender diversity and ensure that it continues, ABB India set up a governance structure, with Diversity & Inclusion council members working together with the Country Managing Director and the Country Human Resources Officer to track progress over time.

## Major initiatives in 2020

In 2020, ABB was among more than 50 leading European companies in the industrial and technology sectors to reaffirm its pledge to EmbraceDifference, a pan-European diversity and inclusion (D&I) initiative. Developed and led by the European Round Table of Industrialists, of which ABB CEO Björn Rosengren is a member, the pledge aims to spur progress in the creation of diverse and inclusive work environments. We signed the EmbraceDifference pledge in 2018, and have linked our D&I initiatives for the next strategy cycle to its six focus areas: Inclusive Culture, Inclusive Leadership, Aspiration & Goal Setting, Clear Responsibility, Equal Opportunities & Societal Engagement, and Responsibility.

In response to COVID-19-related social distancing requirements, we successfully turned our unconscious-bias training materials into virtual workshops. To preside over the virtual delivery of these materials, we specially trained 168 in-house facilitators in the practice of online workshop management. In 2020, more than 1,100 managers participated in these workshops, up from the 900 managers that participated in 2019.

We also revised and adapted the global guidelines for the flexible working practices that we introduced in 2018, adjusting them to meet the unique demands of the COVID-19 pandemic.

Regarding the Lesbian, Gay, Bisexual, Transgender, Questioning and all of the communities encompassed by the “LGBT+” acronym (herewith LGBTQ+), ABB kicked off its LGBTQ+ strategy in 2020, which included trainings, awareness raising campaigns and benefits reviews, among other actions. The company also signed the UN Standards of Conduct for Business Tackling Discrimination against Lesbian, Gay, Bisexual, Trans and Intersex People (LGBTI), in addition to signing a partnership with Stonewall, Europe’s largest LGBT rights organization, to help develop a roadmap on LGBTQ+ for our employees.

In 2020, ABB also joined the Gender and Diversity KPI Alliance together with more than 50 large companies; the alliance supports the use of a common set of key performance indicators to accelerate diversity in corporations. Relatedly, within our own organization we included D&I metrics on the global people analytics dashboard, in addition to our already established D&I dashboard. We continued to build our female mentorship programs around the world and support the establishment and growth of employee resource groups across ABB.



## Lessons learned



From 2010 to 2014, ABB was working to establish diversity and inclusion initiatives on both the local and regional levels. In 2015, the concept of D&I was embedded in our HR strategy and we created our global diversity & inclusion framework. Thanks to local and regional initiatives across our organization, we were able to achieve continued growth and progress in the D&I space within our company in 2016.

Our work received new impetus in 2017, when we set our current 2020 target. Serious work toward achieving this target began at that time, together with work to achieve our D&I goals. In January 2018, ABB's Executive Committee signed off on our global gender diversity ambitions; this marked the beginning of our first truly global D&I strategy, complete with clear key performance indicators on female early pipeline, development and growth into senior leadership roles (G1–7).

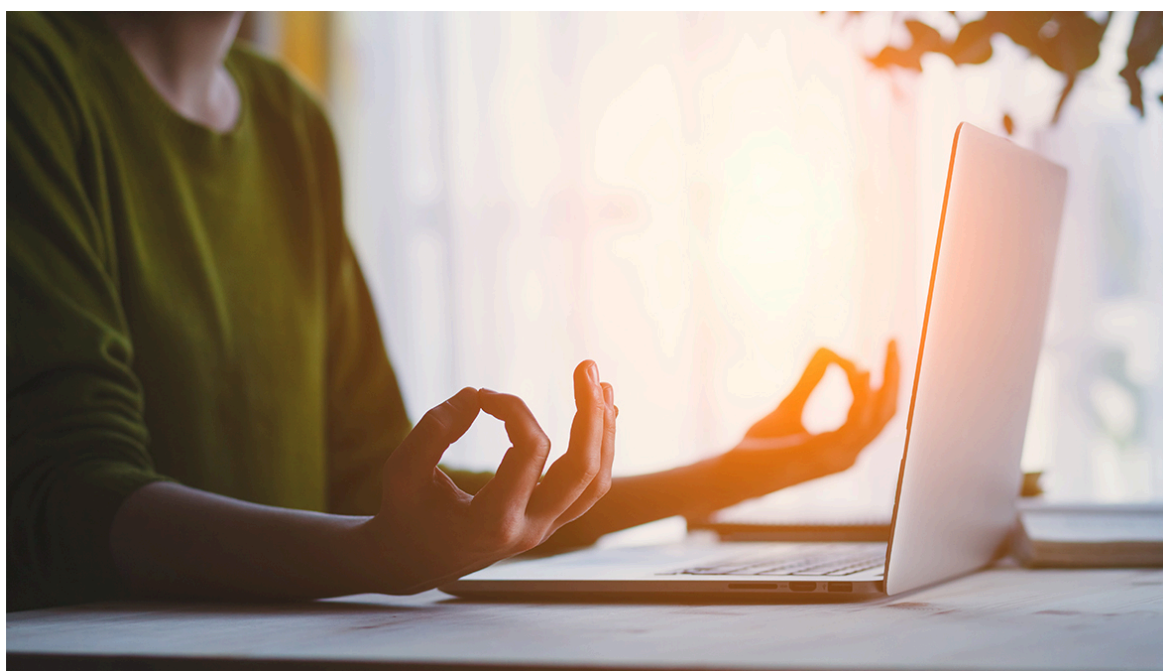
The major lessons we learned during the execution of our 2020 D&I strategy was that the strong engagement of our senior management, the empowerment of our passionate people on the ground and our regular follow up on metrics was crucial to achieving our goals.



## OUR PEOPLE

# Prioritizing health, well-being and resilience

ABB believes there is a direct link between the physical and mental health of its people and the company's overall performance



At ABB, we understand that the health, well-being and resilience of our people is critical to our ability to achieve our strategic goals. To this end, we provide them with standards and guidelines on identifying, reporting and managing health risks. ABB's health programs, which we offer to our people across the world, are built around awareness-raising activities and training focused on general and occupational health issues and concerns. We aim to provide proactive coverage of both risk-related health issues and the task of promoting good health in general.

## A year like no other

Because of the COVID-19 pandemic, we required many of our employees to work remotely; by making physical distancing mandatory, ABB was able to significantly slow down the transmission of the virus at its sites around the world. Remote working and the need to adhere to physical distancing guidelines presented our people with a new set of



challenges, however, and we moved swiftly to provide them with guidance, support and tools aimed at assuring their mental health and well-being.

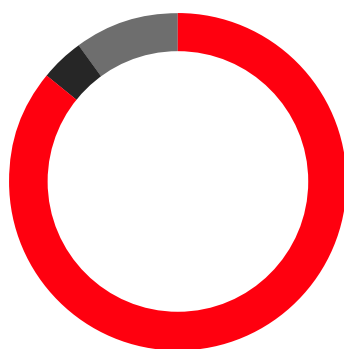
From global pandemic risk assessment tools and home workstation safety guidance to locally run programs and customized approaches, we worked to meet employees' health and well-being needs. At the corporate level, our HSE and HR functions identified a global EAP (employee assistance program) provider for entities based in countries without a local EAP provider.

## 2020 targets

We achieved our 2020 sustainability target, which was to have at least 70 percent of all ABB employees participating in one or more ABB well-being program. Over the year, 86 percent of our people were covered by an ABB well-being program, an increase of 9 percent over 2019. The top three globally reported programs were voluntary medical checks, mental health and fitness and physical activity.

## 2020 wellbeing status

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- **86% Good**  
 Non-smoking policy / program and minimum 3 well-being programs in place
- **4% Making progress**  
 Non-smoking policy and 1–2 programs in place
- **10% Needs improvement**  
 Lack of non-smoking policy or program

At present, we require all of our entities to provide employees with a no-smoking policy and access to smoking cessation programs, as well as three other well-being programs. ABB's well-being programs are designed to give employees the skills, knowledge and self-confidence they need to properly manage their health, quality of work, and productivity. These programs include: healthy nutrition, physical fitness, mental health, vaccinations and infection control, medical checks, good ergonomics and addiction prevention.

## Major initiatives in 2020

Over the year, our resilience building program continued to provide support to employees coping with challenges related to the 2019 carve-out of our Power Grids business; this process concluded on June 30, 2020. By the end of 2020, some 7,000 more employees were able to complete the program, many of them via the new version of the course we created in response to the COVID-19 pandemic. Since we began offering resilience training in 2017, more than 55,000 employees in 84 countries have completed our courses.



The training has been well received by our employees, who have on average rated it 4.0 and above on a scale of 1–5.

In 2020, we also updated the well-being, resilience and occupational hygiene portions of the health section on ABB’s intranet. In addition, we posted articles on pandemic-related topics on ABB’s social channels. Typical titles included, “Boosting your immune system during the pandemic,” “COVID-19 – dealing with loneliness,” and “Family options during isolation – COVID-19.”

The COVID-19 pandemic has increased the world’s focus on mental health, and we continue to develop programs related to managing work-related stress and the impact of physical distancing requirements. For example, inspired by the unique challenges our employees faced this past year, we have begun to conceptualize a mindfulness meditation program. The program will not only train employees in basic meditation techniques but also will teach managers to understand the importance of the program, recognize the signs and symptoms of employees under too much stress, and take appropriate measures to assist over-stressed employees.

CASE STUDY

**Pandemic plan implementation**




In Q1 2019, ABB released its pandemic management standards, together with supporting risk assessment tools and preparedness checklists. These documents enabled our organization to take swift action when we realized the SARS-CoV2 virus had pandemic potential.

Since the January 2020 outbreak and subsequent lockdown in Wuhan, ABB’s emergency response was carried via corporate, business and country crisis management teams together with representatives from the Health and other functions. From the very beginning, these well-prepared teams delivered the right levels of guidance to the organization. Consequently, ABB was able to continue its critical operations without putting employees at risk of infection.



In addition to the support given to the local crisis team, ABB's corporate crisis team also produced documents that covered interrupting virus transmission chains, protecting employees, travel restrictions, remote work guidance, case definition and management, disinfection and cleaning protocols, physical distancing, how to use masks within the workplace, testing policies, return to work measures, and guidance on vaccinations.

We also tracked and monitored all potential cases around the globe. This work helped us to limit disruptions in our operations from any cases acquired within the community.

More information on ABB's pandemic response can be found [here](#) .

## Lessons learned

Since 2017, when ABB's health function started to develop the ABB well-being program, we have derived many valuable lessons that will serve us well in the years ahead.

In the beginning, we required each of ABB's Business Areas to implement a no-smoking policy and provide employees with access to three well-being programs. While this was effective, we realized that we needed to be able to determine how our program was impacting each business. To this end, by the end of 2020 we had adopted the INTELEX system for collecting program data. Critically, we also required each business to track the cost of the program, monitor participation rates, and determine business-specific objectives and KPIs for their well-being programs. Giving our Business Areas increased responsibility for these programs helped us to exceed our 2020 target.

Based on this experience, next year we will give our Business Areas responsibility for setting their own health and well-being targets. During our past sustainability cycle, the health function determined the participation targets for each business based on their headcount, the number of trainers available to them, and the number of their employees that were trained in the previous year.

In addition, we learned that management collaboration with employees was essential to building the right health program. Facilitating such cooperation brought us closer to our goal: fostering a culture where health is taken into account for all decision-making processes. Based on this lesson, we made such collaboration the core of our 2030 health strategy.

Our 2030 health strategy has three core components: understanding the cost of poor health and how to reduce its occurrence; enhancing employee involvement in creating a sense of their own well-being; and ensuring collaboration between ABB's functions and Business Areas for the creation of health programs.

We also gained valuable lessons while delivering our resilience awareness trainings. Very early on, we realized that managers provide crucial support for employees and that we could strengthen our resilience program by bringing managers onboard. To this end, we worked to give managers the skills required to identify the early warning signs of a person



experiencing emotional distress; we also provided managers with guidance on how to support employees through such periods of difficulty.



Finally, we learned that we needed to give employees and their families ready access to continuous support from a competent EAP provider.







## COMMUNITY ENGAGEMENT

# Driving social progress

ABB actively supports the communities in which our people live and work

ABB has a long and distinguished tradition of serving the community. Our approach is to combine strategic corporate partnerships with country-level projects to address local needs. Our company's and employees' contributions make a real difference in people's lives and we are proud of our employees for donating both time and money to help others in need.

By design, our initiatives aim to provide assistance for the most vulnerable and help sustain progress in the fields of education, diversity & inclusion, and care in the community.

Among our largest programs, we have a corporate-level agreement with the International Committee of the Red Cross (ICRC) to support innovative water and habitat projects, while the Jürgen Dormann Foundation assists financially disadvantaged engineering students. We are also members of the select group of Nobel International Partners.

Our assistance for local and international educational institutions and programs provides students with better learning opportunities, raises ABB's profile, and helps us to recruit qualified engineers and other staff. Our support for healthcare and diversity & inclusion can deliver positive social and economic benefits to our employees, customers, suppliers and the communities in which we are present, among other major stakeholders. Supporting impactful, community-building projects demonstrates our values and helps secure promote social progress.

## Making a difference in 2020

In 2020, ABB contributed to more than 340 community projects and charities worldwide. Out of the 67 countries that report on their social activities, 53 countries hosted ABB operations that engaged in community-level projects. We are particularly proud of our employees and our Business Areas; together, they donated some \$10.1 million and bravely provided about 2,000 person-days in volunteer work under extremely challenging circumstances.

While restrictions related to the COVID-19 pandemic limited our ability to implement many projects and activities, we carried out many new activities in response to the unfolding crisis. In addition to implementing measures to protect the health and safety of our own employees and contractors at ABB sites around the world, we launched a range of new



initiatives to help our employees, their families and our contractors get through this challenging year.

In countries around the world, local ABB managers assessed the specific needs of their employees before taking action; many of their measures focused on helping employees cope with challenges associated with remote working. A wide range of on-line courses was provided to help employees adapt to working from home; topics included stress prevention and management, ergonomics for home offices, refreshers on time management, and practical home schooling strategies.

We also provided our employees with supplementary health services in areas where local health providers were overwhelmed or access was limited. In the Americas, a number of our local operations offered telemedicine programs to ABB employees and their families. And in countries across the world, our operations worked to equip employees and their families with masks and hand sanitizer.

Particularly during the opening stages of the pandemic, our company mobilized to support hospitals, healthcare workers and first responders, among others. We directly procured and donated tens of thousands of protective masks along with supplies of hand sanitizer and other critical medical supplies. Together with our employees, ABB made direct contributions to hospital or community relief. Our employees also took the initiative by, for example, applying their technical skills to the design and manufacture of goggles and face shields for paramedics, nurses and doctors. Notably, we leveraged ABB's unique domain expertise to help customers repurpose assembly lines for the manufacture of ventilators; our company also provided emergency response services for hospitals to ensure their electrical systems stayed online.

To address the pandemic's many secondary effects, we have reached out to help the most vulnerable. Our company and our people donated money and food to foodbanks in Egypt, Spain, United Arab Emirates, and the United States, among other countries. In Brazil, we gave the non-perishable items from our canteen to restaurants serving affordable meals to underprivileged communities. In India, we delivered packages of essential food supplies to over 22,000 children and their families. And in a number of countries, local ABB operations donated personal computers and laptops to schools so that disadvantaged students could attend remote classes during school shutdowns.

Where possible, we upheld our educational commitments to promote STEM education and careers, particularly for girls and women. ABB's scholarships and mentoring programs continued in China, Hungary, India, Poland and Sweden, among other countries; given the situation, most of these interactions took place online. These academic programs also aim to enhance the employability of students by helping them develop their "soft skills" and giving them practical experience in real industrial environments.

In 2020, ABB in the U.S. established a new collaboration with the National Urban League to support education and promote diversity and inclusion. An ABB Foundation grant will support Project Ready Mentor, the League's signature education program. Project Ready



Mentor equips African-American and other historically underserved youth with the tools they need to succeed at college and in their professional career.

In Italy, ABB continued its 15-year association with Junior Achievement Italia to mentor the young people participating in its entrepreneurial education program, Enterprise in Action. As part of this program, classes set up mini-enterprises for training purposes, developing project ideas from initial concept to launching the enterprise on the market. Thanks to investments in digital technologies and processes, the classes and their volunteer “dream coaches” proceeded without interruption during the pandemic, even in the most heavily affected areas, such as around Bergamo.

Across the world, we made donations or provided services and other forms of support to health initiatives and services. For example, in India mobile health units funded by ABB gave advice and medicine to treat chronic illnesses in the poor and the elderly in rural areas with restricted access to regular healthcare. And in New Zealand, ABB provided electric-vehicle chargers to Asthma NZ’s offices as well as to the homes of its nurses so that the organization could begin switching its fleet over to EVs.

## **Major initiatives**

During 2020, we significantly reinforced two of our existing partnerships – with the International Committee of the Red Cross (ICRC) and with the World Childhood Foundation.

ABB has a longstanding relationship with the ICRC as a founding member of its Corporate Support Group. As part of numerous initiatives within the company to support COVID-19 relief efforts, we undertook a joint initiative with the ICRC to directly assist the world’s most vulnerable people in the fight against COVID-19. ABB made an initial contribution of CHF 1 million and matched contributions from employees in 72 countries to provide a total donation of CHF 2 million. The money raised helped to provide infrastructure for healthcare centers, sanitation infrastructure, and crucial items such as soap and masks in countries such as Nigeria and South Sudan.



CASE STUDY

## ABB and ICRC helping those in need



As part of numerous initiatives within the company to support COVID-19 relief efforts, ABB undertook a joint initiative with the International Committee of the Red Cross (ICRC). This initiative is aimed at directly assisting some of the world’s most vulnerable people affected by the COVID-19 pandemic.

The ICRC specializes in providing emergency response and has been at the forefront of fighting the pandemic in places of armed conflict and other situations of violence.

The joint ABB-ICRC initiative was launched in early April, with ABB making an initial contribution of CHF 1 million to the ICRC COVID-19 prevention and relief efforts. Additionally, ABB employees from 72 countries contributed to the initiative, and their donations were matched by the company. Overall ABB and its employees donated CHF 2 million to the ICRC.

Regarding the tremendous outpouring of support from the ABB community, CEO Björn Rosengren said, “I have been truly impressed by the generosity and solidarity shown by our employees during this time of crisis. Their support of those communities most at risk shows true ABB spirit and I am proud to be part of such a company.”

More than 90 percent of donations made to the ICRC are used directly for its work in the field. The money raised by ABB is being used to provide infrastructure for healthcare centers and better sanitation, as well as crucial items such as soap and masks in areas such as Nigeria and South Sudan.

Examples of the direct use of the donations on a local level are readily apparent. “With these donations we can increase our stock of personal protective equipment and support the national society, the South Sudanese Red Cross, to disseminate the message of precautionary measures that the population needs to take,” explains Filippo Gatti, Deputy Health Coordinator, ICRC South Sudan. “For example, additional water tanks supplied are filled with clean water and are being used in the communities to encourage people to wash their hands to prevent the spread of the disease.”

In Nigeria, the ICRC is using the donations to help farming communities who have been affected by conflict violence and disruptions caused by lockdowns due to the spread of



COVID-19. The ICRC has been distributing seeds and financial support to help farmers grow enough food for their families and communities.

As a founding member of the ICRC's Corporate Support Group, ABB has a long-standing and trusted relationship with the ICRC. The partnership has covered a range of topics over the years, most recently focusing on knowledge exchange around the electrification value chain, security cooperation and leadership development.

As part of our efforts to promote social progress, in 2020 we renewed our partnership with the World Childhood Foundation, a global children's rights organization that focuses on preventive actions so kids can enjoy a safe childhood. ABB provided CHF 1 million to support the charity during times when many children across the world are particularly at risk as a result of the COVID-19 pandemic.

ABB and the World Childhood Foundation have a longstanding and trusted partnership that started more than 20 years ago, when the company became one of the founding partners of the organization. Established by H.M. Queen Silvia of Sweden, the mission of the foundation is to defend the rights of children and to promote better living conditions for vulnerable and exploited children at risk all over the world. The foundation presently supports more than 75 projects in 14 countries, focusing on prevention, intervention and education efforts.

During the year, ABB also announced it would support the inaugural Ashesi-ETH Master's in Engineering Program in partnership with two of the world's leading universities for technology and the natural sciences, ETH Zurich in Switzerland and Ashesi University in Accra, Ghana. The program, which is for African undergraduate students with an engineering background, will provide them with a modern, interdisciplinary engineering education over six semesters. Students admitted to the program will receive a scholarship that covers their living expenses and tuition fees; they will also be required to complete an industrial internship with a partner such as ABB. Upon completion of the three-year program, graduates will receive degrees from both ETH Zurich and Ashesi University.

Internally, our two most important initiatives in 2020 were to update the focus areas for our community engagement activities and begin a comprehensive review of our community engagement strategy. We carried out these initiatives in response to the rollout of the ABB Way, our company's new operating model, and ABB's newly described Purpose and values.



Based on our successful, existing activities, the interests of our Business Areas and the views expressed by our stakeholders, we will now focus our activities and partnerships on three core areas, which are thematically linked to ABB's values:

- Education (curiosity): Supporting STEM education, lifelong learning, job readiness and preparedness for digitalization
- Diversity & inclusion (courage): Contributing to employability and diversity in communities and at ABB
- Care for communities (care): Caring for the most vulnerable through disaster relief, health & well-being promotion

In alignment with our fourth value (collaboration), we will work to create value through shared purpose, partnerships and business-driven programs. Our updated community engagement strategy will be developed following further research and consultation during 2021.

CASE STUDY

## Rebuilding critical infrastructure in Beirut



In response to the devastating 2020 explosion in the port of Beirut, Lebanon, ABB is donating products and solutions to secure the city's power infrastructure.

Many public buildings, including 159 schools and several hospitals, were damaged or destroyed by the blast that occurred on August 4. More than 6,500 people were injured in the incident, while some 300,000 were left homeless.

Major hospitals and a school in Beirut are receiving products and solutions from ABB to restore and accelerate reconstruction efforts. Working with ABB's local partner, Harb Electric, ABB's donations include a UPS (Uninterruptible Power Supply) System for each hospital, along with various smart power and energy distribution solutions.

The UPS and smart power components are being supplied as a holistic solution from ABB to future proof the electrical and power infrastructure of the hospitals in the event of



blackouts. The infrastructure is feeding all critical loads from operating theatres and rooms with power sensitive equipment, including X-ray machines, MRI (Magnetic Resonance Imaging) and respirators.

With these solutions, we are providing urgent help as the Lebanese medical sector needs every single one of its hospitals to fight the COVID-19 pandemic. This ABB initiative is enabling Beirut's hospitals to resume operations and play their much-needed role in helping local communities, curing people and saving lives.

Among others, ABB's donations are going to the Rosary Sisters Hospital, which was severely hit by the explosion due to its immediate proximity to the port area. The hospital suffered extensive structural and equipment damage that shut down all of its medical and administrative operations.

ABB donations of electrical equipment and systems are going to the Lebanese Hospital Geitaoui – UMC and the Quarantine Government Hospital, which continued to tend to the sick and injured despite damages to their structures. ABB's commitment of support is enabling key parts of the hospital to be reconstructed.

Many of the components donated by ABB are also being used in the Collège du Sacré-Coeur to fit and replace the school's ageing electrical infrastructure, which was almost completely destroyed in the blast. ABB smart power and distribution components are assuring the safety of the electrical supply in time for the school year.

## Lessons learned

During the implementation of our sustainability strategy 2020, we learned that our community service projects enjoyed the most success when they were based on clearly identified needs and supported by a core group of passionate ABB employees who worked to bring the project to life. When projects are driven by enthusiasm and provide demonstrable benefit to communities, success often snowballs into wider employee support and new project ideas.

We also learned the value of demonstrating the impact of our programs and initiatives. Given that our community engagement projects typically yield results that are difficult if not impossible to quantify, we have learned the importance of communicating the impact of our work through powerful images and stories that illustrate the difference our efforts are having on the people and communities we partner with to achieve shared goals.

Over the past seven years, it has become clear not only that ABB's employees would like more volunteer options but also that we need to communicate more clearly about the options we already provide. Our people are proud to work for a company that lives its values and cares for their community, and they welcome the opportunity to volunteer their support. In the coming years, we will make a concerted effort to provide employees with more options for and information about volunteering for our various community service projects.





Relatedly, we have noticed that while a local focus can be critical to the success of engagement projects, our people have a deep interest in knowing how their efforts fit into a larger story. Quite often, our employees and local business managers prefer their contributions to be a part of a wider corporate or Business Area effort; they want to experience a strong sense of solidarity and to see the potential global impact of their efforts. This is a critical insight, one that is also related to the challenges of measuring and assessing the impact of community-level projects.

We will take these lessons learned into full account as we work to further develop our Group-wide and business-specific programs for the upcoming 2030 sustainability reporting cycle.



# 06

## Reporting

**116** Approach to sustainability reporting

**119** Summary of GRI indicators



## APPROACH TO SUSTAINABILITY REPORTING

# Transparent reporting

ABB demonstrates 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 our sustainability reporting. We report on ABB's material economic, environmental and social impacts and how we manage them. Omission from the material issues addressed in our report does not mean an issue is not managed. ABB reports annually; the report for 2020 was published on March 12, 2021. The reporting period for the information provided in this report is from January 1 to December 31, 2020.

## Reporting boundaries

Our formal sustainability reporting system covers all ABB Group companies worldwide, including wholly owned subsidiaries and majority-owned joint ventures ([ABB Annual Report 2020](#), pages 60–61), and most of our Group's significant subsidiaries ([ABB Annual Report 2020](#), pages 233–235).

## Additional disclosures

All of ABB's policies, statements and declarations related to the topic of sustainability can be found on our Group's [website](#).

## Changes in 2020

Entities acquired before the end of 2019 are reflected in our environmental and social reporting for the year.

The divestment of ABB's Power Grids business was concluded in the first half of 2020. Power Grids is not included in our sustainability reporting for 2020, except where specified. In 2020, we reviewed our 2013 baseline data to be able to internally track the environmental performance of each individual ABB division, to reflect the changes at our company and maintain the consistency of the reported information. As a consequence of ABB's divestment of its Power Grids business in 2020, we have re-baselined our four environmental targets by removing the contribution of Power Grids to our 2013 baselines.

Through the ongoing changes, we will seek to maintain alignment between our sustainability reporting and international best practices – including the GRI Standards.



In line with ABB’s 2018 commitment to the Science Based Targets initiative, we will announce ABB’s 2030 GHG emissions targets in 2021.

### Data collection processes

To measure and gather data from across ABB, we relied on three online data reporting systems: a global system to report on hazards and sustainability observation tours; a global system used by HSE professionals to report on incidents at ABB entities; and 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. As of January 2020, the first two systems were combined and as of June 2020 we collect all key safety, social and environmental data in one system, 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 448 ABB sites and offices, covering approximately 95 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<sub>2</sub> 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<sub>2</sub> per kilometer factors per vehicle.

Scope 2 GHG emissions for electricity have also been calculated using the location-based method (source: IEA 2020) and are provided for comparison below.


Scope 2 GHG emissions from electricity	Kilotons CO <sub>2</sub> e
Market-based:	318
Location-based:	293

GHG emissions from air travel are calculated using emission factors published by the UK Department for Business, Energy & Industrial Strategy (BEIS) in its [2019 Government GHG Conversion Factors for Company Reporting](#).



## Independent assurance



DNV GL Business Assurance Services UK Limited (“DNV”) has been engaged by ABB to provide independent assurance for ABB’s 2020 Sustainability Report. The assurance was completed using DNV’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’s full Assurance Statement, including Opinion, Observations and Basis of opinion, is available [here](#) .



SUMMARY OF GRI INDICATORS

# ABB Group Sustainability Indicators 2020

## Environmental

GRI ref.	Indicator description	2020 data assured	2020	2019	2018	2017	2016	2015	2014	2013
<b>Hazardous materials<sup>1</sup></b>										
	Phthalates (tons)	✓	107	102	99	106	191	878	258	21
	Brominated flame retardants (tons)	✓	–	0	0.0	0.0	0.0	0.0	1.9	2.9
	Organic lead in polymers (tons)	✓	0.0	0.0	0.0	0.29	1.0	1.4	0.1	0.6
	Lead in other products (tons), e.g., backup batteries and counterweights in robots	✓	2,196	2,316	2,686	2,548	3,321	1,684	1,884	2,601
	Cadmium in batteries (tons) <sup>2</sup>	✓	7	15	113.3	71.3	53.0	98.3	79.5	72.0
	Cadmium in lead alloy and other uses (tons)	✓	0.1	0.3	0.3	0.4	7.3	6.4	6.0	5.7
	Mercury in products (tons)	✓	–	0.001	0.001	0.001	0.002	0.007	0.071	0.012
	Mercury in instruments in ABB facilities (tons)	✓	0.01	0.0570	0.2150	0.2150	0.2380	0.2250	0.3200	0.3170



GRI ref.	Indicator description	2020 data assured	2020	2019	2018	2017	2016	2015	2014	2013
	Chlorinated volatile organic compounds (VOC-Cl) <sup>3</sup>	✓	2	2	4	3	6	13	20	20
	SF <sub>6</sub> insulation gas (inflow to ABB facilities) (tons) <sup>4</sup>	✓	241	1,211	1,286	1,425	1,653	1,658	1,483	1,438
	SF <sub>6</sub> insulation gas (outflow to customers) (tons) <sup>4</sup>	✓	238	1,204	1,279	1,417	1,644	1,648	1,466	1,425
	No. of transformers with PCB oil in ABB facilities	✓	1	14	6	0	0	0	0	1
	No. of capacitors with PCB oil in ABB facilities	✓	–	89	0	0	0	0	0	60
<b>302-1</b>	<b>Energy consumption (gigawatt-hours – GWh)<sup>1</sup></b>									
	Biofuels <sup>5</sup>	✓	0.92	52.9	51.6	64.4	52	46	44	27
	Oil (11.63 MWh/ton)	✓	7.3	49.0	48.5	58.5	71	79	85	94
	Diesel (11.75 MWh/ton)	✓	3.5	4.4	4.8	5.8	9	8	11	0
	Coal (7.56 MWh/ton)	✓	–	0	0	0	0	0	0	4
	Gas <sup>6,7</sup>	✓	448	728	658	647	658	737	708	755
	District heat consumption <sup>6</sup>	✓	125	208	201	209	198	181	198	251
	Electricity consumption <sup>6,7</sup>	✓	1,031	1,635	1,571	1,561	1,620	1,608	1,628	1,705
	<b>Total energy used</b>	✓	<b>1,616</b>	<b>2,677</b>	<b>2,535</b>	<b>2,546</b>	<b>2,607</b>	<b>2,658</b>	<b>2,675</b>	<b>2,836</b>
	Electricity sold	✓	2	2	2	5	2	1	2	n.a.
<b>302-3</b>	<b>Energy intensity (MWh/million \$ sales)<sup>1</sup></b>	✓	62	72	72	74	77	75	67	68





GRI ref.	Indicator description	2020 data assured	2020	2019	2018	2017	2016	2015	2014	2013
<b>303-1</b>	<b>Water withdrawal (kilotons)<sup>1</sup></b>									
	Purchased from water companies <sup>6</sup>	✓	2,523	3,896	3,721	3,678	3,800	4,000	4,200	4,400
	Groundwater extracted by ABB	✓	576	2,066	2,499	2,726	2,300	3,200	3,100	3,200
	Surface water extracted by ABB	✓	109	2,406	2,561	2,849	3,000	2,400	2,800	2,700
	Collection of rainwater	✓	4.2	9.8	<100	<100	<100	<100	<100	<100
	Waste water from external source	✓	12.0	21.7	<100	<100	<100	<100	<100	<100
	Water withdrawal from areas of water stress <sup>8</sup>	✓	1,268	2,711	2,778	2,694	2,730	2,993	2,951	3,157
	<b>Total water withdrawal</b>	✓	<b>3,224</b>	<b>8,401</b>	<b>8,827</b>	<b>9,280</b>	<b>9,100</b>	<b>9,700</b>	<b>10,100</b>	<b>10,300</b>
<b>303-3</b>	<b>Water recycled and reused<sup>1</sup></b>									
	Volume of water reused and recycled (kilotons)		1,033	8,051	7,449	7,807	10,600	5,200	5,200	5,900
	As percentage of total water withdrawal (%)		25	96	84	84	116	54	51	57
	<b>Greenhouse gas (GHG) emissions<sup>9</sup> (kilotons CO<sub>2</sub> equivalent)</b>									
<b>305-1</b>	<b>Scope 1<sup>1</sup></b>									
	Use of energy <sup>7</sup>	✓	94	162	148	149	155	173	170	180
	SF <sub>6</sub> <sup>10</sup>	✓	77	159	164	180	228	244	394	297
	Transport by own fleet <sup>11</sup>	✓	55	75	63	63	350	350	350	350



GRI ref.	Indicator description	2020 data assured	2020	2019	2018	2017	2016	2015	2014	2013
<b>305-2</b>	<b>Scope 2<sup>1</sup></b>									
	District heat consumption	✓	18	33	30	28	31	29	35	45
	Electricity consumption <sup>7</sup>	✓	318	569	597	606	614	684	682	680
	<b>Total scope 1 and 2 GHG emissions</b>	✓	<b>561</b>	<b>998</b>	<b>1002</b>	<b>1,026</b>	<b>1,378</b>	<b>1,480</b>	<b>1,631</b>	<b>1,552</b>
<b>305-3</b>	<b>Scope 3<sup>1</sup></b>									
	Air travel <sup>12,13</sup>	✓	55	148	138	150	164	158	171	134
	Waste generated in operations <sup>14</sup>		17	12	–	–	–	–	–	–
	Energy-related activities not in scope 1/2 <sup>14</sup>		43	70	–	–	–	–	–	–
	Purchased goods and services <sup>14</sup>		4,751	4104	–	–	–	–	–	–
	Employee commuting <sup>14</sup>		187	249	–	–	–	–	–	–
	Up- and downstream transportation <sup>14</sup>		800	1150	–	–	–	–	–	–
	Up- and downstream leased assets <sup>13</sup>		273	219	–	–	–	–	–	–
<b>305-4</b>	<b>GHG emissions intensity (tons CO<sub>2</sub> equivalents/million \$)<sup>1</sup></b>									
	Tons CO <sub>2</sub> equivalents per million \$ sales, scope 1+2	✓	21	27	28	30	41	42	41	37
<b>305-7</b>	<b>Significant air emissions (tons)<sup>1</sup></b>									
	Volatile organic compounds (VOC) <sup>15</sup>	✓	668	1,128	936	987	1,105	1,223	1,291	1,210



GRI ref.	Indicator description	2020 data assured	2020	2019	2018	2017	2016	2015	2014	2013
	<b>Emissions of NO<sub>x</sub> and SO<sub>x</sub> (tons SO<sub>2</sub> and NO<sub>2</sub>)</b>									
	SO <sub>x</sub> from burning coal		–	0	0	0	0	0	0	3
	SO <sub>x</sub> from burning oil and biofuels		8	77	72	89	82	97	97	89
	NO <sub>x</sub> from burning coal		–	0	0	0	0	0	0	2
	NO <sub>x</sub> from burning oil and biofuels		6	57	54	67	72	73	73	67
	NO <sub>x</sub> from burning gas		94	156	142	140	142	159	153	170
<b>306-1</b>	<b>Water discharge by quality and destination (kilotons)<sup>1</sup></b>									
	Public sewer		2,018	3,591	3,649	3,039	4,200	3,100	3,000	3,600
	treated (percentage)		25%	36%	36%	38%	21%	28%	30%	31%
	untreated (percentage)		75%	64%	64%	62%	79%	72%	70%	69%
	Recipient <sup>16</sup>		585	1,123	761	444	4,500	2,600	2,900	2,300
	treated (percentage)		29%	84%	90%	81%	15%	90%	90%	87%
	untreated (percentage)		71%	16%	10%	19%	85%	10%	10%	13%
	Hazardous treatment company		47	140	47	45	300	360	400	500
	treated (percentage)		45%	81%	47%	13%	71%	90%	75%	60%
	untreated (percentage)		55%	19%	53%	87%	29%	10%	25%	40%
	External use		0.01	0	1	0	0	<100	<100	<100
	treated (percentage)		0%	0%	100%	–	–	63%	50%	50%



GRI ref.	Indicator description	2020 data assured	2020	2019	2018	2017	2016	2015	2014	2013
	untreated (percentage)		100%	100%	–	–	–	37%	50%	50%
<b>306-2</b>	<b>Waste (kilotons)<sup>1</sup></b>									
	Scrap metal recycled	✓	124	167	156	153	148	158	162	185
	Non-hazardous waste recycled <sup>6</sup>	✓	35	61	62	61	53	53	49	52
	Non-hazardous waste sent for disposal <sup>6</sup>	✓	24	41	37	36	37	44	44	50
	Hazardous waste recycled <sup>17</sup>	✓	3	7	5	5	7	5	5	5
	Hazardous waste sent for disposal <sup>17</sup>	✓	5	7	6	8	8	10	13	9
	<b>Total waste (generated)</b>	✓	<b>192</b>	<b>283</b>	<b>266</b>	<b>263</b>	<b>254</b>	<b>270</b>	<b>273</b>	<b>301</b>
<b>306-3</b>	<b>Numbers of significant spills<sup>1,18</sup></b>									
	Oil spills		–	9	15	19	17	11	7	13
	Chemical spills		5	4	9	10	6	1	0	0
	Emissions to air		–	6	5	3	6	11	3	3
	Others		–	7	14	12	9	0	0	4
	<b>Total number of significant spills</b>		<b>5</b>	<b>26</b>	<b>43</b>	<b>44</b>	<b>38</b>	<b>23</b>	<b>10</b>	<b>20</b>

## Social

GRI ref.	Indicator description	2020 data assured	2020	2019	2018	2017	2016	2015	2014	2013
<b>401-1</b>	<b>Total number and rates of new employee hires and employee turnover<sup>1</sup></b>									
	Total workforce by region (ABB employees) <sup>1</sup>									
	Europe		49,200	68,400	68,300	63,000	61,400	61,600	63,000	65,000
	The Americas		27,600	35,200	35,600	28,800	29,000	30,900	32,200	34,400
	Asia, Middle East and Africa		28,800	40,800	42,700	43,000	41,900	43,300	45,200	48,300
	<b>Total</b>		<b>105,600</b>	<b>144,400</b>	<b>146,600</b>	<b>134,800</b>	<b>132,300</b>	<b>135,800</b>	<b>140,400</b>	<b>147,700</b>
	<b>Employee turnover</b>									
	Turnover of all employees <sup>19</sup>									
	Europe		8,570 17%	9,732 14%	6,509 10%	7,105 11%	6,063 10%	5,891 9%	5,877 9%	5,387 9%
	The Americas		3,849 14%	5,443 16%	3,986 11%	3,148 11%	5,338 17%	5,409 17%	5,379 17%	4,760 14%
	Asia, Middle East and Africa		4,252 15%	6,860 17%	5,127 12%	3,749 9%	4,430 11%	4,946 12%	5,701 13%	5,534 13%
	<b>Total employee turnover: ABB Group</b>		<b>16,671 16%</b>	<b>22,035 15%</b>	<b>15,622 11%</b>	<b>14,002 10%</b>	<b>15,831 12%</b>	<b>16,246 12%</b>	<b>16,957 12%</b>	<b>15,681 11%</b>
	Turnover of all female employees <sup>19</sup>									
	Europe		3,038 6%	2,871 4%	2,053 3%	2,097 3%	1,571 2%	1,498 2%	1,370 2%	1,217 2%
	The Americas		1,162 4%	1,553 4%	1,154 3%	940 3%	1,265 4%	1,418 5%	1,307 4%	1,026 3%
	Asia, Middle East and Africa		906 3%	1,399 3%	967 2%	855 2%	882 2%	1,093 3%	1,311 6%	1,358 3%
	<b>Total female employee turnover: ABB Group</b>		<b>5,106 5%</b>	<b>5,823 4%</b>	<b>4,174 3%</b>	<b>3,892 3%</b>	<b>3,718 3%</b>	<b>4,009 3%</b>	<b>3,882 3%</b>	<b>3,601 3%</b>
	<b>Employee hires</b>									
	Hires of all employees <sup>19</sup>									
	Europe		7,649 15%	11,560 17%	7,848 11%	6,888 11%	5,656 9%	5,672 9%	6,195 10%	6,086 10%
	The Americas		2,106 8%	4,221 12%	3,525 10%	3,905 13%	3,354 11%	3,573 11%	4,142 13%	4,246 12%
	Asia, Middle East and Africa		4,209 14%	6,121 15%	5,281 12%	4,403 11%	2,920 7%	3,777 9%	5,493 13%	5,219 10%
	<b>Total employee hires: ABB Group</b>		<b>13,964 13%</b>	<b>21,902 15%</b>	<b>16,654 11%</b>	<b>15,196 11%</b>	<b>11,930 9%</b>	<b>13,022 10%</b>	<b>15,830 12%</b>	<b>15,551 11%</b>



GRI ref.	Indicator description	2020 data assured	2020	2019	2018	2017	2016	2015	2014	2013
	Hires of all female employees <sup>19</sup>									
	Europe		2,799 6%	3,898 6%	2,442 4%	2,161 3%	1,681 3%	1,520 2%	1,597 3%	1,453 2%
	The Americas		742 3%	1,357 4%	950 3%	1,030 3%	937 3%	769 2%	1,010 3%	971 3%
	Asia, Middle East and Africa		1,006 3%	1,275 3%	1,076 3%	900 2%	586 1%	761 2%	1,308 3%	1,467 3%
	<b>Total female employee hires: ABB Group</b>		<b>4,547 4%</b>	<b>6,530 4%</b>	<b>4,468 3%</b>	<b>4,091 3%</b>	<b>3,204 2%</b>	<b>3,050 2%</b>	<b>3,915 3%</b>	<b>3,891 3%</b>
<b>403-9</b>	<b>Occupational health and safety: Injuries, lost days, diseases and fatalities<sup>1</sup></b>									
	Employee work-related fatalities <sup>20,22</sup>	✓	1	1	0	1	0	0	1	0
	Incident rate <sup>21</sup>	✓	0	0.01	0.00	0.00	0.00	0.00	0.00	0.00
	Employee business travel fatalities <sup>20,23</sup>	✓	0	0	1	1	1	0	0	0
	Incident rate <sup>21</sup>	✓	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Contractor work-related fatalities <sup>22</sup>	✓	1	1	3	2	5	2	2	7
	Contractor business travel fatalities <sup>20,23</sup>	✓	0	0	0	0	2	0	0	0
	Members of the public fatalities <sup>20</sup>	✓	0	0	0	0	0	1	0	1
	Employee total recordable incident number <sup>22,24</sup>	✓	410	744	830	1,049	1,140	1,310	1,500	1,664
	Injury rate <sup>21</sup>	✓	0.31	0.47	0.58	0.73	0.79	0.87	0.99	10.94
	Contractor total recordable incident number <sup>22,24</sup>	✓	100	149	203	205	277	343	333	310
	Injury rate <sup>21</sup>	✓	0.46	0.46	0.58	0.52	0.70	0.80	0.78	7.52
	Employee lost time incident number <sup>22</sup>	✓	197	372	386	472	441	531	652	686
	Injury rate <sup>21</sup>	✓	0.15	0.23	0.27	0.33	0.30	0.36	0.43	4.70
	Contractor lost time incident number <sup>22</sup>	✓	56	96	97	95	118	163	200	158



GRI ref.	Indicator description	2020 data assured	2020	2019	2018	2017	2016	2015	2014	2013
	Injury rate <sup>21</sup>	✓	0.26	0.29	0.28	0.24	0.30	0.38	0.47	3.38
	Employee lost days due to industrial incidents <sup>27</sup>		2,014	6,757	6,650	7,331	6,905	7,831	8,415	10,591
	Days lost rate <sup>21</sup>		1.5	4.26	4.63	5.11	4.78	5.26	5.52	77.50
	Employee occupational health illness <sup>22</sup>	✓	5	16	30	35	65	46	17	10
	Employee occupational health illness rate <sup>21,22</sup>	✓	0	0.01	0.02	0.02	0.05	0.03	0.01	0.14
	Sustainability Observation Tours (SOT) conducted <sup>26</sup>	✓	74,266	83,859	144,738	182,265	178,473	139,124	–	–
	SOT rate <sup>26,28</sup>	✓	4.31	5.52	1.01	1.27	1.24	0.92	–	–
	Hazards reported <sup>22</sup>	✓	270,985	336,747	389,733	585,627	621,849	520,942	–	–
	Hazards reporting rate <sup>25</sup>	✓	2.06	2.12	2.72	4.08	4.31	3.51	–	–
<b>Data by region</b>										
	Employee work-related fatalities: ABB Group <sup>20,22</sup>		–	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	–
	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	–



GRI ref.	Indicator description	2020 data assured	2020	2019	2018	2017	2016	2015	2014	2013
	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	–
	<b>Employee total recordable injury rate: ABB Group</b>		–	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	–
	<b>Contractor total recordable injury rate: ABB Group</b>		–	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	–
	<b>Employee lost time injury rate: ABB Group</b>		–	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	–
	<b>Contractor lost time injury rate: ABB Group</b>		–	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	–
	<b>Employee days lost rate: ABB Group</b>		–	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	–
	<b>Employee occupational health disease rate: ABB Group</b>		–	0.01	0.02	0.02	0.05	0.03	0.01	–





GRI ref.	Indicator description	2020 data assured	2020	2019	2018	2017	2016	2015	2014	2013
	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	–
	<b>SOT rate: ABB Group</b>		–	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	–	–
	<b>Hazard rate: ABB Group</b>		–	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	–	–
<b>406-1</b>	<b>Non-discrimination<sup>1</sup></b>									
	Total number of incidents of discrimination		0	8	0	0	0	0	1	1
	Total number of incidents of harassment		36	19	25	9	5	8	10	10
<b>415-1</b>	<b>Public policy<sup>1</sup></b>									
	Financial and in-kind political contributions		\$14,908	\$1,260	\$11,500	\$300	\$10,400	\$12,600	\$13,000	0
<b>404-1</b>	<b>Training and education<sup>1</sup></b>									
	Training per year per employee (average hours)									
	China		14	17	16	17	25	22	26	27
	Finland		10	12	13	13	15	17	19	18
	Germany		10	18	18	18	18	18	18	16
	India		23	10	12	5	3	2	12	12
	Italy		10	16	16	12	10	12	12	19
	Mexico		347	7	134	98	15	16	23	–
	Poland		4	10	35	20	12	10	11	12
	Sweden		12	12	12	12	10	10	12	12
	Switzerland		13	12	14	14	15	14	16	20



GRI ref.	Indicator description	2020 data assured	2020	2019	2018	2017	2016	2015	2014	2013
	USA		16	16	16	24	24	27	32	28
<b>404-3</b>	<b>Employees receiving regular performance and career development reviews<sup>1,29</sup></b>									
	Top and senior managers		94%	73%	89%	94%	92%	85%	87%	-
	Middle and lower managers		92%	89%	93%	96%	94%	90%	91%	-
	Other employees		90%	89%	91%	91%	91%	87%	88%	-
	<b>Total workforce</b>		<b>92%</b>	<b>89%</b>	<b>91%</b>	<b>91%</b>	<b>92%</b>	<b>87%</b>	<b>88%</b>	<b>-</b>
<b>405-1</b>	<b>Diversity and equal opportunity<sup>1</sup></b>									
	Composition of governance bodies									
	Board of Directors									
	Women in Board (percentage)		18%	18%	18%	10%	18%	13%	13%	13%
	Age group diversity (percentage)									
	<30 years old		0%	0%	0%	0%	0%	0%	0%	0%
	30–50 years old		9%	9%	18%	0%	0%	0%	0%	0%
	>50 years old		91%	91%	91%	100%	100%	100%	100%	100%
	Number of nationalities		9	7	7	8	10	8	7	7
	Executive Committee									
	Women in Executive Committee (percentage)		22%	16%	9%	9%	9%	9%	9%	8%
	Age group diversity total (percentage)									
	<30 years old		0%	0%	0%	0%	0%	0%	0%	0%
	30–50 years old		33%	8%	0%	27%	18%	27%	36%	25%
	>50 years old		67%	92%	100%	73%	82%	73%	64%	75%
	Number of nationalities		6	8	8	8	7	8	8	8
	Employees in senior and middle management <sup>30</sup>									



GRI ref.	Indicator description	2020 data assured	2020	2019	2018	2017	2016	2015	2014	2013
	Women in senior and middle management		20%	18%	17%	16%	18%	17%	15%	15%
	Men in senior and middle management		80%	82%	83%	84%	82%	83%	85%	85%
	<b>Total workforce (ABB employees)</b>									
	Women in total workforce		26%	24%	23%	23%	23%	23%	22%	22%
	Men in total workforce		74%	76%	77%	77%	77%	77%	78%	78%

- 1 PG is included in 2013-2019 data but excluded from 2020 data.
- 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 Emissions of chlorinated volatile organic compounds (VOC-Cl) are included in the volatile organic compounds (VOC) reported in the line above.
- 4 Data on inflow and outflow of SF<sub>6</sub> insulation gas have been restated for 2017, due to an error in the reporting from one site.
- 5 Biofuels have been reported as a separate category since 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.
- 6 Results for these indicators are based on reported data covering 95% of employees in 2020, 93% in 2019, 94% in 2018, 93% in 2017, 97% in 2016, 95% in 2015, 93% in 2014 and 88% in 2013, plus energy use per employee for the remaining employees pro rata. See the [“Approach to reporting”](#) section for more details.
- 7 Gas and electricity consumption and the associated greenhouse gas (GHG) emissions have been restated for 2013–2017, due to the correction of earlier conversion factor errors at one of our large facilities.
- 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<sub>6</sub> emissions to CO<sub>2</sub> equivalents to 23,500 kg CO<sub>2</sub>e/kg SF<sub>6</sub>, as recommended by the IPCC 2013 (Fifth Assessment Report), and have applied that factor to SF<sub>6</sub> data reported for all years. SF<sub>6</sub> emissions for 2018 were restated from 155 kilotons to 164 kilotons due to a reporting error at a large manufacturing site.
- 11 Reported fleet emissions for 2020 and 2019 lag one year behind. For 2018 we used the same data as for 2017. For 2017 data see [“Approach to reporting”](#); 2013–2016 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 “2019 Government GHG Conversion Factors for Company Reporting – Methodology Paper for Emission Factors – Final Report.”
- 14 Calculated for the first time for 2019.



- 15 VOC emissions for 2018 were restated from 882 tons to 936 tons due to a reporting error at a large manufacturing site.
- 16 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.
- 17 Hazardous waste as classified in the country where it is generated.
- 18 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.
- 19 2020 data excludes PG. 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 31 December. 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.
- 20 Fatalities include deaths occurring within one year as a result of injuries sustained and commuting is excluded.
- 21 Incident rates are according to the rate per 100 employees or per 200,000 contractor hours worked. For 2013, incident rates are per 1,000 employees / contractors.
- 22 Data covers incidents that happened at workplace (ABB facility, customer site, project site) and excludes incidents that occurred during business travel.
- 23 Includes incidents during business travel by road. Air and rail travels are excluded.
- 24 Recordable incidents include fatal, lost time incidents, serious injury incidents, medical treatment injuries, occupational diseases and restricted workday cases.
- 25 Rate is calculated per employee.
- 26 SOT conducted by manager starting 2019, in previous years by employees. Sustainability Observation Tour starting 2019 and Safety Observation Tour previously.
- 27 Days lost are calendar days and are counted from the day after the incident.
- 28 Rate per manager starting in 2019 and per employee previously.
- 29 Eligible employees included in ABB HR system. Data covers previous year's cycle with completion by Q1 of the reporting year.
- 30 This indicator focuses on senior and middle management and includes employees in pay grades 1 to 10. 2020 data excludes PG.



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