ABB

2021

Annual report

Highlights 2021

Operational performance

Strongly increased demand for ABB's offering from the low level in the previous year period when the adverse business impact of the COVID-19 pandemic was significant.

Orders +20% (+17% comparable[1]) and revenues +11% (+8% comparable) increased in all Business Areas and regions.

Adverse impact from imbalances in the supply chain to some extent hampered the ability to convert orders into actual deliveries, resulting in an order backlog of $16.6 billion, +16% (+21% comparable), year-on-year.

Strong improvement in Operational EBITA margin[1] to 14.2%, +310 basis points, higher in all Business Areas.

Lifted long-term targets as ABB expects to drive through-the-cycle revenue growth to 4-7% (3-5% organic and 1-2% acquired), in constant currency, and sharpened Operational EBITA margin target to be at least 15% as from 2023, in any given year.

Portfolio management

Mechanical Power Transmission (Dodge) divestment completed for $2.9 bn in cash.

Good progress in Turbocharging and E-mobility processes, expected to be completed during first half of 2022.

Acquisition of ASTI to expand in Autonomous Mobile Robots.

Improved portfolio management process to build up acquisition pipelines in the divisions.

Capital allocation

Very strong uplift in cash generation with cash flow from operating activities in continuing operations of $3.3 billion improving by $1.5 billion year-over-year.

Net cash positive at the end of 2021.

Accelerated R&D investments in focus areas.

Board of Directors proposing a CHF 0.82 dividend per share at the 2022 Annual General Meeting.

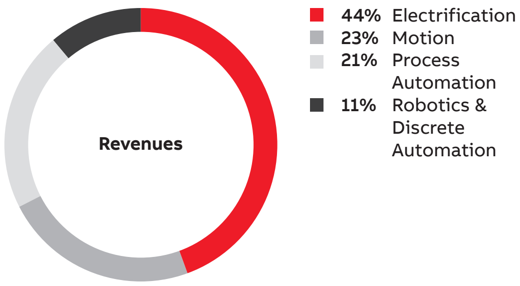
Returned $2.7 billion of Power Grids proceeds during 2021.

(1) For non-GAAP measures, see the "Supplemental information" section of this annual report.

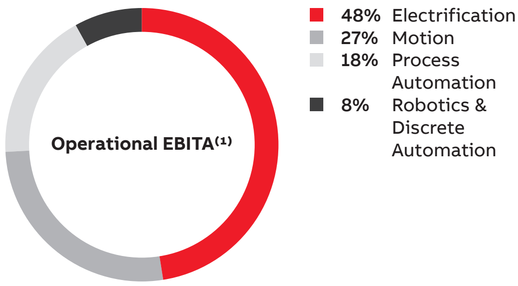
ABB at a glance

ABB (ABBN: SIX Swiss Ex) 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.

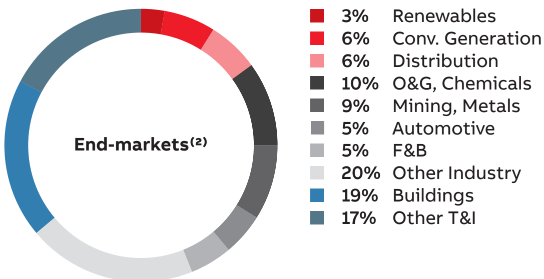
% of FY 2021 third party revenues
excl. Corporate and Other



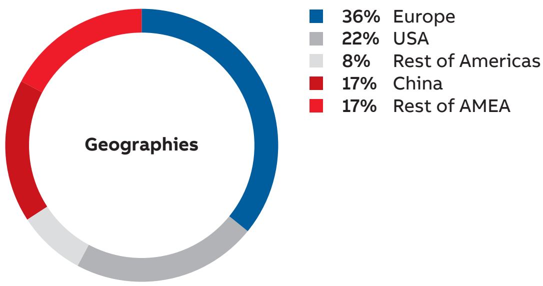
% of FY 2021 Operational EBITA
excl. Corporate and Other



% of FY 2021 third party revenues



% of FY 2021 third party revenues

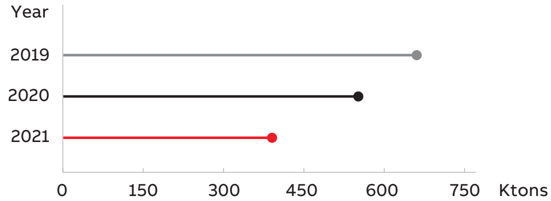


(1) For non-GAAP measures, see the "Supplemental information" section of this annual report.
(2) Management estimates.

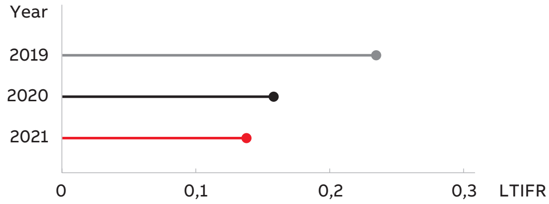
Key figures

$ in millions, unless otherwise indicated	FY 2021	FY 2020	US$	Comparable[4]
Orders	**31,868**	26,512	+20%	+17%
Order backlog (end December)	**16,607**	14,303	+16%	+21%
Revenues	**28,945**	26,134	+11%	+8%
Income from operations	**5,718**	1,593	+259%	
Operational EBITA[1]	**4,122**	2,899	+42%	+37%[5]
as % of operational revenues	**14.2%**	11.1%	+3.1 pts	
Income from continuing operations, net of tax	**4,730**	345	n.a.	
Net income attributable to ABB	**4,546**	5,146	-12%	
Basic Earnings per share ($)	**2.27**	2.44	-7%[2]	
Dividend per share	**0.82**	0.80		
Cash flow from operating activities[3]	**3,330**	1,693	+97%	
Cash flow from operating activities in continuing operations	**3,338**	1,875	+78%	
Net (cash) debt (end December)[1]	**(98)**	112		
	FY2021	**FY2020**	**Change**	
CO_2e own operations emissions, kt scope 1 and 2	**405 kt**	561 kt	-28%	
Lost Time Injury Frequency Rate (LTIFR), frequency / 200,000 working hours	**0.142**	0.162	-12%	
Share of females in senior management positions, %	**16.3%**	13.5%	+2.8 pts	

CO_2 scope 1 & 2
Ktons of CO_2 equivalent emissions



Lost Time Injury Frequency Rate
LTIFR, frequency/200,000 working hours



(1) For non-GAAP measures, see the "Supplemental information" section of this annual report.
(2) EPS growth rates are computed using unrounded amounts.
(3) Amount represents total for both continuing and discontinued operations.
(4) Growth rates for orders, order backlog and revenues are on a comparable basis, see the "Supplemental information" section of this annual report.
(5) Constant currency (not adjusted for portfolio changes).

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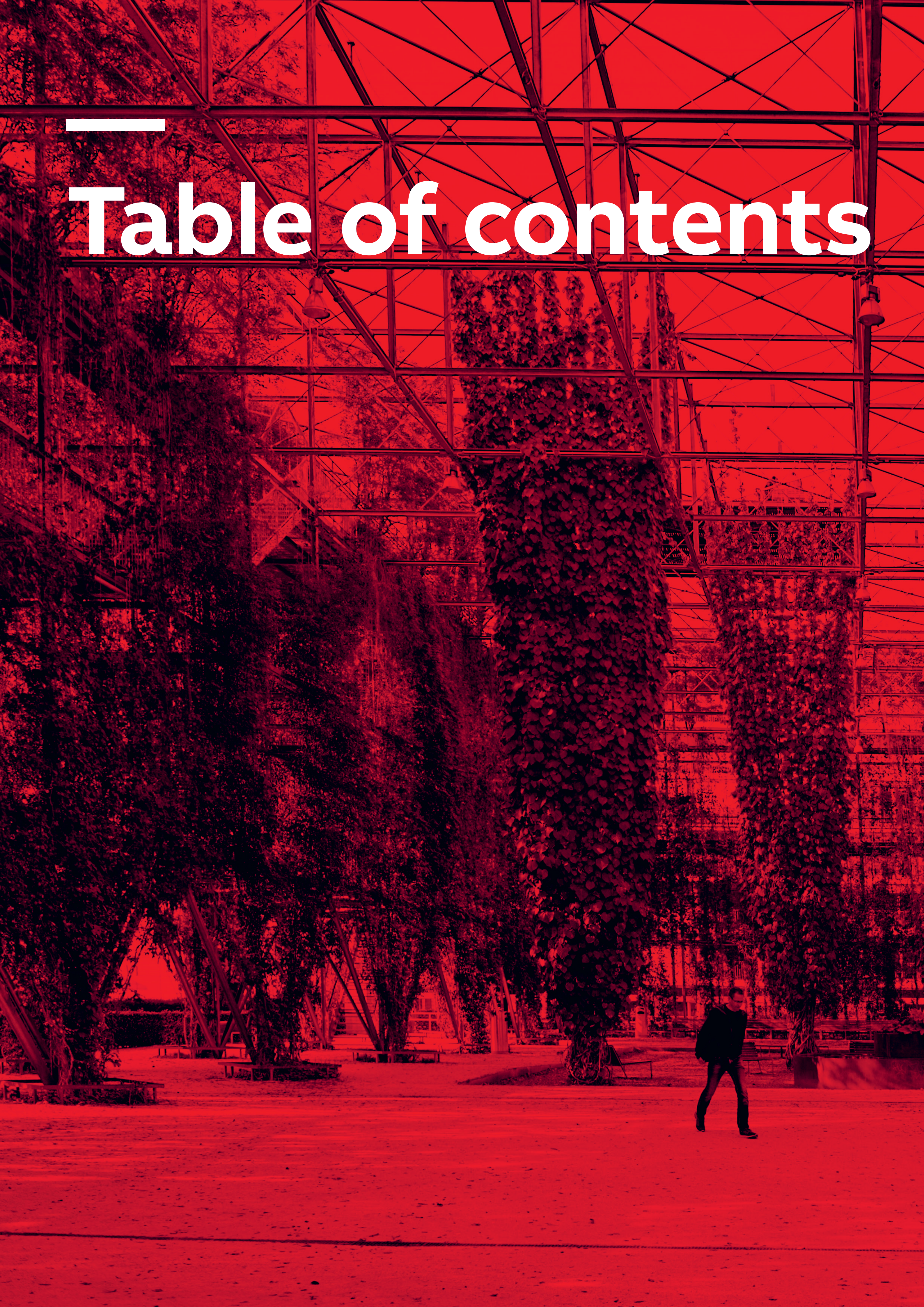
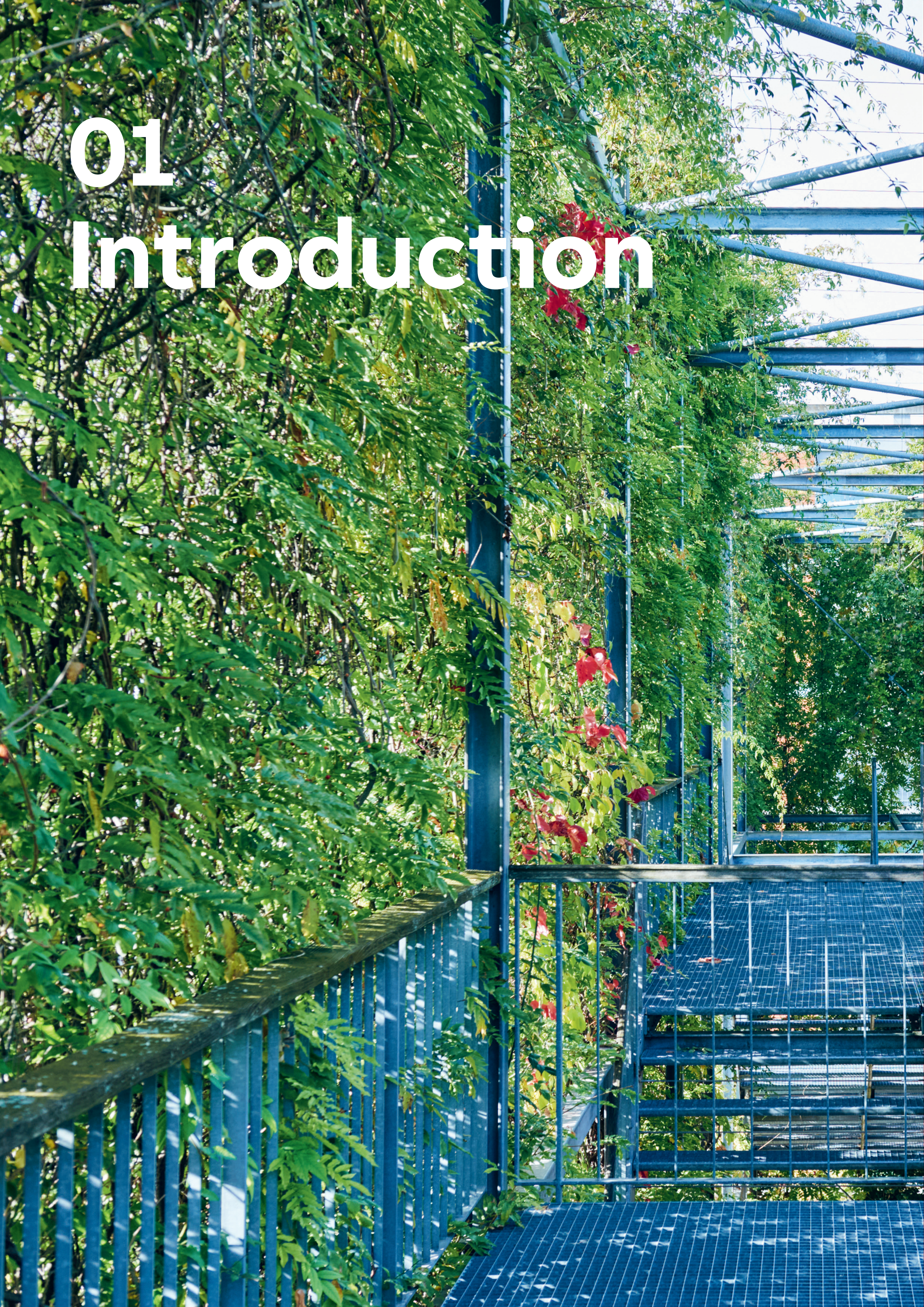


01 Introduction



CHAIRMAN AND CEO LETTER

Dear shareholders, customers, partners and employees,

The year 2021 was also characterized by uncertainty related to the continuing impacts of the COVID-19 pandemic, especially in the second half. Although demand increased significantly, as can be seen in ABB's order performance, broad disruptions in the global supply chain – including component shortages, challenging logistics and tight labor markets – hampered our ability to convert strong order intake into actual customer deliveries. We expect supply-chain problems to ease during the course of this year, and while rising inflation is a concern, it seems likely that the era of ultra-loose monetary policy is coming to an end, which is good news for the economy.

When it comes to longer-term trends, ABB is well-positioned in very attractive markets. Despite the absence of a global agreement on actions to achieve the Paris climate goal, the COP26 climate conference showed that reducing emissions and making more efficient use of resources are now a must for governments and businesses. For ABB, as a provider of electrification, automation and digital technologies, this represents a huge opportunity. Demand for electricity is growing twice as fast as for any other form of energy and software-driven automation is the most effective way to improve energy and resource efficiency.

Positioned for stronger growth

In 2021, ABB started to reap the benefits of its ongoing transformation. Improved efficiency combined with higher demand resulted in a significant increase in orders as well as a marked improvement in profitability. In our Business Areas, we advanced on several fronts, with the launch of important innovations for the transport sector and the mining industry, a value-adding acquisition in robotics, and the divestment of our Dodge business (Mechanical Power Transmission Division) for $2.9 billion in cash.

We made good progress in building a high-performance culture by empowering our Divisions, and we initiated several important actions to reduce our own CO_2 emissions and make ABB a more attractive employer. These achievements, which are covered in more detail below and in the following pages, provide a solid foundation for future profitability and growth. They will also help to strengthen ABB's position in key market segments as well as contribute to sustainable development. In short, our company is now moving forward strongly and with a clear purpose and direction.

Tragically, over the course of the year, we lost several colleagues due to continued outbreaks of COVID-19. However, our high level of preparedness helped us protect our people and keep our operations running. Thanks to our strong focus on safety, we saw a further reduction in workplace injuries and recorded no fatalities for the first time since 2011.

Financial performance

Our strong financial performance in 2021 showed that our "ABB Way" operating model, introduced in 2020, is the right one for our company. All of our four Business Areas contributed to strong order growth as well as increased profitability. We also improved cash flow and strengthened our balance sheet. For the full-year 2021, Group orders were up 20 percent, revenues rose by 11 percent, and we increased our operational EBITA margin by 3.1 percent to 14.2 percent.

Our order backlog increased, driven in part by strong demand and but also due to supply-chain challenges hampering customer deliveries. We were able to mitigate some of them thanks to our global footprint and multiple sourcing strategy, but a worldwide shortage of semi-conductors, impacted logistics and a tight labor market in the United States meant that deliveries to customers were delayed starting in the third quarter. We expect the situation to ease over the course of this year.

In light of our improved financial results, and in line with our policy of paying a sustainable dividend over time, we will be proposing a dividend of CHF 0.82 per share to our shareholders to be voted on at the annual general meeting on March 24, 2022.

At the AGM, we will also ask our shareholders to approve the cancellation of shares purchased through a second buyback program that was launched on April 9, 2021. The buybacks are to return $7.8 billion of cash proceeds from the Power Grids divestment to shareholders. We will also seek shareholder approval for the cancellation of shares purchased under the initial buyback program that were not proposed for cancellation at ABB's 2021 AGM.

Cultural change

A key objective of our transformation is to build a high-performance culture by empowering our

20 Divisions with full ownership and accountability for their respective strategies, performance and resources. Under our decentralized ABB Way operating model, performance is measured through a scorecard system, which provides full transparency on key measures.

To be able to deliver on our commitments to our stakeholders, our Divisions are required to be stable and profitable before focusing on growth. At the end of 2021, around 60 percent of our Divisions were in growth mode, which means that they focus both on organic growth as well as M&A opportunities to consolidate their market position.

Our long-term objective is to shift to more attractive markets, with better quality of revenues, which means better gross margins, less risk and lower earnings volatility. Among the high-growth segments we are targeting are: water and wastewater, food and beverage, sustainable transport and data centers. We aim to be number 1 or 2 in all of our customer segments.

Strengthening our portfolio

To further strengthen our position in electrification and automation, we pursue a strategy of active portfolio management with the aim of making at least five small- to mid-sized acquisitions per year. In 2021, we acquired leading autonomous mobile robot manufacturer ASTI Mobile Robotics Group, which will help us to capture growing potential in areas such as logistics and warehouse automation. With ASTI, we now have the most comprehensive portfolio of industrial robots on the market.

In January 2022, we strengthened our E-mobility business by taking a controlling stake in United States electric vehicle (EV) infrastructure company, In-Charge Energy, as well as increasing our majority stake in Chinese EV charging provider, Chargedot

Shanghai New Energy Technology Co., Ltd. to 80 percent.

To drive the further growth and expansion of our E-mobility business, we are moving ahead with efforts to separately list that business and we aim to complete this during the second quarter of 2022. As the world leader in electric vehicle charging infrastructure, we are well-positioned in an extremely attractive growth market – by 2035, EVs are expected to be outselling combustion cars.

We also made good progress with our planned divestments. We successfully closed the divestment of the Mechanical Power Transmission Division (Dodge) on November 1. This marks the completion of the announced first step to focus our business portfolio on our leading position in electrification and automation. As part of these actions, we have appointed a new head of the Turbocharging Division ahead of a likely spin off.

Groundbreaking innovations

In 2021, ABB again demonstrated its capacity for groundbreaking innovation with the launch of several new solutions that will further drive the shift to electrification and automation and contribute to a low-carbon society.

One notable example from our E-mobility Division was the Terra 360, the world's fastest electric-vehicle charger, capable of providing enough charge for 100 km of driving in less than three minutes, or of fully charging an EV in less than 15 minutes. Designed for commercial fleets and heavy-duty vehicles as well as electric cars, the Terra 360 has the capacity to charge up to four vehicles simultaneously and can be installed in almost any setting from the curbside to gas stations and motorway stops.

Another important offering, from our Process Automation Business Area, was a portfolio of technologies under the name "ABB Ability™ eMine" to electrify and automate mines, including a remote monitoring capability to optimize energy usage. From 2022, the solution will also include high-power electric chargers for mining trucks as well as an automated trolley system that can reduce diesel consumption by up to 90 percent.

TO BE ABLE TO DELIVER ON OUR COMMITMENTS, OUR DIVISIONS ARE REQUIRED TO BE STABLE AND PROFITABLE BEFORE FOCUSING ON GROWTH. AT THE END OF 2021, AROUND 60 PERCENT OF OUR DIVISIONS WERE IN GROWTH MODE.

Progress on sustainability

In 2021, we began implementing our 2030 sustainability strategy, with the focus on reducing CO_2 emissions across our value chain. In the past two years, we have reduced emissions from our own operations by 39 percent, in part by using our own technologies. To achieve our goal of carbon neutrality by 2030, we committed to electrifying our vehicle fleet, sourcing 100 percent of our energy from renewables and installing energy management systems at our sites around the world. Our carbon-neutrality commitment was verified by the Science-Based Targets initiative as being in line with the 1.5°C scenario of the Paris Agreement.

To help our customers reduce their CO_2 emissions – another key target of our 2030 sustainability strategy – we have identified products and solutions from our portfolio that deliver the most significant reductions in CO_2 emissions. At the core of our offering are our energy-efficient electric motors and drives produced by our Motion Business Area. Drives can reduce the power consumption of motors by up to 25 percent and the Motion Business Area's flagship synchronous reluctance (SynRM) motor and drive package has set a new standard for energy efficiency. Thanks to its innovative magnet-free design, the SynRM motor also requires no rare-earth materials in its manufacture, further reducing resource consumption.

Alongside reducing CO_2 emissions, we also have the goal of preserving resources for future generations. In December 2021, we unveiled a new company-wide approach to drive circularity in our own and our customers' operations. By 2030, at least 80 percent of ABB's products and solutions will be evaluated against a clear set of key performance indicators (KPIs), corresponding to each stage of the product lifecycle. We will also send no waste to landfill, wherever this is compatible with local conditions. Today, close to 40 percent of our 440 sites around the world are already sending no waste to landfill.

To support a culture of diversity and inclusion, in line with our 2030 sustainability goal of promoting social progress, we launched a gender-neutral parental leave program for all ABB employees around the world. We also increased the proportion of women in senior management to 16.3 percent, from 13.5 percent in 2020. By 2030, our goal is that 25 percent of senior management roles are filled by women.

To ensure that sustainability is taken as seriously as our other performance targets, we are integrating sustainability KPIs into our performance management planning and our businesses are reporting them at the same time as financial KPIs. Sustainability KPIs are now also part of senior management incentives and a selection is included in our quarterly financial reports.

Finally, to encourage our people to get personally involved in driving ABB's sustainability journey, we launched the "Sustainability Changemaker Award", inviting ideas that support the achievement of our 2030 sustainability goals. The winning individual or team will get the chance to turn their idea into reality.

Strong future prospects

Having decentralized our organization and successfully rolled out our ABB Way operating model, we are in a strong position to capture future growth opportunities. The three key growth drivers for our businesses are: resource efficiency through electrification and automation, where we are global leaders, occupying number 1 or 2 positions in the market; new ways of working, in which our Divisions are accountable for growth and decision-making has been moved closer to the market; and the acceleration of environmental, social and governance (ESG) drivers for energy efficiency and automation.

Accordingly, we have lifted our revenue growth target to 4–7 percent through the economic cycle, in constant currency. Of that, we expect 3–5 percent to come from organic growth and 1–2 percent from acquired growth. We have also sharpened our operational EBITA margin target to be at least 15 percent as of 2023. Previously, we had targeted 3–5 percent for revenue growth through the cycle and an operational EBITA margin in the upper half of a 13–16 percent range as of 2023.

With our leading technologies and talented people, we are confident that ABB will continue to go from strength to strength while living up to the expectations of its stakeholders and making a valuable contribution to a more sustainable society.

On behalf of the Board of Directors and the Executive Committee, we would like to thank our customers and shareholders for their continued trust in ABB and to thank our employees for their tremendous commitment, engagement and hard work. We are proud to lead them.

Best regards,

PETER VOSER
Chairman of the Board of Directors

BJÖRN ROSENGREN
Chief Executive Officer

Targets fulfilment

ABB's financial framework mirrors the company's ambition for improved performance and reflects increased accountability, transparency and speed in decision making. With our 2030 sustainability strategy, we are enabling a low-carbon society, preserving resources, promoting social progress and driving integrity and transparency across the value chain.

Financial target framework and 2021 performance

REVENUE GROWTH

Target:

4–7%
annual average through economic cycle(1)

2021 performance:

8%

OPERATIONAL EBITA MARGIN(2)

Group target:

≥15%
as from 2023

2021 performance:

14.2%

ROCE(2)

Target:

15–20%

2021 performance:

14.9%

FCF CONVERSION TO NET INCOME(2)

Target:

~100%

2021 performance:

108%

BASIC EPS GROWTH

Target:

EPS
growth > revenue growth

2021 performance:

-7%
Basic EPS growth(3)

(1) Calculated to exclude FX impacts and transformational acquisitions and divestments, includes bolt-on acquisitions and divestments within divisions.
(2) For non-GAAP measures, see the "Supplemental information" section of this annual report.
(3) Includes impact from Power Grids related book gain in 2020 and Mechanical Power Transmission related book gain in 2021.

Selected sustainability targets and 2021 progress

WE ENABLE A LOW-CARBON SOCIETY

Target:

Achieve carbon neutrality in ABB's own operations by 2030

Progress:

39%

Reduction compared with 2019 baseline

WE PRESERVE RESOURCES

Target:

Zero waste from ABB's own operations to be disposed of in landfills by 2030, wherever this is compatible with local conditions and regulations

Progress:

28%

Reduction compared with 2019 baseline

WE PROMOTE SOCIAL PROGRESS

Target:

Double number of women in senior management roles to 25% by 2030

Progress:

16.3%

From 13.5% in 2020

SUSTAINABILITY

Creating long-term value across the value chain

ABB has always taken a sustainable approach to business. Our predecessor companies were founded in the late 19th century to take advantage of electricity and since then ABB has been helping its customers electrify their operations as well as improve energy efficiency and productivity.

Today, sustainability is at the center of our company Purpose and the value that we create for stakeholders. Last year, we began implementing our 2030 sustainability strategy, having reduced our greenhouse gas emissions by more than half in our previous strategy period to 2020.

Focus areas of our 2030 sustainability strategy

To determine the focus areas of our 2030 sustainability strategy, we conducted some 400 hours of interviews with 300 stakeholders of ABB's four Business Areas, including customers, suppliers, investors, public representatives and NGOs in 2019. We also analyzed some 40,000 comments from ABB's annual employee engagement survey.

Drawing on the expectations and requirements of those stakeholders, we defined areas where we can make the biggest impact: enabling a low-carbon future, preserving resources, promoting social progress, as well as strengthening our commitment to responsible business practices, and driving integrity and transparency across the value chain.

Sustainability focus areas and targets

For each of our sustainability focus areas, we defined at least three main targets that apply to ABB, to our customers, and to our supply chain respectively. Each target is supported by operational targets and actions.

From strategy to implementation

Last year, we began implementing our 2030 sustainability strategy with the focus on enabling a low-carbon society. To support our customers in reducing their CO_2 emissions, we identified a basket of the products and solutions from our portfolio that deliver the most significant reductions in CO_2 emissions for our customers. The calculations have been validated by a third party and the first measurements will be reported in our 2021 sustainability report.

To achieve carbon neutrality across our own operations, we are committed to reducing our scope 1 and 2 emissions by at least 80 percent. To achieve these targets, we will electrify our vehicle fleet, use renewable energy to power our sites and improve energy efficiency across our operations.

TO ACHIEVE CARBON NEUTRALITY, WE WILL ELECTRIFY OUR VEHICLE FLEET, USE RENEWABLE ENERGY TO POWER OUR SITES AND IMPROVE ENERGY EFFICIENCY ACROSS OUR OPERATIONS.

When it comes to our supply chain, we have mapped our emissions and started engaging with our suppliers through our supplier sustainability framework. We are currently defining more specific actions on the most impactful upstream emissions.

To perserve resources, we are introducing circularity into our business models, aimed at reducing waste at every stage of the value chain. To achieve this goal, we will continuously improve the recycling and reusability of our products and make them more durable, as well as design and reduce the use of virgin and hazardous materials.

Sustainability strategy 2030

How did we get there*

400

Hours of interviews to determine the focus areas of our 2030 sustainability strategy

300

Stakeholders of ABB's four Business Areas, including customers, suppliers, investors, public representatives and NGOs interviewed

40,000

Employee comments analyzed from our engagement survey

Material topics

- Products, solutions and services
- Stakeholder engagement
- Carbon reduction
- Health & safety
- Ethics
- Employee wellbeing
- Responsible sourcing
- Human rights & labor
- Operations – environment
- Circular economy
- Socio-economic impact
- Business resilience
- Data privacy
- Diversity & inclusion

* Figures from 2019 internal and external stakeholder engagement process used for sustainability materiality matrix.

Our 2030 commitment

Enabling a low-carbon society

Support our customers in reducing their annual CO_2 emissions by at least **100 megatons**.

Achieve **carbon neutrality** across our **own operations.**

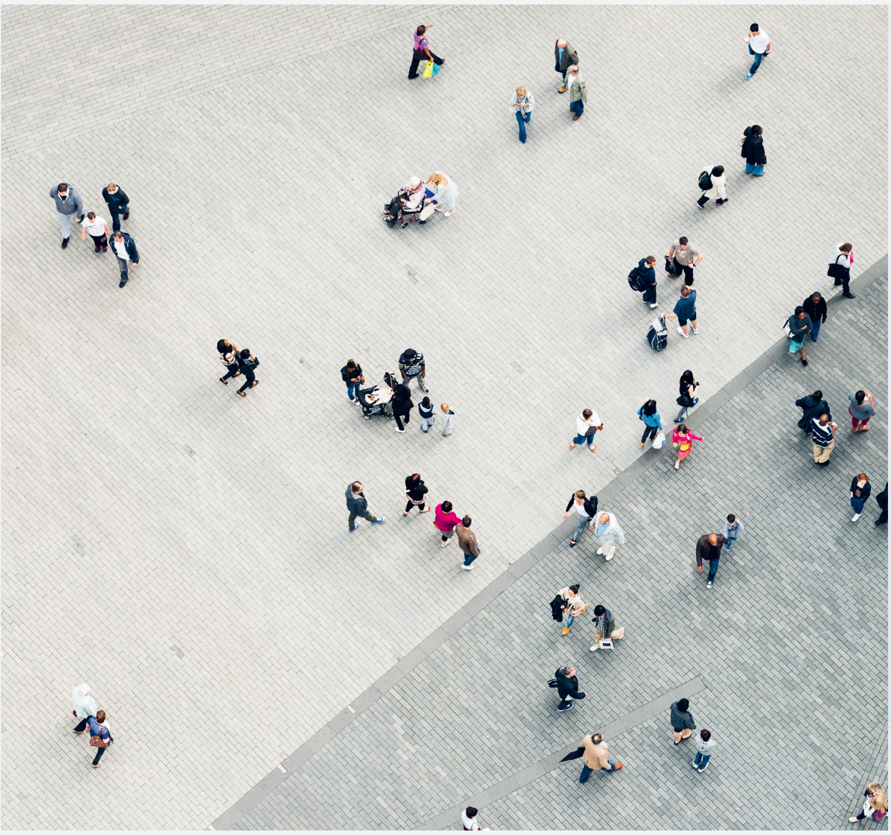
Reduce CO_2 emissions in our **supply chain** through a systematic approach with impactful suppliers.

Preserving resources

Cover at least **80 percent of ABB products and solutions** with our **circularity approach.**

Reduce **waste sent to landfills to zero.**

Implement **supplier sustainability framework including environment** for at least 80% of supply spend in focus countries.



Promoting social progress

Aim for **zero harm to employees and contractors.**

Double the number of women in senior management roles to 25%; target top-tier employee engagement score in our industry.

Provide impactful support for **community-building initiatives.**

Implement **supplier sustainability framework, including human rights**, for at least 80% of supply spend in focus countries.

Integrity and transparency

Extend ABB new **Code of Conduct-based approach to projects and counterparties.**

Include compliance with **Supplier Code of Conduct** in procurement terms and conditions.

Include sustainability targets in **senior management incentives.**

To promote social progress, we are creating safe, fair, equitable and inclusive working environments in which our people can succeed and develop. We also work with suppliers to proactively identify, assess and address human rights issues, and to drive broader environmental, social and governance performance.

Each of our sustainability targets has one or more key performance indicators (KPIs) to measure progress. These are being progressively integrated into our performance management planning and are reported by the business at the same time as financial KPIs. Sustainability KPIs are now also part of senior management incentives.

Actions to enable a low-carbon society

ABB joined three initiatives led by the international non-profit Climate Group to reduce its own emissions:

- EV 100: ABB commits to electrifying its fleet of more than 10,000 vehicles by 2030.
- RE 100: ABB commits to sourcing 100 percent renewable electricity by 2030.
- EP 100: ABB commits to establishing energy efficiency targets and continuing to deploy energy management systems at its sites.

ABB's carbon reduction targets received approval by the Science Based Targets initiative (SBTi) confirming that they are in line with the 1.5°C scenario of the Paris Agreement. ABB also joined the Business Ambition for 1.5°C Campaign, a global coalition of UN agencies, business and industry leaders, led by the UN Global Compact (UNGC).

How we are preserving resources

We aim to preserve resources at all levels of the value chain by eliminating waste in our own operations and making our products last longer. Today, among our 440 sites across the world, close to 40 percent are already sending no waste to landfills.

We are also working with customers to reuse and recycle our products. We aim to help them reduce their resource consumption through more efficient processes and by replacing or upgrading old and outdated equipment.

Our objective is to go beyond compliance to become a leader in circularity. That means setting specific, transparent key performance indicators for all aspects of the product lifecycle to enable continuous improvement across our portfolio.

When it comes to our suppliers, our target is that 80 percent of our supply spend in focus countries is covered by Sustainable Supply Base Management (SSBM), which covers all aspects of environmental, social and governance (ESG) performance, including preserving resources.

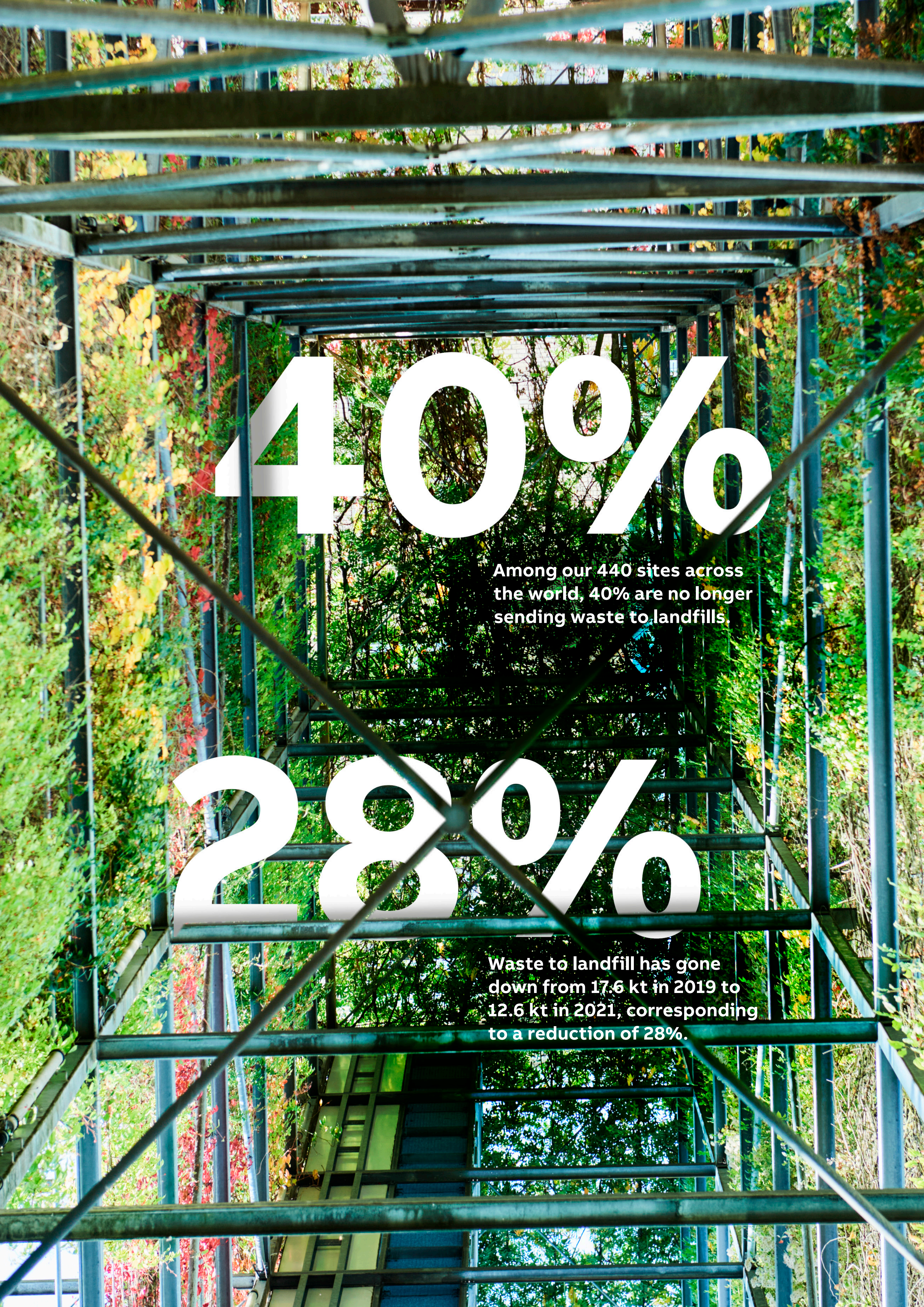
Case studies

Reducing our carbon footprint with recycled plastic

In the Netherlands, ABB introduced a range of surface-mounted junction boxes made entirely from recycled plastic waste. Hundreds of millions of these boxes are installed across Europe every year and using recycled rather than new plastic can reduce carbon emissions by up to 70 percent. In the Netherlands, we estimate that this new range of junction boxes and achieve an annual CO_2 footprint reduction of up to 300,000 kilograms – the equivalent of 500 flights from London to New York.

ABB factory in Italy achieves zero waste to landfill target

In 2021, ABB Smart Power's manufacturing unit in Frosinone, Italy, stopped sending waste to landfills, in line with ABB's target to eliminate waste to landfill by 2030. The factory, which produces more than 3 million circuit breakers per year, achieved the target within two years through rigorous waste sorting and identification. Today, it separates production waste into around 150 categories of material and every workstation has separate waste containers for cardboard/paper and plastic.



40%

Among our 440 sites across the world, 40% are no longer sending waste to landfills.

28%

Waste to landfill has gone down from 17.6 kt in 2019 to 12.6 kt in 2021, corresponding to a reduction of 28%.

Executive Committee
As of December 31, 2021

PETER TERWIESCH
President
Process Automation

THEODOR SWEDJEMARK
Chief Communications and
Sustainability Officer

SAMI ATIYA
President
Robotics & Discrete
Automation

MARIA VARSELLONA
General Counsel &
Company Secretary

BJÖRN ROSENGREN
Chief Executive Officer

CAROLINA GRANAT
Chief Human Resources Officer

TIMO IHAMUOTILA
Chief Financial Officer

TARAK MEHTA
President
Electrification

MORTEN WIEROD
President
Motion

DIVERSITY AND INCLUSION

Our people

Inclusion means everyone

At ABB, we are creating an inclusive culture that represents our communities in all of their diversity. Our goal is that every one of our 105,000 colleagues around the world feels that they are working in a safe, fair, equitable and inclusive environment, where they can succeed and develop.

With our 2030 diversity and inclusion (D&I) strategy, we seek to increase diversity across all dimensions, including gender, LGBTQ+, abilities, ethnicity and generations. Our commitment is reflected in the fact that each dimension is sponsored by a member of our Group Executive Committee, with our CEO Björn Rosengren being the sponsor for gender diversity.

ABB is already a diverse company, with 140 nationalities and five generations represented in the workforce. Here, we tell the stories of nine colleagues who have chosen to pursue their careers at ABB.

BRIA WILLIAMS
HR business partner, Electrification (US)

A self-described people advocate and change agent, Bria joined ABB to bring people together, help them grow and learn, and bring their authentic selves to work.

But to achieve her goals, Bria had to overcome one big challenge – her fear of speaking in public. Bria's supportive manager made sure that she felt comfortable talking with colleagues and pitching ideas. This meant Bria had to step out of her comfort zone – an experience that changed her life and her career prospects. Today, after successfully obtaining her HR certification through the company's development opportunities, Bria helps colleagues realize their career plans and potential at ABB.

IGA KACZMAREK-WRONA
DevOps engineer and product owner – ABB Ability, Process Automation (Poland)

As a science student, Iga wanted to work in a role that would allow her to combine her twin interests in arts and physics.

After her degree and an internship at ABB, Iga joined the ABB Ability team in Poland where she found an ideal environment to develop and learn as one of the growing number of women in STEM (science, technology, engineering and mathematics) fields. Her current programming role also plays to her love of solving logic puzzles. Through ABB, she was able to meet the famous astronomer and Nobel Prize winner, Didier Queloz, providing further energy and motivation to keep taking on challenges and continuing her learning journey.

PEDY ZHU ZHU
R&D program manager, Robotics and Discrete Automation (China)

Growing up in China, Pedy was interested in engineering, a traditionally male dominated field. After completing her master's degree, she joined the ABB Robotics Research & Development center.

At ABB, Pedy's manager trusted her with responsibility, allowing her to learn from her mentor and other experienced colleagues. She felt empowered to own her projects and benefited from a supportive learning environment. The support system continued throughout her maternity leave, and she felt welcomed by her manager and team on her return. In the decade that she has been at ABB, she has the opportunity to develop cobots that help customers increase efficiency, productivity and sustainability. She personally identifies with the IRB 1300 robot, agile and quick, just like her.

JORGE PEREZ BUITRAGO
Planning & fulfilment specialist, Electrification (US)

Jorge's journey with ABB began at a university job fair in Puerto Rico. Jorge wanted to learn more about the role of a mechanical engineer, and ABB offered him a summer internship. After finishing his degree, Jorge was selected into the ABB R&D team in Milwaukee, WI. Now in Philadelphia, he is exploring the role of a Solutions Product Manager in the Electrification business.

Jorge is motivated by the opportunities to continue learning, but the motivation goes beyond that. At ABB, he can be himself at work. As a member of the LGBTQ+ community, and the spokesperson of the internal employee group, Encompass Pride, Jorge has felt welcomed by everyone at ABB and wants others to feel as comfortable as he does at work.

SUBBARAMAIAH GANESH
Leading account payables for AMEA, Global Business Services (India)

Subbaramaiah left a permanent job to join ABB on a short-term contract. Two decades later, he is still with ABB.

Subbaramaiah has faced many challenges in life. He was diagnosed with polio as a child. Later he suffered an accident that left him partially immobile for a few months. Apart from his family, his ABB colleagues provided a strong support system at that tough time. His manager gave him time to recover fully before resuming work, and the managing director of ABB India visited him at home to check on his health.

"ABB has stood by me, valued me, and given me excellent opportunities," he said. "Most importantly, the warmth, the feeling of a community here, is unmatched."

ZAHER RAJAB
Automation engineer, Electrification (Netherlands)

Zaher arrived in the Netherlands as a Syrian refugee in 2015. Faced with learning a new language and culture, different from his Arabic heritage, Zaher embraced the challenge.

After his first job in automation, Zaher joined ABB to have more flexibility in his job as a software specialist and to work with a diverse team of talented engineers. By automating processes, such as the packaging of switches, Zaher was able to increase production efficiency. Zaher believes in continuous learning, and that there are no limits to developing new ideas and automating processes.

FARAH WAHIDAH MAZLAN
Service sales engineer, Electrification (Malaysia)

Farah has always loved challenges. Getting into the field of electrical engineering was one of them. After completing her degree program, Farah joined ABB to continue her development as an engineer, and to have a positive impact on her local community and the environment.

In 2020, she achieved a major win at ABB: securing a multi-year service contract with one of Malaysia's leading utilities. The secret was her ability to listen and understand what the customer needed. Farah credits her supportive colleagues and a great working environment for keeping her motivated to keep learning and developing as a service engineer at ABB.

ALI PARVIZI
Traction sales manager, Motion (Australia)

When Ali moved to Australia from his home country of Iran, the future appeared risky, and very different from the languages and culture he had grown up with. That changed when ABB gave him an opportunity to join the traction business as a sales manager. Ali's manager gave him the freedom to take initiatives to develop the traction business in Australia and New Zealand.

Ali loves the opportunity of working on innovative solutions with talented colleagues and winning over influential customers. As a person who is driven to learn new things, Ali has found both encouragement and reward at ABB, and views this as an immense value-add of working in a truly global company.

CRISTINA D'ÁVILA
Senior electrification engineer, Process Automation (Brazil)

Cristina studied electrical engineering and took her first career steps in Rio de Janeiro. But she felt her career stalling, and one of the reasons was there were very few women in the field. Cristina did not give up, and went to São Paulo, where she was hired by ABB to work on a project for Usiminas, one of the biggest steel producers in Brazil.

Since that day 25 years ago, Cristina has been with ABB and is still excited about her work. In her current role in the field of electrical engineering she is responsible for developing electrical and installation projects for the energy industry division in Brazil. She has proudly witnessed how women are playing a bigger role in engineering. Cristina's advice to a younger generation of women joining the engineering workforce is to "follow your goals, overcome obstacles regardless of gender, and never stop asking questions."

Electrification

WRITING THE FUTURE OF SAFE, SMART AND SUSTAINABLE ELECTRIFICATION.

ABB's Electrification business offers a wide-ranging portfolio of products, digital solutions and services, from substation to socket, enabling safe, smart and sustainable electrification.

$13.2 bn

Revenues

16.1%

Operational EBITA margin

Market growth is driven by electricity demand that grows two times faster than other energy sources as a result of urbanization and population growth. Additionally, digitalization is accelerating demand for intelligent solutions.

The Business Area consists of the following six Divisions:

- **Distribution Solutions**, GLOBAL NO. 1 IN MEDIUM-VOLTAGE. Medium-voltage electrical components and digital devices, medium- and low-voltage switchgear, energy systems, digital systems and service
- **Smart Power**, GLOBAL NO. 3, NO. 2 IN LOW VOLTAGE. Low-voltage breakers & switches, enclosures, motor starter application and power protection
- **Smart Buildings**, GLOBAL NO. 3, NO. 1–2 IN DISTRIBUTION ENCLOSURES AND DIN-RAIL PRODUCTS. Miniature breakers, distribution enclosures, wiring accessories and building automation
- **Installation Products**, GLOBAL NO. 1, NO. 1 IN NORTH AMERICA. Wire & cable management, termination, fittings and other accessories
- **Power Conversion**, NO. 4 IN DC POWER SOLUTIONS. Power conversion products including embedded power products, DC power solutions and services (To be exited)
- **E-mobility**, GLOBAL NO. 1 IN EV CHARGING SOLUTIONS. AC & DC charging hardware, B2C & B2B digital services, advanced energy & fleet management

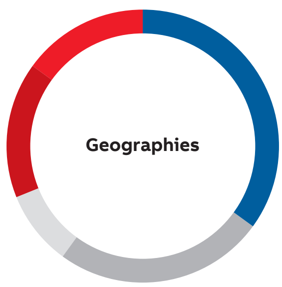
Key figures Electrification

$ in millions, unless otherwise indicated	FY 2021	FY 2020	US$	Comparable[2]
Orders	**14,381**	11,884	+21%	+18%
Order backlog (end December)	**5,458**	4,358	+25%	+29%
Revenues	**13,187**	11,924	+11%	+9%
Income from operations	**1,841**	1,335	+38%	
Operational EBITA[1]	**2,121**	1,681	+26%	+21%[3]
as % of operational revenues	**16.1%**	14.1%	+2.0 pts	
No. of employees (FTE equiv.)	**50,800**	50,500	+1%	

% of FY 2021 third party revenues

- 4% Renewables
- 16% Distribution, Conv. Generation
- 5% O&G, Chemicals
- 4% F&B
- 15% Other Industry
- 36% Buildings
- 7% Data Centers
- 13% Other T&I

% of FY 2021 third party revenues



- 35% Europe
- 25% USA
- 9% Rest of Americas
- 16% China
- 15% Rest of AMEA

(1) For non-GAAP measures, see the "Supplemental information" section of this annual report.
(2) Growth rates for orders, order backlog and revenues are on a comparable basis (local currency adjusted for acquisitions and divestitures).
(3) Constant currency (not adjusted for portfolio changes).
(4) Management estimates.

ELECTRIFICATION

Powering a sustainable future

ABB's Electrification Business Area is meeting growing demand for safe, smart and sustainable electrification by tackling some of society's greatest challenges. In the face of rising emissions and pollution, population growth and aging infrastructure, cities are having to transform themselves. By far the most significant positive impact we can have is through innovative technologies that reduce energy consumption and emissions, which improves quality of life for citizens around the world.

ABB technologies are found nearly everywhere there is electricity. Operating in more than 100 countries, ABB Electrification employed 51,000 people and generated $13.2 billion in revenue in 2021 through its six market-leading Divisions – Smart Power, Smart Buildings, Installation Products, Distribution Solutions, E-mobility and Power Conversion.

Another innovation that dramatically reduces greenhouse gas (GHG) emissions is ABB's AirPlus™, a groundbreaking eco-efficient gas mixture that replaces SF_6 in gas-insulated switchgear (GIS) applications. The importance of replacing SF_6 cannot be underestimated. It is one of the world's most powerful GHGs, 23,500 times more potent than CO_2, with a lifespan of 3,200 years. Since 2002, the concentration of SF_6 in the atmosphere has more than doubled.

In 2021, ABB Electrification continued to introduce new technologies to the market. In September, we launched the world's fastest EV charger, the Terra 360, which can deliver 100km of range in less than three minutes or fully charge an electric car in 15 minutes. This milestone for EV charging will support the rapidly growing global demand for emissions-free vehicles and net-zero goals.

AS A LEADING PROVIDER OF ELECTRIFICATION SOLUTIONS FOR INDUSTRY, INFRASTRUCTURE AND TRANSPORT – SECTORS THAT ACCOUNT FOR THREE-QUARTERS OF GLOBAL ENERGY CONSUMPTION – ABB ELECTRIFICATION IS A KEY ENABLER OF A LOW-CARBON SOCIETY.

Global electricity demand is expected to more than double by 2050. Unless drastic action is taken now to reduce emissions from power generation and consumption, temperatures will continue to rise at unsustainable levels. As a leading provider of electrification solutions for industry, infrastructure and transport – sectors that account for three-quarters of global energy consumption – ABB Electrification is a key enabler of a low-carbon society.

One such technology is the ABB Ability™ Energy and Asset Manager, which combines sensors and analytics software to provide insights on energy consumption and the performance of multiple systems in a factory or plant. By adopting this solution, a site that consumes 2 GWh of power per year, can reduce annual CO_2 emissions by 40 tons.

Digitalization continues to be an important driver of the energy transition. ABB Electrification is increasingly incorporating software and digital services into its offering. The ABB Ability Marketplace™ portal provides customers with access to over 100 cloud-connected digital applications. And the ABB Electrification Startup Challenge invites companies from around the globe to compete for a $30,000 investment to work with our R&D teams.

By 2030, we expect that our market-leading innovations and the promising technologies in our pipeline will enable customers to reduce annual CO_2 emissions by at least 100 megatons, equivalent to the annual emissions of 30 million combustion cars. As part of our "Mission to Zero" initiative, ABB Electrification is using our innovative technologies to make our own sites carbon neutral, while reducing emissions across our supply chain.

Case studies

Cutting energy costs at Vietnam telecommunications HQ by 20 percent

ABB's smart technology has been key to realizing telecom giant Viettel's ambitions to save energy and reduce its carbon footprint while maintaining operational efficiency at its Vietnam headquarters.

The ABB i-bus® KNX solution in the Hanoi facility controls all of the building's functions, from lighting and shutter control to heating, ventilation, security, and energy management. The solution is installed via a single bus interface alongside the standard power lines.

Thanks to this ABB technology, energy costs have been reduced by up to 20 percent, and the 1,000 people working in the building have a much more comfortable and secure work environment. This project sets a benchmark for how intelligent technology can reduce a building's environmental impact.

Enabling Germany's first fully electrified bus terminal

As part of Germany's wider environmental agenda, Hamburg is one of the first cities to commit to the full electrification of its bus fleet. ABB Electrification equipment is helping the city meet its goal of cutting CO_2 emissions in half by 2030 compared with 1990 levels.

Public transport operator, Hamburger Hochbahn AG, is implementing a wide-reaching fleet electrification program that includes Germany's first fully electrified bus terminal.

ABB's turnkey solution included the installation of transformer, switchgear, and heavy vehicle charging stations in the central bus depot. These can simultaneously recharge 44 buses, each with a range of up to 150 km. Additionally, ABB provided the planning and implementation of the electric infrastructure and the connection of the bus depot to the grid.

E-mobility – the future of road transport

Of 46 energy technologies and sectors identified by the International Energy Agency (IEA) as being “critical” to achieve net-zero emissions by 2050, only two are on track, according to the IEA: lighting and e-mobility(1). Electric-vehicle (EV) registrations increased by 41 percent globally in 2020, while sales of combustion-engine cars dropped 16 percent. In the first quarter of 2021, global EV sales rose again by around 140 percent, compared to the same period in 2020.

Rapid expansion of the world’s EV charging infrastructure is necessary to support the burgeoning adoption of electric vehicles. By 2040, an estimated 290 million additional charging points will be required, amounting to circa $500 billion in global investment.

ABB invested early in its EV charging business. Today, through hardware innovation, combined with the expansion of our software and digital offering, we are the market leader in EV charging infrastructure, having sold more than 525,000 chargers across 85 markets, including over 25,000 DC fast chargers and 500,000 AC chargers as of December 31, 2021. In addition, dedicated R&D centers such as our new E-mobility Innovation Lab in Delft in the Netherlands ensure the Division provides charging infrastructure that not only meets today’s needs but anticipates future e-mobility requirements.

To advance EV charging technology, we are also collaborating with leading software companies. In 2021, ABB’s digital e-mobility venture, PANION, and Amazon Web Services (AWS) began testing a newly developed, cloud-based solution, “PANION EV Charge Planning”. This solution is designed for the real-time management of EV fleets and charging infrastructure and will be launched in 2022.

ABB’s fast DC chargers run with a Connected Services Platform, which employs Microsoft’s Azure cloud services to enhance uptime, scalability, and operational efficiencies and to provide real-time remote support services. ABB’s superior offering includes everything from authorization and analytics to remote monitoring and control.

The new Terra 360 charger is not only the most high-power charging solution in the world, but also one of the most versatile. Designed for commercial fleets, heavy-duty vehicles as well as electric cars, it is capable of charging up to four vehicles at a time.

ABB charging solutions have also played a key role in enabling the rapid transition to e-mobility of countries like Norway, which has installed more than 1,000 ABB fast chargers. Other countries, including the USA, Finland, and Qatar, are also turning to ABB to support their ambitious emissions reduction commitments. The Gulf state of Qatar intends to fully electrify its public transport network and has partnered with ABB to create one of the largest e-bus networks in the world. A heavy vehicle charging network with capacity for 1,000 electric buses to transport 50,000 passengers a day is currently under construction, with four bus depots, eight bus stations and 12 metro stations.

(1) https://www.iea.org/topics/tracking-clean-energy-progress

>525,000

The number of chargers sold across 85 markets, including over 25,000 DC fast chargers and 500,000 AC chargers as of December 31, 2021.

Motion

WRITING THE FUTURE OF MOTION.

ABB's Motion business is the largest supplier of drives and motors, globally. We provide customers with the complete range of electrical motors, generators, drives, services and integrated digital powertrain solutions.

$6.9 bn

Revenues

17.1%

Operational EBITA margin

Market growth is driven by megatrends such as growing population, electrification, urbanization, decarbonization and digitalization. This requires further automation of industrial processes, energy efficiency and electric mobility.

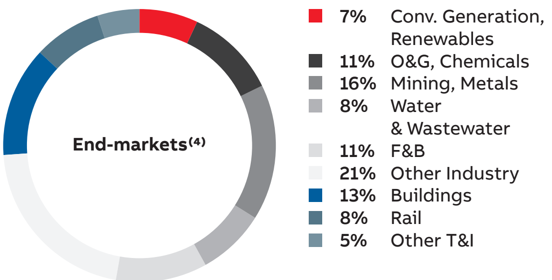
The Business Area consists of the following seven Divisions:

- **Drive Products**, GLOBAL NO. 1. Comprehensive product portfolio of low-voltage AC drives
- **System Drives**, GLOBAL NO. 1. Low- and medium-voltage AC drives and modules, wind converters
- **Service**, GLOBAL NO. 1. Base services and spare parts, upgrades & replacements, smart solutions
- **Traction**, GLOBAL NO. 2. Traction systems incl. converters and motors, battery energy storage systems, auxiliary converters
- **IEC LV Motors**, GLOBAL NO. 2. Comprehensive portfolio of low voltage motors for any industry and application, compliant with all major markets globally
- **Large Motors and Generators**, GLOBAL NO. 2. Comprehensive product portfolio of large AC motors and generators
- **NEMA Motors**, GLOBAL NO. 1. Comprehensive product portfolio of low voltage electric motors

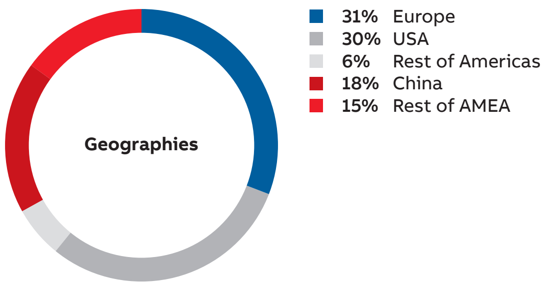
Key figures Motion

$ in millions, unless otherwise indicated	FY 2021	FY 2020	US$	Comparable(2)
Orders	7,616	6,574	+16%	+14%
Order backlog (end December)	3,749	3,320	+13%	+20%
Revenues	6,925	6,409	+8%	+7%
Income from operations	3,276	989	+231%	
Operational EBITA(1)	1,183	1,075	+10%	+6%(3)
as % of operational revenues	17.1%	16.8%	+0.3 pts	
No. of employees (FTE equiv.)	20,100	20,900	-4%	

% of FY 2021 third party revenues



% of FY 2021 third party revenues



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(4) Management estimates.

MOTION

Helping customers become energy efficient

In 2021, ABB Motion launched the Energy Efficiency Movement, a multi-stakeholder initiative both to raise awareness of the advanced technologies that can mitigate climate change, and drive collective action to reduce energy consumption worldwide. At this critical moment for the climate, roughly 45 percent of the world's electricity is used to power electric motors in industry and buildings, and much of the installed base is out of date and inefficient.

ABB Motion enables major improvements in energy efficiency for industry, cities and transport with its leading portfolio of variable-speed drives, motors, generators, traction systems and digital services. Investing in more efficient technology is one of the simplest and most cost-effective ways to lower energy consumption and associated greenhouse gas emissions. As businesses and transport networks seek to bridge the gap that divides us from a fossil-free future, we offer our customers practical and proven technologies that help.

Our deep domain expertise, comprehensive offering and unmatched global presence make ABB Motion the partner of choice for customers seeking the best solutions and support. In 2021, Motion employed 20,000 people and generated $6.9 billion in revenue. With the largest research and development budget in the industry, we are consistently pushing the boundaries of motor and drive technology for the benefit of our customers and society.

Packaging a modern motor with an ABB drive optimizes its operation leading to even greater efficiency. Drives control the speed and torque of a motor to match the load requirements, typically reducing energy consumption by 25 percent or more in industrial applications. ABB's advanced drive offerings include our line of ultra-low-harmonic drives, which minimize electromagnetic disturbances in power networks, resulting in more reliable operations, reduced maintenance needs and higher efficiency.

Serving a wide range of applications with efficient solutions

Transport represents another field of opportunity for the latest electric motion technologies: It accounts for about 25 percent of the world's energy use, and more than 99 percent of that currently depends on the combustion of fossil fuels. ABB Motion provides a variety of solutions for modern electric mobility, including systems used in electric trains, buses, ships and other heavy vehicles that are increasingly being powered by electricity. Our state-of-the-art traction, energy storage and e-drivetrain technologies enable energy-efficient and emission-free mobility in numerous transit systems, rail networks and vehicle fleets.

Alongside our technologies, we deliver a comprehensive range of services and digital solutions to maximize uptime, extend product lifecycles and enhance the performance and efficiency of motors and drives. By tailoring our service offering and solutions to our customers' needs, we help them run their operations more profitably, safely and reliably, allowing them to better take advantage of new business opportunities.

INVESTING IN MORE EFFICIENT TECHNOLOGY IS ONE OF THE SIMPLEST AND MOST COST-EFFECTIVE WAYS TO LOWER ENERGY CONSUMPTION AND ASSOCIATED GREENHOUSE GAS EMISSIONS.

ABB's portfolio includes the most energy-efficient motors and drives on the market. Among these is a synchronous reluctance (SynRM) motor and drive package that has set a new standard for efficiency. The SynRM motor meets the IE5 ultra-premium efficiency rating, providing the performance advantages of permanent magnet technology without using rare earth materials.


Case studies

Synchronous condensers for greener energy

ABB is working closely with Statkraft, Europe's largest generator of renewable energy, to design, manufacture and install two high-inertia synchronous condenser systems for the Lister Drive Greener Grid project in Liverpool, England. The innovative project will play a key role in stabilizing the local electricity network to handle an increasing amount of wind and solar power. This will help National Grid meet its target of operating a zero-carbon electrical system in the UK by 2025.

Statkraft has signed a 10-year service contract with ABB in which we will deploy digital condition monitoring solutions that optimize performance and predict maintenance needs. By assessing real-time data with cloud-based analytics, our service team will be able to plan corrective actions before issues occur, ensuring the system is highly reliable.

ABB traction technology to increase efficiency of Germany's high-speed trains

ABB traction converters were selected in 2021 to upgrade 76 high-speed locomotives on Germany's Deutsche Bahn network. As part of a refurbishment program, our highly energy-efficient traction converters are replacing power electronics from the 1990s. Upgrading the existing fleet will help extend its operating life and improve energy efficiency, reliability and ease of maintenance.

ABB motors and drives reduce power consumption at leading fertilizer company

To improve energy efficiency at its largest production site, Norwegian mineral fertilizer producer, Yara, is upgrading its electric motors with high efficiency ABB drives and motors.

As part of a global frame agreement, Yara has already upgraded around 1,000 motors to an IE3 efficiency rating, mostly with drives. In the next step, some 2,500 motors will be replaced with IE5 SynRM motor and drive technology. Nearly 70 percent of these applications are for pumps and fans, which offer significant room for energy savings. The annual power savings at the Yara Porsgrunn site in Norway are expected to be in the region of 32–40 GWh, leading to CO_2 emissions reductions of 12–19 kilotons. In addition, Yara expects to save some €300,000 per year in maintenance costs due to lower wear and tear.

The Yara Porsgrunn site is also part of a project with ABB and Stena Recycling to recycle copper, aluminum and iron from old motors, helping to support the circular economy.

Process Automation

WRITING THE FUTURE OF SAFE, SMART AND SUSTAINABLE OPERATIONS.

ABB's Process Automation business offers a broad range of solutions for process and hybrid industries, including integrated automation, electrification and digital solutions, control technologies, software and lifecycle services, as well as measurement and analytics, marine and turbocharging offerings.

$6.3 bn

Revenues

12.8%

Operational EBITA margin

Market growth is driven by need for productivity, reliability and improved resource efficiency as well as increasing demand for decarbonized operations and safer workplaces.

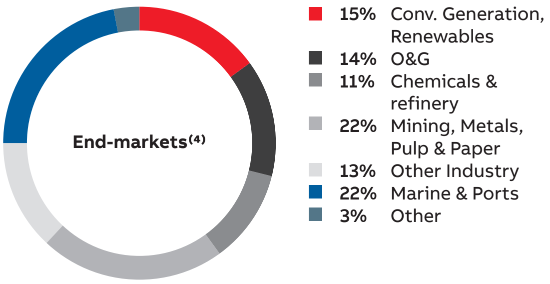
The Business Area consists of the following five Divisions:

- **Energy Industries**, NO. 1–2 IN DISTRIBUTED CONTROL SYSTEMS, NO. 1 IN POWER GENERATION, NO. 3–5 IN OIL, GAS, CHEMICALS. Integrated automation & electrical systems, safety, service and digital solutions
- **Process Industries**, NO. 1 IN DISTRIBUTED CONTROL SYSTEMS, NO. 1–2 MINING, PULP & PAPER. Automation, electrical & motion systems; quality control, mine hoists, gearless mill drives, high power rectifiers, electromagnetic stirrers
- **Marine & Ports**, GLOBAL NO. 1. Azipod® propulsion, ship and port electrification & automation, digital
- **Measurement & Analytics**, NO. 1 IN ANALYTICS, FORCE MEASUREMENT, NO. 2–5 IN INSTRUMENTATION. Gas and liquid analyzers, field instrumentation, force measurement, digital, service
- **Turbocharging**, NO. 1 IN LOW AND MEDIUM SPEED. Low, medium and high speed turbochargers, service, digital solutions (To be exited)

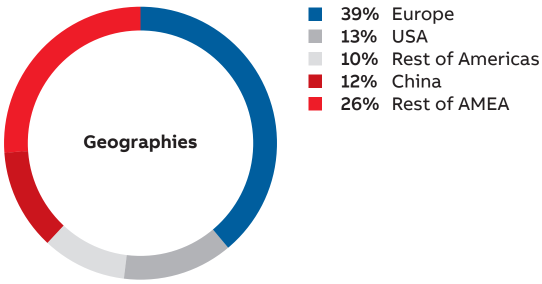
Key figures Process Automation

$ in millions, unless otherwise indicated	FY 2021	FY 2020	US$	Comparable(2)
Orders	6,779	6,144	+10%	+7%
Order backlog (end December)	6,079	5,805	+5%	+10%
Revenues	6,259	5,792	+8%	+5%
Income from operations	713	344	+107%	
Operational EBITA(1)	801	451	+78%	+70%(3)
as % of operational revenues	12.8%	7.8%	+5.0 pts	
No. of employees (FTE equiv.)	22,000	22,200	-1%	

% of FY 2021 third party revenues



% of FY 2021 third party revenues



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(4) Management estimates.

PROCESS AUTOMATION

Supporting a prosperous, low-carbon society

Demand for energy and material is expanding in step with the world's population growth and the pursuit of higher living standards. At the same time, there is a need to reduce harmful emissions from human activity.

ABB's Process Automation Business Area supports industries that address a wide range of essential needs – from supplying energy and water to manufacturing goods and transporting them to market. Through our automation, electrification and digital technologies, we help our customers in industry, transport and infrastructure sectors improve the safety, efficiency and sustainability of their operations. With our R&D and innovation pipeline, we are continuing to push the boundaries of how to address the world's energy challenges and contribute to a circular economy, together with our partners and customers.

With 22,000 employees and $6.3 billion in revenue in 2021, Process Automation enables efficient operations that are safer, smarter and more sustainable over the lifecycle of its customers' investments – some of the largest and most complex industrial infrastructures on the planet. Key to this is the extensive portfolio of solutions combined with the deep domain expertise of our five Divisions – Energy Industries, Process Industries, Marine & Ports, Measurement & Analytics, and Turbocharging. Our solutions include industry-specific products such as mine hoists, gearless mill drives, marine propulsion systems, high power rectifiers, or paper quality control systems, but also an industry-agnostic automation platform in Distributed Control Systems (DCS), where ABB has been the market leader for the past 22 years. All our solutions are supported by a wide range of advanced systems, remote and digital services.

WE ENABLE INDUSTRY TO OPERATE SAFELY, EFFICIENTLY AND SUSTAINABLY – MAKING A WORLD OF DIFFERENCE TOGETHER.

Leveraging digitalization

Connectivity has been at the heart of our solutions for decades. Over the years, we have accelerated the use of digital technologies to continuously expand our solutions and portfolio with Industry 4.0 advances. Our Business Area is a trusted partner for customers at every stage of their digitalization journey, enabling them to maximize their existing investments and installed infrastructure as well as integrate new digital solutions, to take "billions of better operational decisions".

In 2021, in response to the challenges of the COVID-19 pandemic, the use of digital technologies for remote monitoring and control of operations became the "new normal". Today, ABB's remote technologies serve a growing number of customers with asset health monitoring, predictive analytics, enterprise-wide emissions tracking, and continuous access to service expertise, while enabling consistent cost reductions and improvements in productivity and safety. Our ABB Ability™ Collaborative Operations network provides 24/7 remote support to more than 1,500 ships, 80 mines, 300 power generation sites and over 1,200 other industrial facilities. Also in 2021, this remote support was critical to keeping critical infrastructure and production running, and people connected during expansive lockdown periods.

Pushing the boundaries of process technologies

In 2021, we released new applications as part of the ABB Ability™ Genix Industrial Analytics and AI Suite. ABB Ability™ Genix Datalyzer enables comprehensive analysis, consolidation, and utilization of emissions data from industrial plants, helping customers manage their emissions and improve environmental compliance while keeping costs under control. ABB Ability™ Genix Asset Performance Management (APM) consolidates ABB's asset management portfolio into a single powerful system, providing actionable insights that help improve equipment utilization.

In another major advance, Process Automation launched ABB Ability eMine™, a portfolio of solutions that makes the all-electric mine a reality. It deploys a range of fully integrated electrification,

automation and digital systems from mine to port. The benefits of all-electric mining are significant. Electrifying a single mining truck eliminates an amount of CO_2 emissions per year that would take 46,000 trees to absorb.

The launch of the world's fastest, most sensitive drone-based gas leak detection and emissions measurement system, HoverGuard™, was yet another important milestone of 2021. HoverGuard™ is capable of reliably detecting, quantifying and mapping leaks of greenhouse gases from natural gas pipelines and other potential sources from distances of up to 100 meters. In doing so, it can play a critical role in helping industry, cities and communities to reduce emissions and curb climate change.

Case studies

A partnership to make green hydrogen more affordable

Cost is currently a major barrier to the widespread adoption of green hydrogen, which is about three to six times more expensive than hydrogen produced using fossil fuels. In June 2021, ABB joined forces with Switzerland's largest producer of renewable energy, Axpo, to develop modular hydrogen production plants in Italy, with the goal of producing affordable green hydrogen. ABB is building on its capabilities in automation, electrification and industrial operations, and combining them with Axpo's experience as an energy provider. The work will include feasibility studies and exploring strategies for the standardization, modularization, and efficient production of hydrogen solely from renewable resources.

Equipping an all-electric ferry service in Lisbon

In the Portuguese capital, Lisbon, ABB is partnering with shipbuilder Astilleros Gondán GRP Division to replace 10 diesel-powered vessels of the public ferry operator Transtejo, S.A. with an all-electric fleet. The new vessels, operating across the Tagus River, will begin to enter service in 2022. ABB will deliver a comprehensive electric power solution, including energy storage, and an integrated marine and propulsion automation system. Increased electrification of transport, including river vessels, will play a key role in helping Portugal meet its goal of achieving carbon neutrality by 2050. ABB estimates that the new electric ferries will cut CO_2 emissions by about 6,500 tons every year.

Using paper mill technology to enable a more efficient way to recycle textiles

ABB was chosen to deliver an integrated automation, electrification, motion and quality control system for Renewcell's new industrial textile recycling production facility in Sweden. Renewcell, a specialist in textile-to-textile recycling, is using the ABB solution to transform a former paper mill into the world's first commercial-scale recycling plant for cellulosic textiles, which are manufactured by dissolving natural fibers. The process for recycling these materials is similar to pulp drying, as the cellulose in cotton and viscose textiles is broken down for reuse in new materials. The recycled textiles would otherwise have been disposed of in landfills or incinerated.

Robotics & Discrete Automation

WRITING THE FUTURE OF FLEXIBLE AUTOMATION AND SMART MACHINES.

ABB’s Robotics & Discrete Automation business provides products, software and solutions in robotics, machine, and factory automation. Our unparalleled expertise and the seamless integration of our products enable customers from all industries to unlock flexible automation. With our global presence in sales, engineering, and service, we support our customers at every step of their growth journey.

$3.3 bn

Revenues

10.8%

Operational EBITA margin

Market growth driven by megatrends of individualized consumers, labor shortage, digitalization and uncertainty. Resulting in need for automation solutions for increased productivity, highest flexibility, improved quality and maximum simplicity.

The Business Area consists of the following two Divisions:

- **Robotics**, GLOBAL NO. 2. Robots, robotics application cells and smart systems, field services, spare parts, digital services and software
- **Machine Automation**, GLOBAL NO. 5, NO. 2 IN HIGH-END SEGMENT. Solutions based on Programmable Logic Controllers (PLCs), Industrial PCs (IPCs), servo motion, industrial transport systems and vision, software

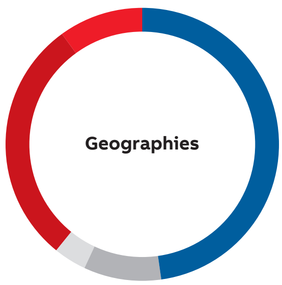
Key figures Robotics & Discrete Automation

$ in millions, unless otherwise indicated	FY 2021	FY 2020	US$	Comparable(2)
Orders	**3,844**	2,868	+34%	+29%
Order backlog (end December)	**1,919**	1,403	+37%	+43%
Revenues	**3,297**	2,907	+13%	+9%
Income from operations	**269**	-163	n.a.	
Operational EBITA(1)	**355**	237	+50%	+43%(3)
as % of operational revenues	**10.8%**	8.2%	+2.6 pts	
No. of employees (FTE equiv.)	**10,600**	10,300	+3%	

% of FY 2021 third party revenues

- 33% Automotive
- 7% Electronics
- 23% General Industry
- 10% CSSR(5)
- 28% Machine Automation

% of FY 2021 third party revenues



- 48% Europe
- 9% USA
- 4% Rest of Americas
- 29% China
- 10% Rest of AMEA

(1) For non-GAAP measures, see the “Supplemental information” section of this annual report.
(2) Growth rates for orders, order backlog and revenues are on a comparable basis (local currency adjusted for acquisitions and divestitures).
(3) Constant currency (not adjusted for portfolio changes).
(4) Management estimates.
(5) Consumer Segments and Service Robotics.

ROBOTICS & DISCRETE AUTOMATION

Opening a new world of possibilities with flexible automation

With 11,000 employees and $3.3 billion in revenue in 2021, ABB Robotics & Discrete Automation is a pioneer in robotics, machine automation and digital services, providing innovative solutions for a diverse range of industries. The Business Area supports automotive OEMs, automotive tier 1 suppliers, electronics manufacturers, general industry and the consumer and service robotics segments and provides machine automation solutions for machine builders.

Against the backdrop of the Covid-19 pandemic and resulting acceleration in global mega trends – from labor shortages, to consumer demand for personalized products and growing pressure to operate sustainably – businesses across the board are seeking to adapt their processes. In a survey of 1,650 large and small businesses in the United States, Europe and China, 84 percent(1) said that they will introduce or increase the use of robotics and machine automation in the next decade, with flexibility becoming a strategic need.

Our intelligent robotics solutions support businesses well beyond traditional manufacturing, increasing productivity and flexibility in high-growth segments including healthcare, logistics, food and beverage, construction and retail, including ecommerce.

Strategic expansion in 2021

Throughout 2021, we successfully expanded both our market and our offer.

We launched more than 20 major new products, covering a broad range of applications across multiple industries. Our new OmniCore™ robot controllers offer faster, scalable, more energy efficient manufacturing, while the speed of our new IRB 920T SCARA robot helps customers in electronics launch new products faster. In our core automotive market, our new fast and precise Ultrasonic Spot Weld quality inspection offers a 20x increase in productivity, using cutting edge AI and ultrasound technology.

Our Machine Automation division launched an innovative magnetic levitation shuttle system, ACOPOS 6D, offering up to four times the shuttle density of other systems on the market.

In addition, we have continued to develop solutions targeting new, high-growth customer segments including e-commerce, laboratories and logistics. These segments offer double-digit, profitable growth by increasing automation levels with our value-adding, flexible automation solutions. We have made strong progress in our efforts to support long-term profitability by reducing exposure to the automotive systems business.

AT ABB ROBOTICS & DISCRETE AUTOMATION, WE ARE LEADING THE TRANSFORMATION TO AUTOMATION AND HELPING OUR CUSTOMERS REALIZE NEW POSSIBILITIES AND OPPORTUNITIES.

This current and future market expansion is underpinned by significant steps to broaden our technology and application leadership.

In February, we announced a new generation of stronger, faster collaborative robots that can work side-by-side with people on a broad range of tasks, dramatically expanding the reach of robotics automation and unlocking potential for sectors and businesses that have not previously had the opportunity to automate.

We further expanded our portfolio of flexible automation solutions in August by completing the acquisition of ASTI Mobile Robotics Group, which has the largest installed fleet of autonomous mobile robots (AMRs) in Europe, and a broad customer base in 20 countries. The market for AMRs has significant growth potential, with global sales expected to reach $14 billion by 2025, a CAGR of approximately 20 percent.

(1) The survey, commissioned by ABB, was conducted by 3Gem Global Market Research & Insights between December 26, 2020, and January 19, 2021.

This acquisition means we are now the only company with a comprehensive and integrated portfolio covering robots, AMRs and machine automation solutions, designed and orchestrated by our value-creating software.

In November, we took another step to enhance our AMR offering, announcing a strategic partnership and investment with Swiss-based start-up, Sevensense Robotics. Their AI and 3D vision mapping software will enable our mobile robots to navigate autonomously in complex, dynamic environments, helping to drive the next generation of flexible automation for our customers.

We continue to expand our software portfolio, for example enhancing our RobotStudio® simulation and programming software with a new Augmented Reality capability, advancing our integration of digital and physical worlds, and creating an intuitive, easy to use interface for new customers. 2021 saw double digit growth for RobotStudio®, doubling the number of active users.

Contributing to a brighter future

At Robotics & Discrete Automation, we provide solutions that free people from dull, dirty, dangerous and repetitive tasks, enabling them to develop their skills and pursue more fulfilling occupations.

At the same time, we help our customers save energy, reduce waste and extend the lifetime of their equipment with solutions that increase product quality and durability.

Our vision is of a world where robots are as familiar in the workplace as laptops or smartphones, and where, by collaborating with humans, robots help make work more rewarding and productive, workplaces safer and healthier, and contribute to a more sustainable future.

Case studies

A ground-breaking factory transport system

In 2021, our Machine Automation division launched ACOPOS 6D, a rail-free product transport system, with intelligent shuttles that move independently between stations. Unlike conventional systems, the solution is not limited to rigid, sequential processes. The solution integrates magnetic levitation technology from Planar Motors Inc. (PMI) and helps customers transition to producing smaller batch sizes and shorter product lifecycles. The healthcare and pharmaceutical sectors, in particular, stand to benefit from this highly flexible manufacturing solution.

A vision for sustainable packaging

ABB Robotics & Discrete Automation is helping to address the problem of plastic waste by collaborating with Zume, a provider of innovative sustainable packaging solutions, to create fully compostable packaging from plant-based agricultural waste. Over the next five years, ABB robots will be installed in more than 1,000 Zume packaging manufacturing cells worldwide, with the potential to turn thousands of tons of plant material into millions of pieces of sustainable packaging every year.

With Zume's solutions, enabled by ABB robots, we can potentially replace single-use plastics, reducing emissions, preserving scarce resources, and cutting plastic waste.

Share developments

ABB Ltd share price trend during 2021

During 2021, the price of ABB Ltd shares listed on the SIX Swiss Exchange increased 41 percent, while the Swiss Market Index increased 20 percent. The price of ABB Ltd shares on NASDAQ OMX Stockholm increased 51 percent, compared to the OMX 30 Index, which increased 29 percent. The price of ABB Ltd American Depositary Shares traded on the New York Stock Exchange increased 37 percent, compared to the S&P 500 Index, which increased 27 percent.

Dividends and total shareholder return

During 2021, ABB distributed a dividend of 0.80 Swiss francs per share to shareholders. Total shareholder return of ABB Ltd shares listed on the SIX Swiss Exchange was 45 percent during the year. With respect to the year ended December 31, 2021, ABB Ltd's Board of Directors has proposed to distribute a dividend to shareholders in the amount of 0.82 Swiss francs per share. This is subject to approval by shareholders at ABB Ltd's 2022 Annual General Meeting. The proposal is in line with the Company's dividend policy to pay a rising, sustainable dividend per share over time.

Key data

	2021	**2020**	**2019**
Dividend per share (CHF)	**0.82**[1]	0.80	0.80
Votes per share	**1**	1	1
Basic earnings per share (USD)[2]	**2.27**	2.44	0.67
Total ABB stockholders' equity per share (USD)[3]	**7.96**	7.72	6.34
Dividend payout ratio (%)[4]	**40%**	37%	123%
Weighted-average number of shares outstanding (in millions)	**2,001**	2,111	2,133

(1) Proposed by the Board of Directors and subject to approval by shareholders at the Annual General Meeting on March 24, 2022.
(2) Calculation based on weighted-average number of shares outstanding.
(3) Calculation based on the number of shares outstanding at December 31.
(4) Dividend per share (converted to U.S. dollars at year-end exchange rates) divided by basic earnings per share.

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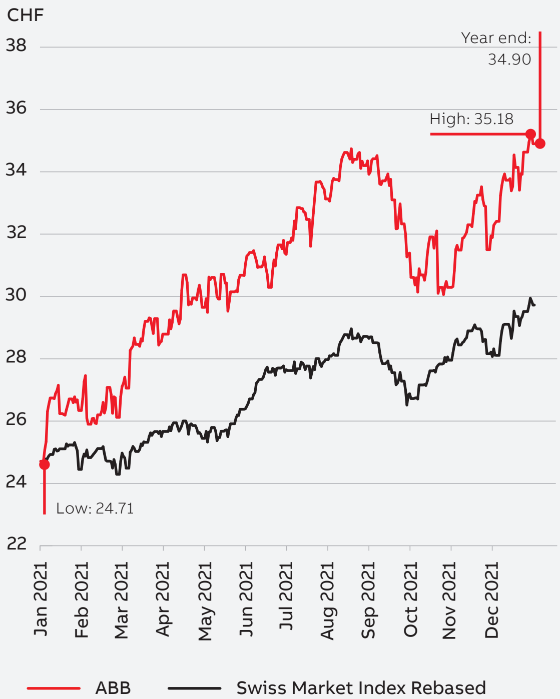
Source: FactSet

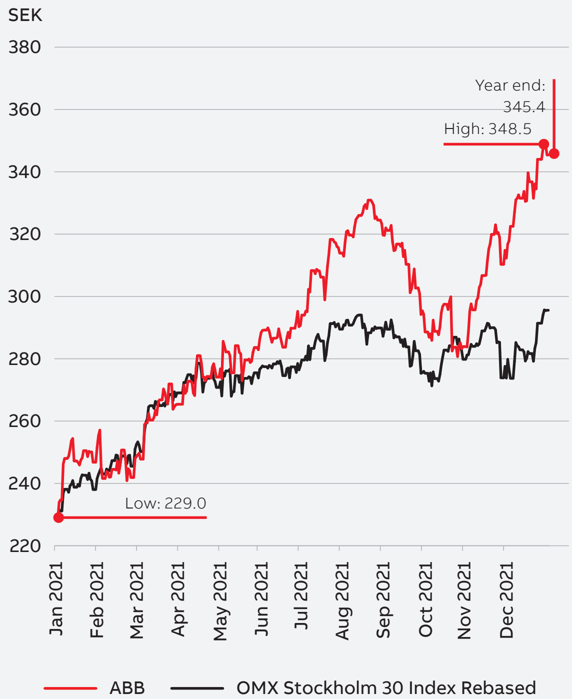
Zurich

Average daily traded number of shares: 4,75 millions



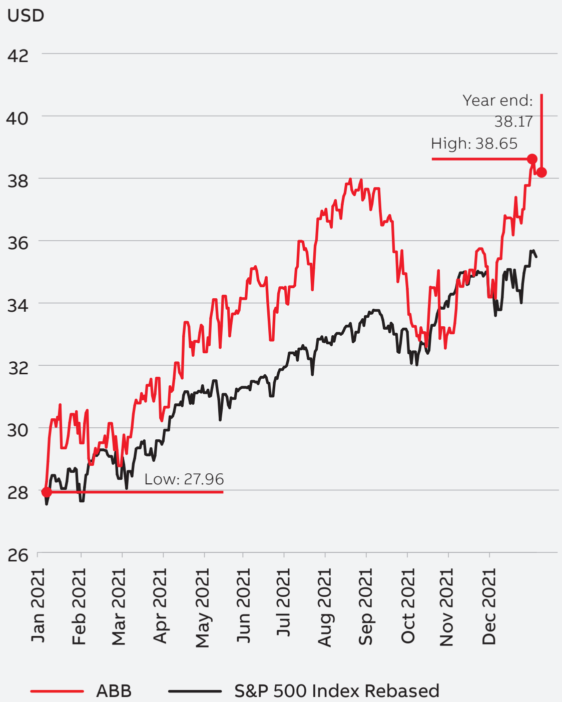
Stockholm

Average daily traded number of shares: 1,04 millions



New York

Average daily traded number of shares: 1,45 millions



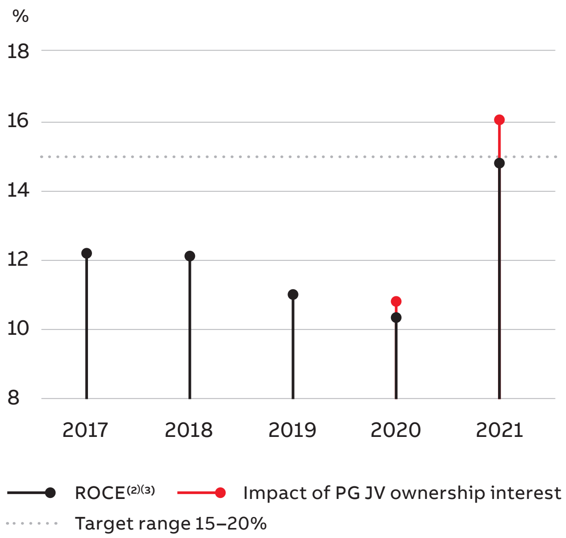
Cash generation and capital allocation

During 2021, ABB delivered a very strong cash flow for the full year. Cash flow from operating activities in continuing operations was $3,338 million, 78 percent higher year-on-year. The increase was driven by improved profitability from all Business Areas, a strong focus on net working capital management as well as fewer items impacting comparability, including transformational impacts such as restructuring or separation costs and cash outflow in the prior year due to the Kusile settlement and pension plan transfers. Cash flow volatility between quarters declined during 2021 – a result of a high focus on net working capital management.

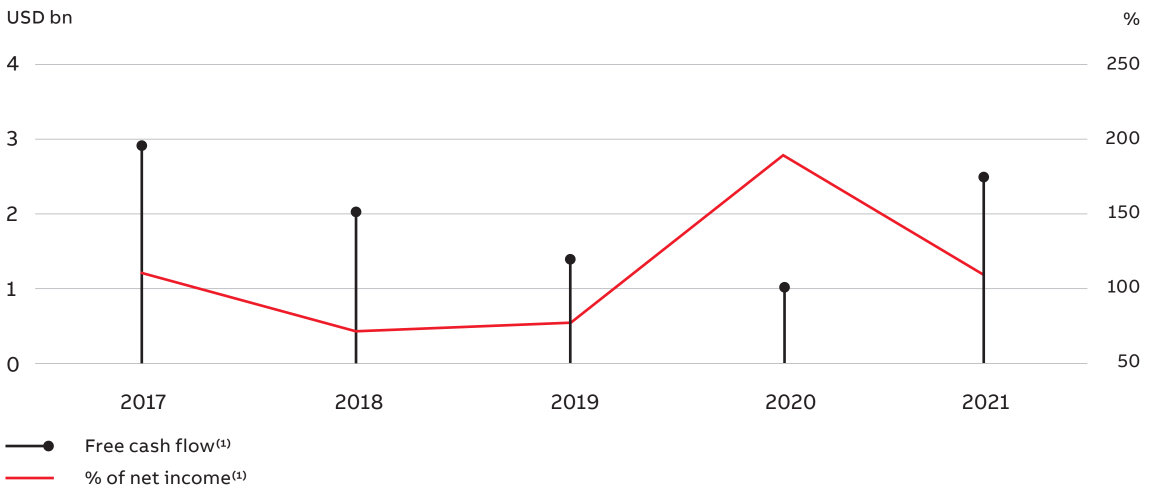
Free cash flow (FCF)(1)(2) was $2,603 million, 159 percent higher on a year-on-year basis, and FCF conversion to net income(2) 108 percent despite 11 percent revenue growth.

The Group's benchmark for the measurement of returns is Return on Capital Employed (ROCE)(2). The Group's ROCE significantly increased to 14.9 percent, from 10.3 percent in 2020, just shy of ABB's 15 – 20% target range. The improvement was driven by a higher Operational EBITA(2) and a lower adjusted group effective tax rate compared to 2020. The Group's ROCE was negatively impacted by approximately 120 basis points due to the 19.9% ownership interest in Hitachi Energy.

Return on Capital Employed



Free cash flow and conversion rate



(1) Amount represents total for both continuing and discontinued operations.
(2) For non-GAAP measures, see the "Supplemental information" section of this annual report.
(3) 2021, 2020 and 2019 are not comparable to 2018 and 2017 due to the adoption of the new lease accounting standard in 2019.

ABB's capital allocation priorities are:

- Fund organic growth, research and development (R&D), capex at attractive returns
- Rising, sustainable dividend per share over time
- Value-creating acquisitions
- Returning additional cash to shareholders

ABB invested $820 million in capital expenditure. Non-order related R&D investment was $1,219 million in 2021 or 4.2 percent of revenues for the year.

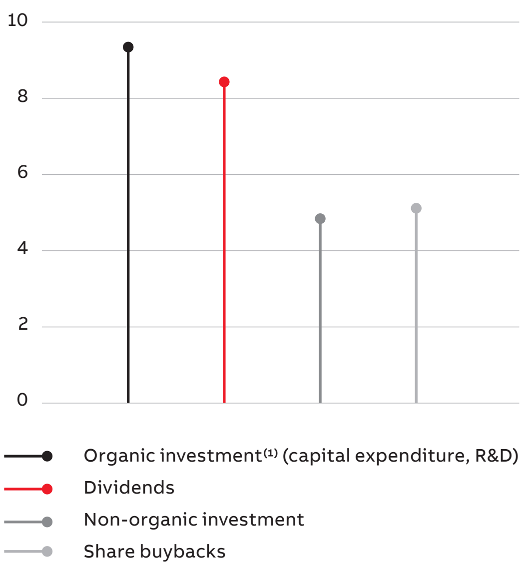
ABB paid $1,726 million in dividends during 2021. The Board of Directors is proposing a 0.82 Swiss francs dividend per share at the 2022 Annual General Meeting. The proposal is in line with ABB's dividend policy of paying a rising, sustainable dividend per share over time.

In April 2021, the E-mobility Division acquired a majority stake in Enervalis, a smart energy control platform company. In August 2021, the Robotics Division acquired ASTI Mobile Robotics Group, a leading global autonomous mobile robot manufacturer with a broad portfolio across all major applications enabled by the company's software suite.

In April 2021, ABB launched a follow-up share buyback program of up to $4.3 billion to return to shareholders cash proceeds following the completion of the sale of 80.1 percent of the Power Grids business to Hitachi. Through this follow-up buyback program, the Company purchased shares in 2021 for approximately $2.0 billion. Together with the initial share buyback program, which ran from July 2020 to March 2021, ABB spent approximately a combined $2.7 billion during the year 2021. ABB plans to continue its share buybacks for the full year of 2022, also in excess of the Power Grids capital return program.

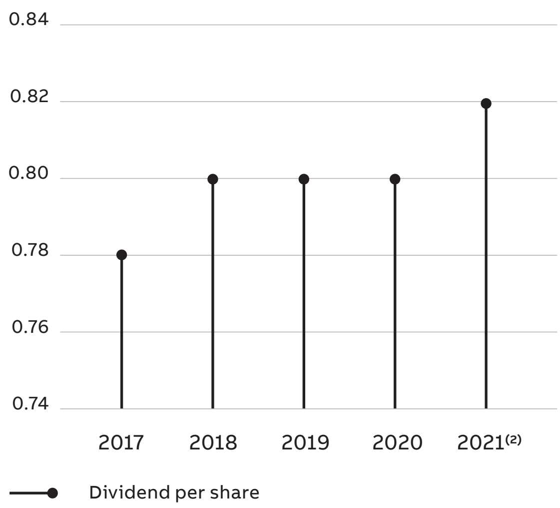
Allocation of Capital

2017–2021 USD bn



Dividends

CHF



(1) Continuing operations only.
(2) Proposed.

Key investor questions 2021

Q You have moved to a decentralized operating model during 2020 and 2021 – The ABB Way – is this now fully implemented?

A We have come a long way and have reached important milestones. Under the ABB Way, the Divisions represent the highest level of operating decisions ensuring speed and customer focused decisions as they are closest to the markets. A lean corporate only focuses on necessary strategic, financial and governance activities. The Divisions are fully accountable for their performance and the divisional targets are aligned with their strategic mandate of stability, profitability before growth. To complement the decentralized operating model, we apply an improved performance management system. This facilitates transparency on divisional and Business Area performance, based on a standardized set of Key Performance Indicators. To fully complete the decentralized way of working at ABB, our focus area in 2022 will be to make sure that we also have accountability, transparency and speed within all of the Divisions. In many cases, it makes sense to drive global accountability even one level lower for product groups within Divisions and here we still have potential to improve.

Q What are the levers to reach at least 15 percent Operational EBITA margin in 2023?

A We have made strong progress towards our profitability target during 2021, improving the Operational EBITA margin from 11.1% in 2020 to 14.2% in 2021. This was driven by better results in all Business Areas, supported by increased efficiency, good volumes and part of the cost base still running at lower "pandemic levels", as well as clearly lower corporate costs and lower specific items which impact comparability. We see further potential in all of our Business Areas. Six out of 18 Divisions (excluding Divisions that we plan to exit) have a strategic mandate to stabilize their business or improve profitability. The remaining 12 Divisions are incentivized to drive profitable growth and therefore improve the mix of the Group. All Divisions have an annual productivity target of 3 percent per annum and will focus on pushing through strategic pricing actions and further improve operational efficiencies including footprint optimizations. Additionally, the exit of our non-core business will also be an important driver.

Q You are now targeting 3 to 5 percent comparable growth through the cycle, clearly above what you have achieved over the last five years. What has changed?

A In recent years, we have taken significant organic and inorganic actions to align our business portfolio to more attractive growth markets, increasing our focus on discrete industries as well as transport and infrastructure that offer better growth opportunities. This ongoing shift towards better quality of revenues is part of ABB's DNA which centers around resource-efficiency in electrification and automation. Additionally, the responsibility for growth has now been fully transferred into the businesses, close to customers. Divisions have the best insights into current and future customer needs and are accountable to build their respective business accordingly. With more Divisions transitioning from stability and profitability to growth over time, we expect to see a continuous shift in the growth profile of ABB. Finally, the underlying demand for our products, systems and services is supported by the escalating drivers from sustainability megatrends with more favorable regulations, improved technology and changing consumer patters.

Q What is the timeline for the remaining portfolio actions after the divestment of the Mechanical Power Transmission Division?

A Active portfolio management is part of our performance culture. On the back of systematic portfolio reviews we ascertain whether ultimately ABB is the best owner of the different businesses. As a result, we successfully divested the Mechanical Power Transmission Division during 2021. We continue to make progress on the exit of the Turbocharging Division, where we are currently running a dual track process for a spin-off or divestment with a spin-off currently looking more likely and a preliminary timeline for summer 2022. We plan to exit the Power Conversion Division during H2 2022 upon improving performance. In addition, we target to complete the legal separation of the E-mobility Division during Q1 2022 and work towards an IPO in Q2 2022 to create a platform for accelerated growth and value creation. We plan to remain a clear majority owner of the new company. At the same time, our active portfolio management process is driving decisions within the Divisions to improve or exit areas of underperformance, supporting improved performance ambitions. Further, the Group intends to pursue strategic partnerships as well as bolt-on acquisitions driven by the Divisions. Over time it is our ambition to complete approximately five bolt-on acquisitions each year.

Q You ended the year 2021 with a net cash position and have significantly improved your cash generation. What are your capital allocation priorities?

A We reiterate our capital allocation principles, which are 1) funding organic growth, 2) paying a rising, sustainable dividend per share over time, 3) investing in value creating acquisitions and 4) returning additional cash to shareholders, which we have mainly done through buybacks in the past. We expect that our improved cash generation on the back of the ABB Way operating model will enhance our flexibility to invest in both organic growth and bolt-on acquisitions, while providing attractive returns to shareholders. We aim to increase the pace of acquisitions going forward, adding technology, digital know-how and further improve geographical footprint. Additionally, we plan to continue our share buybacks for full year of 2022, also in excess of the PG capital return program.

Q How are you managing the various supply chain imbalances that you are currently facing?

A Under the ABB Way, the Divisions are in the lead to manage the supply chain imbalances. Mitigating measures include Divisions cooperating where it is an advantage to pool supply volumes and put the combined ABB weight behind supply chain negotiations, including C-suite discussions where needed. Disruptions towards the end of the year were tangible, predominantly in semiconductor shortages but also in logistics.

Q What are your expectations for ABB in 2022?

A In full year 2022, we expect a steady margin improvement towards the 2023 target of at least 15%, supported by increased efficiency as we fully incorporate the decentralized operating model and performance culture in all our divisions. Furthermore, we expect support from an anticipated positive market momentum and our strong order backlog.

02 Corporate governance report

Chairman’s letter

Dear Shareholders,

2021 was another turbulent year, due to continued outbreaks of COVID-19. However, our high level of preparedness helped us protect our people and keep our operations running. Strong demand boosted our order and revenue growth, but supply-chain disruptions caused delays in deliveries to customers in the second half of the year. Overall, we are pleased with ABB’s financial performance, which has improved significantly compared with pre-pandemic times.

Against that backdrop, we continued to transform ABB by moving accountability to our Divisions, increasing efficiency, making our operations safer and more sustainable, and redesigning our leadership development and succession planning. We also plan to spin off our Turbocharging Division and separately list our E-mobility business. With these steps, we are living up to our Purpose of creating superior, sustainable value, and strengthening our focus on electrification and automation, both of which are key technologies to reduce emissions and enable a more sustainable future.

Sustainability strategy 2030

In 2021, we began implementing our 2030 sustainability strategy, with the focus on reducing CO_2-equivalent emissions across our value chain. In the past two years, we have reduced emissions from our own operations by 39 percent, putting us well on track to achieve our goal of carbon neutrality by 2030. In the years ahead, we can make an even bigger contribution in our customers’ operations through many of our technologies like ABB’s energy-efficient electric motors and drives and electric-vehicle charging solutions. By 2030, we aim to help our customers reduce their annual CO_2-equivalent emissions by 100 megatons, equivalent to the annual emissions of 30 million combustion cars.

We also clarified roles and responsibilities related to sustainability within the Board: The Governance and Nomination Committee is responsible for overseeing corporate social responsibility (including health, safety and environment as well as sustainability), while ultimate responsibility for ABB’s sustainability strategy, its sustainability targets and its annual sustainability report lies with the entire Board of Directors.

At next year’s AGM, we intend to seek shareholder support for our environmental, social and governance (ESG) goals. These include emissions reductions across our value chain, increasing circularity in our own and our customers’ operations, and promoting social progress, including human rights and good governance, in our supply chain and the communities in which we operate.

Stock-exchange listings

In December, we appointed a new head of our Turbocharging Division ahead of a likely spin-off, in the event of which we would invite shareholders to an extraordinary general meeting to seek their approval. We are also moving ahead with efforts to separately list our E-mobility business and we aim to complete this during the second quarter. ABB would retain a majority shareholding in the future listed entity. As a world leader in electric-vehicle (EV) charging infrastructure, we are well-positioned in an extremely attractive growth market – by 2035, EVs are expected to be outselling combustion cars.

Board assessment and diversity

In 2021, an external assessment concluded that the Board’s effectiveness was in the top quartile of comparable companies. The assessment put forward a small number of recommendations concerning the Board’s role in ESG, risk and reputation management, and future requirements in the skills matrix of new Board members, all of which were comprehensively addressed by the Board during the course of last year. As part of this assessment, we also conducted a peer review within the Board in which every Board member assessed the individual performance of all other members. The Board will continue to conduct internal self-assessments every year, complemented periodically with external reviews.

Last year, we also highlighted the need to improve gender diversity on the Board of Directors. In 2021, we sought and identified candidates that would further strengthen the Board’s diversity, expertise and experience. To accommodate candidates’ personal career planning and allow for board adjustments as necessary (overboarding), we will be proposing one or more new members for election at the AGM in 2023. This year, all existing Board members will stand for re-election, and no new members will be proposed.

Leadership development and succession planning

Finally, as part of the implementation of the ABB Way operating model, our leadership development and succession planning was redesigned and has been reviewed by the Executive Committee and the Board of Directors, including the Governance and Nomination Committee. Instead of position-based succession planning, we have introduced an open job market, where all positions up to Executive Committee (EC) level are posted on our internal jobs platform. As part of the new approach, EC- and Business Area-level leadership teams review the strengths and development needs of all team members and support their development so that they are ready to pursue new opportunities when they arise. In this way, we enable our leaders to realize their ambitions through a fair and transparent process that promotes the best people for the job.

On behalf on the Board of Directors, I would like to thank you for your continued trust and support.

Peter Voser
Chairman of the Board of Directors

Zurich, February 24, 2022

Summary of corporate governance approach

Corporate governance – general principles

ABB is committed to the highest international standards of corporate governance and this is reinforced in its structure, processes and rules as outlined in this section of the Annual Report. In line with this, ABB complies with the general principles as set forth in the Swiss Code of Best Practice for Corporate Governance, as well as those of the capital markets where its shares are listed and traded. In addition to the provisions of the Swiss Code of Obligations, ABB's key principles and rules on corporate governance are laid down in ABB's Articles of Incorporation, the ABB Ltd Board Governance Rules (which includes the governance rules of ABB's Board committees and the ABB Ltd Related Party Transaction Policy, which was prepared based on the Swiss Code of Best Practice for Corporate Governance and the independence criteria set forth in the corporate governance rules of the New York Stock Exchange), and the ABB Code of Conduct. These documents are available on ABB's website at https://new.abb.com/about/corporate-governance. It is the duty of ABB's Board of Directors (the Board) to review and amend or propose amendments to those documents from time to time to reflect the most recent developments and practices, as well as to ensure compliance with applicable laws and regulations. Shareholders and other interested parties may communicate with the Chairman of the Board or the independent directors by writing to ABB Ltd (Attn: Chairman of the Board/independent directors), at Affolternstrasse 44, CH-8050 Zurich, Switzerland.

Compensation governance and Board and EC compensation

Information about ABB's compensation governance as well as Board and Executive Committee (EC) compensation and shareholdings is provided in the Compensation Report that can be found on pages 74 to 110 of this Annual Report.

Board of Directors

Board and Board committees (2021–2022 board term)

Board of Directors		
Chairman: Peter R. Voser	Gunnar Brock	Jennifer Xin-Zhe Li
Vice-Chairman: Jacob Wallenberg	David Constable	Geraldine Matchett
	Frederico Fleury Curado	David Meline
	Lars Förberg	Satish Pai

Finance, Audit and Compliance Committee	Governance and Nomination Committee	Compensation Committee
David Meline (chairman)	Peter R. Voser (chairman)	Frederico Fleury Curado (chairman)
Gunnar Brock	Lars Förberg	David Constable
Geraldine Matchett	Jennifer Xin-Zhe Li	Jennifer Xin-Zhe Li
Satish Pai	Jacob Wallenberg	

Board governance

The Board

The Board defines the ultimate direction of the business of ABB and issues the necessary instructions. It determines the organization of the ABB Group and appoints, removes and supervises the persons entrusted with the executive management and representation of ABB. The internal organizational structure and the definition of the areas of responsibility of the Board, as well as the information and control instruments vis-à-vis the Executive Committee are set forth in the ABB Ltd Board Governance Rules (available at https://new.abb.com/about/corporate-governance).

The Board takes decisions as a whole, supported by its three committees: the Finance, Audit and Compliance Committee (FACC), the Governance and Nomination Committee (GNC), and the Compensation Committee (CC). These committees assist the Board in its tasks and report regularly to the Board. The Board and its committees meet regularly throughout the year.

The directors and officers of a Swiss corporation are bound, as specified in the Swiss Code of Obligations, to perform their duties with all due care, to safeguard the interests of the corporation in good faith and to extend equal treatment to shareholders in like circumstances. Prior to proposing new candidates for election to the Board, checks are performed to ensure that they are independent and that there are no conflicts of interest.

The Swiss Code of Obligations does not specify what standard of due care is required of the directors of a corporate board. However, it is generally held by Swiss legal scholars and jurisprudence that the directors must have the requisite capability and skill to fulfill their function, and must devote the necessary time to the discharge of their duties. Moreover, the directors must exercise all due care that a prudent and diligent director would have taken in like circumstances. Finally, the directors are required to take actions in the best interests of the corporation and may not take any actions that may be harmful to the corporation.

Although the Swiss Code of Obligations does not discuss specifically conflicts of interest for board members, the ABB Ltd Board Governance Rules (available at https://new.abb.com/about/corporate-governance) state that board members shall avoid entering into any situation in which their personal or financial interests may conflict with the interests of ABB.

Chairman of the Board

The Chairman is elected by the shareholders to represent their interests in creating sustainable value through effective governance. In addition, the Chairman (1) takes provisional decisions on behalf of the Board on urgent matters where a regular Board decision cannot be obtained, (2) calls for Board meetings and sets the related agendas, (3) interacts with the CEO and other EC members on a more frequent basis outside of Board meetings and (4) represents the Board internally and in the public sphere.

Vice-Chairman of the Board

The Vice-Chairman is elected by the Board and handles the responsibilities of the Chairman to the extent the Chairman is unable to do so or would have a conflict of interest in doing so. He also acts as counselor/advisor to the Chairman on any matters that are Company or Board relevant and as appropriate or as the Chairman may require and with a particular focus on strategic aspects related to the Company and its business in general. In addition, the Vice-Chairman takes such other actions as may be decided by the Board or requested by the Chairman.

Finance, Audit and Compliance Committee

The FACC is responsible for overseeing (1) the integrity of ABB's financial statements, (2) ABB's compliance with legal, tax and regulatory requirements, (3) the external auditors' qualifications and independence, (4) the performance and role of ABB's internal audit function and the performance of the external auditors, (5) ABB's capital structure, funding requirements and financial and risk policies, and (6) ABB's implementation and maintenance of an integrity program and internal controls designed to mitigate integrity risk.

The FACC must comprise three or more independent directors who have a thorough understanding of finance and accounting. The Chairman of the Board and, upon invitation by the committee's chairman, the CEO or other members of the Executive Committee may participate in the committee meetings, provided that any potential conflict of interest is avoided and confidentiality of the discussions is maintained. In addition, the chief integrity officer, the head of internal audit and the external auditors participate in the meetings as appropriate. The Board has determined that each member of the FACC is an audit committee financial expert as such term is defined in Form 20-F.

Governance and Nomination Committee

The GNC is responsible for (1) overseeing corporate governance practices within ABB, (2) overseeing corporate social responsibility (including health, safety and environment as well as sustainability), (3) nominating candidates for the Board, the role of CEO and other positions on the Executive Committee, and (4) succession planning and employment matters relating to the Board and the Executive Committee. The GNC is also responsible for maintaining an orientation program for new Board members and an ongoing education program for existing Board members.

The GNC must comprise three or more independent directors. Upon invitation by the committee's chairman, the CEO or other members of the Executive Committee may participate in the committee meetings, provided that any potential conflict of interest is avoided and confidentiality of the discussions is maintained.

Compensation Committee

The CC is responsible for compensation matters relating to the Board and the Executive Committee.

The CC must comprise three or more directors who are elected by the shareholders. The Chairman of the Board and, upon invitation by the committee's chairman, the CEO or other members of the Executive Committee may participate in the committee meetings, provided that any potential conflict of interest is avoided and confidentiality of the discussions is maintained.

Board membership

Board composition

In proposing individuals to be elected to the Board, the Board seeks to align the composition and skills of the Board with the Company's strategic needs, business portfolio, geographic reach and culture. The Board must be diverse in all aspects including gender, nationalities, geographic/regional experience and business experience. In addition, the average tenure of the members of the Board should be well-balanced. The Board also considers the number of other mandates of each Board member to ensure that he/she will have sufficient time to dedicate to his/her role as an ABB Board member.

Elections and term of office

The members of the Board of Directors and the Chairman of the Board as well as the members of the Compensation Committee are elected by the shareholders at the general meeting of shareholders for a term of office extending until completion of the next ordinary general meeting of shareholders. Members whose terms of office have expired shall be immediately eligible for re-election. ABB's Articles of Incorporation (available at https://new.abb.com/about/corporate-governance) do not provide for the retirement of directors based on their age. However, an age limit for members of the Board is set forth in the ABB Ltd Board Governance Rules (available at https://new.abb.com/about/corporate-governance), although waivers are possible and subject to Board discretion. If the office of the Chairman of the Board of Directors or any position on the Compensation Committee becomes vacant during a Board term, the Board

Members of the Board (2021–2022 board term)

	Board Experience		Corporate Officer Experience		Other Business Experience								
Board Member	ABB Board Tenure (years)	Other Public Board Experience	CEO	CFO	Operations	Risk Management	Sustainability	Digital / Technology	Global Experience	Country of Origin / Nationality	Gender	Non-Executive	Independent
Peter R. Voser	7	●	●	●	●	●	●	●	●	CH	M	Yes	Yes
Jacob Wallenberg	23	●	●		●	●	●	●	●	SE	M	Yes	Yes
Gunnar Brock	4	●	●		●	●	●		●	SE	M	Yes	Yes
David Constable	7	●	●		●	●	●		●	CA, US	M	Yes	Yes
Frederico Fleury Curado	6	●	●		●	●	●	●	●	BR, PT	M	Yes	Yes
Lars Förberg	5	●	●			●	●		●	SE, CH	M	Yes	Yes
Jennifer Xin-Zhe Li	4	●		●	●	●	●	●	●	CN, CA	F	Yes	Yes
Geraldine Matchett	4		●	●		●	●		●	CH, UK, FR	F	Yes	Yes
David Meline	6	●		●		●			●	US, CH	M	Yes	Yes
Satish Pai	6	●	●		●	●	●	●	●	IN	M	Yes	Yes

of Directors may appoint (shall appoint in the case of the Chairman of the Board) another individual from among its members to that position for the remainder of that term. The Board of Directors shall consist of no less than 7 and no more than 13 members.

Members of the Board (2021–2022 board term)

Peter R. Voser has been a member and Chairman of ABB's Board of Directors since April 2015. He was also ABB's Chief Executive Officer from April 2019 to February 2020. He is a member of the board of directors of IBM Corporation (U.S.). He is also a member of the board of directors of Temasek Holdings (Private) Limited (Singapore) as well as chairman of the board of PSA International Pte Ltd (Singapore), one of its subsidiaries. In addition, he is the chairman of the board of trustees of the St. Gallen Foundation for International Studies. He was previously the chief executive officer of Royal Dutch Shell plc (The Netherlands). Mr. Voser was born in 1958 and is a Swiss citizen.

Jacob Wallenberg has been a member of ABB's Board of Directors since June 1999 and Vice-Chairman since April 2015. He is the chairman of the board of Investor AB (Sweden). He is vice-chairman of the boards of Telefonaktiebolaget LM Ericsson, FAM AB and Patricia Industries (all Sweden). He is also a member of the boards of directors of Nasdaq, Inc. (U.S.) and the Knut and Alice Wallenberg Foundation (Sweden) as well as a member of the nomination committee of SAS AB (Sweden). Mr. Wallenberg was born in 1956 and is a Swedish citizen.

Gunnar Brock has been a member of ABB's Board of Directors since March 2018. He is chairman of the boards of Neptunia Invest AB, Mölnlycke Health Care AB and Stena AB (all Sweden). He is a member of the boards of directors of Investor AB and Patricia Industries (both Sweden). He was formerly president and chief executive officer of Atlas Copco AB (Sweden). Mr. Brock was born in 1950 and is a Swedish citizen.

David Constable has been a member of ABB's Board of Directors since April 2015. He is the chief executive officer of Fluor Corporation (U.S.), for which he also serves as a member of the board of directors. He was formerly the chief executive officer and president as well as a member of the board of directors of Sasol Limited (South Africa). He joined Sasol after more than 29 years with Fluor Corporation (U.S.). Mr. Constable was born in 1961 and is a Canadian and U.S. citizen.

Frederico Fleury Curado has been a member of ABB's Board of Directors since April 2016. He is a member of the boards of directors of Ultrapar S.A. (Brazil) and Transocean Ltd. (Switzerland). He was formerly the chief executive officer of Ultrapar S.A. and Embraer S.A. (both Brazil). Mr. Curado was born in 1961 and is a Brazilian and Portuguese citizen.

Lars Förberg has been a member of ABB's Board of Directors since April 2017. He is co-founder and managing partner of Cevian Capital. Mr. Förberg was born in 1965 and is a Swedish and Swiss citizen.

Jennifer Xin-Zhe Li has been a member of ABB's Board of Directors since March 2018. She is a member of the boards of directors of Flex Ltd (Singapore/U.S.), Kone Oy (Finland) and Full Truck Alliance Co. Ltd. (Cayman Islands/P.R.C.). Through May 2021, she was a member of the boards of directors of Philip Morris International Inc. (U.S.) and The Hongkong and Shanghai Banking Corporation Limited (Hong Kong). Ms. Li is a founder and general partner of Changcheng Investment Partners (P.R.C.), a private investment fund. From 2008 to 2018, she served as chief financial officer of Baidu Inc. (P.R.C.) and chief executive officer of Baidu Capital (P.R.C.). Prior to that, Ms. Li spent 14 years with General Motors, holding various senior finance positions, including chief financial officer of GM China and corporate controller for GMAC North American Operations. Ms. Li was born in 1967 and is a Canadian citizen.

Geraldine Matchett has been a member of ABB's Board of Directors since March 2018. She is the co-chief executive officer, the chief financial officer and a member of the managing board of Royal DSM N.V. (The Netherlands). She was previously the chief financial officer of SGS Ltd (Switzerland). Prior to joining SGS she worked as an auditor at Deloitte Ltd (Switzerland) and KPMG LLP (U.K.). Ms. Matchett was born in 1972 and is a Swiss, British and French citizen.

David Meline has been a member of ABB's Board of Directors since April 2016. He is the chief financial officer of Moderna Inc. (U.S.). From 2014 through 2019, Mr. Meline was the chief financial officer of Amgen Inc. (U.S.). He was formerly with the 3M Company (U.S.), where he served as chief financial officer. Prior to joining 3M, Mr. Meline worked for more than 20 years for General Motors Company (U.S.). Mr. Meline was born in 1957 and is a U.S. and Swiss citizen.

Satish Pai has been a member of ABB's Board of Directors since April 2016. He is the managing director and a member of the board of directors of Hindalco Industries Ltd. (India). He joined Hindalco in 2013 after 28 years with Schlumberger Limited (U.S.). Mr. Pai was born in 1961 and is an Indian citizen.

As of December 31, 2021, none of the Board members held any official functions or political posts. Further information on ABB's Board members can be found by clicking on the ABB Board of Directors link (available at https://new.abb.com/about/corporate-governance).

Board meetings and attendance

The Board and its committees have regularly scheduled meetings throughout the year. These meetings are supplemented by additional meetings (either in person or by conference call), as necessary. Board meetings are convened by the Chairman or upon request by any other board member or the CEO. Documentation covering the various items of the agenda for each Board meeting is sent out in advance to each Board member in order to allow each member time to study the covered matters prior to the meetings. Each board meeting has a private session without management or others being present. Decisions made at the Board meetings are recorded in written minutes of the meetings. Some decisions are also taken by circular resolution.

2021 was an intensive year for the Board and its committees. The table below shows the number of meetings held during 2021 by the Board and its committees, their average duration, as well as the attendance of the individual Board members. The Board meetings shown include a strategic retreat attended by the members of the Board and the EC.

Mandates of Board members outside the ABB Group

No member of the Board may hold more than ten additional mandates, of which no more than four may be in listed companies. Certain types of mandates, such as those in our subsidiaries, those in the same group of companies and those in non-profit and charitable institutions, are not subject to those limits. Additional details can be found in Article 38 of ABB's Articles of Incorporation (available at https://new.abb.com/about/corporate-governance).

2021 Board and Board Committee Meetings

	Pre annual general meeting 2021					Post annual general meeting 2021				
	Board					Board				
Meetings and attendance	Mtg.	Conf. Call	FACC	GNC	CC	Mtg.	Conf. Call	FACC	GNC	CC
Average duration (hours)	7.5	1.5	3	1.25	1.75	9	1	3	1.4	1.6
Number of meetings	1	1	2	2	2	4	2	4	5	5
Meetings attended:										
Peter R. Voser	1	1				3	2		5	
Jacob Wallenberg	1	1		2		4	2		4	
Matti Alahuhta	1	1		2						
Gunnar Brock	1	1	2			4	2	4		
David Constable		1			2	4	2			5
Frederico Fleury Curado	1	1			2	4	2			5
Lars Förberg	1	1		2		4	2		5	
Jennifer Xin-Zhe Li	1	1			2	4	2		5	5
Geraldine Matchett	1	1	2			3	2	4		
David Meline	1	1	2			4	2	4		
Satish Pai	1	1	2			4	2	4		

Business relationships between ABB and its Board members

This section describes important business relationships between ABB and its Board members, or companies and organizations represented by them.

Fluor Corporation (Fluor) is an important customer of ABB. ABB sells primarily electrical switchgears, control systems and electrical solutions through its Electrification and Process Automation businesses to Fluor. David Constable is the CEO and a director of Fluor.

After reviewing the level of business with Fluor, the Board has determined that ABB's business relationship with Fluor is not unusual in its nature or conditions and does not constitute a material business relationship. As a result, the Board concluded that all members of the Board are independent.

These determinations were made in accordance with ABB Ltd's Related Party Transaction Policy which was prepared based on the Swiss Code of Best Practice for Corporate Governance and the independence criteria set forth in the corporate governance rules of the New York Stock Exchange. This policy is contained in the ABB Ltd Board Governance Rules (available at https://new.abb.com/about/corporate-governance).

Information and control systems of the Board vis-à-vis the Executive Committee

Information from the Executive Committee

In accordance with the ABB Board Governance Rules (available at https://new.abb.com/about/corporate-governance), the CEO reports regularly to the Board about ABB's overall business and when circumstances require on any extraordinary events that may arise. This includes:

- Reports on financial results (including profit and loss, balance sheet and cash flows);
- Changes in key members of management;
- Information that may affect the supervisory or monitoring function of the Board (including on matters of strategy and compliance); and
- Significant developments in legal matters.

At each Board meeting, Board members are briefed by the Chairman, CEO, CFO and other EC members on ABB's business performance and on material developments affecting ABB. Outside of Board meetings, Board members generally channel any requests for information through the Chairman. Board members also obtain information through offsite retreats with the Executive Committee and visits to ABB sites. In addition, Board members obtain information through the Board committees in which they participate and which are also attended by relevant EC members and management representatives from human resources, finance, legal and the business.

Internal Audit

ABB has an Internal Audit team that provides independent objective assurance and other services to help ensure that ABB operates in accordance with applicable laws as well as internal policies and procedures. Internal Audit reports to the FACC and to the CFO. The FACC reviews and approves the internal audit plan, and material changes to the plan. Investigations of potential fraud and inappropriate business conduct are an integral part of the internal audit process. Depending on circumstances, Internal Audit may act together with ABB's Integrity Investigations and Monitoring department, which is part of ABB's integrity function. Internal Audit reports on a regular basis its main observations and recommendations to the relevant members of the EC and to the FACC as appropriate.

Risk Management

ABB has an enterprise risk management program (ERM) in place which takes into account ABB's size and complexity. ERM provides the EC and the Board with a comprehensive and holistic view of the risks facing the business. ERM involves managing the acceptance of risk to achieve the objectives of the business. The ERM process is typically cyclical in nature, conveying the idea of continuous refinement of the risk management approach in a dynamic business environment. Furthermore, ABB runs a mitigation process for the identified risks that is key to the success of this process. ERM assessments are both top down and bottom up. They cover strategic, financial, and operational risks, both current and long term. Key risks identified and managed in 2021 were those related to the continuation of the COVID-19 pandemic, to constraints in global supply chains, as well as to the preparation for the separation of ABB's turbocharging business and the planned initial public offering in Switzerland of ABB's electric-vehicle charging business. ERM results are reported to the FACC and the entire Board. This information becomes part of the overall strategic and risk discussions by the Board to help create value for stakeholders.

Executive Committee

Composition of the Executive Committee (at December 31, 2021)

Björn Rosengren Chief Executive Officer	
CORPORATE OFFICERS	BUSINESS AREA PRESIDENTS
Timo Ihamuotila Chief Financial Officer	**Tarak Mehta** Electrification
Carolina Granat Chief Human Resources Officer	**Peter Terwiesch** Process Automation
Maria Varsellona General Counsel	**Morten Wierod** Motion
Theodor Swedjemark Chief Communications and Sustainability Officer	**Sami Atiya** Robotics & Discrete Automation

Executive Committee responsibilities and organization

The Board has delegated the executive management of ABB to the CEO. The CEO and, under his direction, the other members of the Executive Committee are responsible for ABB's overall business and affairs and day-to-day management. The CEO reports to the Board regularly, and whenever extraordinary circumstances so require, on the course of ABB's business and financial performance and on all organizational and personnel matters, transactions and other issues material to the Group. Each member of the Executive Committee is appointed and discharged by the Board.

Members of the Executive Committee (at December 31, 2021)

Björn Rosengren was appointed Chief Executive Officer and member of the Executive Committee effective March 2020. He is a member of the board of directors of the World Childhood Foundation (Sweden). Before joining ABB, he was the president and chief executive officer of Sandvik AB (Sweden) since 2015. Prior to that, Mr. Rosengren was the chief executive officer of Wärtsilä Corporation (Finland) from 2011 to 2015. He held a variety of management roles at Atlas Copco AB (Sweden) from 1998 to 2011. Mr. Rosengren was born in 1959 and is a Swedish citizen.

Timo Ihamuotila was appointed Chief Financial Officer and member of the Executive Committee effective April 2017. He is a member of the board of directors of SoftwareONE Holding AG and Hitachi Energy Ltd (both Switzerland). From 2009 to 2016, Mr. Ihamuotila was chief financial officer and an executive vice president of the Nokia Corporation (Finland). From 1999 to 2009, he held various senior roles with Nokia. Mr. Ihamuotila was born in 1966 and is a Finnish citizen.

Carolina Granat was appointed Chief Human Resources Officer and member of the Executive Committee effective January 2021. She joined ABB in 2020 as Head of People Development. Prior to that, she was globally responsible for human resources at the Machining Solutions business area of Sandvik AB (Sweden). Ms. Granat was born in 1972 and is a Swedish citizen.

Maria Varsellona was appointed General Counsel and member of the Executive Committee effective November 2019. From 2014 to 2019 she was the Chief Legal Officer of Nokia Corporation (Finland) and from 2018 to 2019 she was also the president of Nokia Technologies. From 2013 to 2014 she was the General Counsel of Nokia Siemens Networks. During the period from 2011 to 2013 Ms. Varsellona was the Group General Counsel of Tetra Pak and from 2009 to 2010 she was the Group General Counsel of Sidel, both part of the Tetra Laval Group (Sweden). From 2001 to 2009 she held various senior legal roles mainly with GE Oil & Gas.

Ms. Varsellona was born in 1970 and is an Italian citizen.

Theodor Swedjemark was appointed Chief Communications Officer and member of the Executive Committee effective August 2020. As per March 2021 his title was amended to Chief Communications and Sustainability Officer and member of the Executive Committee. He is a member of the board of directors of the Swedish Swiss Chamber of Commerce and is the chairman of the ABB Jürgen Dormann Foundation. Mr. Swedjemark acted as interim Head of Corporate Communications & Public Affairs from March 2020 through August 2020. Prior to that, he assumed the role of Chief of Staff in 2017, later adding group responsibility for government relations and public affairs. During 2016, Mr. Swedjemark managed the Strategic Portfolio Review of the Power Grids project. From 2006 to 2015, he held various management positions at ABB in different functions and businesses. Mr. Swedjemark was born in 1980 and is a Swedish citizen.

Tarak Mehta was appointed President of the Electrification Business effective April 2019 and has been a member of the Executive Committee since October 2010. He is a member of the board of directors of Prysmian S.p.A. (Italy). He had previously been President of the Electrification Products division since January 2016. From October 2010 through December 2015, he was President of the Low Voltage Products division. From 2007 to 2010, he was Head of ABB's transformers business. Between 1998 and 2006, he held several management positions with ABB. Mr. Mehta was born in 1966 and is a U.S. and Swiss citizen.

Peter Terwiesch was appointed President of the Process Automation Business (known as Industrial Automation from 2017–2020) and member of the Executive Committee effective January 2015. He is a member of the board of directors of Metall Zug AG (Switzerland). From 2011 to 2014, Mr. Terwiesch was Head of ABB's Central Europe region. He was ABB's Chief Technology Officer from 2005 to 2011. From 1994 to 2005, he held several positions with ABB. Mr. Terwiesch was born in 1966 and is a German and Swiss citizen.

Morten Wierod was appointed President of the Motion Business and member of the Executive Committee effective April 2019. From 2015 until April 2019 he was the Managing Director of the drives business unit in the Robotics and Motion division. During 2011 to 2015, Mr. Wierod was the Managing Director of the control products business unit in the Low Voltage Products division. Between 1998 to 2011, Mr. Wierod held various management roles with ABB. Mr. Wierod was born in 1972 and is a Norwegian citizen.

Sami Atiya was appointed President of the Robotics & Discrete Automation Business effective April 2019 and has been a member of the Executive Committee since June 2016. He is a member of the board of directors of SGS SA (Switzerland). He had previously been President of the Robotics and Motion division since January 2017. From June to December 2016 he was President of the Discrete Automation and Motion division. Prior to joining ABB, Mr. Atiya held senior roles at Siemens in Germany from 1997 to 2015, including as chief executive officer of the mobility and logistics division in the infrastructure and cities sector from 2011. Mr. Atiya was born in 1964 and is a German citizen.

Further information about the members of the Executive Committee can be found by clicking on the Executive Committee link (available at https://new.abb.com/about/corporate-governance).

Mandates of EC members outside the ABB Group

No member of the EC may hold more than five additional mandates, of which no more than one may be in a listed company. Certain types of mandates, such as those in our subsidiaries, those in the same group of companies and those in non-profit and charitable institutions, are not subject to those limits. Additional details can be found in Article 38 of ABB's Articles of Incorporation (available at https://new.abb.com/about/corporate-governance).

Business relationships between ABB and its EC members

This section describes important business relationships between ABB and its EC members, or companies and organizations represented by them.

ABB has a minority stake in Hitachi Energy Ltd (Hitachi Energy), the holding company of ABB's former power grids business. Hitachi Energy is both an important supplier to and customer of ABB. Timo Ihamuotila is a director of Hitachi Energy.

After reviewing the level of business with Hitachi Energy, the Board has determined that ABB's business relationship with Hitachi Energy is not unusual in its nature or conditions.

These determinations were made in accordance with ABB Ltd's Related Party Transaction Policy which was prepared based on the Swiss Code of Best Practice for Corporate Governance and the independence criteria set forth in the corporate governance rules of the New York Stock Exchange. This policy is contained in the ABB Ltd Board Governance Rules (available at https://new.abb.com/about/corporate-governance).

Shares

Share capital of ABB

At December 31, 2021, ABB's ordinary share capital (including treasury shares) as registered with the Commercial Register amounted to CHF 246,377,791.68, divided into 2,053,148,264 fully paid registered shares with a par value of CHF 0.12 per share.

ABB Ltd's shares are listed on the SIX Swiss Exchange, the NASDAQ OMX Stockholm Exchange and the New York Stock Exchange (where its shares are traded in the form of American depositary shares (ADS) – each ADS representing one registered ABB share). At December 31, 2021, ABB Ltd had a market capitalization based on outstanding shares (total number of outstanding shares: 1,958,344,400) of approximately CHF 68 billion ($75 billion, SEK 676 billion). The only consolidated subsidiary in the ABB Group with listed shares is ABB India Limited, Bangalore, India, which is listed on the BSE Ltd. (Bombay Stock Exchange) and the National Stock Exchange of India. At December 31, 2021, ABB Ltd, Switzerland, directly or indirectly owned 75 percent of ABB India Limited, Bangalore, India, which at that time had a market capitalization of approximately INR 474 billion.

Stock exchange listings (at December 31, 2021)

Stock exchange	Security	Ticker symbol	ISIN code
SIX Swiss Exchange	ABB Ltd, Zurich, share	ABBN	CH0012221716
SIX Swiss Exchange	ABB Ltd, Zurich, share buyback (second trading line)	ABBNE	CH0357679619
NASDAQ OMX Stockholm Exchange	ABB Ltd, Zurich, share	ABB	CH0012221716
New York Stock Exchange	ABB Ltd, Zurich, ADS	ABB	US0003752047
BSE Ltd. (Bombay Stock Exchange)	ABB India Limited, Bangalore, share	ABB(1)	INE117A01022
National Stock Exchange of India	ABB India Limited, Bangalore, share	ABB	INE117A01022

(1) Also called Scrip ID.

Share repurchases and cancellation

Under the share buyback program that ran from July 2020 to March 2021, ABB repurchased a total of 128,620,589 shares. At ABB's Annual General Meeting 2021, the shareholders approved the proposal to cancel 115,000,000 repurchased shares. These shares were cancelled in June 2021, resulting in a reduced total number of issued ABB Ltd shares of 2,053,148,264. ABB intends to propose to the Annual General Meeting 2022 to cancel the remaining 13,620,589 repurchased shares.

In April 2021, ABB launched a follow-up share buyback program of up to $4.3 billion to complete ABB's plan to return $7.8 billion of cash proceeds from the Power Grids divestment to shareholders. Under that share buyback program, ABB repurchased a total of 58,627,600 shares as per December 31, 2021, and a total of 74,782,600 shares as per February 15, 2022. ABB intends to propose to the Annual General Meeting 2022 to cancel these shares.

In addition, ABB repurchased a total of 32,668,987 shares as per December 31, 2021, primarily for use in connection with employee share programs. Further information can be found at https://www.abb.com/investorrelations.

Changes to the ordinary share capital

Except for the share cancellation described above, there were no other changes to ABB's ordinary share capital during 2021, 2020 and 2019.

Convertible bonds and options

ABB does not have any bonds outstanding that are convertible into ABB shares. For information about options on shares issued by ABB, please refer to "Note 19 – Stockholders' equity" to ABB's Consolidated Financial Statements.

Contingent share capital

At December 31, 2021, ABB's share capital may be increased by an amount not to exceed CHF 24,000,000 through the issuance of up to 200,000,000 fully paid registered shares with a par value of CHF 0.12 per share through the exercise of conversion rights and/or warrants granted in connection with the issuance on national or international capital markets of newly or already issued bonds or other financial market instruments. If this contingent share capital were fully issued this would increase the existing share capital by approximately 9.7 percent. The contingent share capital has not changed during the last three years.

At December 31, 2021, ABB's share capital may be increased by an amount not to exceed CHF 1,200,000 through the issuance of up to 10,000,000 fully paid registered shares with a par value of CHF 0.12 per share through the exercise of warrant rights granted to its shareholders. If this contingent share capital were fully issued this would increase the existing share capital by approximately 0.5 percent. This contingent share capital has not changed during the last three years. The Board may grant warrant rights not taken up by shareholders for other purposes in the interest of ABB.

The pre-emptive rights of the shareholders are excluded in connection with the issuance of convertible or warrant-bearing bonds or other financial market instruments or the grant of warrant rights. The then current owners of conversion rights and/or warrants will be entitled to subscribe for new shares. The conditions of the conversion rights and/or warrants will be determined by the Board.

The acquisition of shares through the exercise of warrants and each subsequent transfer of the shares will be subject to the restrictions of ABB's Articles of Incorporation (see "Limitations on transferability of shares and nominee registration" in the Shareholders section below) (available at https://new.abb.com/about/corporate-governance).

In connection with the issuance of convertible or warrant-bearing bonds or other financial market instruments, the Board is authorized to restrict or deny the advance subscription rights of shareholders if such bonds or other financial market instruments are for the purpose of financing or refinancing the acquisition of an enterprise, parts of an enterprise, participations or new investments or an issuance on national or international capital markets. If the Board denies advance subscription rights, the convertible or warrant-bearing bonds or other financial market instruments will be issued at the relevant market conditions and the new shares will be issued pursuant to the relevant market conditions taking into account the share price and/or other comparable instruments having a market price. Conversion rights may be exercised during a maximum ten-year period, and warrants may be exercised during a maximum seven-year period, in each case from the date of the respective issuance. The advance subscription rights of the shareholders may be granted indirectly.

At December 31, 2021, ABB's share capital may be increased by an amount not to exceed CHF 11,284,656 through the issuance of up to 94,038,800 fully paid shares with a par value of CHF 0.12 per share to employees. If this contingent share capital were fully issued this would increase the existing share capital by approximately 4.6 percent. This contingent share capital has not changed during the last three years. The pre-emptive and advance subscription rights of ABB's shareholders are excluded. The shares or rights to subscribe for shares will be issued to employees pursuant to one or more regulations to be issued by the Board, taking into account performance, functions, level of responsibility and profitability criteria. ABB may issue shares or subscription rights to employees at a price lower than that quoted on a stock exchange. The acquisition of shares within the context of employee share ownership and each subsequent transfer of the shares will be subject to the restrictions of ABB's Articles of Incorporation (see "Limitations on transferability of shares and nominee registration" in the Shareholders section below).

Authorized share capital

At December 31, 2021, ABB had an authorized share capital in the amount of up to CHF 24,000,000 through the issuance of up to 200,000,000 fully paid registered shares with a par value of CHF 0.12 each, which is valid through March 25, 2023. If the authorized share capital were fully issued, this would increase the existing share capital by approximately 9.7 percent. Aside from renewal at the 2021 AGM, the authorized share capital has not changed during the last three years. The Board is authorized to determine the date of issue of new shares, the issue price, the type of payment, the conditions for the exercise of pre-emptive rights and the beginning date for dividend entitlement. In this regard, the Board may issue new shares by means of a firm underwriting through a banking institution, a syndicate or another third party with a subsequent offer of these shares to the shareholders. The Board may permit pre-emptive rights that have not been exercised by shareholders to expire or it may place these rights and/or shares as to which pre-emptive rights have been granted but not exercised at market conditions or use them for other purposes in the interest of the Company. Furthermore, the Board is authorized to restrict or deny the pre-emptive rights of shareholders and allocate such rights to third parties if the shares are used (1) for the acquisition of an enterprise, parts of an enterprise, or participations, or for new investments, or in case of a share placement, for the financing or refinancing of such transactions; or (2) for the purpose of broadening the shareholder constituency in connection with a listing of shares on domestic or foreign stock exchanges. The subscription and the acquisition of the new shares, as well as each subsequent transfer of the shares, will be subject to the restrictions of ABB's Articles of Incorporation (available at https://new.abb.com/about/corporate-governance).

Shareholders

Shareholder structure

As of December 31, 2021, the total number of shareholders directly registered with ABB Ltd was approximately 96,000 and another 513,000 shareholders held shares indirectly through nominees. In total as of that date, ABB had approximately 609,000 shareholders.

Significant shareholders

Under the Swiss Financial Market Infrastructure Act, shareholders and groups of shareholders acting in concert who directly or indirectly acquire or sell shares of a listed Swiss corporation or rights based thereon and thereby reach, exceed or fall below the thresholds of 3 percent, 5 percent, 10 percent, 15 percent, 20 percent, 25 percent, $33^1/_3$ percent, 50 percent or $66^2/_3$ percent of the voting rights of the corporation must notify the corporation and the SIX Swiss Exchange of such holdings. Consequently, significant shareholdings may have varied within the relevant threshold levels since they were reported.

Investor AB, Sweden, held 265,385,142 ABB shares as of December 31, 2021 (refer to Investor's year-end 2021 report available at https://www.investorab.com/investors-media/reports-presentations). This holding represented 12.9 percent of ABB's total share capital and voting rights as registered in the Commercial Register on December 31, 2021. The number of shares held by Investor AB does not include shares held by Mr. Jacob Wallenberg, the chairman of Investor AB and a director of ABB, in his individual capacity.

The Capital Group Companies Inc., USA, disclosed that as of July 1, 2021, it, together with its direct and indirect affiliates, held 115,841,336 ABB shares (refer to https://www.ser-ag.com/en/resources/notifications-market-participants/significant-shareholders.html#/shareholder-details/TAL7600020). This holding represented 5.64 percent of ABB's total share capital and voting rights as registered in the Commercial Register at that time.

Cevian Capital II GP Limited, Jersey, disclosed that as of August 3, 2020, it held 105,988,662 ABB shares (refer to https://www.sec.gov/Archives/edgar/data/1091587/000090266420002862/p20-1467sc13da.htm). This holding represented 4.89 percent of ABB's total share capital and voting rights as registered in the Commercial Register at that time.

BlackRock Inc., U.S., disclosed that as of August 31, 2017, it, together with its direct and indirect subsidiaries, held 72,900,737 ABB shares (refer to https://www.ser-ag.com/en/resources/notifications-market-participants/significant-shareholders.html#/shareholder-details/TAH91000F4). This holding represented 3.36 percent of ABB's total share capital and voting rights as registered in the Commercial Register at that time.

At December 31, 2021, to the best of ABB's knowledge, no other shareholder held 3 percent or more of ABB's total share capital and voting rights as registered in the Commercial Register on that date.

ABB Ltd has no cross shareholdings in excess of 5 percent of capital, or voting rights with any other company.

Announcements related to disclosure notifications made by shareholders during 2021 can be found via the search facility on the platform of the Disclosure Office of the SIX Swiss Exchange: https://www.ser-ag.com/en/resources/notifications-market-participants/significant-shareholders.html#/.

Under ABB's Articles of Incorporation (available at https://new.abb.com/about/corporate-governance), each registered share represents one vote. Significant shareholders do not have different voting rights. To our knowledge, we are not directly or indirectly owned or controlled by any government or by any other corporation or person.

Shareholders' rights

Shareholders have the right to receive dividends, to vote and to execute such other rights as granted under Swiss law and the Articles of Incorporation (available at https://new.abb.com/about/corporate-governance).

Right to vote

ABB has one class of shares and each registered share carries one vote at the general meeting. Voting rights may be exercised only after a shareholder has been registered in the share register of ABB as a shareholder with the right to vote, or with Euroclear Sweden AB (Euroclear), which maintains a subregister of the share register of ABB.

A shareholder may be represented at the Annual General Meeting by its legal representative, by another shareholder with the right to vote or by the independent proxy elected by the shareholders (unabhängiger Stimmrechtsvertreter). If the Company does not have an independent proxy, the Board of Directors shall appoint the independent proxy for the next General Meeting of Shareholders. All shares held by one shareholder may be represented by one representative only.

For practical reasons shareholders must be registered in the share register no later than 6 business days before the general meeting in order to be entitled to vote. Except for the cases described under "Limitations on transferability of shares and nominee registration" below, there are no voting rights restrictions limiting ABB's shareholders' rights.

Annual General Meeting/COVID-19

ABB's top priority is protecting the health of its shareholders and employees. Therefore, due to the extraordinary circumstances and in accordance with applicable Swiss COVID-19 legislation, shareholders were not able to attend ABB's Annual General Meeting 2021 in person, but could exercise their shareholder rights via the independent proxy only. The Board of Directors has resolved that for ABB's Annual General Meeting 2022, in accordance with applicable Swiss COVID-19 legislation, the same procedures shall apply. In addition, ABB will offer shareholders the opportunity to address questions on agenda items to the Board of Directors in writing ahead of the meeting.

Powers of General Meeting

The Ordinary General Meeting of Shareholders must be held each year within 6 months after the close of the fiscal year of the Company; the business report, the compensation report and the Auditors' reports must be made available for inspection by the shareholders at the place of incorporation of the Company by no later than 20 days prior to the meeting. Each shareholder is entitled to request immediate delivery of a copy of these documents.

The following powers shall be vested exclusively in the General Meeting of Shareholders:

- Adoption and amendment of the Articles of Incorporation;
- Election of the members of the Board of Directors, the Chairman of the Board of Directors, the members of the Compensation Committee, the Auditors and the independent proxy;
- Approval of the annual management report and consolidated financial statements;
- Approval of the annual financial statements and decision on the allocation of profits shown on the balance sheet, in particular with regard to dividends;
- Approval of the maximum compensation of the Board of Directors and of the Executive Committee pursuant to Article 34 of the Articles of Incorporation;
- Granting discharge to the members of the Board of Directors and the persons entrusted with management;
- Passing resolutions as to all matters reserved to the authority of the General Meeting by law or under the Articles of Incorporation or that are submitted to the General Meeting by the Board of Directors, subject to Article 716a of the Swiss Code of Obligations.

Resolutions and elections at General Meetings

Shareholders' resolutions at general meetings are approved with an absolute majority of the votes represented at the meeting, except for those matters described in Article 704 of the Swiss Code of Obligations and for resolutions with respect to restrictions on the exercise of the right to vote and the removal of such restrictions, which all require the approval of two-thirds of the votes represented at the meeting.

At December 31, 2021, shareholders representing shares of a par value totaling at least CHF 48,000 may require items to be included in the agenda of a general meeting. Any such request must be made in writing at least 40 days prior to the date of the general meeting and specify the items and the motions of such shareholder(s).

ABB's Articles of Incorporation do not contain provisions on the convocation of the general meeting of shareholders that differ from the applicable legal provisions.

Shareholders' dividend rights

The unconsolidated statutory financial statements of ABB Ltd are prepared in accordance with Swiss law. Based on these financial statements, dividends may be paid only if ABB Ltd has sufficient distributable profits from previous years or sufficient free reserves to allow the distribution of a dividend. Swiss law requires that ABB Ltd retain at least 5 percent of its annual net profits as legal reserves until these reserves amount to at least 20 percent of ABB Ltd's share capital. Any net profits remaining in excess of those reserves are at the disposal of the shareholders' meeting.

Under Swiss law, ABB Ltd may only pay out a dividend if it has been proposed by a shareholder or the Board of Directors and approved at a general meeting of shareholders, and the auditors confirm that the dividend conforms to statutory law and ABB's Articles of Incorporation. In practice, the shareholders' meeting usually approves dividends as proposed by the Board of Directors.

Dividends are usually due and payable no earlier than 2 trading days after the shareholders' resolution and the ex-date for dividends is normally 2 trading days after the shareholders' resolution approving the dividend. Dividends are paid out to the holders that are registered on the record date. Euroclear administers the payment of those shares registered with it. Under Swiss law, dividends not collected within 5 years after the due date accrue to ABB Ltd and are allocated to its other reserves. As ABB Ltd pays cash dividends, if any, in Swiss francs (subject to the exception for certain shareholders in Sweden described below), exchange rate fluctuations will affect the U.S. dollar amounts received by holders of ADSs upon conversion of those cash dividends by Citibank, N.A., the depositary, in accordance with the Amended and Restated Deposit Agreement dated May 7, 2001.

For shareholders who are residents of Sweden, ABB has established a dividend access facility (for up to 600,004,716 shares). With respect to any annual dividend payment for which this facility is made available, shareholders who register with Euroclear may elect to receive the dividend from ABB Norden Holding AB in Swedish krona (in an amount equivalent to the dividend paid in Swiss francs) without deduction of Swiss withholding tax. For further information on the dividend access facility, see ABB's Articles of Incorporation.

Limitations on transferability of shares and nominee registration

ABB may decline a registration with voting rights if a shareholder does not declare that it has acquired the shares in its own name and for its own account. If the shareholder refuses to make such declaration, it will be registered as a shareholder without voting rights. A person failing to expressly declare in its registration/application that it holds the shares for its own account (a nominee), will be entered in the share register with voting rights, provided that such nominee has entered into an agreement with ABB concerning its status, and further provided that the nominee is subject to recognized bank or financial market supervision. In special cases the Board may grant exemptions. There were no exemptions granted in 2021. The limitation on the transferability of shares may be removed by an amendment of ABB's Articles of Incorporation by a shareholders' resolution requiring two-thirds of the votes represented at the meeting.

No restriction on trading of shares

No restrictions are imposed on the transferability of ABB shares. The registration of shareholders in the ABB share register, Euroclear and the ADS register kept by Citibank does not affect transferability of ABB shares or ADSs. Registered ABB shareholders or ADR holders may therefore purchase or sell their ABB shares or ADRs at any time, including before a General Meeting regardless of the record date. The record date serves only to determine the right to vote at a General Meeting.

Duty to make a public tender offer

ABB's Articles of Incorporation do not contain any provisions raising the threshold (opting up) or waiving the duty (opting out) to make a public tender offer pursuant to Article 135 of the Swiss Act on Financial Market Infrastructures and Market Conduct in Securities and Derivatives Trading.

Independent external auditors

Duration of the mandate and term of office of the auditors

On March 25, 2021, shareholders at the Annual General Meeting of ABB Ltd approved the appointment of KPMG AG (KPMG) to be the auditors of the Company for the 2021 financial year.

KPMG are the auditors of ABB's statutory and consolidated financial statements. KPMG, Switzerland, assumed the sole auditing mandate of the consolidated financial statements of the ABB Group beginning in the year ended December 31, 2018. The auditor in charge and responsible for the mandate, Hans-Dieter Krauss, began serving in this capacity in respect of the financial year ended December 31, 2018. Pursuant to ABB's Articles of Incorporation (available at https://new.abb.com/about/corporate-governance), the term of office of ABB's auditors is one year.

Information to the Board and the Finance, Audit and Compliance Committee

Supervisory and control instruments vis-à-vis the auditors

Our auditors, KPMG, attend each meeting of the FACC and each meeting includes a private session between the auditors and the FACC without the management being present. In 2021, the FACC had 6 meetings (either in person or via telephone call). On at least an annual basis, the FACC reviews and discusses with the external auditors all significant relationships that the auditors have with the Company that could impair their independence. The FACC reviews the auditor engagement letter and the audit plan including discussion of scope, staffing, locations and general audit approach. The FACC also reviews and evaluates the auditors' judgment on the quality and appropriateness of the Company's accounting principles as applied in the financial reporting. In addition, the FACC approves in advance any non-audit services to be performed by the auditors.

At least annually, the FACC obtains and reviews a report by the auditors that includes discussion on:

- The Company's internal control procedures;
- Material issues, if any, raised by the most recent internal quality control review;
- Critical accounting policies and practices of the Company;
- All alternative accounting treatments of financial information that were discussed between the auditors and management as well as the related ramifications; and
- Material communications between the auditors and management such as any management letter or schedule of audit differences.

Taking into account the opinions of management the FACC evaluates the qualifications, independence and performance of the auditors. The FACC reports the material elements of its supervision of the auditors to the Board and on an annual basis recommends to the Board the auditors to be proposed for election at the shareholders meeting.

Audit and additional fees paid to the auditors

The audit fees charged by KPMG for the legally prescribed audit amounted to $34.5 million in 2021. Audit services are defined as the standard audit work performed each fiscal year necessary to allow the auditors to issue an opinion on the consolidated financial statements of ABB and to issue an opinion on the local statutory financial statements.

This classification may also include services that can be provided only by the auditors, such as pre-issuance reviews of quarterly financial results and comfort letters delivered to underwriters in connection with debt and equity offerings. Included in the 2021 audit fees were approximately $4.7 million related to audits from 2020 and earlier, which were not agreed until after the Company had filed its annual report on Form 20-F with the SEC on February 26, 2021.

In addition, KPMG charged $13.6 million for non-audit services during 2021. Non-audit services include primarily carve-out financial statement audits in relation to transactional activities, service organization attestation procedures, agreed-upon procedure reports, accounting consultations, audits of pension and benefit plans, accounting advisory services and other attest services related to financial reporting that are not required by statute or regulation, income tax and indirect tax compliance services as well as tax advisory services. In accordance with the requirements of the U.S. Sarbanes Oxley Act of 2002 and rules issued by the SEC, we utilize a procedure for the review and pre approval of any services performed by KPMG.

Other governance information

ABB Group organizational structure

ABB Ltd, Switzerland, is the ultimate parent company of the ABB Group. It is the sole shareholder of ABB Asea Brown Boveri Ltd which directly or indirectly owns the other companies in the ABB Group. The table in the appendix to this Corporate Governance Report sets forth, as of December 31, 2021, the name, place of incorporation, ownership interest and share capital of the significant direct and indirect subsidiaries of ABB Ltd. In addition, ABB Ltd also owns 19.9 percent of Hitachi Energy Ltd. ABB's operational group structure is described in the "Financial review of ABB Group" section of this Annual Report under "Operating and financial review and prospects – Organizational structure".

Management contracts

There are no management contracts between ABB and companies or natural persons not belonging to the ABB Group.

Change of control clauses

Board members, Executive Committee members, and other members of senior management do not receive any special benefits in the event of a change of control. However, the conditional grants under the Long Term Incentive Plan (LTIP) and the Management Incentive Plan (MIP) may be subject to accelerated vesting in the event of a change of control. From 2021, the rules for the LTIP have been amended to no longer provide for accelerated vesting upon a change in control. No further grants are made under the MIP.

Employee participation programs

In order to align its employees' interests with the business goals and financial results of the Company, ABB operates a number of incentive plans, linked to ABB's shares, such as the Employee Share Acquisition Plan, the Management Incentive Plan and the Long Term Incentive Plan. For a more detailed description of these incentive plans, please refer to "Note 18 – Share-based payment arrangements" to ABB's Consolidated Financial Statements.

General blackout periods for trading ABB securities

During the 30 days prior to the day of publication of the ABB Group's quarterly financial results, as well as on such day, the members of the Board of Directors and the Executive Committee as well as certain employees of ABB, as specified in ABB's internal policies, are prohibited from trading in ABB Ltd securities and any related financial instruments.

Governance differences from NYSE Standards

According to the New York Stock Exchange's corporate governance standards (the Standards), ABB is required to disclose significant ways in which its corporate governance practices differ from the Standards. ABB has reviewed the Standards and concluded that its corporate governance practices are generally consistent with the Standards, with the following significant exceptions:

- Swiss law requires that the external auditors be elected by the shareholders at the Annual

General Meeting rather than by the audit committee or the board of directors.
- The Standards require that all equity compensation plans and material revisions thereto be approved by the shareholders. Consistent with Swiss law such matters are decided by our Board. However, the shareholders decide about the creation of new share capital that can be used in connection with equity compensation plans.
- Swiss law requires that the members of the compensation committee are elected by the shareholders rather than appointed by our Board.
- Swiss law requires shareholders to approve the maximum aggregate Board compensation and the maximum aggregate Executive Committee compensation.

Information policy

ABB, as a publicly traded company, is committed to communicating in a timely and consistent way to shareholders, potential investors, financial analysts, customers, suppliers, the media and other interested parties. ABB is required to disseminate material information pertaining to its businesses in a manner that complies with its obligations under the rules of the stock exchanges where its shares are listed and traded.

ABB publishes an annual report that provides audited financial statements and information about ABB including our business results, strategy, products and services, corporate governance and executive compensation. ABB also submits an annual report on Form 20-F to the Securities and Exchange Commission (SEC). In addition, ABB publishes its results on a quarterly basis as press releases, distributed pursuant to the rules and regulations of the stock exchanges on which its shares are listed and traded. Press releases relating to financial results and material events are also filed with the SEC on Form 6-K. An archive containing Annual Reports, Form 20-F reports, quarterly results releases and related presentations can be found in the "Financial results and presentations" section at www.abb.com/investorrelations. The quarterly results press releases contain unaudited financial information prepared in accordance with or reconciled to U.S. GAAP. To subscribe to important press releases, please click on the "Contacts and Services" and choose "Subscribe to updates" at https://www.abb.com/investorrelations. Ad-hoc notices can also be found in the press releases section at https://www.abb.com/news.

ABB's official means of communication is the Swiss Official Gazette of Commerce (https://www.shab.ch). The invitation to the Company's Annual General Meeting is sent to registered shareholders by mail.

Inquiries may also be made to ABB Investor Relations:

Affolternstrasse 44
CH-8050 Zurich, Switzerland
Telephone: +41 43 317 7111
E-Mail: investor.relations@ch.abb.com
ABB's website is: www.abb.com

Further information on corporate governance

The list below contains references to additional information concerning the corporate governance of ABB (available at https://new.abb.com/about/corporate-governance).

- Articles of Incorporation
- ABB Ltd Board Governance Rules, which includes:
  – Governance Rules of the Finance, Audit and Compliance Committee
  – Governance Rules of the Governance and Nomination Committee
  – Governance Rules of the Compensation Committee
  – Related Party Transaction Policy
- ABB Code of Conduct
- Comparison of ABB's corporate governance practices to the New York Stock Exchange rules
- Summary of differences of shareholder rights under Swedish and Swiss law applicable to ABB
- CVs of the Board members
- CVs of the Executive Committee members

ABB's corporate calendar can be found at https://new.abb.com/investorrelations/calendar-events-and-publications/financial-calendar.

Appendix – ABB Ltd's significant subsidiaries

Company name/location	Country	ABB interest %	Share capital in thousands	Currency
ABB S.A., Buenos Aires	Argentina	100.00	278,860	ARS
ABB Australia Pty Limited, Moorebank	Australia	100.00	131,218	AUD
ABB Group Holdings Pty. Ltd., Moorebank	Australia	100.00	552,982	AUD
ABB Group Investment Management Pty. Ltd., Moorebank	Australia	100.00	505,312	AUD
ABB AG, Wiener Neudorf	Austria	100.00	15,000	EUR
B&R Holding GmbH, Eggelsberg	Austria	100.00	35	EUR
B&R Industrial Automation GmbH, Eggelsberg	Austria	100.00	1,240	EUR
ABB N.V., Zaventem	Belgium	100.00	34,308	EUR
ABB Automacao LTDA, Soracaba	Brazil	100.00	196,554	BRL
ABB Eletrificacao LTDA, Soracaba	Brazil	100.00	268,759	BRL
ABB Bulgaria EOOD, Sofia	Bulgaria	100.00	65,110	BGN
ABB Electrification Canada ULC, Edmonton	Canada	100.00	—(2)	CAD
ABB Inc., Saint-Laurent	Canada	100.00	—(2)	CAD
ABB S.A., Santiago	Chile	100.00	5,484,348	CLP
ABB (China) Investment Limited, Beijing	China	100.00	95,000	USD
ABB (China) Ltd., Beijing	China	100.00	140,000	USD
ABB Beijing Drive Systems Co. Ltd., Beijing	China	90.00	5,000	USD
ABB Beijing Switchgear Limited, Beijing	China	60.00	16,500	USD
ABB Electrical Machines Ltd., Shanghai	China	100.00	14,400	USD
ABB Engineering (Shanghai) Ltd., Shanghai	China	100.00	40,000	USD
ABB LV Installation Materials Co. Ltd. Beijing, Beijing	China	85.70	17,100	USD
ABB Shanghai Free Trade Zone Industrial Co., Ltd., Shanghai	China	100.00	6,500	CNY
ABB Shanghai Motors Co. Ltd., Shanghai	China	75.00	11,217	USD
ABB Xiamen Low Voltage Equipment Co. Ltd., Xiamen	China	100.00	15,800	USD
ABB Xiamen Switchgear Co. Ltd., Xiamen	China	66.52	29,500	USD
ABB Xinhui Low Voltage Switchgear Co. Ltd., Xinhui	China	90.00	6,200	USD
ABB s.r.o., Prague	Czech Republic	100.00	400,000	CZK
ABB A/S, Skovlunde	Denmark	100.00	100,000	DKK
ABB for Electrical Industries (ABB ARAB) S.A.E., Cairo	Egypt	100.00	353,479	EGP
Asea Brown Boveri S.A.E., Cairo	Egypt	100.00	166,000	USD
ABB AS, Jüri	Estonia	100.00	1,663	EUR
ABB Oy, Helsinki	Finland	100.00	10,003	EUR
ABB France, Cergy Pontoise	France	99.83	25,778	EUR
ABB SAS, Cergy Pontoise	France	100.00	45,921	EUR
ABB AG, Mannheim	Germany	100.00	167,500	EUR
ABB Beteiligungs- und Verwaltungsges. mbH, Mannheim	Germany	100.00	61,355	EUR
ABB Stotz-Kontakt GmbH, Heidelberg	Germany	100.00	7,500	EUR
B + R Industrie-Elektronik GmbH, Bad Homburg	Germany	100.00	358	EUR
Busch-Jaeger Elektro GmbH, Lüdenscheid	Germany	100.00	1,535	EUR
ABB Engineering Trading and Service Ltd., Budapest	Hungary	100.00	436,281	HUF
Industrial C&S Hungary Kft., Budapest	Hungary	100.00	3,000	HUF
ABB Global Business Services and Contracting India Private Limited, Bangalore	India	100.00	5,200,100	INR
ABB Global Industries and Services Private Limited, Bangalore	India	100.00	366,923	INR
ABB India Limited, Bangalore	India	75.00	423,817	INR
ABB S.p.A., Milan	Italy	100.00	110,000	EUR
ABB K.K., Tokyo	Japan	100.00	1,000,000	JPY
ABB Ltd., Seoul	Korea, Republic of	100.00	23,670,000	KRW
ABB Electrical Control Systems S. de R.L. de C.V., Monterrey	Mexico	100.00	315,134	MXN
ABB Mexico S.A. de C.V., San Luis Potosi	Mexico	100.00	683,418	MXN
Asea Brown Boveri S.A. de C.V., San Luis Potosi	Mexico	100.00	667,686	MXN
ABB B.V., Rotterdam	Netherlands	100.00	9,200	EUR
ABB Finance B.V., Rotterdam	Netherlands	100.00	20	EUR
ABB Holdings B.V., Rotterdam	Netherlands	100.00	363	EUR
ABB AS, Fornebu	Norway	100.00	134,550	NOK
ABB Electrification Norway AS, Skien	Norway	100.00	60,450	NOK

Company name/location	Country	ABB interest %	Share capital in thousands	Currency
ABB Holding AS, Fornebu	Norway	100.00	240,000	NOK
ABB Business Services Sp. z o.o., Warsaw	Poland	99.94	24	PLN
ABB Industrial Solutions (Bielsko-Biala) Sp. z o.o., Bielsko-Biala	Poland	99.94	328,125	PLN
ABB Industrial Solutions (Klodzko) Sp.z o.o., Klodzko	Poland	99.94	50	PLN
ABB Sp. z o.o., Warsaw	Poland	99.94	245,461	PLN
Industrial C&S of P.R. LLC, San Juan	Puerto Rico	100.00	—[2]	USD
ABB Ltd., Moscow	Russian Federation	100.00	23,000	RUB
ABB Electrical Industries Co. Ltd., Riyadh	Saudi Arabia	65.00	181,000	SAR
ABB Pte. Ltd., Singapore	Singapore	100.00	32,797	SGD
ABB Holdings (Pty) Ltd., Modderfontein	South Africa	100.00	217,758	ZAR
ABB Investments (Pty) Ltd, Modderfontein	South Africa	51.00	56,000	ZAR
ABB South Africa (Pty) Ltd., Modderfontein	South Africa	74.91	200,001	ZAR
Asea Brown Boveri S.A., Madrid	Spain	100.00	33,318	EUR
ABB AB, Västerås	Sweden	100.00	200,000	SEK
ABB Electrification Sweden AB, Västerås	Sweden	100.00	10,000	SEK
ABB Norden Holding AB, Västerås	Sweden	100.00	2,344,783	SEK
ABB Asea Brown Boveri Ltd, Zurich	Switzerland	100.00	2,767,880	CHF
ABB Canada EL Holding GmbH, Zurich	Switzerland	100.00	1,000	CHF
ABB Capital AG, Zurich	Switzerland	100.00	100	CHF
ABB Information Systems Ltd., Zurich	Switzerland	100.00	500	CHF
ABB Investment Holding 2 GmbH, Zurich	Switzerland	100.00	20	CHF
ABB Management Services Ltd., Zurich	Switzerland	100.00	571	CHF
ABB Schweiz AG, Baden	Switzerland	100.00	55,000	CHF
ABB Ltd., Taipei	Taiwan (Chinese Taipei)	100.00	195,000	TWD
ABB Elektrik Sanayi A.S., Istanbul	Turkey	99.99	13,410	TRY
ABB Industries (L.L.C.), Dubai	United Arab Emirates	49.00[1]	5,000	AED
ABB Holdings Limited, Warrington	United Kingdom	100.00	226,014	GBP
ABB Limited, Warrington	United Kingdom	100.00	120,000	GBP
ABB Finance (USA) Inc., Wilmington, DE	United States	100.00	1	USD
ABB Holdings Inc., Cary, NC	United States	100.00	2	USD
ABB Inc., Cary, NC	United States	100.00	1	USD
ABB Installation Products Inc, Memphis, TN	United States	100.00	1	USD
ABB Motors and Mechanical Inc, Fort Smith, AR	United States	100.00	—[2]	USD
ABB Treasury Center (USA), Inc., Wilmington, DE	United States	100.00	1	USD
Edison Holding Corporation, Wilmington, DE	United States	100.00	—[2]	USD
Industrial Connections & Solutions LLC, Cary, NC	United States	100.00	—[2]	USD

(1) Company consolidated as ABB exercises full management control.
(2) Shares without par value.

03 Compensation report

Letter from the Chairman of the Compensation Committee

Dear Shareholders,

On behalf of the Board of Directors and the Compensation Committee, I am pleased to present the ABB Compensation Report for 2021.

Our focus remains to ensure that the compensation structure at ABB drives value creation for our shareholders, represents a motivating package for our executives, meets best-practice corporate governance standards and aligns with ABB's sustainability strategy.

Summary of changes for 2022

One of the main subjects of our analysis this year was how to best link our sustainability strategy - and its associated ambitious targets for 2030 - to the short- and long-term incentive plans of our Executive Committee (EC) members. This and other discussions resulted in a suite of changes which we believe will place ABB in line with leading market practices for executive compensation and reinforce our commitment towards sustainability and long-term value creation. In brief:

Annual Incentive Plan (AIP)
All EC members will have two or more KPIs relating to environmental, social and corporate governance (ESG) matters in the personal component of their short-term incentive plan, and the existing mechanism of subjectively adjusting its outcome against an ESG "boundary condition" will be discontinued.

Long-Term Incentive Plan (LTIP)
- A Corporate ESG measure will be added to the LTIP of all EC members, with a material weighting of 20 percent, and the Company will set and prospectively disclose appropriate ESG target(s) on an annual basis. The target for the 2022 LTIP is set out in this Compensation Report;
- There will be no vesting of the Total Shareholder Return (TSR) portion of our LTIP award below the median (50th percentile) of the peer group;
- A dividend equivalent (to the dividends paid during the vesting period) payment will be introduced on the final number of awarded shares at the time of vesting. This will be largely offset by the reduction of other benefit-related costs;
- The existing discretion to increase or decrease the target pool size applicable to EC members will be discontinued, as well as the discretion to increase or decrease individual target grants (except to give no grant in certain circumstances) and
- The clawback and leaver provisions will be updated to provide greater clarity of the use of discretion of the Compensation Committee to adjust the formulaic outcomes of the achievement level against defined performance measures and targets.

Policy and general terms and conditions
New joiners to the EC will have an increased variable, performance oriented portion of compensation mix and, in turn, a reduced fixed portion, when compared to current EC members.

The compensation structure for the EC, its purpose and links to our Company strategy, and associated performance measures, valid as of 2022, are set out in Exhibit 3 below.

Compensation policy outcomes

Board of Directors: the approved maximum aggregate compensation for the 2021-2022 term is lower than for the previous term, as a result of a reduction in the number of members of the Board (from eleven to ten).

The aggregate Board compensation for the 2021-2022 term is in line with the amount approved at the 2021 Annual General Meeting (AGM). There has been no change to the individual Board fees since 2015 .

Executive Committee: the aggregate EC total compensation was CHF 39.2 million in 2021, compared to CHF 35.4 million in 2020, as summarized in Exhibit 21 below and presented in detail in Exhibits 38 and 39. This difference in total compensation was driven by the increase in performance related variable pay elements.

Three of the nine EC members in place in March 2021 received a salary adjustment, which ranged from 2.1 to 6.7 percent, for exceptional performance and/or market adjustment. This corresponded to an average 1.3 percent increase on annual aggregate base salaries for the EC members in post in March 2021, which was broadly consistent with the salary review budget for the wider Swiss employee population.

The average award for the current EC members under the AIP for 2021 was 143.4 percent (out of a maximum 150 percent), compared to 72.4 percent in 2020. This significant outcome was driven by a strong performance from all businesses, leading to an overachievement related to the majority of the 2021 AIP financial targets. In comparison, the 2020 performance levels were heavily influenced by the impact on the business from the COVID-19 pandemic, and no changes in targets were made.

The average weighted achievement level of the 2018 LTIP, which vested in 2021, was 57.4 percent (out of a maximum 200 percent). There was no vesting under the EPS component, which was impacted by the COVID-19 pandemic that took place during the performance period, and for which no adjustments to targets were applied.

Disclosure

During the reporting year, the Compensation Committee listened carefully to inputs and suggestions to increase the clarity of disclosures in our Compensation Reports. As such, we introduced a new section “Compensation at a glance” at the beginning of the Compensation Report, where we provide a tabular overview of the EC compensation structure. We continue to structure the Compensation Report to clearly differentiate between our compensation policies and their implementation. It is also intended to progressively move from narrative and complex tables towards more simplified charts with enhanced disclosures.

Governance

During 2021, the CC also reviewed the Company’s gender pay policy and disclosure requirements and fully performed its regular activities, which include formulating the Compensation Report, preparing the “say-on-pay” vote for the AGM, reviewing the terms of departure for members of the EC, and recommending to the Board the performance measures and targets for the EC as well as the compensation of the Board, the CEO and the EC members. You will find further information on our activities and on ABB’s compensation system and governance in the following pages.

At the AGM on March 24, 2022, you will be asked to vote on the maximum aggregate compensation for the Board for its 2022–2023 term and on the maximum aggregate compensation for the EC in 2023. It is important to note that the increase in maximum aggregate compensation for 2023, rather than any structural increase to EC compensation, is the result of the associated cost related to the 2020 LTIP vesting in 2023, influenced by the increased number of shares subject to vesting compared to prior years; the current, solid performance of the Company against its earnings per share targets and total shareholder return peer group; and the strong share price development since the time of grant, with a reference price of CHF 19.36.

This Compensation Report will also be submitted for a non-binding, consultative vote by shareholders.

We encourage and pursue an open and regular dialogue with all of our stakeholders. Your constructive input is highly valued and appreciated as we continue to improve our compensation system. On behalf of the Compensation Committee, I thank you for your continued trust in ABB and for your consistently supportive feedback.

Frederico Fleury Curado
Chairman of the Compensation Committee

Zurich, February 24, 2022

Compensation report

Compensation at a glance

Board compensation

Compensation for the 2021-2022 term of office

The effective Board compensation for the 2021-2022 term of office (CHF 4,380,000) was within the maximum amount approved at the 2021 AGM (CHF 4,400,000).

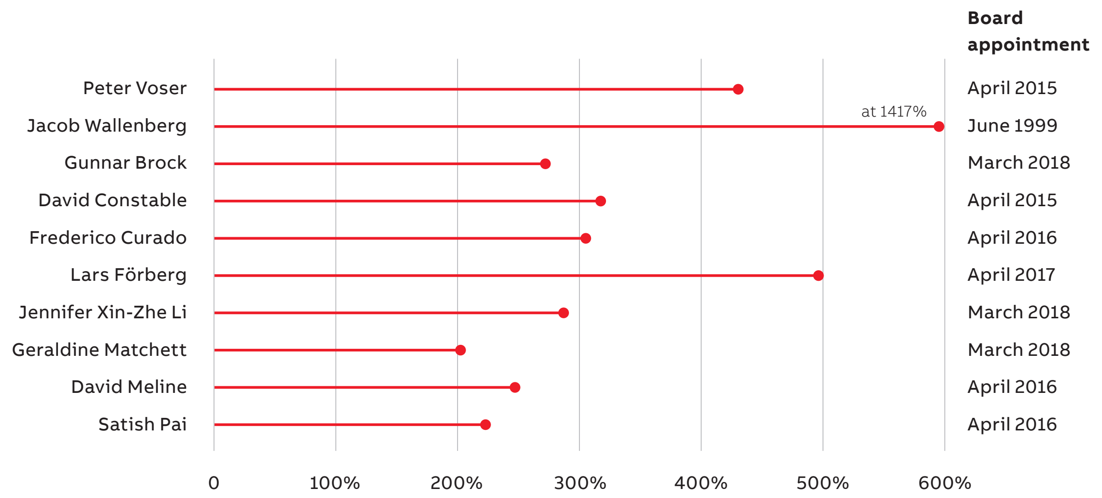
Exhibit 1: Board compensation (in CHF) for the 2021-2022 term of office

Effective compensation	4,380,000
Approved compensation amount	4,400,000

Shareholding of Board members

All Board members held ABB shares at December 31, 2021, worth at least 200 percent of their 2021 Board compensation.

Exhibit 2: Board members shareholding (at December 31, 2021) in % of 2021 total compensation*

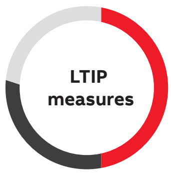


* Based on share price of CHF 26.59, the 2021 LTIP reference price, and shares held at December 31, 2021.

Executive Committee (EC) compensation

Compensation structure as from 2022

Exhibit 3: EC compensation structure as from 2022

	Fixed compensation - base salary and benefits	Variable compensation – short-term incentive (AIP)	Variable compensation – long-term incentive (LTIP)	Wealth at risk/ Share ownership
Purpose and link to strategy	Base salary compensates for the role and relevant experience; Benefits protect against risks. Facilitates attraction and retention of talented EC members	Rewards annual Company, Business Area, functional and individual performance. Aligned with the Company's Annual Performance Plan	Rewards the achievement of Company goals over a three-year period. Encourages creation of long-term, sustainable value for shareholders, and delivery of long-term strategic goals. Aligned with the Company's Long-term Performance Plan	Aligns individual's personal wealth at risk directly to the ABB share price, and EC members' interests with those of shareholders in order to maintain focus on ABB's long-term success
Operation	Salary in cash, benefits in kind, and pension contribution	Annual awards, payable in cash after a one-year performance period	Annual grants in shares which may vest after three years, subject to performance conditions	Individuals required to hold ABB shares
Opportunity level (as % of base salary)	Based on scope of responsibilities, personal experience and skillset	Minimum 0% Target 100% Maximum 150%	**CEO** Minimum 0% Target 150% Maximum 300% **Other current EC Members** Minimum 0% Target 80–100% Maximum 160–200% **Other new EC Members*** Minimum 0% Target 150% Maximum 300% * higher LTIP opportunity to be largely offset by lower fixed cost benefits	**CEO** 500% (net of tax) **Other EC Members** 400% (net of tax)
Performance indicators	Changes to base salary take into account individual performance, future potential and external benchmarking	 80% Group financial results 20% Individual results  20% Group financial results 60% Business Area results 20% Individual results	 50% Average EPS 30% Relative TSR 20% ESG (CO_2 emission reduction)	Exposed to ABB share price

Total EC compensation for 2021

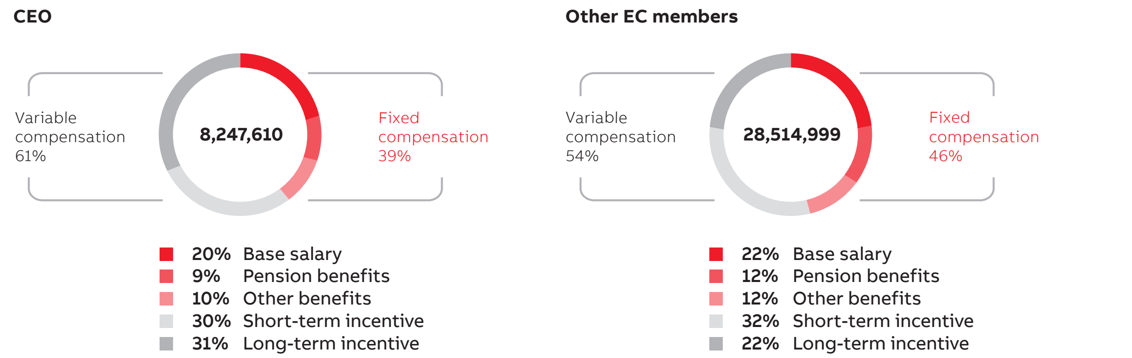
The effective EC compensation for 2021 (CHF 39,157,046) is within the maximum amount approved at the 2020 AGM (CHF 39,500,000).

Exhibit 4: EC compensation (in CHF) for 2021

Effective aggregate compensation	39,157,046
Approved aggregate compensation	39,500,000

The larger portion of the CEO's 2021 total compensation was delivered via variable compensation (61 percent represented by short-term incentive and long-term incentive). For the other EC members, on an aggregate level, variable compensation represented 54 percent of their 2021 compensation. The following chart shows the composition of the 2021 total compensation for the current EC, without consideration of former EC members.

Exhibit 5: 2021 Total compensation mix for the CEO and other EC members on aggregate level

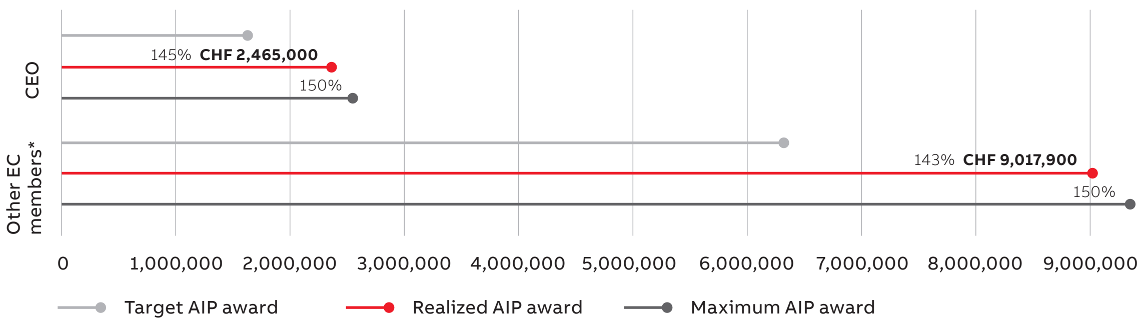


Realized variable compensation in 2021

Realized variable compensation considers the AIP award and the LTIP award at the end of their respective performance cycles, reflecting actual AIP payment and LTIP vesting based on achievement of the plan specific performance measures.

While the outcome of the 2021 short-term incentive was above the target for all current EC members (143.4 percent on average), the long-term incentive that vested in 2021 (2018 LTIP) remained substantially below the target, with a final vesting level of 57.4 percent of target.

Exhibit 6: AIP 2021 outcome compared to target



Target AIP award corresponds to 100% of base salary

* individual outcome ranges from 140% to 145%

Realized total compensation in 2021

Considering the stated variable components above, the realized total compensation in 2021 was above the target total compensation for all current EC members, driven by strong performance in 2021.

Exhibit 7: Long-term incentive: 2018 LTIP outcome compared to target

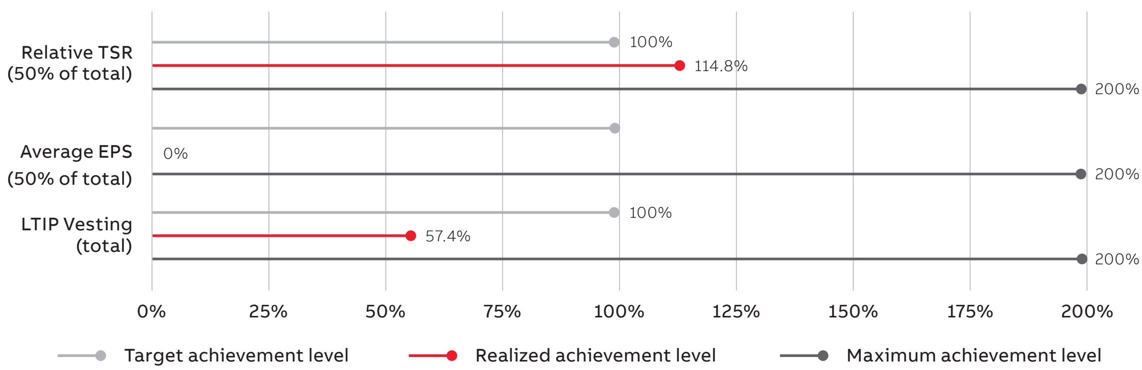
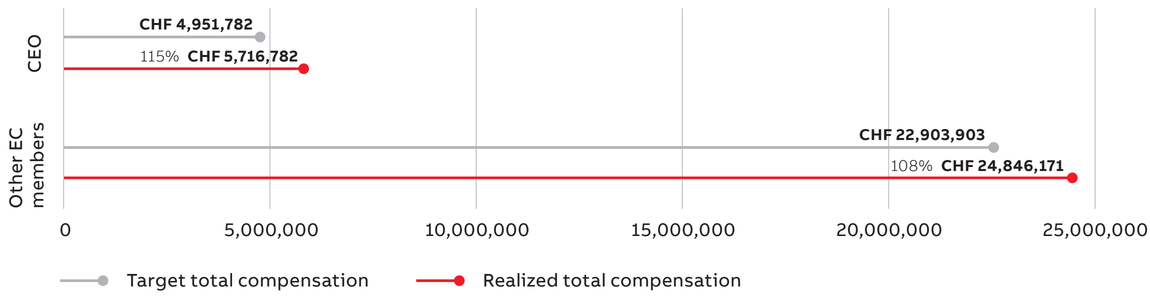


Exhibit 8: Realized total compensation compared to target total compensation

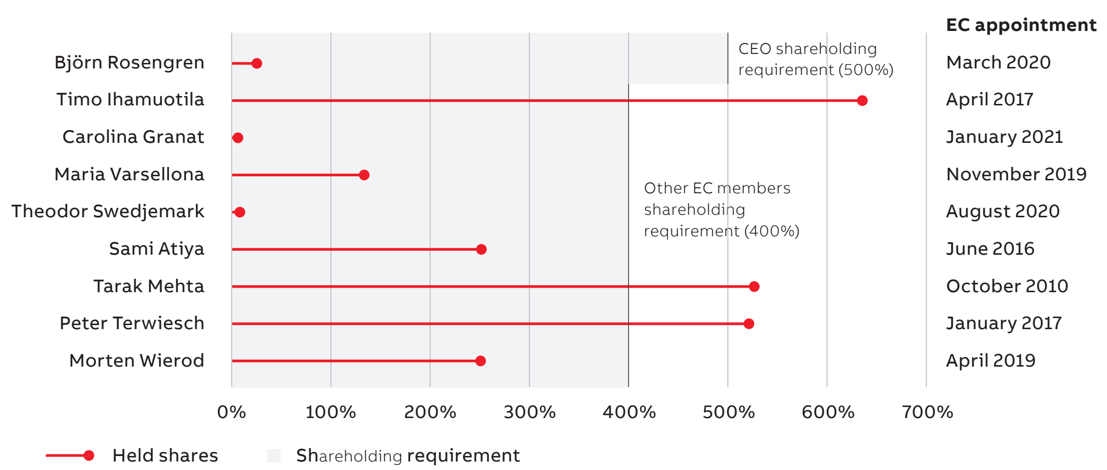


Further details related to the realized compensation of each EC member and each compensation component are specified in Exhibit 44.

Shareholding of EC members

Three out of nine EC members have achieved or exceeded their share ownership requirement, while three members have been newly appointed to the EC in the last two years, and one member is leaving the Company. Note that EC members may not sell their shares (except to meet tax and social security costs) until they achieve the required shareholding level.

Exhibit 9: EC shareholding compared to share ownership guideline*



*Based on share price of CHF 26.59, the 2021 LTIP reference price, and shares held at December 31, 2021.

Compensation governance

The Compensation Report is prepared in accordance with the Ordinance against Excessive Remuneration in Listed Stock Corporations, the Directive on Information relating to Corporate Governance of the SIX Exchange Regulation, the rules of the stock markets of Sweden and the United States, where ABB shares are also listed, and the principles of the Swiss Code of Best Practice for Corporate Governance of economiesuisse.

ABB's Articles of Incorporation

ABB's Articles of Incorporation, approved by its shareholders, contain provisions on compensation which govern and outline the principles of compensation relating to our Board of Directors and Executive Committee. They can be found on ABB's Corporate Governance website new.abb.com/about/corporate-governance and are summarized below:

- **Compensation Committee** (Articles 28 to 31): The Compensation Committee (CC) is composed of a minimum of three members of the Board and are elected individually by the shareholders at the Annual General Meeting for a period of one year. It supports the Board in establishing and reviewing the compensation strategy, principles and programs, in preparing the proposals to the AGM on compensation matters and in determining the compensation of the Board and of the EC. The responsibilities of the CC are defined in more detail in the Board Regulations and Corporate Governance guidelines, which are also available on ABB's Corporate Governance website.

- **Compensation principles** (Article 33): Compensation of the members of the Board consists of fixed compensation only, which is delivered in cash and shares (with an option to elect for shares only). Compensation of the members of the EC consists of fixed and variable compensation. Variable compensation may comprise short-term and long-term elements. Compensation may be paid in cash, shares or other benefits.
- **"Say-on-pay" vote** (Article 34): Shareholders approve the maximum aggregate amount of compensation of the Board for the following Board term and of the EC for the following financial year.
- **Supplementary amount for new EC members** (Article 35): If the maximum approved aggregate compensation amount is not sufficient to also cover the compensation of newly promoted/hired EC members, up to 30 percent of the last maximum approved aggregate amount shall be available as a supplementary amount to cover the compensation of such new EC members.
- **Loans** (Article 37): Loans may not be granted to members of the Board or of the EC.

Authority levels in compensation matters

The CC acts in an advisory capacity while the Board retains the decision authority on compensation matters, except for the maximum aggregate compensation amounts of the Board and of the EC, which are subject to the approval of shareholders at the AGM. The authority levels of the different bodies on compensation matters are detailed in Exhibit 10. Shareholders also have a consultative vote on the prior year's Compensation Report at the AGM and a binding vote on the maximum aggregate amount of compensation of the Board for the following Board term and of the EC for the following financial year.

Exhibit 10: Authority levels in compensation matters

	CEO	CC	Board	AGM
Compensation policy including incentive plans	○	●	🔴	
Maximum aggregate compensation amount for the EC		○	●	🔴
CEO compensation		●	🔴	
Individual compensation of other EC members	○	●	🔴	
Performance target setting and assessment of the CEO		●	🔴	
Performance target setting and assessment of other EC members	○	●	🔴	
Shareholding requirements for CEO and other EC members		●	🔴	
Maximum aggregate compensation amount for the Board		○	●	🔴
Individual compensation of Board members		●	🔴	
Compensation Report		●	🔴	Consultative vote

○ Proposal ● Recommendation 🔴 Approval

Activities of the CC in 2021

The CC meets as often as business requires but at least four times a year. In 2021, the CC held seven meetings and performed the activities described in Exhibit 11. The CEO, the Chief Human Resources Officer (CHRO) and the Head of Performance and Reward also attend all or part of the CC meetings in an advisory capacity. The Chairman of the CC may decide to invite other executives upon consultation with the CEO, as appropriate. Executives do not attend the meetings or the parts of the meetings in which their own compensation and/or performance are being discussed. Details on meeting attendance of the individual CC members (number of meetings held during 2021, their average duration, as well as the attendance of the individual members) are provided in the section titled "Board of Directors – Meetings and attendance" of the Corporate Governance Report.

The Chairman of the CC reports to the full Board after each CC meeting. The minutes of the meetings are available to the members of the Board.

The CC retains independent, external advisors for compensation matters. PricewaterhouseCoopers (PwC) was mandated to provide consulting services related to executive compensation matters. Apart from its CC advisory role, PwC also provides human resources, tax and advisory services to ABB.

Exhibit 11: CC activities during 2021

Strategy	
	Review of Long-Term Incentive plan (LTIP)
	Review of link between Environmental, Social and Corporate Governance (ESG) and compensation
EC Compensation	
	Review of recommendations on individual compensation for EC members
	Review of the share ownership of EC members
	Review and approval of compensation for departing EC members
Performance – relating to past performance cycle	
	Assessment of short-term incentive awards for 2020
	Assessment of achievement of performance targets for LTIP awards vesting in 2021
Performance – relating to forthcoming performance cycle	
	Setting of Annual Incentive Plan (AIP) design and targets for 2021
	Consideration of forecast AIP outcomes for 2021
	Consideration of preliminary AIP targets for 2022
	Setting of performance targets for LTIP grants in 2021
	Consideration of forecast achievement against performance targets for unvested LTIP grants
Compliance	
	Review of CC Terms of Reference and annual plan
	Review of the gender pay policy and disclosure in Switzerland
	Review of feedback from Stakeholder Engagement meetings
	Regulatory and market updates
	Review of the Compensation Report for publication
	Preparation of maximum aggregate compensation for the Board to be submitted for AGM vote
	Preparation of maximum aggregate compensation for the EC to be submitted for AGM vote

Pay equity

ABB believes that a culture of diversity, inclusion and equal opportunity is critical to our business success and makes us stronger. This mindset is supported by our Diversity & Inclusion Strategy 2030, that clearly defines ABB plans to ensure an inclusive culture and equal treatment of everyone, regardless of gender, age, ethnic origin, sexual orientation, etc. Equal pay is a critical component of this strategy.

In Switzerland, under the revised Swiss Federal Act on Gender Equality (GEA) that came into force last year, legal entities with more than 100 employees are required to conduct an equal pay analysis. ABB has completed this analysis for all four required legal entities and the results of this analysis were verified by an external accounting firm, KPMG. As a result, the two in-scope legal entities forming part of ABB Switzerland (ABB Schweiz AG and ABB Power Protection SA, which now is part of ABB Schweiz AG), meet the equal pay requirements and are within the applicable thresholds for salary and overall compensation (salary plus actual bonus).

At ABB Headquarters, ABB Asea Brown Boveri Ltd meets the equal pay requirements and is within the applicable thresholds for salary and overall compensation (salary plus actual bonus). The smaller legal entity in scope, ABB Management Services Ltd, meets the equal pay requirements for salary and slightly underachieves the parity level for overall compensation (salary plus actual bonus), as it has employees from different businesses assigned with different bonus plans, leading to varying levels of bonus payments. In accordance with the Swiss law, ABB will continue to monitor these requirements.

Board compensation policy

The compensation policy for the members of the Board is designed to attract and retain experienced people to the Board of Directors. Compensation takes into account the responsibilities, time and effort required to fulfill their roles on the Board and its Committees, and is generally positioned at levels similar to other Swiss listed companies of comparable size and complexity.

Compensation structure

A fixed fee is payable for the Chairman, Vice-Chairman and members of the Board, and additional fees are payable for chairing or membership of a Board Committee, except for the Chairman and Vice-Chairman. Board members are paid for their service over a 12-month period that starts with their election at the AGM. Payment of fees is made in semi-annual installments in arrears.

Each fee is delivered in cash and shares, although Board members may elect to receive all their fees in shares. The number of shares delivered is calculated prior to each semi-annual payment by dividing the monetary amount to which the Board members are entitled by the average closing price of the ABB share over a predefined 30-day period. The shares are subject to a three-year restriction period during which they cannot be sold, transferred or pledged. Any restricted shares are unblocked when the Board member leaves the Board.

Implementation of Board compensation policy

Board fees by role

As mentioned above, the levels and mix of compensation of Board members are regularly compared against the compensation of non-executive Board members from a cross-section of publicly traded companies in Switzerland that are part of the Swiss Market Index (i.e., Adecco, Alcon, Geberit, Givaudan, Holcim, Lonza, Richemont, SGS, Sika, Swisscom, Swiss Life, Zurich Insurance). Such a review was last undertaken in 2020, and there was no adjustment made to Board fees for the term of office from the 2021 AGM to the 2022 AGM, as set out in Exhibit 12 below.

Exhibit 12: Current Board fees

	Board term fee (CHF)
Chairman of the Board(1)	1,200,000
Vice-Chairman of the Board(1)	450,000
Member of the Board	290,000
Additional committee fees:	
Chairman of FACC(2)	110,000
Chairman of CC or GNC(2)	60,000
Member of FACC(2)	40,000
Member of CC or GNC(2)	30,000

(1) The Chairman and the Vice-Chairman do not receive any additional committee fees for their roles on the GNC.
(2) CC: Compensation Committee,
FACC: Finance, Audit and Compliance Committee,
GNC: Governance and Nomination Committee.

Total Board compensation

The compensation paid to the Board members for the calendar year 2021 and for the term of office from the 2021 AGM to the 2022 AGM are disclosed in Exhibit 13 below and in Exhibits 35 and 36, respectively, in the section "Compensation tables and share ownership tables".

At the 2021 AGM, the shareholders approved a maximum aggregate compensation amount of CHF 4.40 million for the 2021-2022 Board term. This amount was lower than the approved amount for the previous Board term, reflecting the reduction of the total number of members of the Board from eleven to ten. The Board compensation to be paid is CHF 4.38 million and is therefore within the amount approved by the shareholders. The Board compensation paid for the previous 2020-2021 term of office was below the amount approved by the shareholders due to the voluntary donation of 10 percent of fees for a six-month period during 2020 to fight the impacts of the COVID-19 pandemic.

Exhibit 13: Board compensation (in CHF)

	Board term	
Board of Directors	2021–2022	2020–2021
Number of members	10	11
Total compensation	4,380,000	4,436,500
Maximum aggregate compensation amount approved at previous AGM	4,400,000	4,700,000

Compensation of former Board members

In 2021, no payment was made to any former Board member.

Compensation for services rendered

In 2021, ABB did not pay any fees or compensation to the members of the Board for services rendered to ABB other than those disclosed in this Compensation Report.

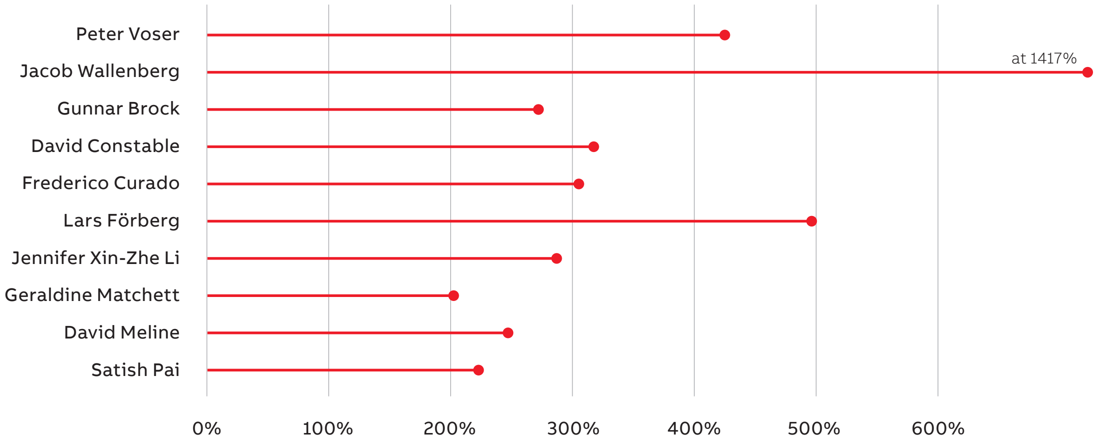
Shareholding of Board members

The members of the Board collectively owned less than 1 percent of ABB's total shares outstanding at December 31, 2021.

Exhibit 37 in the section "Compensation tables and share ownership tables" shows the number of ABB shares held by each Board member at December 31, 2021 and 2020. Except as described in this Exhibit, no member of the Board and no person closely linked to a member of the Board held any shares of ABB or options in ABB shares.

Shares delivered to Board members as part of their compensation are blocked for a period of three years. Exhibit 14 shows the wealth at risk for each Board member, comparing the value of held shares at December 31, 2021 with the total compensation for the 2021-2022 term of office. At December 31, 2021, all Board members held ABB shares worth at least 200 percent of their 2021 total compensation.

Exhibit 14: Board shareholding (at December 31, 2021) in % of 2021 total compensation*



* Based on share price of CHF 26.59, the 2021 LTIP reference price, and shares held at December 31, 2021.

Executive Committee compensation policy

The EC compensation policy reflects ABB's commitment to attract, motivate and retain people with the talent necessary to strengthen its position as a leading global technology company.

Compensation structure

The compensation structure is designed to be competitive, based on performance, and to encourage executives to deliver outstanding results and create sustainable shareholder value without taking excessive risks. The EC compensation framework therefore balances fixed and variable compensation. Variable compensation is provided through short-term and long-term incentives based on strategic, financial and ESG objectives, recognizing Group, Business Area and Corporate Function performance as well as individual performance.

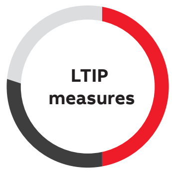
This structure is linked to our strategy and is illustrated in Exhibit 15.

A significant portion of total compensation depends on variable pay components, which require the achievement of challenging performance targets, in alignment with ABB Annual and Long-Term Performance Plans.

The target AIP award is defined as a percentage of base salary, currently 100 percent for all EC members. There is no award under the AIP if performance is below thresholds on all financial performance measures. When performance exceeds targets, the maximum award is capped at 150 percent of the targeted amount.

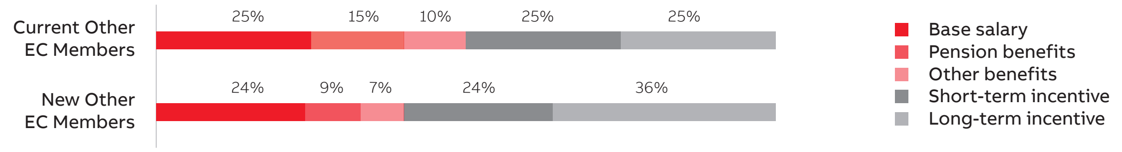
The target LTIP grant size is defined as a percentage of base salary, currently 150 percent for the CEO and 80 to 100 percent for all other EC members. There will be no award under the LTIP if performance is below thresholds for all applicable measures. When performance exceeds targets, the maximum award is capped at 200 percent of the conditional grant.

Exhibit 15: EC compensation structure as from 2022

	Fixed compensation - base salary and benefits	**Variable compensation – short-term incentive (AIP)**	**Variable compensation – long-term incentive (LTIP)**	**Wealth at risk/ Share ownership**
Purpose and link to strategy	Base salary compensates for the role and relevant experience; Benefits protect against risks. Facilitates attraction and retention of talented EC members	Rewards annual Company, Business Area, functional and individual performance. Aligned with the Company's Annual Performance Plan	Rewards the achievement of Company goals over a three-year period. Encourages creation of long-term, sustainable value for shareholders, and delivery of long-term strategic goals. Aligned with the Company's Long-term Performance Plan	Aligns individual's personal wealth at risk directly to the ABB share price, and EC members' interests with those of shareholders in order to maintain focus on ABB's long-term success
Operation	Salary in cash, benefits in kind, and pension contribution	Annual awards, payable in cash after a one-year performance period	Annual grants in shares which may vest after three years, subject to performance conditions	Individuals required to hold ABB shares
Opportunity level (as % of base salary)	Based on scope of responsibilities, personal experience and skillset	Minimum 0% Target 100% Maximum 150%	**CEO** Minimum 0% Target 150% Maximum 300% **Other current EC Members** Minimum 0% Target 80–100% Maximum 160–200% **Other new EC Members*** Minimum 0% Target 150% Maximum 300% * higher LTIP opportunity to be largely offset by lower fixed cost benefits	**CEO** 500% (net of tax) **Other EC Members** 400% (net of tax)
Performance indicators	Changes to base salary take into account individual performance, future potential and external benchmarking	 80% Group financial results 20% Individual results  20% Group financial results 60% Business Area results 20% Individual results	 50% Average EPS 30% Relative TSR 20% ESG (CO_2 emission reduction)	Exposed to ABB share price

From 2022, the mix of fixed and variable target compensation elements for new EC members will be adjusted to provide a greater emphasis on variable pay. This will be achieved by increasing the LTIP grant size from 100 percent to 150 percent of base salary, while reducing the level of pension contributions and other benefits. The reduction of pension contributions and other benefits substantially offsets the increase of the LTIP component, and represents a shift from guaranteed pay elements to pay at risk. Fixed compensation for new EC members will represent 40 percent of their target total compensation, in comparison to 50 percent for current EC members. Exhibit 16 below illustrates the changes for new EC members in more detail.

Exhibit 16: Mix of target compensation for current and new EC members



Competitive positioning of compensation

The Board considers competitive market data when setting the compensation policy for the EC. It is also one of several factors in positioning the target compensation for individual EC members which include:

- market value of the role (compensation benchmarking);
- individual profile of the EC member in terms of experience and skills;
- personal performance and potential.

The CC conducted a comprehensive review of its approach to competitive benchmarking in 2020, which led to the creation of three benchmarking peer groups, designed to match the size, scope and complexity of ABB, and exclude companies from the financial services sector.

The use of these peer groups depends on the nature of the role and the source of relevance. For example, a stronger emphasis is placed on the Global Industry peer group for operational roles and in compensation design, and on the Pan-European Market peer group for functional roles. In all cases, the other two peer groups are used to stress test the findings of the primary peer group (see the summary in Exhibit 17 below).

Exhibit 17: Compensation benchmarking peer groups

Peer Group	Composition	Rationale
Global Industry	A tailored group of 16 global industry peer companies(1), matching the scale and complexity of ABB	Focus for Business Area roles and benchmarking compensation design
Pan-European Market	A panel of 50 cross-industry European companies(2), matching the scale and complexity of ABB	Focus for Corporate roles; continuity and stability of data points
Swiss Market	A panel of 16 SMI and SMIM companies(3), matching the scale and complexity of ABB	Swiss listing and location of headquarters

(1) AB SKF, Alstom, Airbus, Atlas Copco, Denso, Eaton, Emerson Electric, Honeywell, Mitsubishi Electric, Mitsubishi Heavy Industries, Schneider Electric, Schindler, Siemens, Thermo Fisher Scientific, Toshiba and Traton.

(2) AB InBev, Adidas, Air Liquide, Associated British Foods, AstraZeneca, BAE Systems, Bayer, Bouygues, British American Tobacco, Compass Group, Continental, CRH, Danone, Endesa, EssilorLuxottica, Fresenius, Fresenius Medical Care, GlaxoSmithKline, HeidelbergCement, Heineken, Henkel, Hennes & Mauritz, Iberdrola, Imperial Brands, Industria de Diseno Textil, Jeronimo Martins SGPS, Kuehne & Nagel, Holcim, Linde, L'Oreal, Michelin, National Grid, Naturgy Energy Group, Nokia, Novartis, Novo Nordisk, OMV, Philips, Rio Tinto, Safran, Saint Gobain, Sanofi, SAP, Schneider Electric, Telefonaktiebolaget LM Ericsson, Thales, Umicore, Veolia Environment, Vinci and Vodafone.

(3) SMI: Swiss Market Index; SMIM: Swiss Market Index MID; Companies include: Adecco, Geberit, Givaudan, Glencore, Kuehne & Nagel, Holcim, Nestle, Novartis, Richemont, Roche, Schindler, SGS, Sika, STMicroelectronics, Swatch and Swisscom.

Since benchmark reviews are performed every other year, the comparison of ABB to its compensation benchmarking peer groups, shown in Exhibit 18 below is based on the last review in 2020. This data shows that ABB is typically positioned at the median of key comparator indicators (market capitalization, revenues, number of employees) against the Global Industry and Pan-European Market peer groups, and at the upper quartile of the Swiss Market peer group.

It is the intention to position target compensation for individual EC members between median and upper quartile of the relevant peer group(s) considering the other factors referenced above (e.g., the EC member's skills, experience, performance, potential).

Exhibit 18: Comparison of ABB to compensation benchmarking peer groups(1)

	Market capitalization(2)(3)(4)	Revenues(2)(4)(5)	Number of employees(5)(6)
ABB	**45.6**	**27.0**	**110,000**
Global Industry			
Upper Quartile	54.6	37.8	137,828
Median	31.1	29.2	94,500
Lower Quartile	12.4	16.5	72,827
Pan-European Market			
Upper Quartile	68.9	38.4	126,994
Median	37.4	26.9	95,331
Lower Quartile	18.2	22.2	61,450
Swiss Market			
Upper Quartile	31.6	31.7	93,930
Median	25.9	13.4	55,930
Lower Quartile	18.0	8.2	31,785

(1) Data sources for market capitalization, revenues and number of employees are Thomson Reuters or Annual Reports.
(2) Market capitalization and revenues are in CHF millions.
(3) Market capitalization is averaged over a period of three months (May 3, 2020 until August 3, 2020).
(4) Amounts have been translated to CHF using the one-year average rate from July 1, 2019 until June 30, 2020.
(5) Revenues and number of employees as per last financial year prior to October 2020.
(6) Number of employees in full-time equivalent (FTE) unless FTE information was not available, then in total number of employees.

Compensation elements

Exhibit 15 above sets out the purpose and link to strategy, the operation, the opportunity level and the performance measures. In addition, this section provides further details for each compensation element.

Fixed compensation - base salary and benefits

Purpose and link to strategy

Base salary compensates for the role and relevant experience; Benefits protect against risks, and facilitate the attraction and retention of talented EC members.

Base salary is paid in cash. Benefits consist primarily of retirement, insurance and healthcare plans that are designed to provide a reasonable level of support for the employees and their dependants in case of retirement, disability or death.

Opportunity levels

Base salary is set with reference to the scope of responsibilities, personal experience and skills and competitive market data.

Benefit plans are set in line with the local competitive and legal environment and are, at a minimum, in accordance with the legal requirements of the respective country.

The monetary value of base salary and benefits are disclosed in Exhibit 38 "EC compensation in 2021".

Performance measures and weighting

Base salary is adjusted considering the factors set out under opportunity levels above, the executive's performance as well as their future potential.

Variable compensation - Annual Incentive Plan (AIP)

Purpose and link to strategy

The AIP is designed to reward EC members for the Group's results, the results of their Business Area or Corporate Function and their individual performance over a time horizon of one year , and is aligned with the Annual Performance Plan approved by the Board.

Opportunity levels

The AIP opportunity levels for the EC are 100 percent of base salary at target with a maximum opportunity of 150 percent.

Performance measures and weighting

The AIP structure is designed to incentivize operational delivery and underpin our performance culture. As such, it is focused on key priorities, with a maximum of five measures.

- A common Group measure with a 20 to 25 percent weighting.
- Up to three Corporate or Business Area measures, with a 55 to 60 percent weighting.
- An individual measure with a 20 percent weighting. This personal component is informed by up to three key performance indicators (KPIs) which may include a combination of quantitative and qualitative goals.
  - From 2022, at least two of these KPIs will relate to ESG, e.g., CO_2 emissions, safety or female leader targets.
  - Business Area Presidents will continue have a safety KPI, and an environment KPI (CO_2 emissions) will be introduced.
  - Corporate Officers will have a social KPI (gender representation on management level) or a governance KPI (internal controls), and an environment KPI (CO_2 emissions).
  - The final outcome against this individual measure will be a discretionary judgment based on the combined performance against all personal KPIs.
- The CC/Board has a discretionary authority to adjust the results and/or the award. This specifically includes a downwards adjustment based on safety performance, including fatalities.

A summary of the composition and total weighting of the measures for all EC members is set out in Exhibit 19.

Exhibit 19: Composition and weighting of short-term incentive measures for EC members

	CEO and Corporate Officers[1]	Business Area Presidents
Common Group measure	25%	20%
Other Group measures	Up to three measures 55%	n.a.
Business Area measures	n.a.	Up to three measures 60%
Individual measure	Function-specific 20%	Business-specific 20%
Total	100%	100%

(1) Corporate Officers include: Chief Financial Officer, Chief Human Resources Officer, General Counsel and Chief Communications and Sustainability Officer.

Other design features

For each performance measure, a target will be set corresponding to the expected level of performance that will generate a target (100 percent) award. For all except the individual measure, a minimum level of performance, below which there is no award (threshold) and a maximum level of performance, above which the award is capped at 150 percent of the target (cap), will also be defined. For quantitative Group, Business Area and Functional measures, the award percentage-achievements between threshold and target, as well as between target and cap are determined by linear interpolations between these points.

The outcomes of financial AIP measures are subject to appropriate discretionary upward or downward adjustments for non-operational items and other adjustment principles agreed with the Board.

In 2021, progress against defined ESG target(s) was a “boundary condition” for making AIP awards. Under this approach, the Board agreed to review whether the Company had made sufficient progress at the end of the year to justify making the indicated AIP award. If, in the opinion of the Board, insufficient progress had been made, the AIP award might have been reduced on a discretionary basis. Following feedback from stakeholders, this practice will be discontinued in 2022 and replaced with the approach to ESG in the AIP individual measure described above, and in the LTIP described below.

Variable compensation - Long-Term Incentive Plan (LTIP)

Purpose and link to strategy

Rewards the achievement of predefined performance goals over a three year period. Encourages the creation of long-term, sustainable shareholder value creation and is aligned with the Company’s Long-Term Performance Plan approved by the Board.

Opportunity levels

The LTIP opportunity levels for the EC are 80 to 100 percent of base salary at target, with a maximum opportunity of 160 to 200 percent. For new EC members from 2022, the opportunity levels will be 150 percent and 300 percent, respectively. This change, to be mostly offset by a reduction in pension and other benefits costs, is taking into account historical LTIP vesting levels and the risks associated in moving from fixed to variable pay.

For the CEO the opportunity levels are 150 percent of base salary at target, with a maximum opportunity of 300 percent.

Performance measures and weighting

The LTIP will have, from 2022, three performance measures:

Total Shareholder Return (TSR)

- Achievement against this measure is determined by ABB’s relative TSR performance against a defined peer group.
- The constituents of the peer group and the appropriate threshold (zero), target (100 percent) and maximum (200 percent) award points are reviewed by the CC on an annual basis.
- The TSR calculations are made for the reference period beginning in the year of the conditional grant of the shares and ending three years later. The evaluation is performed by an independent third party.
- For grants from 2022, the award curve for the TSR measure will be adjusted to become more challenging. The threshold point for awards, for which vesting starts, will move from the 25th percentile to the 50th percentile (P50) of the TSR peer group, i.e., there will be no award for performance below P50.
- Vesting for P50 achievement remains at 100 percent of target, and vesting for a 75th percentile (P75) achievement level remains at 200 percent of target (capped). There will be a linear vesting for an achievement between P50 and P75 (100 to 200 percent of target)

Earnings Per Share (EPS)

- Achievement against this measure is determined by ABB's average EPS over a three-year period.
- The average EPS result is calculated from the sum of EPS for each of the three relevant years, divided by three.
- EPS is defined as "Diluted earnings per share attributable to ABB shareholders, calculated using Income from continuing operations, net of tax, unless the Board elects to calculate using Net income for a particular year".
- Appropriate threshold (zero), target (100 percent) and maximum (200 percent) award points are reviewed by the CC on an annual basis.
- Performance target points are set using the long-term strategic plan, calibrated against an "outside-in" view, taking into account the growth expectations, risk profile, investment levels and profitability levels that are typical for the industry. This "outside-in" approach is provided by external advisors and assumes that investors expect a risk-adjusted return on their investment, which is based on market value (and not on book value) and translates such expected returns over a three-year period into EPS targets.
- Adjustments to the outcome of the EPS may be considered for items which are not part or the result of the normal course of business operation and/or which were not considered, either by way of inclusion or exclusion, for the target-setting of a specific LTIP launch. Only the net impact of such adjustments over the vesting period of the respective LTIP grant will be considered.

ESG

- The Board will determine on an annual basis LTIP specific ESG measure(s) and related targets.
- For 2022, the ESG measure will be the Company's scope 1&2 CO_2 emission reduction at the end of the three-year performance period (2022-2024), compared to the 2019 baseline.
- Appropriate threshold (zero), target (100 percent) and maximum (200 percent) award points are reviewed and approved by the CC on an annual basis.

The approved ESG target points for the 2022 LTIP, which are designed to incentivize material progress towards our 2030 sustainability strategy commitments, are illustrated in Exhibit 20 below.

Exhibit 20: ESG target points for the 2022 LTIP

Measure	Weighting	Threshold	Target	Maximum
ABB scope 1&2 CO_2 emission reduction compared to 2019 baseline	20%	60%	70%	80%

At or below threshold point: no award;
At target point: 100 percent award;
At or above maximum point: capped at 200 percent award;
Linear award interpolations between points.

The relative weighting of measures for the LTIP is as follows:

- EPS measure: 50 percent
- TSR measure: 30 percent
- ESG measure: 20 percent

Other design features

The number of shares to be granted is determined by dividing the grant value by the average share price over the period 20 trading days prior, and 20 trading days after, the date of publication of ABB's full year financial results. Settlement of the LTIP is three years after grant, subject to achievement of performance conditions, defined prior to grant.

The actual settlement of shares awarded will vary between zero and 200 percent of the shares granted, according to achievement against the performance measures stated above.

Default settlement of the final LTIP award is 100 percent in shares, and an automatic sell-to-cover is in place for employees who are subject to withholding taxes.

LTIP shares are subject to malus and clawback rules, which include illegal activities and any financial misstatement that have a material impact on any Group company. This means that the Board may decide not to award any unsettled or unvested incentive compensation (malus), or may seek to recover long-term incentive compensation that has been settled in the past (clawback).

The CC also has the ability to suspend the payment of awards if it is likely that the Board determines that the malus or clawback provisions may potentially apply (e.g., if the employee is subject to an external investigation).

For grants from 2021, there is no automatic accelerated vesting of awards in the event of a change of control.

For LTIP grants as of 2022 participants will also be entitled to receive a cash amount on each vested award share that is equal to the total dividends per share paid by ABB on the ABB Ltd share between the grant date and the delivery date of the vested award (a “dividend equivalent payment”). This will be offset by reducing other benefit-related costs by a similar level over the life of the share grant.

CC discretion will be extended to allow for discretionary adjustments to the formulaic LTIP vesting outcome. Clawback will be extended to include material reputational damage and will apply for a period of up to five years following the originally scheduled plan specific vesting date.

Total wealth at risk / Share ownership

Purpose and link to strategy

To align EC members’ personal wealth directly with the interests of shareholders in order to maintain focus on the long-term success of the Company.

Share ownership program

EC members are required to retain all shares vested from the Company’s LTIP and any other share-based compensation until their share ownership requirement is met. In circumstances where there is a withholding tax obligation, the number of shares received will be considered to be the number of shares vested minus the shares sold under the default sell-to-cover facility.

The share ownership requirement is equivalent to a multiple of the EC member’s annual base salary, net of tax (see Exhibit 15).

These shareholding requirements are aligned with market practice and result in a wealth at risk for each EC member which is aligned with shareholder interests.

Only vested shares owned by an EC member and their spouse count for the comparison of the actual share ownership against the share ownership requirement. Vested but unexercised and unvested stock options under the Management Incentive Plan (MIP) are not considered for this purpose.

The CC reviews the status of EC share ownership on an annual basis. It also reviews the required shareholding amounts annually, based on salary and expected share price developments.

Notice period, severance provisions and non-competition clauses

Employment contracts for EC members include a notice period of 12 months, during which they are entitled to their annual base salary, benefits and short-term incentive. In accordance with Swiss law and ABB’s Articles of Incorporation, the contracts for the EC members do not allow for any severance payment.

Non-compete agreements have been entered into with the CEO and all other EC members for a period of 12 months after their employment. Compensation for such agreements, if any, may not exceed the EC member’s last total annual cash remuneration (comprising of base salary, short-term incentive and benefits).

Implementation of EC compensation policy

Overview

EC members received total compensation of CHF 39.2 million in 2021 compared with CHF 35.4 million in 2020, as summarized in Exhibit 21 below and presented in detail in Exhibits 38 and 39.

Exhibit 21: Total compensation of EC members (monetary values in CHF)(1)

	Calendar year	
	2021	**2020**
Number of active EC members	**9**	**9**
Base salaries	8,713,406	8,413,363
Pension benefits	4,795,259	4,450,785
Other benefits	4,819,803	6,001,823
Total fixed compensation	**18,328,468**	**18,865,971**
Short-term incentives	12,144,280	6,782,229
Long-term incentives (fair value at grant)	8,684,298	6,491,137
Replacement share grants	n.a.	3,308,781
Total variable compensation	**20,828,578**	**16,582,147**
Total compensation	**39,157,046**	**35,448,118**
Maximum aggregate compensation approved at AGM	**39,500,000**	**55,500,000**

(1) For an overview of compensation by individual and component, please refer to Exhibits 38 and 39 in section “Compensation tables and share ownership tables” below. An overview of 2021 realized compensation by individual is provided in Exhibit 44 in the same section.

The total compensation for the EC in 2021 increased by 10.5 percent compared to 2020. Context of the change in costs, in addition to the over-achievement against the challenging short-term incentive targets, includes:

- The COVID-19 pandemic, which negatively impacted achievement under the 2020 short-term incentive - when targets were not adjusted - compared to the outperformance against targets in 2021.
- In addition, the target short-term incentive was decreased in 2020 to reflect the voluntary 10 percent donation of the EC members’ salary to fight the impact of the COVID-19 pandemic

and a pro-rata outcome was applied for those EC members who joined the EC during the year.

- An increase in base salary resulting from a) the omission of the voluntary 10 percent donation of the EC members' salary to fight the impact of the COVID-19 pandemic for a six-month period during 2020, b) that all EC members provided services for the full year during 2021 and c) the increases in salary for three EC members.
- An increase in pension contributions is solely due to changes in the constitution of the Executive Committee. The contribution rates in the pension plan have not changed for several years, and only age driven adjustments were applied.
- A reduction in other benefits costs given that 2020 included costs related to four former EC members, including the interim CEO, while in 2021 the costs related to only one former EC member.
- The increase of the grant fair value for the 2021 LTIP grant compared to the 2020 LTIP grant, is mainly driven by the price of the ABB share at the day of grant.

At the 2020 AGM, the shareholders approved a maximum aggregate compensation amount of CHF 39.5 million for the EC for the year 2021. The EC total compensation for 2021 amounted to CHF 39.2 million and is therefore within the approved amount. See Exhibit 21 above.

Compensation mix

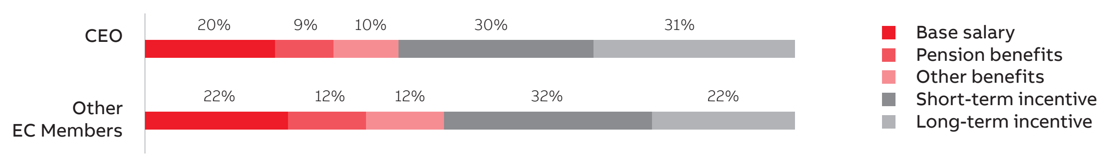
The ratio of fixed to variable components in any given year depends on the performance of the Company and individual EC members against predefined performance objectives.

In 2021, the variable compensation of the CEO was 61 percent of his total annual compensation (previous year: 51 percent). For the other EC members, the variable compensation was 54 percent on average (previous year: 41 percent). To allow an appropriate year-on-year comparison, the calculation of the total annual compensation excludes the value of any one-time replacement grant to compensate for foregone compensation with the previous employer.

Exhibit 22 below shows the composition of the total annual compensation in 2021 for the CEO and for other current EC members on an aggregate level, specifying the split of its five compensation components.

Note that compensation paid in 2021 for former EC members is not included in Exhibit 22. This can be found in Exhibit 38.

Exhibit 22: Compensation mix



Compensation elements – 2021 highlights

Base salary

Three of the nine EC members in place in March 2021 received a salary adjustment, which ranged from 2.1 to 6.7 percent, reflecting exceptional performance and closer market alignment. The base salary of Timo Ihamuotila was increased by 2.1 percent to CHF 970,000, Tarak Mehta by 3.3 percent to CHF 930,000, and Morten Wierod by 6.7 percent to CHF 800,000. Considering that the other six current EC members had no salary adjustments, this corresponded to a 1.3 percent increase on annual base salaries for the EC members post March 2021, which was broadly consistent with the salary review budget for the wider Swiss employee population.

Annual Incentive Plan (AIP) - design

Exhibit 23 below shows the composition and weighting of the measures applied in 2021 for all EC members under their AIP, specified by their roles.

Exhibit 23: Composition and weighting of 2021 short-term incentive measures for EC members

ESG boundary condition for short-term incentive awards: Reduction of CO_2 equivalent scope 1&2 emission

	Focus of measure	CEO and Corporate Officers(1)	President Electrification	President Motion	President Process Automation	President Robotics & Discrete Automation
Common Group measure	Bottom line earnings	Op EBITA margin **25%**	Op EBITA margin **20%**	Op EBITA margin **20%**	Op EBITA margin **20%**	Op EBITA margin **20%**
Other Group measures	Profitability and capital efficiency	ROCE margin **25%**				
	Cash generation	Free Cash Flow **20%**				
	Bottom line output	Productivity growth **10%**				
Business Area measures	Bottom line earnings		Op EBITA margin **30%**	Op EBITA margin **30%**	Op EBITA margin **30%**	Op EBITA margin **30%**
	Cash generation		Op Free Cash Flow **20%**			Op Free Cash Flow **20%**
	Bottom line profit				Gross Profit on Orders **20%**	
	Top line input			Orders received **20%**		
	Bottom line output		Productivity growth **10%**	Productivity growth **10%**	Productivity growth **10%**	Productivity growth **10%**
Individual measure	Safety, Cost discipline, Strategy implementation	Function-specific **20%**				
	Safety, Acquisi-tions, Digitalization		Business-specific **20%**	Business-specific **20%**	Business-specific **20%**	Business-specific **20%**
Total		**100%**	**100%**	**100%**	**100%**	**100%**

(1) Corporate Officers include: Chief Financial Officer, Chief Human Resources Officer, General Counsel and Chief Communications and Sustainability Officer.

Under the AIP, all members of the EC have a common Group measure, with a 20 to 25 percent weighting. In 2021, this was Group Operational EBITA margin, applied to create a greater focus on profitability.

In addition to the common Group measure, the CEO and the Corporate Officers shared the same Group measures, including ROCE margin, Free Cash Flow and Productivity growth, with a total weighting of 55 percent.

For Business Area Presidents, up to three measures were tailored to business imperatives, with a total weighting of 60 percent. While all Business Area Presidents shared two measures, (Operational EBITA margin and Productivity growth with 30 percent and 10 percent weighting, respectively), the third measure varied, including Operational Free Cash Flow, Gross Profit on Orders and Orders received, for the remaining 20 percent.

Definitions of the quantitative measures for EC members are set out in Exhibit 24, below.

All EC members also had an individual measure with a 20 percent weighting. This personal component was informed by up to three KPIs, which included a combination of quantitative and qualitative objectives. The final outcome against the individual measure was based on a discretionary judgment of the combined performance against all three KPIs.

- In 2021, all the EC had a common safety KPI – namely the percentage improvement in the Lost Time Incident Frequency Rate (LTIFR), underpinned by sustainability observation tours. For the CEO and the Corporate Officers, this related to Group level and for Business Areas Presidents to their respective Business Areas.
- For the CEO and Corporate Officers, the other KPIs were linked to the Group or Function costs, to the strategy implementation on Group or Function level, or to internal controls.
- For the Business Area Presidents, the other KPIs were business growth, digitalization or market positioning targets.

Exhibit 24: Definition of quantitative objectives, applied in 2021

Objective	Description
Operational EBITA margin (%)	Operational EBITA, which is Operational earnings before interest, tax and amortization, as a percentage of Operational revenues, which is total revenues adjusted for foreign exchange/ commodity timing differences in total revenues
Return on Capital Employed (ROCE) margin (%)	Calculated as Operational EBITA after tax divided by the average of the period's opening and closing Capital employed, adjusted to reflect impacts from significant acquisitions/ divestments occurring during the same period. Capital employed is calculated as the sum of Adjusted total fixed assets and Net Working Capital
Free Cash Flow (FCF)	Free Cash Flow is calculated as net cash provided by operating activities adjusted for: (i) purchases of property, plant and equipment and intangible assets, and (ii) proceeds from sales of property, plant and equipment
Productivity growth	Productivity is calculated as 12-month rolling revenues over the average number of total workforce in the last three months. Productivity growth is the change of productivity over the same period a year earlier, represented as a percentage change
Operational Free Cash Flow (OFCF)(1)	Cash generated by business operations after paying capital expenditures but before paying interests and taxes (OCF(2) minus capital expenditures)
Gross Profit on Orders (absolute)(3)	Gross Profit on Orders is calculated by deducting the total costs to complete the order from the total revenue value of the order
Orders received(4)	Represents the values of goods and services contracted and ordered by customers within a given accounting period net of cancellations

(1) Applied to Robotics & Discrete Automation and Electrification only.
(2) Cash flow from operating activities excluding payments for interest and income taxes.
(3) Applied to Process Automation only.
(4) Applied to Motion only.

Outcomes were subject to appropriate adjustments for some non-operational items and other adjustment principles agreed with the Board.

For 2021, the "boundary condition" was the setting of plans in each ABB Division to mitigate for ABB scope 1 and 2 CO_2 emissions, aligned with ABB's sustainability strategy and associated targets.

2021 Annual Incentive Plan – achievements

In summary, the average award for the current EC members under the AIP for 2021 was 143.4 percent (out of a maximum 150 percent), compared to 72.4 percent in 2020. In addition to achieving the challenging performance targets in 2021, this improvement in outcomes from the prior year was influenced by the following factors:

- In 2021, all nine EC members served on a full-year basis, compared to only seven members working on a full-year basis in 2020. AIP opportunities and final awards for 2020 were prorated for those EC members who joined the EC during the year.
- EC members voluntarily donated 10 percent of their salary to fight the impacts of the COVID-19 pandemic for a six-month period during 2020. Consequently AIP opportunities and final awards for 2020 were based on the reduced salaries.
- In 2020, the negative impact of the COVID-19 pandemic on the business performance - when targets were not adjusted - was bigger than in 2021.

The 2021 AIP outcomes were net of the application of adjustments for some non-operational items, aligned with adjustment principles agreed with the Board. These led to minor increases in awards for two EC members.

Common Group measure

Achievement against the 2021 Group Operational EBITA margin measure, which applied to all EC members, with a weighting of 20 or 25 percent, was 150 percent (2020: 53 percent). The 2021 Group Operational EBITA margin was 14.2 percent compared to 11.1 percent in 2020, primarily reflecting the increased business activity. The weighted achievement related to the common Group measure was 37.5 percent for the CEO and the Corporate Officers, and 30 percent for the Business Area Presidents.

Other Group measures

The outcome related to all other Group measures, applied to the CEO and Corporate Officers, with weightings of 10 to 25 percent, was at maximum. Achievement against the Group ROCE target was 150 percent (2020: zero percent), achievement against the Free Cash Flow target was 150 percent (2020: 109 percent) and achievement against the Productivity growth target was also 150 percent (2020: n.a.). The weighted achievement related to these Group measures was 82.5 percent.

Business Area measures

Up to three quantitative business measures were applied to Business Area Presidents, with weightings from 10 to 30 percent, and the outcomes ranged from 119 to 150 percent of target.

Achievement against the Operational EBITA margin measure ranged from 119 to 150 percent (2020: zero to 95 percent), Operational Free Cash Flow 150 percent for the two Business Areas applicable (2020: 106 to 150 percent), Gross Profit on Orders 150 percent (2020: zero percent), Orders received 150 percent (2020: zero to 83 percent) and Productivity growth 150 percent for the four Business Areas (2020: n.a.). The weighted achievement related to these Business Area measures ranged from 80.8 to 90 percent (2020: 21 to 66 percent).

Individual measure

Thanks to the Company's strong focus on safety, in 2021 the target set for the Lost Time Incident Frequency Rate (LTIFR) was overachieved at Group level, as a result of all Business Areas overachieving their targets. There were no work-related fatalities in 2021, for the first time since 2011. The assessed achievement of the KPIs informing the outcome of the personal component for EC members, with a weighting of 20 percent, inclusive of the safety outcomes described, ranged from 100 to 150 percent (2020: 100 to 150 percent).

These outcomes are summarized in Exhibit 25 below.

Exhibit 25: AIP 2021 outcomes for the CEO and the Corporate Officers (rounded)

Category	Measure (and weighting)	Target points and achievement Threshold (0%) – Target (100%) – Maximum (150%)
Common Group measure 25%	Group Op EBITA margin 25%	150%
Other Group measures 55%	ROCE 25%	150%
	Free Cash Flow 20%	150%
	Productivity growth 10%	150%
Individual measure 20%	Safety, Cost discipline, Strategy implementation 20%	100–125%

AIP 2021 outcomes for the Business Presidents (rounded)

Category	Measure (and weighting)	Target points and achievement Threshold (0%) – Target (100%) – Maximum (150%)
Common Group measure 20%	Group Op EBITA margin 20%	150%
Business measures 80%	Op EBITA margin 30%	119–150%
	Op Free Cash Flow 0–20%	150%
	Gross Profit on Orders 0–20%	150%
	Orders received 0–20%	150%
	Productivity growth 10%	150%
Individual measure 20%	Safety, Acquisitions, Digitalization 20%	125–150%

Exhibit 26 below provides information related to the overall actual 2021 AIP outcomes, in comparison to the target 2021 AIP for all current EC members.

Exhibit 26: Overview of targeted and realized AIP 2021 values

	Common Group measure			Other Group measures			Business Area measures			Individual measure					
	Achievement	Weighting	Outcome	Achievement	Weighting	Outcome	Achievement	Weighting	Outcome	Achievement	Weighting	Outcome	**Total AIP outcome percentage (in % of target)**	**Target AIP award (in CHF)**	**Actual AIP award (in CHF)[1]**
Björn Rosengren	150.0%	25.0%	37.5%	150.0%	55.0%	82.5%	n.a.	n.a.	n.a.	125.0%	20.0%	25.0%	**145.0%**	1,700,000	**2,465,000**
Timo Ihamuotila	150.0%	25.0%	37.5%	150.0%	55.0%	82.5%	n.a.	n.a.	n.a.	100.0%	20.0%	20.0%	**140.0%**	970,000	**1,358,000**
Carolina Granat	150.0%	25.0%	37.5%	150.0%	55.0%	82.5%	n.a.	n.a.	n.a.	100.0%	20.0%	20.0%	**140.0%**	700,000	**980,000**
Maria Varsellona	150.0%	25.0%	37.5%	150.0%	55.0%	82.5%	n.a.	n.a.	n.a.	125.0%	20.0%	25.0%	**145.0%**	800,000	**1,160,000**
Theodor Swedjemark	150.0%	25.0%	37.5%	150.0%	55.0%	82.5%	n.a.	n.a.	n.a.	125.0%	20.0%	25.0%	**145.0%**	500,000	**725,000**
Sami Atiya	150.0%	20.0%	30.0%	n.a.	n.a.	n.a.	150.0%	60.0%	90.0%	125.0%	20.0%	25.0%	**145.0%**	800,000	**1,160,000**
Tarak Mehta	150.0%	20.0%	30.0%	n.a.	n.a.	n.a.	150.0%	60.0%	90.0%	125.0%	20.0%	25.0%	**145.0%**	930,000	**1,348,500**
Peter Terwiesch	150.0%	20.0%	30.0%	n.a.	n.a.	n.a.	150.0%	60.0%	90.0%	125.0%	20.0%	25.0%	**145.0%**	800,000	**1,160,000**
Morten Wierod	150.0%	20.0%	30.0%	n.a.	n.a.	n.a.	134.7%	60.0%	80.8%	150.0%	20.0%	30.0%	**140.8%**	800,000	**1,126,400**
Total														8,000,000	**11,482,900**

(1) Represents accrued AIP award for the year 2021, which will be paid in 2022, after the publication of ABB's financial results.

ESG boundary condition

The Board also considered that the terms for the 2021 ESG "boundary condition" were fully met.

Overall outcomes

The overall average award under the AIP for the entire current EC was 143.4 percent of target (2020: 72.4 percent) with a range from 140.8 percent (lowest achievement) to 145.0 percent of target (highest achievement). This compared to a range of 51.0 to 95.6 percent in 2020.

Long-Term Incentive Plan (LTIP)

2021 LTIP grants

The estimated value at grant of the share-based grants to EC members under the 2021 LTIP was CHF 8.7 million, compared with CHF 6.5 million in 2020. This increase in grant fair value for the 2021 LTIP grant compared to 2020 was mainly driven by the price of the ABB share on the day of grant. In 2020 the price of the ABB share at the day of grant, was influenced by significant market volatility at the start of the COVID-19 pandemic which impacted the 2020 LTIP grant fair value substantially at that time.

The 2021 LTIP is based on two equally weighted performance measures, one tied to ABB's TSR and the other to ABB's EPS.

The companies approved by the Board to determine ABB's relative TSR performance for the 2021 LTIP were: 3M, Danaher, Eaton, Emerson Electric, General Electric, Honeywell Intl., Holcim, Legrand, Mitsubishi Electric, Raytheon Technologies, Rockwell, Rolls Royce, Schneider Electric, Siemens and Yokogawa. These were selected to provide an appropriate and very challenging set of peers, and influenced the vesting point setting accordingly. The 2021 LTIP target points are illustrated in Exhibit 27 below.

Exhibit 27: 2021 LTIP target points

Measure	Weighting	Threshold	Target	Maximum
Relative TSR	50%	25th percentile	50th percentile	75th percentile
Average EPS	50%	Target point -14%	Disclosed after performance period	Target point +14%

At or below threshold point: no award;
At target point: 100 percent award;
At or above maximum point: capped at 200 percent award;
Linear award interpolations between points;
The actual EPS target is not prospectively disclosed for reasons of commercial sensitivity.

The latest change in the EPS target points (range reduced from plus/minus 17 percent of target for 2020 LTIP to plus/minus 14 percent of target for the 2021 LTIP) is a reflection of the perceived EPS volatility during the performance period, and also serves to make the achievement of a threshold award under the plan more demanding.

The reference price for the 2021 LTIP grant which is used to determine the number of shares granted to participants was CHF 26.59.

2018 LTIP achievements

The final number of shares vesting under the 2018 LTIP grant in 2021 was determined based on the achievement level against the defined TSR and EPS targets.

The relative TSR measure was achieved at 114.8 percent (previous year: not applicable) out of a potential of 200 percent.

The average EPS measure vested at zero percent (previous year: 41 percent) out of a potential 200 percent, net of adjustments for items considered outside the normal course of business operation and/or which were not considered in the target setting of the 2018 LTIP. On this occasion, adjustments were made for the impact of divestments, integration costs and restructuring costs. The EPS for 2020 applicable to the 2018 LTIP grant after the application of the approved adjustments, amounted to USD 1.06, leading to plan relevant average EPS of USD 0.98, being below the threshold target point.

The average weighted achievement level of the two performance measures under the 2018 LTIP was 57.4 percent (out of a maximum 200 percent), as specified in Exhibit 28.

There was no award under the EPS measure, since the performance period for determining the value of the award was from 2018 to 2021 and in consequence, the EPS outcome was impacted by the COVID-19 pandemic, for which no adjustment was applied.

As announced in our 2019 Compensation Report, the EPS performance targets for vested LTIP awards will be retrospectively disclosed in our Compensation Reports. The three target points (threshold, target and maximum) and the actual achievement for the adjusted 2018 EPS performance measure are shown in Exhibit 28 below.

Since the Average EPS amounted to USD 0.98, no vesting occured as the threshold target was not met. The relative ranking of ABB's TSR against the predefined peer group of companies for the 2018 LTIP set on the 54th percentile, which leads to a vesting level of 114.8 percent under this measure. The weighted combined vesting level corresponds to 57.4 percent of the target.

Exhibit 28: Target points and achievements of 2018 LTIP performance measures

Measure	Weighting	Threshold	Target	Maximum	Actual
Relative TSR	50%	25th percentile	50th percentile	75th percentile	54th percentile
Achievement level		0%	100%	200%	114.8%
Average EPS (USD)	50%	1.15	1.36	1.57	0.98
Achievement level		0%	100%	200%	0%
Award as percentage of target (capped at 200%)					**57.4%**

Overview of disclosed and realized 2018 LTIP value

In the 2020 Compensation Report ABB introduced a new table, requested by stakeholders, to provide information related to the past LTIP, that vested in the reporting year. This table compares the previously disclosed "fair value" of the grant to each EC member and the actual value of the grant at the time of vesting. The following Exhibit 29 shows such comparison for the 2018 LTIP, that vested in 2021. The values presented are gross and before payment of any applicable taxes owing by the recipient. This indicates the average gross realized LTIP value was 76.2 percent of the disclosed grant fair value.

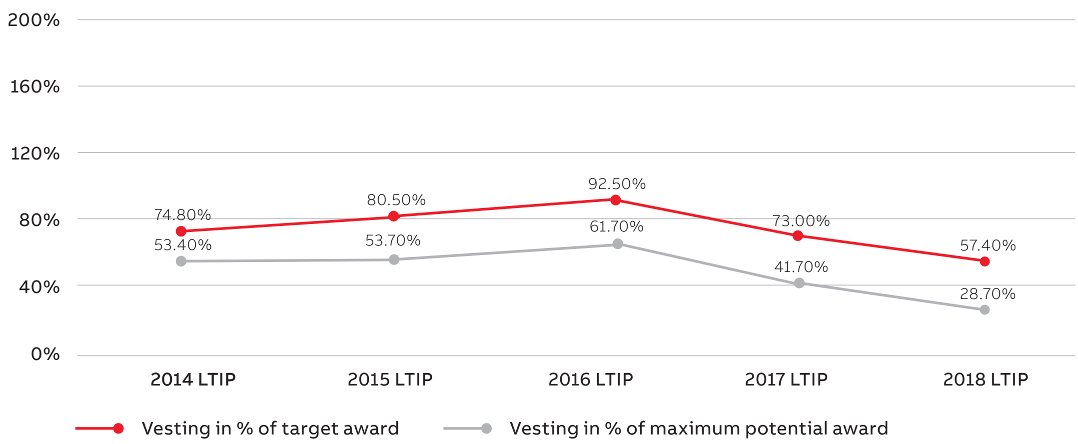
Exhibit 29: Realized value of 2018 LTIP grant for current EC members

	Grant date	Number of shares granted related to the TSR measure(1)	Shares granted related to the EPS measure(2)	Total number of shares granted	Disclosed grant fair value (CHF)(3)(4)	Vesting date	Vesting percentage	Number of vested shares	Realized value (CHF)(5)
Björn Rosengren	n.a.								
Timo Ihamuotila	April 6, 2018	18,609	18,608	37,217	**819,965**	April 6, 2021	57.4%	21,364	**624,897**
Carolina Granat	n.a.								
Maria Varsellona	n.a.								
Theodor Swedjemark	n.a.								
Sami Atiya	April 6, 2018	11,651	11,650	23,301	**513,368**	April 6, 2021	57.4%	13,376	**391,248**
Tarak Mehta	April 6, 2018	17,395	17,395	34,790	**766,494**	April 6, 2021	57.4%	19,970	**584,123**
Peter Terwiesch	April 6, 2018	18,690	18,689	37,379	**823,534**	April 6, 2021	57.4%	21,457	**627,617**
Morten Wierod	April 6, 2018	7,646	7,646	15,292	**336,913**	April 6, 2021	57.4%	8,778	**256,757**
Total					**3,260,274**				**2,484,642**

(1) Actual achievement level of the TSR measure was 114.8 percent.
(2) Actual achievement level of the EPS measure was zero percent.
(3) Valued at CHF 22.03, the grant fair value of the ABB share on the day of grant.
(4) At the time of disclosure Morten Wierod was not member of the EC.
(5) Valued at CHF 29.25, the closing price of the ABB share on the day of vesting.

LTIP vesting outcomes in the last five years
The historical vesting percentages for the prior five years are shown in Exhibit 30 below. Over the last five years vesting has averaged at 75.6 percent of target and 47.8 percent of the maximum award.

Exhibit 30: LTIP historical actual vesting percentages[1]



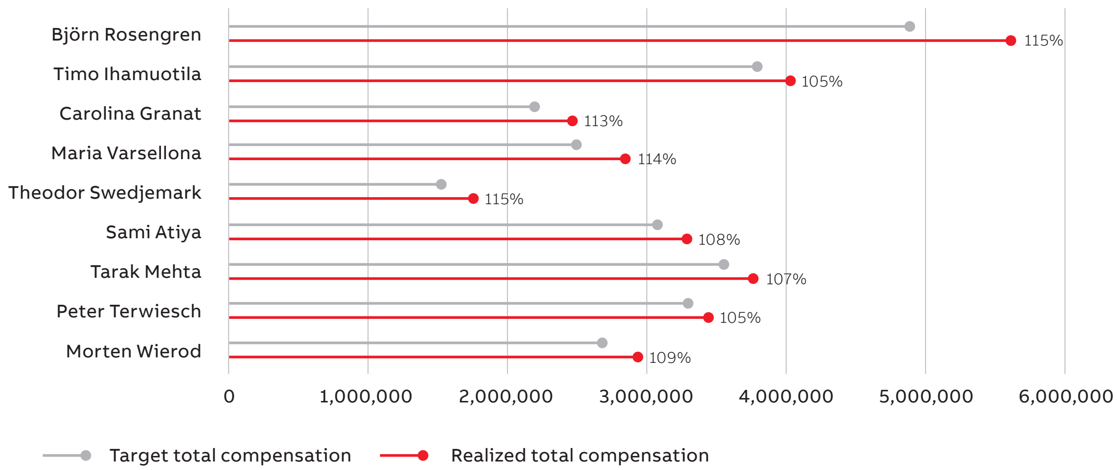
(1) Average of relevant performance measures.

Realized total compensation - 2021

In the 2020 Compensation Report, ABB started to disclose the realized total compensation for each EC member. Realized compensation means that the AIP award and the LTIP award are disclosed at the end of their respective performance cycles, reflecting actual payment and settlement, based on achievements of the plan specific performance measures. Such transparency on realized compensation is designed to aid stakeholder's understanding of ABB's link between pay and performance.

The following Exhibit 31 sets out a high-level comparison of realized and target total compensation for each EC member. Note that the higher percentages relating to the CEO and Corporate Officers (except for the CFO) are driven by the fact that they were not an EC member in 2018, and therefore did not receive an LTIP grant in 2018, vesting in 2021. A detailed summary table is specified in Exhibit 44 in the section "Compensation tables and share ownership tables".

Exhibit 31: Realized total compensation compared to target total compensation



Other compensation - 2021

Members of the EC are eligible to participate in the Employee Share Acquisition Plan (ESAP), a savings plan based on stock options, which is open to employees around the world. Five members of the EC participated in the 18th annual launch of the plan in 2021. EC members who participated will, upon vesting, each be entitled to acquire up to 330 ABB shares at CHF 30.32 per share, the market share price at the start of the 2021 launch.

For a more detailed description of the ESAP, please refer to “Note 18 – Share-based payment arrangements” in our Consolidated Financial Statements.

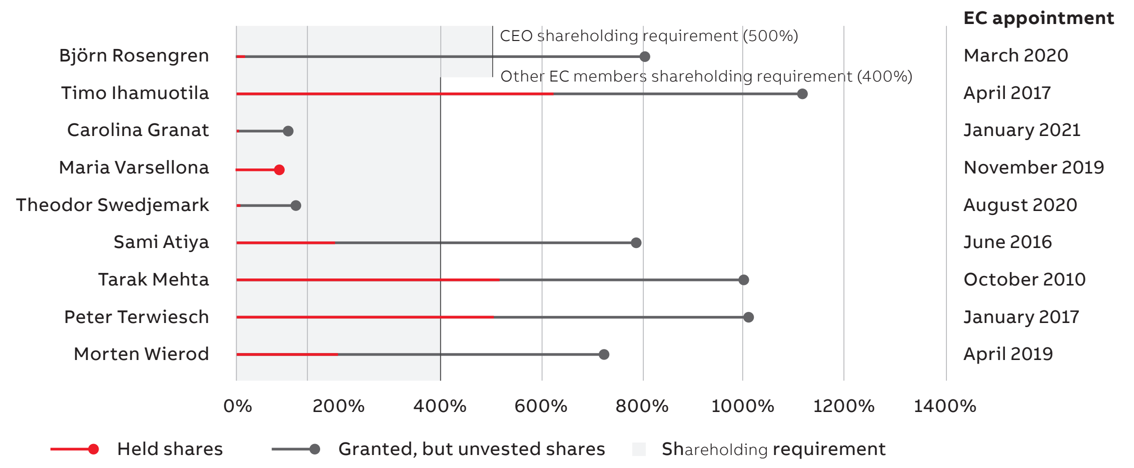
In 2021, ABB did not pay any fees or compensation to the members of the EC for services rendered to ABB other than those disclosed in this Compensation Report. Except as disclosed in the section titled “Executive Committee – Business relationships between ABB and its EC members” in the Corporate Governance Report, ABB did not pay any additional fees or compensation in 2021 to persons closely linked to a member of the EC for services rendered to ABB.

Shareholding of EC members

Three out of nine EC members have achieved or exceeded their share ownership requirement. Two members are close to achieving their requirement, and a further three members have been newly appointed to the EC in the last two years.

When considering the number of granted, but unvested shares of current EC members as per December 31, 2021, it is expected that the majority of these members will meet or exceed their share ownership requirement.

Exhibit 32: EC shareholding compared to share ownership guideline*



* Based on share price of CHF 26.59, the 2021 LTIP reference price, and shares held at December 31, 2021. Future allocation of granted, but unvested shares is based on target achievement level and relevant plan specific settlement: default settlement of the final 2019 LTIP award is 65 percent in shares (recipients may elect to receive 100 percent of the vested LTIP award in shares), default settlement of the final 2020 LTIP and 2021 LTIP awards is 100 percent in shares. Default settlement of replacement shares is 65 percent in shares (recipients may elect to receive 100 percent of the vested award in shares).

The EC members collectively owned less than 1 percent of ABB’s total shares outstanding at December 31, 2021.

At December 31, 2021, EC members held ABB shares and conditional rights to receive shares, as shown in Exhibit 42 in the section “Compensation tables and share ownership tables” below. Their holdings at December 31, 2020, are shown in Exhibit 43 in the same section.

As previously communicated, as from 2020, grants under the Management Incentive Plan (MIP), a stock option plan without performance conditions, have been discontinued, and no further grants were made. Any MIP instruments held by EC members were awarded prior to their appointment as EC members. For a more detailed description of MIP, please refer to “Note 18 – Share-based payment arrangements” in our Consolidated Financial Statements.

Except as described in Exhibits 42 and 43, no member of the EC and no person closely linked to a member of the EC held any shares of ABB or options on ABB shares at December 31, 2021 and 2020.

Changes applicable to EC members

Terms of appointment for new EC members

The new Chief Human Resources Officer (CHRO), Carolina Granat, was appointed to the EC effective from January 1, 2021 with an annual base salary of CHF 700,000, a target short-term and long-term incentive of 100 percent of annual base salary. This represents a reduction in total target direct compensation (TTDC) compared to the prior CHRO incumbent. Carolina Granat is eligible for standard EC benefits and, where appropriate legacy relocation benefits.

Terms of departure for EC members

The General Counsel & Company Secretary, Maria Varsellona, has resigned from ABB and will depart on March 31, 2022. She will be entitled to receive compensation and benefits up to the point of her departure. This includes a contractually agreed pro-rata short-term incentive payment of CHF 181,985 for the period January 1 to March 31, 2022. All her unvested LTIP share grants and the unvested second tranche of her replacement share grant were forfeited.

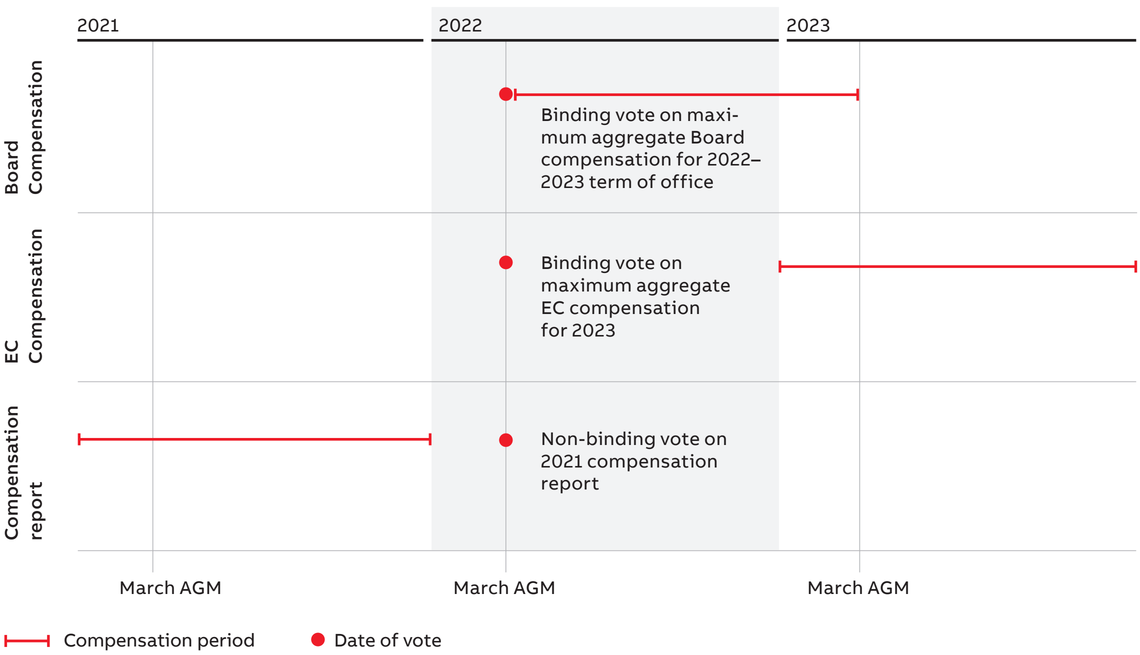
Compensation of former EC members

In 2021, certain former EC members received contractual compensation for the period after leaving the EC, as shown in Exhibit 38, footnotes (5) and (6).

Votes on compensation at the 2022 AGM

As illustrated in Exhibit 33, the Board's proposals to shareholders at the 2022 AGM will relate to Board compensation for the 2022–2023 term of office and EC compensation for the calendar year 2023. There will also be a non-binding vote on the 2021 Compensation Report.

Exhibit 33: Shareholders will have three separate votes on compensation at the 2022 AGM



In determining the proposed maximum aggregate EC compensation, the Board takes into consideration the criteria illustrated in Exhibit 34. Given the variable nature of a major portion of the compensation components, the proposed maximum aggregate EC compensation will almost normally be higher than the actual compensation paid or awarded, as it must cover the potential maximum value of each component of compensation.

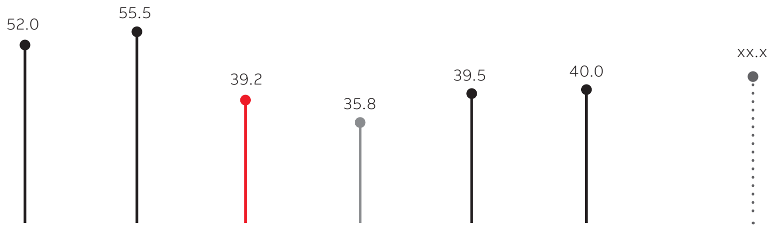
It is important to note that the increase in maximum aggregate compensation for 2023 is mainly the result of the associated cost related to the 2020 LTIP vesting in 2023, influenced by:

a) the increased number of shares subject to vesting compared to prior years (see Exhibit 34),
b) the current, solid performance of the Company against its earnings per share targets and total shareholder return peer group and
c) the strong share price development since the time of grant with a reference price of CHF 19.36,

rather than any structural increase to EC compensation.

Exhibit 34: Overview of key factors affecting the determination of maximum aggregate EC compensation

Aggregate EC compensation in CHF (millions)



	2019	2020	2021			2022	2023(1)
	Maximum (approved at 2018 AGM)	Maximum (approved at 2019 AGM)	Actual	Target	Maximum (approved at 2020 AGM)	Maximum (approved at 2021 AGM)	Maximum (to be requested at 2022 AGM)
Assumptions							
AIP award percentage	150%	150%	139%(2)	100%	150%	150%	150%
Adjustment of LTIP grant size	12.5%	12.5%	0%	0%	12.5%	12.5%	n.a.
Number of LTIP shares vested or potentially vesting in year(3)	532,674	266,104	n.a.	n.a.	147,979	220,561	354,869
Number of EC members	11	12	10	10	9	9	9

(1) Number will be provided in the AGM invitation.
(2) Outcome without the allocation of former EC members, but including previous CHRO. For full description, see previous section “Compensation elements – 2021 Highlights”.
(3) For example, 354,869 LTIP shares were granted in 2020 that potentially vest in 2023, subject to performance conditions.

Compensation tables and share ownership tables

Exhibit 35: Board compensation in 2021 and 2020 (audited)

	Paid in 2021					Paid in 2020				
	November Board term 2021–2022		May Board term 2020–2021			November Board term 2020-2021		May Board term 2019-2020		
Name	Settled in cash[1]	Settled in shares – number of shares received[2]	Settled in cash[1]	Settled in shares – number of shares received[2]	Total compensation paid in 2021[3]	Settled in cash[1]	Settled in shares – number of shares received[2]	Settled in cash[1]	Settled in shares – number of shares received[2]	Total compensation paid in 2020[3]
	CHF		CHF		CHF	CHF		CHF		CHF
Peter Voser, Chairman[4]	—	17,209	—	20,089	**1,200,000**	—	21,831	—	32,642	**1,140,000**
Jacob Wallenberg[5]	112,500	2,599	112,500	3,033	**450,000**	101,250	3,297	112,500	4,928	**427,500**
Matti Alahuhta[6]	—	—	—	3,615	**160,000**	—	4,787	—	7,155	**304,000**
Gunnar Brock[7]	82,500	1,906	—	4,542	**330,000**	—	4,937	—	7,379	**313,500**
David Constable[8]	80,000	1,848	87,500	2,359	**335,000**	78,750	2,564	87,500	3,833	**332,500**
Frederico Curado[9]	—	3,829	—	4,090	**335,000**	—	4,438	—	6,646	**304,000**
Lars Förberg[10]	—	4,577	—	5,347	**320,000**	—	5,805	—	8,688	**304,000**
Jennifer Xin-Zhe Li[11]	87,500	1,866	80,000	1,993	**335,000**	72,000	2,163	80,000	3,239	**304,000**
Geraldine Matchett[12]	82,500	2,490	82,500	2,906	**330,000**	74,250	3,159	82,500	4,722	**313,500**
David Meline[13]	100,000	2,310	100,000	2,696	**400,000**	90,000	2,931	100,000	4,380	**380,000**
Satish Pai[14]	82,500	1,759	82,500	2,055	**330,000**	74,520	2,231	82,500	3,340	**313,500**
Total	**627,500**	**40,393**	**545,000**	**52,725**	**4,525,000**	**490,770**	**58,143**	**545,000**	**86,952**	**4,436,500**

(1) Represents gross amounts paid, prior to deductions for social security, withholding tax etc.
(2) Number of shares per Board member is calculated based on net amount due after deductions for social security, withholding tax etc.
(3) In addition to the Board remuneration stated in the above table, in 2021 and 2020 the Company paid CHF 231,287 and CHF 272,312, respectively, in related mandatory social security payments.
(4) Chairman of the ABB Ltd Board for the 2019-2020, 2020-2021 and 2021-2022 board terms and Chairman of the Governance and Nomination Committee for the 2021-2022 board term; is receiving 100 percent of his compensation in the form of ABB shares.
(5) Vice-Chairman of the ABB Ltd Board for the 2019-2020, 2020-2021 and 2021-2022 board terms; Chairman of the Governance and Nomination Committee for the 2019-2020 and 2020-2021 board terms and member of that committee for the 2021-2022 board term; is receiving 50 percent of his compensation in the form of ABB shares.
(6) Member of the Governance and Nomination Committee for the 2019-2020 and 2020-2021 board terms; received 100 percent of his compensation in the form of ABB shares for the 2019-2020 and 2020-2021 board terms. Did not stand for election in 2021.
(7) Member of the Finance, Audit and Compliance Committee for the 2019-2020, 2020-2021 board terms; received 100 percent of his compensation in the form of ABB shares for the 2019-2020 and 2020-2021 board term and is receiving 50 percent of his compensation in the form of ABB shares for the 2021-2022 board term.
(8) Chairman of the Compensation Committee for the 2019-2020, 2020-2021 board terms and member of that committee for the 2021-2022 board term; is receiving 50 percent of his compensation in the form of ABB shares.
(9) Member of the Compensation Committee for the 2019-2020, 2020-2021 and Chairman of the Compensation Committee for the 2021-2022 board term; is receiving 100 percent of his compensation in the form of ABB shares.
(10) Member of the Governance and Nomination Committee for the 2019-2020, 2020-2021 and 2021-2022 board terms; is receiving 100 percent of his compensation in the form of ABB shares.
(11) Member of the Compensation Committee for the 2019-2020, 2020-2021 and 2021-2022 board terms and member of Governance and Nomination Committee for 2021-2022 board term; is receiving 50 percent of her compensation in the form of ABB shares.
(12) Member of the Finance, Audit and Compliance Committee for the 2019-2020, 2020-2021 and 2021-2022 board terms; is receiving 50 percent of her compensation in the form of ABB shares.
(13) Chairman of the Finance, Audit and Compliance Committee for 2019-2020, 2020-2021 and 2021-2022 board terms; is receiving 50 percent of his compensation in the form of ABB shares.
(14) Member of the Finance, Audit and Compliance Committee for the 2019-2020, 2020-2021 and 2021-2022 board terms; is receiving 50 percent of his compensation in the form of ABB shares.

Exhibit 36: Board compensation for the Board terms 2021-2022 and 2020-2021 (audited)

Name	Specific Board Roles	Board term 2021-2022	Board term 2020-2021[1]
		CHF	CHF
Peter Voser	Chairman of the Board for 2020-2021 term, Chairman of the Board and Chairman GNC for 2021-2022 term	1,200,000	1,140,000
Jacob Wallenberg	Vice-Chairman of the Board and Chairman GNC for 2020-2021 term, Vice Chairman of the Board and Member GNC for 2021-2022 term	450,000	427,500
Matti Alahuhta	Member GNC for 2020-2021 term	n.a.	304,000
Gunnar Brock	Member FACC for both the 2020-2021 and 2021-2022 terms	330,000	313,500
David Constable	Chairman CC for 2020-2021 term, Member CC for the 2021-2022 term	320,000	332,500
Frederico Curado	Member CC for 2020-2021 term, Chairman CC for the 2021-2022 term	350,000	304,000
Lars Förberg	Member GNC for both the 2020-2021 and 2021-2022 terms	320,000	304,000
Jennifer Xin-Zhe Li	Member CC for the 2020-2021 term Member CC and Member GNC for the 2021-2022 term	350,000	304,000
Geraldine Matchett	Member FACC for both the 2020-2021 and 2021-2022 terms	330,000	313,500
David Meline	Chairman of FACC for both the 2020-2021 and 2021-2022 terms	400,000	380,000
Satish Pai	Member FACC for both the 2020-2021 and 2021-2022 terms	330,000	313,500
Total		**4,380,000**	**4,436,500**

(1) This reflects a 10 percent COVID-19 related voluntary donation in Board fees for the first half of the 2020-2021 Board term.

Key:
CC: Compensation Committee
FACC: Finance, Audit and Compliance Committee
GNC: Governance and Nomination Committee

Exhibit 37: Board ownership of ABB shares (audited as part of the financial statement stand-alone audit)

	Total number of shares held	
Name	December 31, 2021	December 31, 2020
Peter Voser[1]	191,946	314,648
Jacob Wallenberg	239,878	234,246
Matti Alahuhta[2]	n.a.	93,408
Gunnar Brock	33,399	26,951
David Constable	38,185	33,978
Frederico Curado	40,301	32,382
Lars Förberg	59,916	49,992
Jennifer Xin-Zhe Li	37,580	33,721
Geraldine Matchett	25,196	19,800
David Meline[3]	37,780	33,774
Satish Pai	28,432	24,618
Total	**732,613**	**897,518**

(1) Includes 2,000 shares held by spouse.
(2) Matti Alahuhta did not stand for re-election at ABB's Annual General Meeting in March 2021.
(3) Includes 3,150 shares held by spouse.

Exhibit 38: EC compensation in 2021 (audited)

Name	Cash Compensation							
	Base salary	Short-term incentive[1]	Pension benefits	Other benefits[2]	2021 Total cash-based compensation[3]	Estimated value of share-based grants under the LTIP in 2021[4]	Estimated value of replacement share-based grant in 2021	2021 Total compensation (incl. conditional share-based grants)[5][6]
	CHF	CHF	CHF	CHF	CHF	CHF	CHF	CHF
Björn Rosengren	1,700,012	2,465,000	744,770	807,000	**5,716,782**	2,530,828	—	**8,247,610**
Timo Ihamuotila	966,675	1,358,000	518,063	570,546	**3,413,284**	962,708	—	**4,375,992**
Carolina Granat (EC member as of January 1, 2021)	700,000	980,000	417,382	399,334	**2,496,716**	694,744	—	**3,191,460**
Maria Varsellona	800,009	1,160,000	455,000	511,824	**2,926,833**	793,997	—	**3,720,830**
Theodor Swedjemark	500,004	725,000	274,535	263,567	**1,763,106**	397,012	—	**2,160,118**
Sami Atiya	800,009	1,160,000	482,662	481,598	**2,924,269**	793,997	—	**3,718,266**
Tarak Mehta	925,008	1,348,500	507,646	476,481	**3,257,635**	923,018	—	**4,180,653**
Peter Terwiesch	800,009	1,160,000	473,441	422,542	**2,855,992**	793,997	—	**3,649,989**
Morten Wierod	791,676	1,126,400	443,506	362,112	**2,723,694**	793,997	—	**3,517,691**
Total Executive Committee members at December 31, 2021	**7,983,402**	**11,482,900**	**4,317,005**	**4,295,004**	**28,078,311**	**8,684,298**	**—**	**36,762,609**
Sylvia Hill (EC member until December 31, 2020)	730,004	661,380	478,254	524,799	**2,394,437**	—	—	**2,394,437**
Total departing Executive Committee members	**730,004**	**661,380**	**478,254**	**524,799**	**2,394,437**	**—**	**—**	**2,394,437**
Total	**8,713,406**	**12,144,280**	**4,795,259**	**4,819,803**	**30,472,748**	**8,684,298**	**—**	**39,157,046**

(1) Represents accrued short-term variable compensation for the year 2021, which will be paid in 2022, after the publication of ABB's financial results. Short-term variable compensation is linked to the objectives defined in each EC member's Annual Incentive Plan. Upon full achievement of these objectives, the short-term variable compensation of the EC members represents 100 percent of their respective base salary. Sylvia Hill received a short-term variable compensation payment in December 2021 related to her termination period, in accordance with the contractual obligations of ABB.

(2) Other benefits mainly comprise payments related to social security, health insurance, children's education, transportation, tax advice and compensation for foregone dividends on replacement share grants and certain other items.

(3) Prepared on an accrual basis.

(4) The estimated value of the share-based LTIP grants are based on the price of ABB shares on the grant date, adjusted for expected foregone dividends during the vesting period. On the day of vesting (April 26, 2024), the value of the share-based awards granted under the LTIP may vary from the above amounts due to changes in ABB's share price and the outcome of the performance factors.

(5) Payments totaling CHF 296,004 were made in 2021 on behalf of certain other former EC members, representing social security premium payments due on the LTIP 2018 vesting and tax advisory services for the period when they have been active EC members.

(6) Ulrich Spiesshofer received non-compete payments for the period January 1, 2021 to April 30, 2021 and a vesting of the 2018 LTIP, with related social security payments, totaling to CHF 1,726,896.

Exhibit 39: EC compensation in 2020 (audited)

Name	Cash Compensation							
	Base salary[1]	Short-term incentive[1][2]	Pension benefits	Other benefits[3]	2020 Total cash-based compensation[4]	Estimated value of share-based grants under the LTIP in 2020[5]	Estimated value of replacement share-based grant in 2020	2020 Total compensation (incl. conditional share-based grants)[6]
	CHF	CHF	CHF	CHF	CHF	CHF	CHF	CHF
Björn Rosengren (EC member as of January 27, 2020, CEO as of March 1, 2020)	1,504,141	977,685	666,175	688,685	**3,836,686**	1,970,457	3,308,781	**9,115,924**
Timo Ihamuotila	902,508	698,535	494,360	646,278	**2,741,681**	734,103	—	**3,475,784**
Sylvia Hill	725,004	547,500	471,925	290,108	**2,034,537**	564,097	—	**2,598,634**
Maria Varsellona	760,008	655,880	471,538	818,288	**2,705,714**	618,193	—	**3,323,907**
Theodor Swedjemark (EC member as of August 1, 2020)	200,002	130,000	118,951	75,259	**524,212**	92,887	—	**617,099**
Sami Atiya	760,008	418,000	465,509	423,787	**2,067,304**	618,193	—	**2,685,497**
Tarak Mehta	848,339	695,115	479,932	390,681	**2,414,067**	695,462	—	**3,109,529**
Peter Terwiesch	760,008	387,600	456,374	334,575	**1,938,557**	618,193	—	**2,556,750**
Morten Wierod	704,171	681,150	413,120	346,080	**2,144,521**	579,552	—	**2,724,073**
Total Executive Committee members at December 31, 2020	**7,164,189**	**5,191,465**	**4,037,884**	**4,013,741**	**20,407,279**	**6,491,137**	**3,308,781**	**30,207,197**
Peter Voser (EC member until February 29, 2020)	280,835	421,250	37,443	48,160	**787,688**	—	—	**787,688**
Ulrich Spiesshofer (EC member until April 16, 2019)[7]	561,670	749,825	214,588	820,421	**2,346,504**	—	—	**2,346,504**
Jean-Christophe Deslarzes (EC member until May 31, 2019)	156,668	158,939	86,309	169,099	**571,015**	—	—	**571,015**
Diane de Saint Victor (EC member until October 31, 2019)	250,001	260,750	74,561	950,402	**1,535,714**	—	—	**1,535,714**
Total departing Executive Committee members	**1,249,174**	**1,590,764**	**412,901**	**1,988,082**	**5,240,921**	**—**	**—**	**5,240,921**
Total	**8,413,363**	**6,782,229**	**4,450,785**	**6,001,823**	**25,648,200**	**6,491,137**	**3,308,781**	**35,448,118**

(1) Base salary as well as the target short-term incentive were adjusted where appropriate for EC members who voluntarily donated 10 percent of their salary to fight the impacts of the COVID-19 crisis for a six-month period during 2020.
(2) Represents accrued short-term variable compensation for the year 2020, which was paid in 2021, after the publication of ABB's 2020 financial results. Short-term variable compensation is linked to the objectives defined in each EC member's Annual Incentive Plan. Upon full achievement of these objectives, the short-term variable compensation of the EC members represents 100 percent of their respective base salary. The short-term variable compensation of the former CEO, Ulrich Spiesshofer, corresponded to the contractually agreed average of the year 2017 and 2018 short-term variable compensation award. Peter Voser received his short-term variable compensation payment monthly at target achievement level. Diane de Saint Victor and Jean-Christophe Deslarzes received a pro-rata short-term variable compensation payment for their period of service as an EC member, in accordance with the contractual obligations of ABB.
(3) Other benefits comprise payments related to social security, health insurance, children's education, transportation, tax advice and certain other items like compensation for unused vacation balances at the time of departure from ABB.
(4) Prepared on an accrual basis.
(5) The estimated value of the share-based LTIP grants are based on the price of ABB shares on the grant date, adjusted for expected foregone dividends during the vesting period. On the day of vesting (April 27, 2023), the value of the share-based awards granted under the LTIP may vary from the above amounts due to changes in ABB's share price and the outcome of the performance factors.
(6) Payments totaling CHF 161,274 were made in 2020 on behalf of certain other former EC members, representing social security premium payments.
(7) ABB paid Ulrich Spiesshofer in addition to the compensation related to the termination period, non-compete payments for the period May 1, 2020, to December 31, 2020, and related social security payments totaling CHF 2,806,111.

Exhibit 40: LTIP grants in 2021 (audited)

Name	Reference number of shares under the EPS performance factor of the 2021 launch of the LTIP[1]	Total estimated value of share-based grants under the EPS performance factor of the 2021 launch of the LTIP[2][3]	Reference number of shares under the TSR performance factor of the 2021 launch of the LTIP[1]	Total estimated value of share-based grants under the TSR performance factor of the 2021 launch of the LTIP[2][3]	Total number of shares granted under the 2021 launch of the LTIP[1][2]	Total estimated value of share-based grants under the LTIP in 2021[2][3]
		CHF		CHF		CHF
Björn Rosengren	47,950	1,265,401	47,951	1,265,427	**95,901**	**2,530,828**
Timo Ihamuotila[4]	18,240	481,354	18,240	481,354	**36,480**	**962,708**
Carolina Granat (EC member as of January 1, 2021)	13,163	347,372	13,163	347,372	**26,326**	**694,744**
Maria Varsellona	15,043	396,985	15,044	397,012	**30,087**	**793,997**
Theodor Swedjemark[4]	7,522	198,506	7,522	198,506	**15,044**	**397,012**
Sami Atiya	15,043	396,985	15,044	397,012	**30,087**	**793,997**
Tarak Mehta[4]	17,488	461,509	17,488	461,509	**34,976**	**923,018**
Peter Terwiesch[4]	15,043	396,985	15,044	397,012	**30,087**	**793,997**
Morten Wierod[4]	15,043	396,985	15,044	397,012	**30,087**	**793,997**
Total Executive Committee members at December 31, 2021	**164,535**	**4,342,082**	**164,540**	**4,342,216**	**329,075**	**8,684,298**

(1) Vesting date April 26, 2024.

(2) The reference number of shares of the EPS and TSR performance factors are valued using the fair value of the ABB shares on the grant date adjusted for expected foregone dividends during the vesting period.

(3) Default settlement of the final LTIP award is 100 percent in shares, with an automatic sell-to-cover in place for employees who are subject to withholding taxes. The plan foresees a maximum payout of 200 percent of the number of reference shares granted based on the achievement against the pre-defined average EPS and relative TSR targets.

(4) In addition to the above awards, five members of the EC participated in the 18th launch of the ESAP in 2021, which will allow them to save over a 12-month period and, in November 2022, use their savings to acquire ABB shares under the ESAP. Each EC member who participated in ESAP will be entitled to acquire up to 330 ABB shares at an exercise price of CHF 30.32 per share.

Exhibit 41: LTIP grants in 2020 (audited)

Name	Reference number of shares under the EPS performance factor of the 2020 launch of the LTIP(1)	Total estimated value of share-based grants under the EPS performance factor of the 2020 launch of the LTIP(2)(3)	Reference number of shares under the TSR performance factor of the 2020 launch of the LTIP(1)	Total estimated value of share-based grants under the TSR performance factor of the 2020 launch of the LTIP(2)(3)	Total number of shares granted under the 2020 launch of the LTIP(1)(2)	Total estimated value of share-based grants under the LTIP in 2020(2)(3)
		CHF		CHF		CHF
Björn Rosengren (EC member as of January 27, 2020, CEO as of March 1, 2020)	65,857	985,221	65,858	985,236	**131,715**	**1,970,457**
Timo Ihamuotila(4)	24,535	367,044	24,536	367,059	**49,071**	**734,103**
Sylvia Hill	18,853	282,041	18,854	282,056	**37,707**	**564,097**
Maria Varsellona	20,661	309,089	20,662	309,104	**41,323**	**618,193**
Theodor Swedjemark (EC member as of August 1, 2020)(4)	3,104	46,436	3,105	46,451	**6,209**	**92,887**
Sami Atiya	20,661	309,089	20,662	309,104	**41,323**	**618,193**
Tarak Mehta(4)	23,244	347,731	23,244	347,731	**46,488**	**695,462**
Peter Terwiesch(4)	20,661	309,089	20,662	309,104	**41,323**	**618,193**
Morten Wierod(4)	19,370	289,776	19,370	289,776	**38,740**	**579,552**
Total Executive Committee members at December 31, 2020	**216,946**	**3,245,516**	**216,953**	**3,245,621**	**433,899**	**6,491,137**

(1) Vesting date April 27, 2023.
(2) The reference number of shares of the EPS and TSR performance factors are valued using the fair value of the ABB shares on the grant date adjusted for expected foregone dividends during the vesting period.
(3) Default settlement of the final LTIP award is 100 percent in shares, with an automatic sell-to-cover in place for employees who are subject to withholding taxes. The plan foresees a maximum payout of 200 percent of the number of reference shares granted based on the achievement against the pre-defined average EPS and relative TSR targets.
(4) In addition to the above awards, five members of the EC participated in the 17th launch of the ESAP in 2020, which allowed them to save over a 12-month period and, in November 2021, use their savings to acquire ABB shares under the ESAP. Each EC member who participated in ESAP was be entitled to acquire up to 440 ABB shares at an exercise price of CHF 22.87 per share.

Exhibit 42: EC shareholding overview at December 31, 2021 (audited as part of the financial statement stand-alone audit)

Name	Total number of shares held at December 31, 2021	Vested at December 31, 2021	Unvested at December 31, 2021					
		Number of vested options held under the MIP	Number of unvested options held under the MIP	Reference number of shares deliverable under the 2019 performance factors (EPS and TSR) of the LTIP(1)	Reference number of shares deliverable under the 2020 performance factors (EPS and TSR) of the LTIP(1)	Reference number of shares deliverable under the 2021 performance factors (EPS and TSR) of the LTIP(1)	Replacement share grant for foregone benefits from former employer(2)	Replacement share grant for foregone benefits from former employer(2)
			(vesting 2022)	(vesting 2022)	(vesting 2023)	(vesting 2024)	(vesting 2022)	(vesting 2023)
Björn Rosengren	10,000	—	—	—	131,715	95,901	130,150	18,904
Timo Ihamuotila	150,440	—	—	49,071	49,071	36,480	—	—
Carolina Granat (EC member as of January 1, 2021)(3)	1,200	—	—	—	—	26,326	—	—
Maria Varsellona(4)	26,006	—	—	—	—	—	—	—
Theodor Swedjemark(3)(5)	1,360	—	148,750	—	6,209	15,044	—	—
Sami Atiya	51,472	—	—	49,587	41,323	30,087	—	—
Tarak Mehta	118,056	—	—	44,422	46,488	34,976	—	—
Peter Terwiesch	100,440	—	—	41,323	41,323	30,087	—	—
Morten Wierod	51,912	—	—	36,158	38,740	30,087	—	—
Total Executive Committee members at December 31, 2021	**510,886**	**—**	**148,750**	**220,561**	**354,869**	**298,988**	**130,150**	**18,904**

(1) The final LTIP 2019 award will be settled 65 percent in shares and 35 percent in cash. This applies to both performance factors (EPS and TSR). However, the participants have the possibility to elect to receive 100 percent of the vested award in shares. The final LTIP 2020 and LTIP 2021 award will be settled 100 percent in shares, with an automatic sell-to-cover in place for employees who are subject to withholding taxes.

(2) It is expected that the replacement share grants will be settled 65 percent in shares and 35 percent in cash. However, the participants have the possibility to elect to receive 100 percent of the vested award in shares.

(3) This includes shares held by the spouse.

(4) Unvested share grants were forfeited as a result of the resignation provided and removed from the shareholding overview.

(5) In addition, his spouse holds unvested shares and options granted in connection with her role in the company.

Exhibit 43: EC shareholding overview at December 31, 2020 (audited as part of the financial statement stand-alone audit)

Name	Total number of shares held at December 31, 2020	Vested at December 31, 2020: Number of vested options held under the MIP	Unvested at December 31, 2020: Number of unvested options held under the MIP (vesting 2021/2022)	Unvested at December 31, 2020: Reference number of shares deliverable under the 2018 performance factors (EPS and TSR) of the LTIP(1) (vesting 2021)	Unvested at December 31, 2020: Reference number of shares deliverable under the 2019 performance factors (EPS and TSR) of the LTIP(1) (vesting 2022)	Unvested at December 31, 2020: Reference number of shares deliverable under the 2020 performance factors (EPS and TSR) of the LTIP(1) (vesting 2023)	Unvested at December 31, 2020: Replacement share grant for foregone benefits from former employer(2) (vesting 2021)	Unvested at December 31, 2020: Replacement share grant for foregone benefits from former employer(2) (vesting 2022)	Unvested at December 31, 2020: Replacement share grant for foregone benefits from former employer(2) (vesting 2023)
Björn Rosengren (EC member as of January 27, 2020, CEO as of March 1, 2020)	5,000	—	—	—	—	131,715	—	130,150	18,904
Timo Ihamuotila	171,610	—	—	37,217	49,071	49,071	—	—	—
Sylvia Hill	2,265	796,875	318,750	—	36,158	37,707	—	—	—
Maria Varsellona	—	—	—	—	41,323	41,323	40,010	40,009	—
Theodor Swedjemark (EC member as of August 1, 2020)(3)	480	102,000	250,750	—	—	6,209	—	—	—
Sami Atiya	42,778	—	—	23,301	49,587	41,323	—	—	—
Tarak Mehta	179,636	—	—	34,790	44,422	46,488	—	—	—
Peter Terwiesch	142,338	—	—	37,379	41,323	41,323	—	—	—
Morten Wierod	1,544	—	—	15,292	36,158	38,740	—	—	—
Total Executive Committee members at December 31, 2020	**545,651**	**898,875**	**569,500**	**147,979**	**298,042**	**433,899**	**40,010**	**170,159**	**18,904**

(1) The final LTIP 2018 award and LTIP 2019 award will be settled 65 percent in shares and 35 percent in cash. This applies to both performance factors (EPS and TSR). However, the participants have the possibility to elect to receive 100 percent of the vested award in shares. The final LTIP 2020 award will be settled 100 percent in shares, with an automatic sell-to-cover in place for employees who are subject to withholding taxes.

(2) It is expected that the replacement share grants will be settled 65 percent in shares and 35 percent in cash. However, the participants have the possibility to elect to receive 100 percent of the vested award in shares.

(3) In addition, his spouse holds unvested shares and options granted in connection with her role in the company.

Exhibit 44: Targeted and realized EC total compensation in 2021

Target compensation (in CHF)	Base salary	Pension benefits	Other benefits(1)	Target short-term incentive(2)	Grant fair value of 2018 LTIP(3)	Target total variable compensation	Target total compensation
Björn Rosengren	1,700,012	744,770	807,000	1,700,000	n.a.	**1,700,000**	**4,951,782**
Timo Ihamuotila	966,675	518,063	570,546	970,000	819,965	**1,789,965**	**3,845,249**
Carolina Granat (EC member as of January 1, 2021)	700,000	417,382	399,334	700,000	n.a.	**700,000**	**2,216,716**
Maria Varsellona	800,009	455,000	511,824	800,000	n.a.	**800,000**	**2,566,833**
Theodor Swedjemark	500,004	274,535	263,567	500,000	n.a.	**500,000**	**1,538,106**
Sami Atiya	800,009	482,662	481,598	800,000	513,368	**1,313,368**	**3,077,637**
Tarak Mehta	925,008	507,646	476,481	930,000	766,494	**1,696,494**	**3,605,629**
Peter Terwiesch	800,009	473,441	422,542	800,000	823,534	**1,623,534**	**3,319,526**
Morten Wierod	791,676	443,506	362,112	800,000	336,913	**1,136,913**	**2,734,207**
Total	**7,983,402**	**4,317,005**	**4,295,004**	**8,000,000**	**3,260,274**	**11,260,274**	**27,855,685**

Realized compensation (in CHF)	Base salary	Pension benefits	Other benefits(1)	Short-term incentive 2021(4)	Grant fair value of 2018 LTIP(5)	Total variable compensation	Total compensation
Björn Rosengren	1,700,012	744,770	807,000	2,465,000	n.a.	**2,465,000**	**5,716,782**
Timo Ihamuotila	966,675	518,063	570,546	1,358,000	624,897	**1,982,897**	**4,038,181**
Carolina Granat (EC member as of January 1, 2021)	700,000	417,382	399,334	980,000	n.a.	**980,000**	**2,496,716**
Maria Varsellona	800,009	455,000	511,824	1,160,000	n.a.	**1,160,000**	**2,926,833**
Theodor Swedjemark	500,004	274,535	263,567	725,000	n.a.	**725,000**	**1,763,106**
Sami Atiya	800,009	482,662	481,598	1,160,000	391,248	**1,551,248**	**3,315,517**
Tarak Mehta	925,008	507,646	476,481	1,348,500	584,123	**1,932,623**	**3,841,758**
Peter Terwiesch	800,009	473,441	422,542	1,160,000	627,617	**1,787,617**	**3,483,609**
Morten Wierod	791,676	443,506	362,112	1,126,400	256,757	**1,383,157**	**2,980,451**
Total	**7,983,402**	**4,317,005**	**4,295,004**	**11,482,900**	**2,484,642**	**13,967,542**	**30,562,953**

Realized achievement level	Base salary	Pension benefits	Other benefits(1)	Short-term incentive(4)	Grant fair value of 2018 LTIP(5)	Total variable compensation	Total compensation
Björn Rosengren	100.0%	100.0%	100.0%	145.0%	n.a.	**145.0%**	**115.4%**
Timo Ihamuotila	100.0%	100.0%	100.0%	140.0%	76.2%	**110.8%**	**105.0%**
Carolina Granat (EC member as of January 1, 2021)	100.0%	100.0%	100.0%	140.0%	n.a.	**140.0%**	**112.6%**
Maria Varsellona	100.0%	100.0%	100.0%	145.0%	n.a.	**145.0%**	**114.0%**
Theodor Swedjemark	100.0%	100.0%	100.0%	145.0%	n.a.	**145.0%**	**114.6%**
Sami Atiya	100.0%	100.0%	100.0%	145.0%	76.2%	**118.1%**	**107.7%**
Tarak Mehta	100.0%	100.0%	100.0%	145.0%	76.2%	**113.9%**	**106.5%**
Peter Terwiesch	100.0%	100.0%	100.0%	145.0%	76.2%	**110.1%**	**104.9%**
Morten Wierod	100.0%	100.0%	100.0%	140.8%	76.2%	**121.7%**	**109.0%**
Average	**100.0%**	**100.0%**	**100.0%**	**143.4%**	**76.2%**	**127.7%**	**110.0%**

(1) Other benefits comprise payments related to social security, health insurance, children's education, transportation, tax advice and certain other items.
(2) Target short-term incentive corresponds to 100 percent of the latest applicable annual base salary.
(3) Represents the LTIP 2018 grant date fair value as per April 6, 2018, as disclosed in our annual report 2018.
(4) Represents accrued STI for the year 2021, which will be paid in 2022, after the publication of ABB's financial results. STI is linked to the objectives defined in each EC member's Annual Incentive Plan.
(5) Valued at CHF 29.25, the closing price of the ABB share on the day of vesting.

Report of the Statutory Auditor

To the General Meeting of ABB Ltd, Zurich

We have audited the accompanying compensation report of ABB Ltd for the year ended December 31, 2021. The audit was limited to the information according to articles 14 – 16 of the Ordinance Against Excessive Compensation in Stock Exchange Listed Companies (Ordinance) contained in the tables labeled “audited” on pages 102 to 109 of the compensation report.

Responsibility of the Board of Directors

The Board of Directors is responsible for the preparation and overall fair presentation of the compensation report in accordance with Swiss law and the Ordinance against Excessive compensation in Stock Exchange Listed Companies (Ordinance). The Board of Directors is also responsible for designing the compensation system and defining individual compensation packages.

Auditor's Responsibility

Our responsibility is to express an opinion on the accompanying compensation report. We conducted our audit in accordance with Swiss Auditing Standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the compensation report complies with Swiss law and articles 14 – 16 of the Ordinance.

An audit involves performing procedures to obtain audit evidence on the disclosures made in the compensation report with regard to compensation, loans and credits in accordance with articles 14 – 16 of the Ordinance. The procedures selected depend on the auditor’s judgment, including the assessment of the risks of material misstatements in the compensation report, whether due to fraud or error. This audit also includes evaluating the reasonableness of the methods applied to value components of compensation, as well as assessing the overall presentation of the compensation report.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Opinion

In our opinion, the compensation report for the year ended December 31, 2021 of ABB Ltd complies with Swiss law and articles 14 – 16 of the Ordinance.

KPMG AG

Hans-Dieter Krauss
Licensed Audit Expert
Auditor in Charge

Mohammad Nafeie

Zurich, Switzerland
February 24, 2022

KPMG AG, Badenerstrasse 172, CH-8036 Zurich

04

2021 Financial review of ABB Group

About ABB

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.

Organizational structure

Our business is international in scope and we generate revenues in numerous currencies. We operate in over 100 countries across three regions: Europe, the Americas, and Asia, Middle East and Africa. We are headquartered in Zurich, Switzerland.

We manage our company through our four Business Areas: Electrification, Motion, Process Automation, and Robotics & Discrete Automation. For a breakdown of our consolidated revenues (i) by Business Area, (ii) by geographic region, and (iii) by product type, see "Analysis of results of operations—Revenues" and "Note 23 - Operating segment and geographic data" to our Consolidated Financial Statements. Until June 30, 2020, we also operated the Power Grids business, which is reported as discontinued operations in the Consolidated Financial Statements (see "Discontinued operations" section below). On July 1, 2020, we completed the divestment of 80.1 percent of the Power Grids business to Hitachi Ltd (Hitachi). We retain a 19.9 percent ownership interest through our investment in Hitachi Energy Ltd, formerly Hitachi ABB Power Grids Ltd (Hitachi Energy) which beneficially owns or controls all the subsidiaries of the Power Grids business.

Our principal corporate offices are located at Affolternstrasse 44, CH 8050 Zurich, Switzerland, telephone number +41 43 317 7111. Our agent for U.S. federal securities law purposes is ABB Holdings Inc., located at 305 Gregson Drive, Cary, North Carolina 27511. Our internet address is www.abb.com or global.abb. The information contained on or accessible from our Web site is not incorporated into this annual report, and you should not consider it to be a part of this annual report. The United States Securities and Exchange Commission (SEC) maintains a website at www.sec.gov which contains in electronic form each of the reports and other information that we have filed electronically with the SEC.

Employees

A breakdown of our employees by geographic region is as follows:

December 31,	2021	2020	2019
Europe	50,000	49,200	68,400
The Americas	25,600	27,600	35,200
Asia, Middle East and Africa	28,800	28,800	40,800
Total	**104,400**	**105,600**	**144,400**

The proportion of our employees that are represented by labor unions or are subject to collective bargaining agreements varies based on the labor practices of each country in which we operate.

History of the ABB Group

The ABB Group was formed in 1988 through a merger between Asea AB and BBC Brown Boveri AG. Initially founded in 1883, Asea AB was a major participant in the introduction of electricity into Swedish homes and businesses and in the development of Sweden's railway network. In the 1940s and 1950s, Asea AB expanded into the power, mining and steel industries. Brown Boveri and Cie. (later renamed BBC Brown Boveri AG) was formed in Switzerland in 1891 and initially specialized in power generation and turbines. In the early to mid-1900s, it expanded its operations throughout Europe and broadened its business operations to include a wide range of electrical engineering activities.

In January 1988, Asea AB and BBC Brown Boveri AG each contributed almost all of their businesses to the newly formed ABB Asea Brown Boveri Ltd, of which they each owned 50 percent. In 1996, Asea AB was renamed ABB AB and BBC Brown Boveri AG was renamed ABB AG. In February 1999, the ABB Group announced a group reconfiguration designed to establish a single parent holding company and a single class of shares. ABB Ltd was incorporated on March 5, 1999, under the laws of Switzerland. In June 1999, ABB Ltd became the holding company for the entire ABB Group. This was accomplished by having ABB Ltd issue shares to the shareholders of ABB AG and ABB AB, the two companies that formerly owned the ABB Group. The ABB Ltd shares were exchanged for the shares of those two companies, which, as a result of the share exchange and certain related transactions, became wholly-owned subsidiaries of ABB Ltd.

As described above, on July 1, 2020, we divested 80.1 percent of our ownership in the Power Grids business to Hitachi.

ABB Ltd shares are currently listed on the SIX Swiss Exchange, the NASDAQ OMX Stockholm Exchange and the New York Stock Exchange (in the form of American Depositary Shares).

ABB Today

As a global leader in resource efficiency, excelling in electrification and automation, our offering is relevant for the global energy transition, increased energy efficiency, and the transition to more adaptive manufacturing and automation, putting us right in the center of long-term secular trends.

The ABB Purpose

The ABB Purpose captures what we do, and the ABB Way describes how we do it. With our Purpose at the core, ABB strives to create superior value for customers, employees and shareholders. The ABB Purpose is summarized as:

- 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.

Our core competencies

Our leadership in resource efficiency is based on our core competencies, each of which constitutes a barrier to entry: decades-long domain expertise, cutting-edge technology and innovation as well as the ability to scale operations and distribution.

With its long history, ABB not only invented or pioneered many power and automation technologies but has retained technology and market leadership in many of these areas. Being present in various vertical markets for decades with close long-term relationships with customers and channel partners has resulted in our unique deep domain expertise, enabling a thorough understanding of customers' needs and operations.

We continuously evolve our offering to remain a relevant and trusted partner to our customers. Our annual non-order related research and development spending in 2021 amounted to approximately 4.2 percent of revenues. We focus our research and development expenditures on key areas of innovation and have spent approximately $7 billion since the beginning of 2016, focusing on developing best-in-class products and services in the fields of electrification and automation with the goal of helping our customers to increased productivity and lower their ecological footprint.

All our four Business Areas are market leaders in their respective areas being in either the number 1 or 2 positions. Our global reach along with our extensive local presence assists us in scaling innovations to achieve stronger returns, which supports higher absolute investments for future growth. Active globally, our revenues are well-balanced across regions with customers served directly and through a strong channel partner network.

The ABB Way

The ABB Way is the glue that unites our Group and comprises a select number of common processes covering our business model, our people and culture, the ABB brand and our governance framework. It facilitates accountability, transparency and speed in ABB.

In our operating model, the Divisions represent the highest level of operating decisions. They are closest to their respective markets and customer needs. Each Division progresses through the strategic mandates and priorities of stability and profitability before growth. Meaning, in order to deploy full focus on organic and acquired growth to the extent of consolidating the market, the business' structure should be robust and profitability should be at least in line with industry peers. We have made good progress on the transition through these priorities with two thirds of our Divisions, representing approximately 60 percent of Group revenues, now on a growth mandate.

Each Division has full accountability for its results and carries the responsibility for business development, and research and development for leading technology to secure a number 1 or 2 market position. To fully complete the decentralized way of working at ABB, our focus area in 2022 will be to make sure that we also have accountability, transparency and speed within all of the Divisions. Strong performance management is key in a decentralized business model. We apply a monthly scorecard system for the Divisions and Business Areas, based on a standardized set of Key Performance Indicators, to support full transparency of performance. It is accompanied by a mandatory target to make annual productivity improvements of at least 3 percent each year.

The corporate functions focus on necessary strategic, financial and governance activities, with a lean headcount of approximately 800 employees.

Enhanced growth profile

Over the past several years, we have taken significant organic and inorganic actions to align our business portfolio to more attractive growth markets, increasing our focus on discrete industries, as well as transport and infrastructure, that offer better growth opportunities. Additionally, we have increased the proportion of sales stemming from short-cycle businesses, meaning a reduced proportion from project-related activities, which should reduce the risk and volatility in our earnings. This ongoing shift towards better quality of revenues is part of ABB's DNA which centers around resource-efficiency in electrification and automation.

The responsibility for growth has been fully transferred to the Divisions, as they are closest to customers. This includes both organic and acquired growth. The Divisions have the best insights into current and future customer needs and are accountable for building their respective business accordingly. With more Divisions transitioning over time from stability and profitability to growth, we expect to see a continuous shift in our growth profile.

Finally, the underlying demand for our products, systems and services is supported by strong sustainability megatrends with more favorable regulations, improved technology and changing consumer patterns all being positive drivers. An example of such a megatrend is sustainable transport. We estimate that approximately 10 percent of our order intake comes from this area and that we have outgrown the market in recent years. The related segments have different commercial maturity, including more mature technologies which already generate significant orders, including traction systems in rail or hybrid ships using Azipod® propulsion. Segments that are in commercial take-off (i.e. currently see very high growth rates) include electric vehicle charging solutions or robotic solutions for electric vehicle manufacturing. There are also very early-stage segments which are still emerging and which might offer a high potential in the future such as fully electric mines (“eMines”) or alternative fuels such as hydrogen.

Our markets

ABB is a leading global technology company with a comprehensive and increasingly digitalized offering of electrification, motion and automation solutions. Our exposure to customers is geographically balanced while catering to multiple end-markets and segments. We believe that our portfolio is well positioned to benefit from secular growth drivers, including urbanization, labor shortage, shift to electrification, automation and robotization, as well as other data and digitalization trends.

We are focused on creating superior customer value through our comprehensive, modular offering, combining traditional products and services with software-enabled products and systems as well as digital services and software that we sell both separately and combined as scalable solutions. Superior software is a key differentiation of our digital offering and about 60 percent of our approximately 7,000 employees in research and development are active in software development.

The majority of our businesses are market leaders within their respective segments. We believe market leadership is critical, as it provides the opportunity for price leadership, which in turn supports profitability, enabling us to invest in further research and development to sustain our technological leadership. For a discussion of the geographic distribution of our total revenues, see “Analysis of results of operations—Revenues.”

Industry market

Approximately half of our customers are industrial customers. We serve production facilities and factories all around the world, from process industries such as oil and gas, pulp and paper as well as mining, to discrete industries including automotive, food and beverage and consumer electronics. Automation, software and digital services that help customers achieve improved safety, uptime, energy efficiency and productivity are key to the success of our offerings in this market. The ongoing COVID-19 pandemic has served as a prominent reminder for companies of the importance of simplicity and flexibility in automated production and has accelerated customer demand for the digital services and solutions we offer.

Industrial end-markets recovered from the initial pandemic-related impacts. In discrete industries, end-markets such as food and beverage, consumer electronics, machine builders and general industry grew strongly. Investments in robotics by the automotive industry recovered and we applied a strategic selective order approach aimed at improving long-term profitability in the segment.

Later-cycle process industries segments picked up especially during the second half of 2021, benefiting from a rebound in commodity prices and generally easing international travel restrictions. This was particularly the case for the oil and gas segment, while the recovery in segments such as pulp and paper, mining or water and wastewater had already started earlier.

Transport & infrastructure market

Approximately one-third of our customers operate in the transport & infrastructure market. Our expertise provides efficient, reliable and sustainable solutions for these customers, with a focus on energy efficiency and reduced operating costs.

Transport & infrastructure markets were strong in 2021. Buildings activity rebounded from the widespread lockdowns of the previous year. Data center markets continued to expand, with ABB successful in offering bundled solutions to hyperscale and co-location customers in particular. Underlying demand in rail for electrification and traction solutions was also high, while modest growth rates were impacted by the strong order intake in 2020. In the marine sector, we saw continued strong order demand for our market-leading electric propulsion systems. Services in the cruise segment started to pick-up in the second half of 2021 in anticipation of a recovery in cruising activities. EV charging markets also continued to see very strong growth rates.

Utilities market

ABB delivers solutions mainly for distribution utilities and renewables customers, while continuing to service conventional power generation customers with our control and automation solutions. Following the divestment of our Power Grids business to Hitachi in July 2020, our exposure to the utilities market has decreased significantly.

During 2021, the renewables markets saw very strong growth after a challenging, pandemic-impacted 2020. Business levels in the conventional power generation market improved, albeit from a low level. Demand from electrical distribution utilities was strong, with ongoing investments to increase grid reliability and resilience with integrating increased renewables.

We serve industry, transport & infrastructure and utilities through our operating Divisions which are included in our Business Areas. Developments in these Business Areas are discussed in more detail below. Revenue figures presented in this Businesses section are before intersegment eliminations.

Businesses

Electrification Business Area

Overview

The products of the Electrification Business Area portfolio are designed to enable safe, smart, and sustainable electrification, with a full range of low- and medium-voltage products and solutions, along with pre-engineered packaged services and tailored solutions for intelligent protection and connection.

The Electrification Business Area delivers products through a global network of channel partners and end customers. Most of the Business Area's revenue is derived from distributors and approximately a quarter is derived from direct sales to end-users. The remaining revenues are generated from original equipment manufacturers (OEMs), engineering, procurement, construction (EPC) contracting companies, system integrators, utilities and panel builders. The proportion of direct compared to channel partner sales varies by segment, product technology and geographic markets.

The Electrification Business Area had approximately 50,800 employees on December 31, 2021, and generated $13.2 billion of revenues in 2021.

Customers

The Electrification Business Area serves a wide range of customer segments, including residential, commercial, and industrial buildings, electric utilities, oil and gas, chemicals, data centers, e-mobility, renewables, food and beverage, and other industries and infrastructure.

Products and Services

The Electrification Business Area's products and services are delivered through six operating Divisions.

The Distribution Solutions Division helps utility, industry and transport & infrastructure customers improve power quality and control, reduce outage time and enhance operational reliability and efficiency. The Division offers products, solutions and services that largely serve the power distribution sector, often providing the requisite medium-voltage link between high-voltage transmission systems and low-voltage users. With ABB Ability™ enabled digital solutions at its core, the offering includes low-voltage switchgear (up to 1 kilovolt) and medium-voltage equipment (1 to 66 kilovolts), indoor and outdoor circuit breakers, reclosers, fuses, contactors, relays, instrument transformers, sensors, motor control centers, as well as a wide range of air- and gas-insulated switchgear. The Division also produces indoor and outdoor modular systems and other segment-specific solutions to facilitate efficient and reliable distribution, protection and control of power, adding value through design, engineering, project management and service. The service offering spans the entire value chain, from the moment a customer makes the first inquiry to disposal and recycling of the product, enriched by advanced digital services for asset management. Throughout the value chain, the Division provides training, technical support and customized contracts.

The Smart Power Division helps protect, control, and connect people, plants, and systems with a portfolio of low-voltage products and systems. The product offering includes, molded-case and air-circuit breakers, safety products including sensors, switches, contactors, relays, and power protection solutions such as uninterruptible power supply (UPS) solutions, status transfer switches and power distribution units.

The Smart Buildings Division helps optimize efficiency, safety, security and comfort in homes and other buildings. The Division offers digitally enabled controls for HVAC, lighting, shutters, and security in addition to low-voltage products including conventional wiring accessories, industrial plugs and sockets, emergency lighting, DIN-rail products, and enclosures ideal for single family homes, multiple dwellings, commercial buildings, infrastructure and industrial applications. The Division's highly innovative solutions serve rising global demand among developers, owners, and investors for smart building technology, offering significant sustainable and financial benefits, as well as answering social and environmental needs, and addressing customers' carbon reduction strategies.

The Installation Products Division helps manage the connection, protection and distribution of electrical power. The Division's products are engineered to provide ease of installation and perform in demanding and harsh conditions, helping to ensure safety and continuous operation for our customers and people around the world. The commercial essentials product segment includes electrical junction boxes, commercial fittings, strut and cable tray metal framing systems for commercial and residential construction. The premier industrial product segment includes multiple product lines, such as Ty-Rap®, T&B Liquidtight Systems®, PVC coated and nylon conduit systems, power connection and grounding systems, cable protection systems of conduits and fittings for harsh and industrial applications. The Division also manufactures solutions for medium-voltage applications used in utility and industrial applications under its marquee brands including Elastimold™ reclosers and switchgear, capacitor switches, current limiting fuses, the High Tech Valiant™ full-range current limiting fuse for fire mitigation, faulted current indicators and distribution connectors, cable accessories and apparatus with products for overhead and underground distribution.

The Power Conversion Division supplies innovative critical power solutions to infrastructure customers and manufacturers of a wide range of equipment. The Division supports its customers in telecom/5G, networking, data centers, and industrial applications (such as oil and gas, utility, power generation, and robotics) in rapidly changing, disruptive environments where information, access and response times are redefining the markets. The Power Conversion Division also provides customers with reliable and efficient power that supports increasing infrastructure requirements, ensuring that data flows 24/7, while optimizing footprint, energy costs and operations. The Division supports customers by providing the latest industry insights and technology, partnering to co-develop solutions to tackle evolving challenges.

The E-mobility Division engineers electrification solutions to enable global, accessible, reliable, smart and emission-free mobility. The Division offers to its customers a total electric vehicle charging solution from compact AC wall boxes and DC fast charging stations to on-demand electric bus charging systems. The Division also provides customers with services such as infrastructure installation and maintenance to meet the requirements of the next generation of smarter mobility. ABB Ability™ connected chargers enable fast global service and pro-active maintenance.

Sales and Marketing

The Electrification Business Area's global markets common sales and marketing organization creates demand across all channels and products, with a range of promotional activities and support services including account, channel, and segment sales management, commercial operations, and digital expertise.

Competition

The Electrification Business Area's principal competitors vary by product group and include Chint, Eaton, Hubbell, Legrand, LS Electric, Panasonic, Rittal, Schneider Electric and Siemens.

Capital Expenditures

The Electrification Business Area's capital expenditures for property, plant and equipment totaled \$345 million in 2021, compared to \$316 million in 2020. Investments in 2021 were higher than in 2020 as some investments were previously delayed in 2020 due to the COVID-19 pandemic. Investments in 2021 principally related to capacity expansion for e-mobility products, including the construction of a new factory in Italy, and to footprint changes, equipment replacement and upgrades. Geographically, in 2021, Europe represented 54 percent of the capital expenditures, followed by the Americas (34 percent) and Asia, Middle East and Africa (12 percent).

Motion Business Area

Overview

The Motion Business Area provides pioneering technology, products, solutions and related services to industrial customers to increase energy efficiency, improve safety and reliability, and maintain precise control over processes. The portfolio includes motors, generators and drives for a wide range of applications in all industrial sectors.

The Motion Business Area had approximately 20,000 employees as of December 31, 2021, and generated around $6.9 billion of revenues in 2021.

Products and Services

The Motion Business Area designs, manufactures and sells drives, motors, generators and traction converters. Building on long-standing experience in electric powertrains, the Business Area combines domain expertise and technology to deliver the optimum solution for a wide range of applications for a comprehensive range of industrial segments. In addition, the Business Area, along with its channel partners, has an industry-leading global service presence.

At December 31, 2021, the Motion Business Area's products and services are delivered through seven operating Divisions. The Business Area divested its Mechanical Power Transmission Division on November 1, 2021, which designed, manufactured and sold various mechanical power transmission products sold under the Dodge® brand.

The Drive Products Division serves the industries and infrastructure segments with world-class drives and programmable logic controllers (PLC). With its products, global scale and local presence, the Division helps customers to improve energy efficiency, productivity and safety.

The System Drives Division supplies high-power, high-performance drives, drive systems and packages for industrial process and large infrastructure applications. The Division offers global support to help customers, partners and equipment manufacturers with asset reliability, performance improvement and energy efficiency in mission critical applications.

The Service Division serves customers worldwide and aims to help customers by maximizing uptime, extending life cycle and enhancing the performance and energy efficiency of their electrical motion solutions. The Division is leading the way in digitalization by securely connecting motors and drives to help customers prevent expensive downtime while also optimizing operations' profitably, safely and reliably.

The Traction Division is a recognized leader in traction technologies that drive innovation in rail, bus and other modes of electric transportation. A comprehensive range of high performance propulsion, auxiliary and energy storage solutions help improve energy efficiency and contributes to making transportation more sustainable.

The IEC Low Voltage Motors Division is a global market leader that provides a full range of energy efficient low voltage motors, including ultra-efficient motors such as synchronous reluctance motors (SynRM) to help customers reduce power bills and cut emissions.
Through a global footprint, application expertise and with rugged designs, the Division's products support customers with IEC low-voltage motor solutions that improve reliability and productivity in the most demanding applications.

The Large Motors and Generators Division offers a comprehensive product portfolio of large AC motors and generators. The Division's robust, reliable and highly efficient offerings power critical infrastructure and transportation across all major industries and applications often in remote and demanding locations.

The NEMA Motors Division is a marketer, designer and manufacturer that offers Baldor-Reliance® industrial electric motors, primarily in North America. The Division focuses on quality, reliability and efficiency to provide a comprehensive offering of NEMA motors in the market across most industrial segments and applications.

Customers

The Motion Business Area serves a wide range of customers in different industrial segments such as pulp and paper, oil and gas, metals and mining, food and beverage, HVAC, water and wastewater, transportation, power generation, marine and offshore.

Sales and Marketing

Sales are made both through direct sales forces and through channel partners, such as distributors and wholesalers, as well as installers, OEMs and system integrators. The proportion of direct sales to end users compared to channel partner sales varies among the different industries, products and geographic markets.

Competition

The principal competitors of the Motion Business Area include Schneider, Siemens, Toshiba, WEG Industries, SEW EURODRIVE and Danfoss.

Capital Expenditures

Capital expenditures in the Motion Business Area for property, plant and equipment totaled $230 million in 2021, compared to $118 million in 2020. Principal investments in 2021 related to the purchase of a formerly leased property in China as well as equipment replacement, footprint adjustments and automation upgrades. Geographically, in 2021, Asia, Middle East and Africa represented 49 percent of the capital expenditures, followed by Europe (34 percent) and the Americas (17 percent).

Process Automation Business Area

Overview

In 2021, the former Industrial Automation Business Area was renamed Process Automation and there was no change in the composition of the Divisions. The Process Automation Business Area offers customers in process, hybrid and maritime industries a broad range of integrated automation, electrical, motion and digital systems, solutions and related services that are designed to optimize productivity, energy efficiency, sustainability and safety of industrial processes and operations, based on the Business Area's deep domain knowledge and expertise of each end market.

The Business Area's offering can be grouped, with about half relating to solutions for new and brownfield projects and half relating to service, mainly for installed own products. In some cases, the Business Area integrates offerings from the Electrification, Motion and Robotics & Discrete Automation Business Areas into its integrated systems. The Business Area's offerings are sold primarily through its direct sales force with a smaller share through partners and distributors.

The Business Area had approximately 22,000 employees as of December 31, 2021, and generated revenues of $6.3 billion in 2021.

Customers

The Process Automation Business Area's end customers include companies across process, hybrid and maritime industries. These industries include oil, gas, chemicals and plastics, mining and minerals, metals, pulp and paper, pharmaceuticals, food and beverage, power generation, marine and ports.

Products and Services

The offering of the Process Automation Business Area includes an extensive portfolio of products, solutions, digital applications and services for the control of the simplest to the most complex and critical of processes and infrastructure. These systems can link various process and information flows, allowing customers to manage and control their entire business process based on real-time information. The Business Area's control platform includes ABB Ability™ Distributed Control System (DCS), System 800xA®, which is also an electrical control system, a safety system and a collaboration enabler with the capacity to improve engineering efficiency, operator performance and asset utilization. Other control solutions include Symphony® Plus (designed to address the open automation platform needs of the Hydropower and Water industry segments) and our Freelance DCS solution. Components for basic automation solutions, process controllers, I/O modules, panels, and Human Machine Interfaces (HMI), are available through the Compact Product Suite offering. The product portfolio is complemented by a suite of ABB Ability™ Advanced Digital Services and by ABB Care, a subscription-based lifecycle management program that provides services to maintain and continually advance and enhance ABB's distributed control systems and optimize customers' lifecycle costs. The ABB Ability™ Genix Industrial Analytics and Artificial Intelligence Suite unlocks greater value by contextualizing and integrating data from IT, engineering, and operations systems to provide deep, meaningful and actionable insights. The portfolio is complemented by a range of industry-specific products in each Division.

The Process Automation Business Area has five operating Divisions.

The Energy Industries Division enables safe, smart, and sustainable projects and operations for businesses across the oil and gas, chemicals, life sciences, power generation and water sectors. It is committed to driving more sustainable use of our planet's resources through innovative solutions that enable energy efficient and low carbon operations across traditional industries and support the development of new and renewable energy models. The Division serves the energy market with leading integrated solutions that automate, digitalize and electrify operations across industries. The Division's goal is to help customers adapt and succeed in the rapidly changing global energy transition. Harnessing data, machine learning and AI, the Division brings over 50 years of domain expertise delivering solutions designed to improve energy, process and production efficiency, as well as reduce risk, operational cost and capital cost, while minimizing waste for all customers, from project start-up and throughout the entire plant lifecycle.

The Process Industries Division serves the mining, minerals processing, metals, aluminum, cement, pulp and paper, battery manufacturing, and food and beverage, as well as their associated service industries. The Division brings deep industry domain expertise coupled with the ability to integrate both automation and electrical, increase productivity and reduce overall capital and operating costs for customers. For mining, metals and cement customers, solutions include specialized products and services, as well as total production systems. The Division designs, plans, engineers, supplies, erects and commissions integrated electrical and motion systems, including electric equipment, drives, motors, high power rectifiers and equipment for automation and supervisory control within a variety of areas including mineral handling, mining operations, aluminum smelting, hot and cold steel applications and cement production. The offering for the pulp and paper industries includes control systems, quality control systems, drive systems, on-line sensors, actuators and field instruments. Digitalization solutions, including collaborative operations and augmented reality, help improve plant and enterprise productivity, and reduce maintenance and energy costs.

The Marine & Ports Division serves the shipping industry through its extensive portfolio of integrated marine systems and solutions that improve the flexibility, reliability and energy efficiency of vessels. By coupling power, propulsion, automation, marine software and services that ensure maximum vessel uptime, we are well positioned to help improve the profitability and sustainability of our customers' business throughout the entire lifecycle of a fleet. With ABB Ability™ Marine software solutions and ABB Ability™ Collaborative Operations Centers around the world, shipowners and operators can run their fleets at lower fuel and maintenance costs, while improving crew, passenger and cargo safety as well as overall productivity of their operations. Further, the Division delivers automation, electrical systems and digital solutions for container and bulk cargo handling, from ship to gate. These solutions help terminal operators meet the challenge of larger ships, taller cranes and bigger volumes per call, and make terminal operations safer, greener and more productive.

The portfolio of the Measurement & Analytics Division consists of analyzers (measuring compositions of gases and liquids), instrumentation (measuring the typical process variables of temperature, pressure, flow, and level) as well as specialized measurements for specific industries. With this offering the Division serves virtually all process, hybrid and marine industries, the largest among them being the oil, gas and chemical value chain, water and power generation industries. The Division also provides advanced digital solutions to help customers improve productivity, safety and environmental sustainability.

The Turbocharging Division manufactures and services turbochargers for diesel and gas engines with power levels ranging from 500 kilowatts to over 80 megawatts. Key end sectors are marine- and land-based power generation. The Division provides engine builders and operators advanced solutions and services for efficient and flexible application operations, in compliance with the most stringent environmental requirements.

Sales and Marketing

The Process Automation Business Area's sales are primarily made through its direct sales force as well as third-party channel partners, such as distributors, system integrators and OEMs. The majority of revenues are derived through the Business Area's own direct sales channels.

Competition

The Process Automation Business Area's principal competitors vary by industry or product group. Competitors include: Emerson, Honeywell, Schneider Electric, Siemens, Siemens Energy, Yokogawa, Endress + Hauser, Kongsberg, Valmet and Garrett.

Capital Expenditures

The Process Automation Business Area's capital expenditures for property, plant and equipment totaled $85 million in 2021, compared to $75 million in 2020. Principal investments in 2021 were in the Turbocharging and the Measurement & Analytics Divisions. Geographically, in 2021, Europe represented 73 percent of the capital expenditures, followed by Asia, Middle East and Africa (18 percent) and the Americas (9 percent).

Robotics & Discrete Automation Business Area

Overview

The Robotics & Discrete Automation Business Area provides robotics, and machine and factory automation including products, software, solutions and services. Revenues are generated both from direct sales to end users as well as from indirect sales mainly through system integrators and machine builders.

The Robotics & Discrete Automation Business Area had approximately 10,600 employees as of December 31, 2021, and generated $3.3 billion of revenues in 2021.

Products and Services

The Robotics & Discrete Automation Business Area's products and services are delivered through two operating Divisions.

The Robotics Division offers a wide range of products, solutions and services including robots, robotics application cells and smart systems, field services, spare parts, digital services, engineering and operations software. This offering provides customers with increased productivity, quality, flexibility and simplicity for operations, e.g. to meet the challenge of making smaller lots of a larger number of specific products in shorter cycles for today's dynamic global markets and coping with increasing uncertainty. Robots are also used in activities or environments which may be hazardous to employee health and safety, such as repetitive or strenuous lifting, dusty, hot or cold rooms, or painting booths and can help customers address labor shortages. Robotics solutions are used in a wide range of segments from automotive OEMs, automotive suppliers, electronics, general industry, consumer goods, food and beverage, and warehouse/logistics center automation. They are increasingly deployed in service applications for health care, restaurants and retail. Typical robotic applications include welding, material handling, machine tending, machining, painting, picking, packing, palletizing and assembly. In 2021, we acquired ASTI Mobile Robotics Group (ASTI) adding a broad portfolio of autonomous mobile robot vehicles and solutions.

The Machine Automation Division offers integrated automation solutions based on programmable logical controllers, industrial PCs, servo motion, industrial transport systems and machine vision. It also provides software for engineering and optimization. The range of solutions are mainly used by machine builders for various types of series machines, e.g. for plastics, metals, printing and packaging.

Customers

Robotics & Discrete Automation serves a wide range of customers. The main customers are active in industries such as automotive, machine building, metalworking, electronics, food and beverage and logistics. They include end-users such as manufacturers, system integrators and machine builders.

Sales and Marketing

Sales are made both through direct sales as well as through third-party channel partners, such as system integrators and machine builders. The proportion of direct sales compared to channel partner sales varies among the different industries, product technologies and geographic markets.

Competition

Competitors of the Robotics & Discrete Automation Business Area vary by offering and include companies such as Fanuc, Kuka, Yaskawa, Epson, Dürr, Stäubli, Universal Robots, Rockwell Automation, Siemens, Mitsubishi Electric and Beckhoff.

Capital Expenditures

The Robotics & Discrete Automation Business Area's capital expenditures for property, plant and equipment totaled $96 million in 2021, compared to $65 million in 2020. Principal investments in 2021 were primarily related to research and development and training facilities, especially the new Machine Automation Division global innovation and training campus in Austria, and upgrades and equipment replacement. In 2021, Europe represented 75 percent of capital expenditures, followed by Asia, Middle East and Africa (23 percent) and the Americas (2 percent).

Corporate and Other

Corporate and Other includes core headquarter functions, real estate activities, Corporate Treasury Operations, Global Business Services (GBS), the investment in Hitachi Energy and other minor business activities. Certain strategic investments managed by ABB Technology Ventures are also included in Corporate. The remaining activities of certain EPC projects which we are completing and are in a wind-down phase are reported as non-core businesses within Corporate and Other. In addition, the historical business activities of certain divested businesses are presented in Corporate and Other. These include the high-voltage cables business, steel structures and certain EPC contracts relating to the oil and gas industry.

Corporate headquarters and stewardship activities include the operations of our corporate headquarters in Zurich, Switzerland, as well as limited corporate-related activities in some countries. These activities cover staff functions with group-wide responsibilities, such as accounting and financial reporting, corporate finance and corporate treasury, taxes, financial planning and analysis, internal audit, legal and integrity, compliance, risk management and insurance, corporate communications, information systems and investor relations.

GBS operates shared service centers globally through a network of five hubs and consists of both expert and transactional services in the areas of human resources, finance, information services, legal, real estate, customer contact centers, global travel services and other ancillary activities. GBS also staffs and maintains front offices in most countries. The costs in GBS are incurred primarily for the benefit of the Business Areas, who are charged for their use of the services and the related number of employees are allocated to the Business Areas. GBS also provides services to third-parties under transitional service agreements in relation to certain divested businesses, the largest of which is the Power Grids business.

A significant portion of the costs for GBS and other shared corporate overhead costs are charged to the operating businesses. Up until the divestment of the Power Grids business on July 1, 2020, overhead and other management costs, including GBS costs, which would have been allocated or charged to our Power Grids business, and which were not directly attributable to this business, have not been allocated to the discontinued operation and are included in Corporate and Other as “stranded costs”.

Corporate and Other had approximately 1000 employees at December 31, 2021, of which approximately 200 pertain to our non-core businesses.

Discontinued operations

In July 2020, we divested 80.1 percent of our Power Grids business to Hitachi Ltd. As a result, the Power Grids business is reported as discontinued operations in the Consolidated Financial Statements for all years presented. See “Note 3 - Discontinued operations” to our Consolidated Financial Statements.

Power Grids business

The former Power Grids business of ABB delivered products, systems, software and service solutions across the power value chain for utility, industry and transport & infrastructure customers.

The Power Grids business operated worldwide with a globally diversified manufacturing, engineering, and research and development footprint. Direct sales accounted for the majority of total revenues generated by the business while external channel partners such as EPCs, wholesalers, distributors and OEMs accounted for the rest.

Products and Services

The Grid Automation operation supplied substation automation products, systems and services. It also provided Supervisory Control and Data Acquisition (SCADA) systems for transmission and distribution networks as well as a range of wireless, fiber optic and powerline carrier-based telecommunication technologies for mission-critical applications and also offered grid-edge and microgrid solutions. Its enterprise software portfolio provided solutions for managing and optimizing assets, operations, logistics, financials and HR, reducing operating costs and improving productivity for customers.

The Grid Integration operation was a leading provider of integration and transmission solutions such as High Voltage Direct Current (HVDC). Another key part of the portfolio was the Flexible Alternating Current Transmission Systems (FACTS) business, which comprises Static Var Compensation (SVC) and static compensator (STATCOM) technologies to address stability and power quality issues. The Grid Integration operation's portfolio also included a range of high-power semiconductors, a core technology for power electronics deployed in HVDC, FACTS and rail applications. The Grid Integration operation also provided transmission and distribution substations and associated lifecycle services. These substations are used in utility and non-utility applications including rail, data centers and various industries. Battery energy storage solutions and shore-to-ship power supply were also part of the customer offering.

The High Voltage products operation was a provider of high voltage switchgear up to 1200 kV AC and 1100 kV DC with a portfolio spanning air-insulated, gas-insulated and hybrid technologies. It also manufactured generator circuit breakers, a key product for integrating large power plants into the grid. The portfolio also included a broad range of capacitors and filters that facilitate power quality, instrument transformers and other substation components.

The Transformers operation supplied transformers that are an integral component found across the power value chain, enabling the reliable, efficient and safe conversion of voltage levels. The product range included dry- and liquid-distribution transformers, traction transformers for rail applications and special application transformers plus related components, for example, insulation kits, bushings and other transformer accessories.

The Power Grids business also had an extensive portfolio of service offerings across the value chain. The portfolio included spare parts, condition monitoring and maintenance services, on- and off-site repairs as well as retrofits and upgrades. Advanced software-based monitoring and advisory services further enhanced the portfolio.

Capital expenditures

Total capital expenditures for property, plant and equipment and intangible assets (excluding intangibles acquired through business combinations) amounted to $820 million, $694 million and $762 million in 2021, 2020 and 2019, respectively. In 2021 and 2020, capital expenditures were 8 percent and 24 percent lower, respectively, than depreciation and amortization. Excluding acquisition-related amortization, capital expenditures were 28 percent higher in 2021 and 6 percent higher in 2020, respectively, than depreciation and amortization.

Capital expenditures in 2021 remained primarily focused in mature markets, reflecting the geographic distribution of our existing production facilities. Capital expenditures in Europe and North America in 2021 were driven primarily by upgrades and maintenance of existing production facilities, mainly in the U.S., Austria, Italy, Switzerland, Finland and Sweden. Capital expenditures in Austria included continued investment in the state-of-the-art innovation and training campus, which is planned to become one of our largest research and development centers for new automation technologies. We also are constructing a new facility in Italy for our E-mobility Division. This investment aims to serve as a global center of excellence and production site for electric vehicle charging infrastructure. Our capital expenditures in emerging markets continued to remain primarily concentrated in China and focus on increasing existing production capacity. In Asia, we continued our significant investments in China investing in the new automated and flexible robotics factory and also purchasing a significant formerly leased property. The share of emerging markets capital expenditures as a percentage of total capital expenditures in 2021 and 2020 was 33 percent and 22 percent, respectively.

At December 31, 2021, construction in progress for property, plant and equipment was $522 million, mainly in the U.S., Switzerland, Germany, Sweden, Italy, China and India while at December 31, 2020, construction in progress for property, plant and equipment was $505 million, mainly in the U.S., Switzerland, Austria, Germany and China.

Our capital expenditures relate primarily to property, plant and equipment and are funded primarily through cash flows from operating activities. For 2022, we estimate the expenditures for property, plant and equipment will be higher than our annual depreciation and amortization charge, excluding acquisition-related amortization.

Supplies and raw materials

We purchase a variety of supplies and products which contain raw materials for use in our production and project execution processes. The primary materials used in our products, by weight, are copper, aluminum, steel, mineral oil and various plastics. We also purchase a wide variety of fabricated products, electronic components and systems. We operate a worldwide supply chain management network with employees dedicated to this function in our Business Areas, Divisions and in key countries. Our supply chain operations consists of a number of teams, each focusing on different product categories. These category teams take advantage of opportunities to leverage the scale of ABB on a global, Business Area and/or Division level, as appropriate, to optimize the efficiency of our supply networks in a sustainable manner.

Our supply chain management organization's activities and objectives include:

- pool and leverage procurement of materials and services,
- provide transparency of ABB's global spending through a comprehensive performance and reporting system linked to our enterprise resource planning (ERP) systems,
- strengthen ABB's supply chain network by implementing an effective product category management structure and extensive competency-based training, and
- monitor and develop our supply base to ensure sustainability, both in terms of materials and processes used.

We buy many categories of products which contain steel, copper, aluminum, crude oil and other commodities. Continuing global economic growth in many emerging economies, coupled with the volatility in foreign currency exchange rates, has led to significant fluctuations in these raw material costs over the last few years. While we expect global commodity prices to remain highly volatile, we expect to offset some market volatility through the use of long-term contracts and global sourcing.

We seek to mitigate the majority of our exposure to commodity price risk by entering into derivative contracts. For example, we manage copper, silver and aluminum price risk using principally swap contracts based on prices for these commodities quoted on leading exchanges. ABB's hedging policy is designed to safeguard margins by minimizing price volatility and providing a stable cost base during order execution. In addition to using derivatives to reduce our exposure to fluctuations in raw materials prices, in some cases we can reduce this risk by incorporating changes in raw materials prices into the prices of our end products (through price escalation clauses).

Overall, during 2021, supply chain management personnel in our businesses, and in the countries in which we operate, along with the category teams, continued to focus on value chain optimization efforts in all areas, while maintaining and improving quality and delivery performance. Responding to the challenges of overall global supply chain constraints, each Business Area quickly implemented a task force to mitigate supply chain shortages. The Business Areas experienced some delays in supplier deliveries and product shortages for various categories such as semiconductors and other raw materials as well as constraints in the transportation of inbound supplies. However, we responded to these challenges and took mitigating actions such as building up buffer stocks, approving new suppliers, changing supplier splits, combined with daily, weekly and monthly task force project follow ups. We have, to a large extent, been able to mitigate most disruptions, maintain a competitive service level and support our business growth, while maintaining delivery schedules to our customers.

In August 2012, the SEC issued its final rules regarding "Conflict Minerals", as required by section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act. We initiated conflict minerals processes in 2013 and have continuously aimed at improving and tailoring the processes to our value chain. We continue to work with our suppliers and customers, to enable us to comply with the rules and disclosure obligations. Further information on ABB's Conflict Minerals policy and supplier requirements can be found under "Material Compliance" at global.abb/group/en/about.supplying.

Patents and trademarks

While we are not materially dependent on any one of our intellectual properties, as a technology-driven company, we believe that intellectual property rights are crucial to protect the assets of our business. Over the past ten years, we have continued to substantially add new applications to our existing first patent filings, and we intend to continue our aggressive approach to seeking patent protection. As of December 31, 2021, we have approximately 25,000 patent applications and registrations, of which approximately 5,500 are pending applications. These patents include more than 3,500 utility model and design applications and registrations, of which approximately 200 are pending applications. In 2021, we filed more than 2,250 patents, utility model and design applications for more than 1,250 inventions. Based on our existing intellectual property strategy, we believe that we have adequate control over our core technologies. The "ABB" trademarks and logo are protected in all of the countries in which we operate. We proactively assert our intellectual property rights to safeguard the reputation associated with the ABB technology and brand. While these intellectual property rights are fundamental to all of our businesses, there is no dependency of the business on any single patent, utility model or design application.

Management overview

During 2021, we saw a strong recovery from the pandemic-related disruptions of 2020. It also was the first full fiscal year where we operated under our decentralized operating model, the ABB Way. In 2021, we have seen improved efficiencies from this new way of operating and we expect the increased transparency, accountability and speed to further support future growth and profitability. Additionally, we made progress in reshaping our business portfolio, completing the divestment of the Mechanical Power Transmission business, as we continue to be fully focused on electrification and automation. This transaction completes the first of the three planned Divisional exits previously announced in 2020.

Active portfolio management is part of our performance culture. On the back of systematic portfolio reviews we ascertain whether ultimately ABB is the best owner of the different businesses. As a result, we have successfully divested the Mechanical Power Transmission Division during 2021. We continue to make progress on the exit of the Turbocharging Division, where we are currently running a dual track process for a spin-off or divestment, and plan to exit the Power Conversion Division. At the same time, we are carving-out the E-mobility Division and work towards an initial public offering to create a platform for accelerated growth and value creation. We plan to remain a majority owner of the new company.

In addition, our active portfolio management process is driving decisions within the Divisions to improve or exit areas of underperformance, supporting improved performance ambitions. Further, we intend to pursue strategic partnerships as well as bolt-on acquisitions driven by the Divisions. In 2021, we acquired ASTI Mobile Robotics Group, a global leader in the high-growth autonomous mobile robots market with a broad portfolio of vehicles and software. As part of our future strategy we aim to complete five or more bolt-on acquisitions each year.

Business progress

During 2021, demand for ABB's offering recovered from the low level in 2020 when the adverse business impact of the pandemic was most significant. Orders and revenues increased in all Business Areas. Demand increased year-on-year in all regions with the Americas seeing the highest growth, while the increase was lower in Asia, Middle East and Africa as China had already started to recover in 2020. While short-cycle product demand recovered relatively quickly from the sharp downturn seen at the onset of the pandemic, project activities, particularly in process industries, predominantly picked-up during the second half of 2021. The loosening of various pandemic-related travel restrictions allowed for a more significant improvement in service-related activities.

While our orders increased 20 percent in 2021, revenues only grew by 11 percent. Supply chain constraints, and imbalances in the overall supply chain limited our ability to convert orders into actual deliveries resulting in an increase of our order backlog by 16 percent to $16.6 billion at the end of the year.

Group profitability showed strong improvement during 2021 with segment profit (Operational EBITA) higher in all Business Areas and continued progress towards a lean corporate function. The result was driven by better volumes, continuous improvements, improved internal efficiency and the absence of certain larger non-core project losses incurred in 2020. Active price management and productivity gains were able to offset increasing raw material costs and general cost inflation emphasized by the tight supply situation over the year. While some costs such as discretionary travel or certain marketing costs are still expected to rebalance from low pandemic levels, we believe we are on track to achieve our future business targets.

The profitability improvement as well as lower cash costs for transformation initiatives have also allowed us to achieve strong cash generation, with cash flows from operating activities in continuing operations improving to $3.3 billion in 2021, an increase of 78 percent compared to 2020.

We continued to make organic growth investments in a disciplined manner, prioritizing research and development while reducing administrative costs. Total non-order related research and development was $1.2 billion in 2021, or 4.2 percent of revenues. We also completed key acquisitions and divestments in 2021, strengthening our portfolio.

Capital allocation

Our capital allocation priorities are unchanged:

- funding organic growth, research and development, and capital expenditures at attractive returns,
- paying a rising, sustainable dividend per share over time,
- investing in value-creating acquisitions, and
- returning additional cash to shareholders.

We expect that our improved cash generation, on the back of the ABB Way operating model, will enhance our flexibility to invest in both organic growth and bolt-on acquisitions, while providing attractive returns to shareholders.

At the 2022 Annual General Meeting (AGM), the Board of Directors is proposing a dividend of 0.82 Swiss francs per share. We also plan to continue our announced share buyback to return $7.8 billion of cash proceeds from the Power Grids divestment to shareholders. At December 31, 2021, under the initial and follow-up share buyback programs, we had cumulatively purchased shares for approximately $5.5 billion.

Updated financial target framework

During 2021, we raised our growth target to 4 to 7 percent (up from 3 to 5 percent) annual average revenue growth, through an economic cycle and in constant currencies. This includes 3 to 5 percent organic growth and 1 to 2 percent from acquired growth.

For the Operational EBITA margin, we have removed the previous margin ranges and raised our target to at least 15 percent as from 2023 (from upper half of 13 to 16 percent range in 2023).

The other targets within our financial framework remain unchanged:

- Return on Capital Employed (ROCE) of 15 to 20 percent,
- Cash conversion to net income of approximately 100 percent, and
- Basic EPS growth above revenue growth.

Sustainability strategy 2030

With our 2030 sustainability strategy, we are actively contributing to a more sustainable world, leading by example in our own operations and partnering with customers and suppliers to enable a low-carbon society, preserve resources and promote social progress. Our sustainability focus is part of ABB's commitment to responsible business practices, which are at the center of our comprehensive governance framework, based on integrity and transparency.

Amongst other focus areas in 2021, we unveiled, at the Capital Markets Day 2021, our circularity framework covering every stage of the product lifecycle to preserve resources. It includes four stages: circular design and sourcing, resource efficient operations, optimized use phase and responsible end of life. The goal is to have 80 percent of ABB products, solutions and services covered by the circularity framework by 2030, with our progress measured against a set of KPIs. For further information on sustainability see the Sustainability section in the Introduction to this Annual Report.

Critical accounting policies and estimates

General

We prepare our Consolidated Financial Statements in accordance with U.S. GAAP and present these in U.S. dollars unless otherwise stated.

The preparation of our financial statements requires us to make assumptions and estimates that affect the reported amounts of assets, liabilities, revenues and expenses and the related disclosure of contingent assets and liabilities. We evaluate our estimates on an ongoing basis (see “Note 2 - Significant accounting policies” to our Consolidated Financial Statements for a listing of our most significant accounting estimates). Where appropriate, we base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from our estimates and assumptions.

We deem an accounting policy to be critical if it requires an accounting estimate to be made based on assumptions about matters that are highly uncertain at the time the estimate is made and if different estimates that reasonably could have been used, or if changes in the accounting estimates that are reasonably likely to occur periodically, could materially impact our Consolidated Financial Statements. We also deem an accounting policy to be critical when the application of such policy is essential to our ongoing operations. We believe the following critical accounting policies require us to make subjective judgments, often as a result of the need to make estimates regarding matters that are inherently uncertain and material to our Consolidated Financial Statements. These policies should be considered when reading our Consolidated Financial Statements.

Revenue recognition

A customer contract exists if collectability under the contract is considered probable, the contract has commercial substance, contains payment terms, the rights and commitments of both parties, and has been approved. By analyzing the type, terms and conditions of each contract or arrangement with a customer, we determine which revenue recognition method applies.

We recognize revenues when control of goods or services is transferred to customers in an amount that reflects the consideration we expect to be entitled to in exchange for these goods or services. Control is transferred when the customer has the ability to direct the use and obtain the benefits from the goods or services.

The percentage-of-completion method of accounting is generally used when recognizing revenue on an over time basis and involves the use of assumptions and projections, principally relating to future material, labor, subcontractor and project-related overhead costs as well as estimates of the amount of variable consideration to which we expect to be entitled. As a consequence, there is a risk that total contract costs or the amount of variable consideration will, respectively, either exceed or be lower than those we originally estimated (based on all information reasonably available to us) and the margin will decrease or the contract may become unprofitable. This risk increases if the duration of a contract increases because there is a higher probability that the circumstances upon which we originally developed our estimates will change, resulting in increased costs that we may not recover. Factors that could cause costs to increase include:

- unanticipated technical problems with equipment supplied or developed by us which may require us to incur additional costs to remedy,
- changes in the cost of components, materials or labor,
- difficulties in obtaining required governmental permits or approvals,
- project modifications creating unanticipated costs,
- suppliers’ or subcontractors’ failure to perform, and
- delays caused by unexpected conditions or events.

Changes in our initial assumptions, which we review on a regular basis between balance sheet dates, may result in revisions to estimated costs, current earnings and anticipated earnings. We recognize these changes in the period in which the changes in estimates are determined. By recognizing changes in estimates cumulatively, recorded revenue and costs to date reflect the current estimates of the stage of completion of each project. Additionally, losses on such contracts are recognized in the period when they are identified and are based upon the anticipated excess of contract costs over the related contract revenues.

Pension and other postretirement benefits

As more fully described in "Note 17 - Employee benefits" to our Consolidated Financial Statements, we have a number of defined benefit pension and other postretirement plans and recognize an asset for a plan's overfunded status or a liability for a plan's underfunded status in our Consolidated Balance Sheets. We measure such a plan's assets and obligations that determine its funded status as of the end of the year.

Significant differences between assumptions and actual experience, or significant changes in assumptions, may materially affect the pension obligations. The effects of actual results differing from assumptions and the changing of assumptions are included in net actuarial loss within "Accumulated other comprehensive loss".

We recognize actuarial gains and losses gradually over time. Any cumulative unrecognized actuarial gain or loss that exceeds 10 percent of the greater of the present value of the projected benefit obligation (PBO) and the fair value of plan assets is recognized in earnings over the expected average remaining working lives of the employees participating in the plan, or the expected average remaining lifetime of the inactive plan participants if the plan is comprised of all or almost all inactive participants. Otherwise, the actuarial gain or loss is not recognized in the Consolidated Income Statements.

We use actuarial valuations to determine our pension and postretirement benefit costs and credits. The amounts calculated depend on a variety of key assumptions, including discount rates, mortality rates and expected return on plan assets. Under U.S. GAAP, we are required to consider current market conditions in making these assumptions. In particular, the discount rates are reviewed annually based on changes in long-term, highly-rated corporate bond yields. Decreases in the discount rates result in an increase in the PBO and in pension costs. Conversely, an increase in the discount rates results in a decrease in the PBO and in pension costs. The mortality assumptions are reviewed annually by management. Decreases in mortality rates result in an increase in the PBO and in pension costs. Conversely, an increase in mortality rates results in a decrease in the PBO and in pension costs.

Holding all other assumptions constant, a 0.25 percentage-point decrease in the discount rate would have increased the PBO related to our defined benefit pension plans by $262 million while a 0.25 percentage-point increase in the discount rate would have decreased the PBO related to our defined benefit pension plans by $254 million.

The expected return on plan assets is reviewed regularly and considered for adjustment annually based upon the target asset allocations and represents the long-term return expected to be achieved. Decreases in the expected return on plan assets result in an increase to pension costs. Holding all other assumptions constant, an increase or decrease of 0.25 percentage points in the expected long-term rate of asset return would have decreased or increased, respectively, the net periodic benefit cost in 2021 by $21 million.

The funded status, which can increase or decrease based on the performance of the financial markets or changes in our assumptions, does not represent a mandatory short-term cash obligation. Instead, the funded status of a defined benefit pension plan is the difference between the PBO and the fair value of the plan assets. At December 31, 2021, our defined benefit pension plans were $27 million overfunded compared to an underfunding of $656 million at December 31, 2020. Our other postretirement plans were underfunded by $71 million and $98 million at December 31, 2021 and 2020, respectively.

Income taxes

In preparing our Consolidated Financial Statements, we are required to estimate income taxes in each of the jurisdictions in which we operate. Tax expense from continuing operations is reconciled from the weighted-average global tax rate (rather than from the Swiss domestic statutory tax rate). As the parent company of the ABB Group, ABB Ltd, is domiciled in Switzerland, income which has been generated in jurisdictions outside of Switzerland (hereafter "foreign jurisdictions") and has already been subject to corporate income tax in those foreign jurisdictions is, to a large extent, tax exempt in Switzerland. Therefore, generally no or only limited Swiss income tax has to be provided for on the repatriated earnings of foreign subsidiaries. There is no requirement in Switzerland for a parent company of a group to file a tax return of the group determining domestic and foreign pre-tax income and as our consolidated income from continuing operations is predominantly earned outside of Switzerland, corporate income tax in foreign jurisdictions largely determines our global weighted-average tax rate.

We account for deferred taxes by using the asset and liability method. Under this method, we determine deferred tax assets and liabilities based on temporary differences between the financial reporting and the tax bases of assets and liabilities. Deferred tax assets and liabilities are measured using the enacted tax rates and laws that are expected to be in effect when the differences are expected to reverse. We recognize a deferred tax asset when it is more likely than not that the asset will be realized. We regularly review our deferred tax assets for recoverability and establish a valuation allowance based upon historical losses, projected future taxable income and the expected timing of the reversals of existing temporary differences. To the extent we increase or decrease this allowance in a period, we recognize the change in the allowance within "Income tax expense" in the Consolidated Income Statements unless the change relates to discontinued operations, in which case the change is recorded in "Income from discontinued operations, net of tax". Unforeseen changes in tax rates and tax laws, as well as differences in the projected taxable income as compared to the actual taxable income, may affect these estimates.

Certain countries levy withholding taxes, dividend distribution taxes or additional corporate income taxes (hereafter "withholding taxes") on dividend distributions. Such taxes cannot always be fully reclaimed by the shareholder, although they have to be declared and withheld by the subsidiary. Switzerland has concluded double taxation treaties with many countries in which we operate. These treaties either eliminate or reduce such withholding taxes on dividend distributions. It is our policy to distribute retained earnings of subsidiaries, insofar as such earnings are not permanently reinvested or no other reasons exist that would prevent the subsidiary from distributing them. No deferred tax liability is set up, if retained earnings are considered as indefinitely reinvested, and used for financing current operations as well as business growth through working capital and capital expenditure in those countries.

We operate in numerous tax jurisdictions and, as a result, are regularly subject to audit by tax authorities, including for transfer pricing. We provide for tax contingencies whenever it is deemed more likely than not that a tax asset has been impaired or a tax liability has been incurred for events such as tax claims or changes in tax laws. Contingency provisions are recorded based on the technical merits of our filing position, considering the applicable tax laws and OECD guidelines and are based on our evaluations of the facts and circumstances as of the end of each reporting period. Changes in the facts and circumstances could result in a material change to the tax accruals. Although we believe that our tax estimates are reasonable and that appropriate tax reserves have been made, the final determination of tax audits and any related litigation could be different than that which is reflected in our income tax provisions and accruals.

An estimated loss from a tax contingency must be accrued as a charge to income if it is more likely than not that a tax asset has been impaired or a tax liability has been incurred and the amount of the loss can be reasonably estimated. We apply a two-step approach to recognize and measure uncertainty in income taxes. The first step is to evaluate the tax position for recognition by determining if the weight of available evidence indicates that it is more likely than not that the position will be sustained on audit, including resolution of related appeals or litigation processes, if any. The second step is to measure the tax benefit as the largest amount which is more than 50 percent likely of being realized upon ultimate settlement. The required amount of provisions for contingencies of any type may change in the future due to new developments.

Goodwill and intangible assets

We review goodwill for impairment annually as of October 1, or more frequently if events or circumstances indicate the carrying value may not be recoverable. We use either a qualitative or quantitative assessment method for each reporting unit.

As each of our Divisions have full ownership and accountability for their respective strategies, performance and resources, we have determined our reporting units to be at the Division level, which is one level below our operating segments of Electrification, Motion, Process Automation and Robotics & Discrete Automation.

When performing the qualitative assessment, we first determine, for a reporting unit, factors which would affect the fair value of the reporting unit including: (i) macroeconomic conditions related to the business, (ii) industry and market trends, and (iii) the overall future financial performance and future opportunities in the markets in which the business operates. We then consider how these factors would impact the most recent quantitative analysis of the reporting unit's fair value. Key assumptions in determining the fair value of the reporting unit include the projected level of business operations, the reporting unit's weighted-average cost of capital, the income tax rate and the terminal growth rate.

During 2021, we added three new Divisions by splitting two existing ones into multiple stand-alone Divisions and announced (in July 2021) the divestment of the Mechanical Power Transmission Division, resulting in twenty reporting units in total for the Group at October 1, 2021. For each change in reporting unit which arose during 2021, an interim quantitative impairment test was conducted before and after the change. In both the "before" and "after" tests, it was concluded that the fair value of the reporting units exceeded the carrying value by a significant amount.

In 2020, prior to the adoption of the new "ABB Way" operating model on July 1, 2020, goodwill was generally assessed at the level of ABB's operating segments (one level above the Division, with the exception of Process Automation where the reporting units were the same as the Divisions) while after the change, goodwill impairment was assessed at the Division level. Although the new operating model resulted only in an allocation of goodwill within the operating segments and did not change the segment level goodwill, an interim quantitative impairment test was conducted before and after the July 1 change.

In the "before" test, it was concluded that the fair value of our reporting units exceeded the carrying value under the historical reporting unit structure. For the impairment test performed immediately after the change in reporting units, the fair value of each of the eighteen reporting units was determined using a discounted cash flow fair value estimate based on objective information at the measurement date. The significant assumptions used to develop the estimates of fair value for each reporting unit included our best estimates of the expected future results and discount rates specific to the reporting unit. Determining the projected future cash flows required significant judgments and estimates involving variables such as future sales volumes, sales prices, production and other operating costs, capital expenditures, net working capital requirements and other economic factors such as the continued impact of the COVID-19 pandemic. The fair value estimates were based on assumptions that we believed to be reasonable, but which were inherently uncertain and thus, actual results may differ from those estimates. Sensitivity analyses were performed around certain of these assumptions in order to assess the reasonableness of the assumptions and the resulting estimated fair values.

The 2020 interim quantitative impairment test indicated that, with the exception of the Machine Automation reporting unit within the Robotics & Discrete Automation operating segment, the estimated fair values of our reporting units were substantially in excess of their carrying value. The contraction of the global economy in 2020, particularly in end-customer industries and considerable uncertainty around the continued pace of macroeconomic recovery generally led to a reduction in the fair values of the reporting units, thus also affecting the Machine Automation reporting unit. At the Division level, this reporting unit does not benefit from shared cash flows generated within an entire operating segment. In addition, the book value of the Machine Automation Division includes a significant amount of intangible assets recognized in past acquisitions, resulting in a proportionately higher book value than the other reporting unit within the Robotics & Discrete Automation operating segment. These factors led to the carrying value of the Machine Automation reporting unit exceeding its fair value. During 2020, a goodwill impairment charge of $290 million was recorded to reduce the carrying value of this reporting unit to its implied fair value. The remaining goodwill for the Machine Automation reporting unit was $554 million as of December 31, 2020. Since the carrying value of this reporting unit was reduced to its fair value as of July 1, 2020, any material adverse changes such as market deterioration or changes in the competitive landscape could result in future impairment charges.

At October 1, 2021 and 2020, respectively, we performed qualitative assessments and determined that it was not more likely than not that the fair value for each of these reporting units was below the carrying value. As a result, we concluded that it was not necessary to perform the quantitative impairment test.

Intangible assets are reviewed for recoverability upon the occurrence of certain triggering events (such as a decision to divest a business or projected losses of an entity) or whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. We record impairment charges other than impairments of goodwill in "Other income (expense), net" in our Consolidated Income Statements, unless they relate to a discontinued operation, in which case the charges are recorded in "Income from discontinued operations, net of tax".

New accounting pronouncements

For a description of accounting changes and recent accounting pronouncements, including the expected dates of adoption and estimated effects, if any, on our Consolidated Financial Statements, see “Note 2 - Significant accounting policies” to our Consolidated Financial Statements.

Research and development

Each year, we invest significantly in research and development. Our research and development focuses on developing and commercializing the technologies, products and solutions of our businesses that are of strategic importance to our future growth. In 2021, we invested $1,219 million, or approximately 4.2 percent of our 2021 consolidated revenues, on research and development activities in our continuing operations. We also had expenditures of $53 million, or approximately 0.2 percent of our 2021 consolidated revenues, on order-related development activities. These are customer- and project-specific development efforts that we undertake to develop or adapt equipment and systems to the unique needs of our customers in connection with specific orders or projects.

In addition to continuous product development, and order-related engineering work, we develop platforms for technology applications in our businesses in our research and development laboratories, which operate on a global basis, such as our ABB Ability™ platform. Through active management of our investment in research and development, we seek to maintain a balance between short-term and long-term research and development programs and optimize our return on investment. We protect these results by holding patents, copyrights and other appropriate intellectual property protection.

To complement our business-focused product development, our businesses invest together in collaborative research activities covering topics such as artificial intelligence, software, sensors, control and optimization, mechatronics and robotics, power electronics, communication technologies, material and manufacturing, electrodynamics and electrical switching technologies. This results in advancing the state-of-the-art technologies used in our products and in common technology platforms that can be applied in multiple product lines.

Universities are incubators of future technology, and one task of our research and development teams is to transform university research into industry-ready technology platforms. We collaborate with multiple universities and research institutions to build research networks and foster new technologies. We believe these collaborations shorten the amount of time required to turn basic ideas into viable products, and they additionally help us to recruit and train new personnel. We have built numerous university collaborations in several continents, including long-term, strategic relationships with a number of leading institutions in the U.S., the United Kingdom, Sweden, Germany, Switzerland, Poland, India and China.

We are also leveraging our ecosystem to enhance our innovation efforts and gain speed with strategic partners with complementary competencies. In addition, we invest and collaborate with start-ups worldwide via our corporate venture arm ABB Technology Ventures and our start-up collaboration arm SynerLeap.

The result of our investment in research and development is that ABB is widely recognized for its world-class technology. Technology has been deeply embedded in our DNA since our founding and has carried us through our century-long history. It is one of the main reasons why customers and partners turn to us for help on their biggest challenges. Together with them, we continuously push technology frontiers to make things possible that were not possible before. We are committed to stay ahead to help our customers address the world’s energy challenges, transform industries to reach new levels of performance and embed sustainability, all to leave behind a world for future generations that is at least as healthy and prosperous as the one we inherited.

Acquisitions and divestments

Acquisitions

During 2021 and 2020, ABB paid $212 million and $79 million to purchase two and three businesses, respectively.

The principal acquisition in 2021 was ASTI Mobile Robotics Group SL (ASTI). ASTI, headquartered in Burgos, Spain, is a global autonomous mobile robot (AMR) manufacturer and employs approximately 300 people. See “Note 4 - Acquisitions, divestments and equity-accounted companies” to our Consolidated Financial Statements.

There were no significant acquisitions in 2020 or 2019.

Divestments

Divestment of Mechanical Power Transmission Division

In November 2021, we completed the sale of our Mechanical Power Transmission Division (Dodge) to RBC Bearings Inc. for cash proceeds of $2,862 million, net of transactions costs and cash disposed and recognizing a net gain on sale of $2,195 million. Prior to its disposal, the Dodge business was part of our Motion operating segment. See “Note 4 - Acquisitions, divestments and equity-accounted companies” to our Consolidated Financial Statements.

Divestment of Power Grids

On July 1, 2020, ABB completed the divestment of 80.1 percent of its former Power Grids business to Hitachi. As this divestment represented a strategic shift that had a major effect on our operations and financial results, the results of operations for this business are presented as discontinued operations and the assets and liabilities are reflected as held for sale for all periods presented. For more information on the divestment of the Power Grids business see “Note 3 - Discontinued operations” to our Consolidated Financial Statements.

Divestment of solar inverters

In February 2020, ABB completed the sale of its solar inverters business to FIMER S.p.A. (Italy) for no consideration. Under the agreement, which was reached in July 2019, ABB was obligated to transfer $143 million of cash to the buyer on the closing date. In addition, further payments totaling EUR 132 million ($145 million at the divestment date) are required to be transferred to the buyer from 2020 through 2025. In connection with this divestment, in 2019, we recorded a loss of $421 million, representing the excess of the carrying value over the estimated fair value of this business. In 2020, a further $33 million was recorded for additional changes in fair value occurring prior to the date of sale. Both amounts, in the respective years are reported in “Other income (expense), net”. See “Note 4 - Acquisitions, divestments and equity-accounted companies” to our Consolidated Financial Statements.

Other

In 2019, we recorded net gains (including transaction costs) of $55 million, primarily due to the divestment of two businesses in China.

Exchange rates

We report our financial results in U.S. dollars. Due to our global operations, a significant amount of our revenues, expenses, assets and liabilities are denominated in other currencies. As a consequence, movements in exchange rates between currencies may affect: (i) our profitability, (ii) the comparability of our results between periods and (iii) the reported carrying value of our assets and liabilities.

We translate non-USD denominated results of operations, assets and liabilities to USD in our Consolidated Financial Statements. Balance sheet items are translated to USD using year-end currency exchange rates. Income statement and cash flow items are translated to USD using the relevant monthly average currency exchange rate.

Increases and decreases in the value of the USD against other currencies will affect the reported results of operations in our Consolidated Income Statements and the value of certain of our assets and liabilities in our Consolidated Balance Sheets, even if our results of operations or the value of those assets and liabilities have not changed in their original currency. As foreign exchange rates impact our reported results of operations and the reported value of our assets and liabilities, changes in foreign exchange rates could significantly affect the comparability of our reported results of operations between periods and result in significant changes to the reported value of our assets, liabilities and stockholders' equity.

While we operate globally and report our financial results in USD, exchange rate movements between the USD and the EUR, the CNY and the CHF are of particular importance to us due to (i) the location of our significant operations and (ii) our corporate headquarters being in Switzerland.

The exchange rates between the USD and the EUR, the USD and the CHF and the USD and the CNY at December 31, 2021, 2020 and 2019, were as follows:

Exchange rates into $	2021	2020	2019
EUR 1.00	1.13	1.23	1.12
CHF 1.00	1.10	1.14	1.03
CNY 1.00	0.16	0.15	0.14

The average exchange rates between the USD and the EUR, the USD and the CHF and the USD and the CNY for the years ended December 31, 2021, 2020 and 2019, were as follows:

Exchange rates into $	2021	2020	2019
EUR 1.00	1.18	1.14	1.12
CHF 1.00	1.09	1.07	1.01
CNY 1.00	0.16	0.14	0.14

When we incur expenses that are not denominated in the same currency as the related revenues, foreign exchange rate fluctuations could affect our profitability. To mitigate the impact of exchange rate movements on our profitability, it is our policy to enter into forward foreign exchange contracts to manage the foreign exchange transaction risk of our operations.

In 2021, approximately 77 percent of our consolidated revenues were reported in currencies other than the USD. The following percentages of consolidated revenues were reported in the following currencies:

- Euro, approximately 23 percent, and
- Chinese renminbi, approximately 17 percent.

In 2021, approximately 74 percent of our cost of sales and selling, general and administrative expenses were reported in currencies other than the USD. The following percentages of consolidated cost of sales and selling, general and administrative expenses were reported in the following currencies:

- Euro, approximately 20 percent, and
- Chinese renminbi, approximately 14 percent.

We also incur expenses other than cost of sales and selling, general and administrative expenses in various currencies.

The results of operations and financial position of our subsidiaries outside of the U.S. are generally accounted for in the currencies of the countries in which those subsidiaries are located. We refer to these currencies as "local currencies". Local currency financial information is then translated into USD at applicable exchange rates for inclusion in our Consolidated Financial Statements.

The discussion of our results of operations below provides certain information with respect to orders, revenues, income from operations and other measures as reported in USD (as well as in local currencies). We measure period-to-period variations in local currency results by using a constant foreign exchange rate for all periods under comparison. Differences in our results of operations in local currencies as compared to our results of operations in USD are caused exclusively by changes in currency exchange rates.

While we consider our results of operations as measured in local currencies to be a significant indicator of business performance, local currency information should not be relied upon to the exclusion of U.S. GAAP financial measures. Instead, local currencies reflect an additional measure of comparability and provide a means of viewing aspects of our operations that, when viewed together with the U.S. GAAP results, provide a more complete understanding of factors and trends affecting the business. As local currency information is not standardized, it may not be possible to compare our local currency information to other companies' financial measures that have the same or a similar title. We encourage investors to review our financial statements and publicly filed reports in their entirety and not to rely on any single financial measure.

Orders

Our policy is to book and report an order when a binding contractual agreement has been concluded with a customer covering, at a minimum, the price and scope of products or services to be supplied, the delivery schedule and the payment terms. The reported value of an order corresponds to the undiscounted value of revenues that we expect to recognize following delivery of the goods or services subject to the order, less any trade discounts and excluding any value added or sales tax. The value of orders received during a given period of time represents the sum of the value of all orders received during the period, adjusted to reflect the aggregate value of any changes to the value of orders received during the period and orders existing at the beginning of the period. These adjustments, which may in the aggregate increase or decrease the orders reported during the period, may include changes in the estimated order price up to the date of contractual performance, changes in the scope of products or services ordered and cancellations of orders. The undiscounted value of future revenues we expect to generate from our orders at any point in time is represented by our order backlog.

The level of orders fluctuates from year to year. Portions of our business involve orders for long-term projects that can take months or years to complete and many larger orders result in revenues in periods after the order is booked. Consequently, the level of orders generally cannot be used to accurately predict future revenues or operating performance. Orders that have been placed can often be cancelled, delayed or modified by the customer. These actions can reduce or delay any future revenues from the order or may result in the elimination of the order.

Transactions with affiliates and associates

In the normal course of our business, we purchase products from, sell products to and engage in other transactions with entities in which we hold an equity interest. The amounts involved in these transactions are not material to ABB Ltd. Our most significant equity method investment is in Hitachi Energy Ltd (see “Note 4 - Acquisitions, divestments and equity-accounted companies” for details). Also, in the normal course of our business, we engage in transactions with businesses that we have divested. We believe that the terms of the transactions we conduct with these companies are negotiated on an arm’s length basis.

Performance measures

We evaluate the performance of our operating segments based on orders received, revenues and Operational EBITA.

Operational EBITA represents income from operations excluding:

- amortization expense on intangibles arising upon acquisitions (acquisition-related amortization),
- restructuring, related and implementation costs,
- changes in the amount recorded for obligations related to divested businesses occurring after the divestment date (changes in obligations related to divested businesses),
- changes in estimates relating to opening balance sheets of acquired businesses (changes in pre-acquisition estimates),

- gains and losses from sale of businesses (including fair value adjustment on assets and liabilities held for sale),
- acquisition- and divestment-related expenses and integration costs,
- other income/expense relating to the Power Grids joint venture,
- certain other non-operational items, as well as
- foreign exchange/commodity timing differences in income from operations consisting of: (a) unrealized gains and losses on derivatives (foreign exchange, commodities, embedded derivatives), (b) realized gains and losses on derivatives where the underlying hedged transaction has not yet been realized, and (c) unrealized foreign exchange movements on receivables/payables (and related assets/ liabilities).

Certain other non-operational items generally includes: certain regulatory, compliance and legal costs, certain asset write downs/impairments (including impairment of goodwill) and certain other fair value changes, as well as other items which are determined by management on a case-by-case basis.

See “Note 23 - Operating segment and geographic data” to our Consolidated Financial Statements for a reconciliation of the total Operational EBITA to income from continuing operations before taxes.

Analysis of results of operations

The discussion in the following sections below provides a comparative analysis between 2021 and 2020. See the sections under "Operating and financial review and prospects" in our 2020 Annual Report for a comparative discussion and analysis between 2020 and 2019.

Our consolidated results from operations were as follows:

Income statement data:

($ in millions, except per share data in $)	2021	2020	2019
Revenues	28,945	26,134	27,978
Cost of sales	(19,478)	(18,256)	(19,072)
Gross profit	**9,467**	**7,878**	**8,906**
Selling, general and administrative expenses	(5,162)	(4,895)	(5,447)
Non-order related research and development expenses	(1,219)	(1,127)	(1,198)
Impairment of goodwill	—	(311)	—
Other income (expense), net	2,632	48	(323)
Income from operations	**5,718**	**1,593**	**1,938**
Interest and dividend income	51	51	67
Interest and other finance expense	(148)	(240)	(215)
Losses from extinguishment of debt	—	(162)	—
Non-operational pension (cost) credit	166	(401)	72
Income tax expense	(1,057)	(496)	(772)
Income from continuing operations, net of tax	**4,730**	**345**	**1,090**
Income (loss) from discontinued operations, net of tax	(80)	4,860	438
Net income	**4,650**	**5,205**	**1,528**
Net income attributable to noncontrolling interests	(104)	(59)	(89)
Net income attributable to ABB	**4,546**	**5,146**	**1,439**
Amounts attributable to ABB shareholders:			
Income from continuing operations, net of tax	4,625	294	1,043
Income (loss) from discontinued operations, net of tax	(79)	4,852	396
Net income	4,546	5,146	1,439
Basic earnings per share attributable to ABB shareholders:			
Income from continuing operations, net of tax	2.31	0.14	0.49
Income (loss) from discontinued operations, net of tax	(0.04)	2.30	0.19
Net income	2.27	2.44	0.67
Diluted earnings per share attributable to ABB shareholders:			
Income from continuing operations, net of tax	2.29	0.14	0.49
Income (loss) from discontinued operations, net of tax	(0.04)	2.29	0.19
Net income	2.25	2.43	0.67

A more detailed discussion of the orders, revenues, income from operations and Operational EBITA for our Business Areas follows in the sections of "Business analysis" below for Electrification, Motion, Process Automation, Robotics & Discrete Automation and Corporate and Other. Orders and revenues of our businesses include intersegment transactions which are eliminated in the "Corporate and Other" line in the tables below.

Orders

				% Change	
($ in millions)	**2021**	**2020**	**2019**	**2021**	**2020**
Electrification	14,381	11,884	13,050	21%	(9)%
Motion	7,616	6,574	6,782	16%	(3)%
Process Automation	6,779	6,144	6,432	10%	(4)%
Robotics & Discrete Automation	3,844	2,868	3,260	34%	(12)%
Total Business Areas	**32,620**	**27,470**	**29,524**	**19%**	**(7)%**
Corporate and Other					
Non-core and divested businesses	(10)	(31)	(91)	n.a.	n.a.
Intersegment eliminations and other	(742)	(927)	(845)	n.a.	n.a.
Total	**31,868**	**26,512**	**28,588**	**20%**	**(7)%**

In 2021, total orders increased 20 percent compared to 2020 (17 percent in local currencies). Total orders reflect the growth across all Business Areas as the pandemic-related slowdown affected most of our businesses across all regions in the previous year. The growth rate was highest in the Robotics & Discrete Automation Business Area, while the amount of orders increased the most in Electrification, our largest Business Area. Order growth rates were also strong in the Motion and Process Automation Business Areas. The increase in orders was most significant in the second quarter of the year with growth rates declining over the remainder of the year. The significant growth was visible across all regions. For additional information about individual Business Area order performance, refer to the relevant sections of "Business analysis" below.

We determine the geographic distribution of our orders based on the location of the ultimate destination of the products' end use, if known, or the location of the customer. The geographic distribution of our consolidated orders was as follows:

				% Change	
($ in millions)	2021	2020	2019	2021	2020
Europe	11,857	9,618	10,509	23%	(8)%
The Americas	9,940	7,956	9,057	25%	(12)%
of which: United States	7,453	5,971	6,804	25%	(12)%
Asia, Middle East and Africa	10,071	8,938	9,022	13%	(1)%
of which: China	5,036	4,121	4,118	22%	0%
Total	**31,868**	**26,512**	**28,588**	**20%**	**(7)%**

In 2021, total orders increased in all regions as all regions made strong recoveries from the pandemic-related downturn in the previous year. In the Americas, orders increased 25 percent (24 percent in local currencies) and increased across all Business Areas. Orders grew in the U.S., Canada, Brazil and Mexico. In Europe, orders increased 23 percent (19 percent in local currencies) with all Business Areas reporting order growth. Orders increased in Germany, France, Switzerland, Italy and Finland while they declined in Poland. In Asia, Middle East and Africa, orders increased 13 percent (8 percent in local currencies) and were higher across all Business Areas. Total orders increased in China, India and Australia while they decreased in South Korea, Singapore and Saudi Arabia.

Order backlog

	December 31,			% Change	
($ in millions)	2021	2020	2019	2021	2020
Electrification	5,458	4,358	4,488	25%	(3)%
Motion	3,749	3,320	2,967	13%	12%
Process Automation	6,079	5,805	5,077	5%	14%
Robotics & Discrete Automation	1,919	1,403	1,356	37%	3%
Total Business Areas	**17,205**	**14,886**	**13,888**	**16%**	**7%**
Corporate and Other					
Non-core and divested businesses	114	139	192	(18)%	(28)%
Intersegment eliminations	(712)	(722)	(756)	n.a.	n.a.
Total	**16,607**	**14,303**	**13,324**	**16%**	**7%**

At December 31, 2021, consolidated order backlog was 16 percent higher (21 percent in local currencies) compared to December 31, 2020. Order backlog increased significantly in most Business Areas with a moderate growth in the Process Automation Business Area. The order backlog in the Motion Business Area was driven by both short and long-cycle business order growth in most Divisions. Order backlog increased across all Divisions in the Electrification Business Area with a very strong order intake, but also reflecting execution challenges. Growth was strong in the E-mobility and Power Conversion Divisions but grew only moderately in the Distribution Solutions Division. The growth in the Process Automation Business Area was driven by a strong order increase in most Divisions except the Marine & Ports Division, which decreased, mainly on the execution of large orders received in 2020. The increase in the order backlog in the Robotics & Discrete Automation Business Area was driven by strong growth in the Machine Automation Division, while the Robotics Division decreased slightly due to lower demand from the automotive systems end market.

Revenues

				% Change	
($ in millions)	2021	2020	2019	2021	2020
Electrification	13,187	11,924	12,728	11%	(6)%
Motion	6,925	6,409	6,533	8%	(2)%
Process Automation	6,259	5,792	6,273	8%	(8)%
Robotics & Discrete Automation	3,297	2,907	3,314	13%	(12)%
Total Business Areas	**29,668**	**27,032**	**28,848**	**10%**	**(6)%**
Corporate and Other					
Non-core and divested businesses	11	(6)	37	n.a.	n.a.
Intersegment eliminations and other	(734)	(892)	(907)	n.a.	n.a.
Total	**28,945**	**26,134**	**27,978**	**11%**	**(7)%**

In 2021, revenues increased 11 percent (8 percent in local currencies). Revenues increased across all Business Areas, recovering from the pandemic-related impacts of the previous year. The Electrification and Robotics & Discrete Automation Business Areas reported strong growth, largely driven by the short-cycle businesses. For additional analysis of revenues for each of the Business Areas, refer to the relevant sections of "Business analysis" below.

We determine the geographic distribution of our revenues based on the location of the ultimate destination of the products' end use, if known, or the location of the customer. The geographic distribution of our consolidated revenues was as follows:

				% Change	
($ in millions)	2021	2020	2019	2021	2020
Europe	10,529	9,764	10,097	8%	(3)%
The Americas	8,686	7,949	8,955	9%	(11)%
of which: United States	6,397	6,027	6,753	6%	(11)%
Asia, Middle East and Africa	9,730	8,421	8,926	16%	(6)%
of which: China	4,932	4,098	4,047	20%	1%
Total	**28,945**	**26,134**	**27,978**	**11%**	**(7)%**

In 2021, revenues increased across all regions, reflecting the recovery from the pandemic-related challenges of the previous year. In the Americas revenues increased 9 percent (9 percent in local currencies) and were higher across all Business Areas. Revenues increased in the U.S., Canada, Brazil, Mexico, Argentina and Chile while they decreased slightly in Peru and Panama. In Europe revenues increased 8 percent (5 percent in local currencies) and increased across all Business Areas except the Process Automation Business Area. Sales were lower in Finland and France while revenues grew in Germany, the United Kingdom, Italy, Sweden, Turkey, Austria, Netherlands and Switzerland. In Asia, Middle East and Africa revenues increased 16 percent (11 percent in local currencies) and increased across all Business Areas. Revenues increased in China, India, Australia and South Korea while they decreased in Japan.

Cost of sales

Cost of sales consists primarily of labor, raw materials and component costs but also includes indirect production costs, expenses for warranties, contract and project charges, as well as order-related development expenses incurred in connection with projects for which corresponding revenues have been recognized.

In 2021, cost of sales increased 7 percent (4 percent in local currencies) to $19,478 million. Cost of sales as a percentage of revenues decreased to 67.3 percent from 69.9 percent in 2020, an increase in the gross margin of 2.6 percent, primarily driven by lower losses in non-core businesses, and because 2020 included significant warranty charges related to a divested business as well as losses on specific projects. The increase in gross margin also reflects higher revenue volumes, a positive portfolio mix as well as price increases and certain cost savings actions taken to mitigate higher commodity prices and freight costs. In 2021, gross margin percentages were higher in the Electrification, Robotics & Discrete Automation and Process Automation Business Areas. The gross margin percentage in the Motion Business Area was lower in 2021 compared to 2020 due to the impact of higher commodity prices. For ABB, the gross margin did benefit partially from the results of saving initiatives in the areas of supply chain and operational excellence.

Selling, general and administrative expenses

The components of selling, general and administrative expenses were as follows:

($ in millions)	2021	2020	2019
Selling expenses	3,281	3,087	3,383
General and administrative expenses	1,881	1,808	2,064
Total	**5,162**	**4,895**	**5,447**

In 2021, general and administrative expenses increased 4 percent (1 percent in local currencies) compared to 2020. As a percentage of revenues, general and administrative expenses decreased to 6.5 percent from 6.9 percent in 2020. General and administrative expenses in 2021 benefited partially from a $40 million reduction of stranded corporate costs compared to 2020 but continue to include the ongoing costs required to deliver services to Hitachi Energy Ltd under transition service agreements, for which we are compensated and recorded $173 million in Other income (expense), net during 2021 compared to $91 million in the previous year. Stranded costs were overhead and other management costs which could previously be allocated to the Power Grids business.

In 2021, selling expenses increased 6 percent (3 percent in local currencies) compared to 2020 across all Business Areas as pandemic-related restrictions were gradually relaxed and we increased sales activities to keep pace with the strong recovery in demand. Selling expenses as a percentage of orders received decreased from 11.6 percent in 2020 to 10.3 percent in 2021 mainly due to strong order growth.

Non-order related research and development expenses

In 2021, non-order related research and development expenses increased 8 percent (4 percent in local currencies) compared to 2020. Non-order related research and development expenses increased mainly due to higher investment activities related to selective growth areas in certain operating Divisions such as Distribution Solutions, Robotics, Process Industries, Smart Buildings and E-mobility.

In 2021, the higher non-order related research and development expenses were consistent with the higher revenues and as a percentage of revenues these expenditures decreased in 2021 to 4.2 percent from 4.3 percent compared to the previous year.

Impairment of goodwill

In 2020, as a result of the new composition of the reporting units and reallocation of goodwill, we recorded an impairment charge of $311 million, the majority of which related to our Machine Automation Division within the Robotics & Discrete Automation Business Area. In 2021, no impairment was recorded as a result of the annual review. See “Note 11 - Goodwill and intangible assets” to our Consolidated Financial Statements.

Other income (expense), net

($ in millions)	2021	2020	2019
Net gain (loss) from sale of businesses	2,193	(2)	55
Income from provision of services under transition services agreements	173	91	—
Gain (loss) from change in fair value of investments in equity securities	105	71	(5)
Brand income from Hitachi Energy	89	60	—
Net gain from sale of property, plant and equipment	38	37	51
Favorable resolution of an uncertain purchase price adjustment	6	36	92
Fair value adjustment on assets and liabilities held for sale	—	(33)	(421)
Asset impairments	—	(35)	(56)
Restructuring and restructuring-related expenses(1)	(48)	(87)	(69)
Income (loss) from equity-accounted companies	(100)	(66)	8
Other income (expense)	176	(24)	22
Total	**2,632**	**48**	**(323)**

(1) Excluding asset impairments

In 2021, Other income (expense), net, was an income of $2,632 million compared to $48 million in 2020. In 2021, we recorded gains of $2,193 million in Other income (expense), net for net gains from sales of businesses. This is primarily due to the divestment of the Dodge business. In 2021, we also recorded a full year of both brand income and income for provision of transition services relating to Hitachi Energy, compared to only six months of income in 2020. In 2021, we recorded higher increases in the fair value of various equity investments in our ABB Technology Ventures portfolio, the most significant of which related to CMR Surgical Ltd. The amount in 2021 also reflects lower restructuring and restructuring-related expenses and lower asset impairments. Partially offsetting this were higher losses from equity-accounted companies mainly reflecting the loss recorded from the Hitachi Energy joint venture.

Income from operations

				% Change	
($ in millions)	**2021**	**2020**	**2019**	**2021**	**2020**
Electrification	1,841	1,335	1,049	38%	27%
Motion	3,276	989	1,009	231%	(2)%
Process Automation	713	344	700	107%	(51)%
Robotics & Discrete Automation	269	(163)	298	n.a.	n.a.
Total Business Areas	**6,099**	**2,505**	**3,056**	**143%**	**(18)%**
Corporate and Other	(385)	(927)	(1,113)	n.a.	n.a.
Intersegment elimination	4	15	(5)	n.a.	n.a.
Total	**5,718**	**1,593**	**1,938**	**259%**	**(18)%**

In 2021 and 2020, changes in income from operations were a result of the factors discussed above and in “Business analysis” below.

Financial income and expenses

Financial income and expenses include “Interest and dividend income”, “Interest and other finance expense” and “Losses from extinguishment of debt”.

“Interest and other finance expense” includes interest expense on our debt, the amortization of upfront transaction costs associated with long-term debt and committed credit facilities, commitment fees on credit facilities, foreign exchange gains and losses on financial items and gains and losses on marketable securities. In addition, interest accrued relating to uncertain tax positions is included within interest expense. “Interest and other finance expense” excludes interest expense which has been allocated to discontinued operations.

($ in millions)	2021	2020	2019
Interest and dividend income	51	51	67
Interest and other finance expense	(148)	(240)	(215)
Losses from extinguishment of debt	—	(162)	—

In 2020, we redeemed the full amount outstanding for two bonds according to the terms of the instruments and executed public tenders for two additional bonds resulting in a partial reduction of the principal outstanding. These transactions resulted in losses on extinguishment of debt in 2020 totaling $162 million (see “Note 12 - Debt” to our Consolidated Financial Statements). The reduction of outstanding debt from these public tenders as well as maturities of bonds in both 2021 and 2020 reduced “Interest and other finance expense” by approximately $70 million compared to 2020. This was partially offset by higher interest expense for income tax related contingencies and the elimination of the allocation of interest expense to discontinued operations subsequent to the divestment of the Power Grids business.

Non-operational pension (cost) credit

A non-operational pension credit of $166 million was recorded in 2021 compared to a $401 million cost in 2020. Non-operational pension credits primarily result from higher expected returns on plan assets compared to interest costs on benefit obligations. The net cost in 2020 was mainly due to charges of $520 million for settlements of certain international pension plans (see “Note 17 - Employee benefits” to our Consolidated Financial Statements).

Income tax expense

($ in millions)	2021	2020	2019
Income from continuing operations before taxes	5,787	841	1,862
Income tax expense	(1,057)	(496)	(772)
Effective tax rate for the year	18.3%	59.0%	41.5%

In 2021, the effective tax rate decreased from 59.0 percent in 2020 to 18.3 percent primarily due to specific items which increased the effective tax rate in 2020. In 2020, the income tax rate was higher by 9 percent due to the impairment of non-deductible goodwill, 10 percent due to non-deductible charges relating to the settlement of certain defined benefit pension plans and 5 percent due to losses from extinguishment of debt which were incurred in jurisdictions with a full valuation allowance. In 2021, the tax impacts related to the sale of the Dodge business reduced the effective tax rate by approximately 5 percent. We also realized certain benefits from internal reorganizations in anticipation of this divestment which reduced the effective tax rate by a further 4 percent.

See “Note 16 - Income taxes” to our Consolidated Financial Statements for additional information.

Income from continuing operations, net of tax

As a result of the factors discussed above, compared to 2020, Income from continuing operations, net of tax, increased by $4,385 million to $4,730 million in 2021.

Income from discontinued operations, net of tax

Income (loss) from discontinued operations, net of tax, in 2021, 2020 and 2019 was as follows:

($ millions)	2021	2020	2019
Total revenues	—	4,008	9,037
Total cost of sales	—	(3,058)	(6,983)
Gross profit	**—**	**950**	**2,054**
Expenses	(18)	(808)	(1,394)
Change to net gain recognized on sale of the Power Grids business	(65)	5,141	—
Income (loss) from operations	**(83)**	**5,282**	**660**
Net interest income (expense) and other finance expense	2	(5)	(61)
Non-operational pension (cost) credit	—	(94)	5
Income (loss) from discontinued operations before taxes	**(81)**	**5,182**	**605**
Income tax	1	(322)	(167)
Income (loss) from discontinued operations, net of tax	**(80)**	**4,860**	**438**

On July 1, 2020, we completed the divestment of 80.1 percent of our former Power Grids business to Hitachi. As a result of the sale, substantially all Power Grids related assets and liabilities have been sold. As this divestment represented a strategic shift that would have a major effect on our operations and financial results, the results of operations for this business have been presented as discontinued operations for all periods presented. In addition, we also have retained obligations (primarily for environmental and taxes) related to other businesses disposed or otherwise exited that qualified as discontinued operations. Changes to these retained obligations are also included in Income (loss) from discontinued operations, net of tax.

In 2020, as a result of the sale of the Power Grids business, we recognized a net gain of $5,141 million, net of transaction costs, for the sale of the entire Power Grids business which is included in Income from discontinued operations, net of tax. Certain amounts included in the net gain are estimated or otherwise subject to change in value and, as a result, we have recorded additional adjustments in 2021, primarily due to the impacts of the final purchase price settlement agreed with Hitachi and net foreign currency losses on certain obligations. We may record additional adjustments in future periods to the gain which are not expected to have a material impact on the Consolidated Financial Statements.

The amounts shown in the table above for the full-year 2020 primarily represent the operations of the Power Grids business for six months, compared to a full year of operations for 2019. Income from discontinued operations for 2020 included income from operations, before tax, of $5,182 million. In 2020, we recorded $322 million as income tax expense within discontinued operations, which included $262 million in Income tax within discontinued operations in connection with the reorganization of the legal entity structure of the Power Grids business required to facilitate its sale.

For additional information on the divestment and discontinued operations, see “Note 3 - Discontinued operations” to our Consolidated Financial Statements.

Net income attributable to ABB

As a result of the factors discussed above, compared to 2020, Net income attributable to ABB decreased by $600 million to $4,546 million in 2021.

Earnings per share attributable to ABB shareholders

(in $)	2021	2020	2019
Basic earnings per share attributable to ABB shareholders:			
Income from continuing operations, net of tax	2.31	0.14	0.49
Income (loss) from discontinued operations, net of tax	(0.04)	2.30	0.19
Net income	2.27	2.44	0.67
Diluted earnings per share attributable to ABB shareholders:			
Income from continuing operations, net of tax	2.29	0.14	0.49
Income (loss) from discontinued operations, net of tax	(0.04)	2.29	0.19
Net income	2.25	2.43	0.67

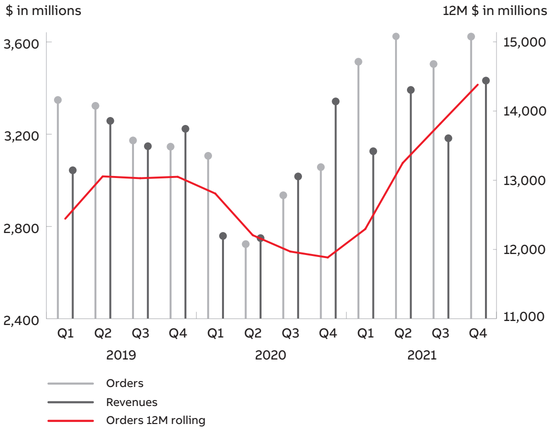
Basic earnings per share is calculated by dividing income by the weighted-average number of shares outstanding during the year. Diluted earnings per share is calculated by dividing income by the weighted-average number of shares outstanding during the year, assuming that all potentially dilutive securities were exercised, if dilutive. Potentially dilutive securities comprise: outstanding written call options and outstanding options and shares granted subject to certain conditions under our share-based payment arrangements. See “Note 20 - Earnings per share” to our Consolidated Financial Statements.

Business analysis

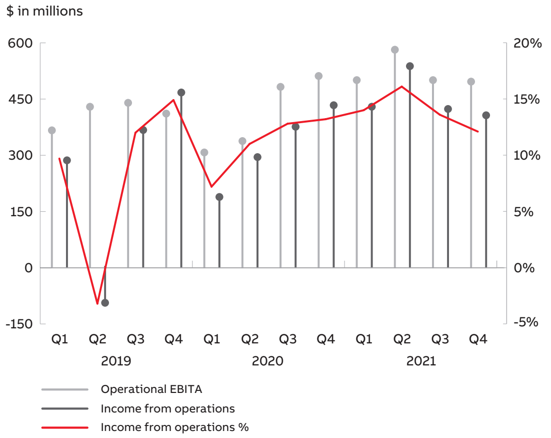
Electrification Business Area

The financial results of our Electrification Business Area were as follows:

Orders and Revenues



Income from operation & Operational EBITA



				% Change	
($ in millions)	**2021**	**2020**	**2019**	**2021**	**2020**
Orders	14,381	11,884	13,050	21%	(9)%
Order backlog at December 31,	5,458	4,358	4,488	25%	(3)%
Revenues	13,187	11,924	12,728	11%	(6)%
Income from operations	1,841	1,335	1,049	38%	27%
Operational EBITA	2,121	1,681	1,688	26%	0%

Orders

Approximately two-thirds of the Business Area's orders are for products with short delivery times; orders are usually recorded and delivered within a three-month period and thus are generally considered as short-cycle. The remainder of orders is comprised of smaller projects that require longer lead times, as well as larger solutions requiring engineering and installation. Approximately half of the Business Area's orders are received via third-party distributors; as a consequence, end-customer market data is based partially on management estimates.

In 2021, orders increased 21 percent (18 percent in local currencies) as demand improved across most end-user segments and markets in both short-cycle and long-cycle businesses. Although global economic output recovered during the year and is now above the pre-pandemic level of 2019, growth was geographically uneven, largely due to diverse ongoing pandemic impacts, especially in emerging economies. Demand in the buildings segment, the Electrification Business Area's largest end-user segment, was robust with strong growth in the residential market and recovery of the non-residential building sector with increasing investments in commercial and healthcare. Substantial growth continues in the e-mobility segment along with strong growth in food and beverage, utilities, renewables and data centers. Additionally, demand in the oil and gas segment increased following higher oil prices.

The geographic distribution of orders for our Electrification Business Area was as follows:

($ in millions)	**2021**	**2020**	**2019**
Europe	5,022	4,149	4,281
The Americas	5,199	4,033	4,653
of which: United States	3,891	3,065	3,501
Asia, Middle East and Africa	4,160	3,702	4,116
of which: China	2,141	1,819	1,885
Total	**14,381**	**11,884**	**13,050**

In 2021, orders increased in all regions. Orders in the Americas increased 29 percent (28 percent in local currencies), with strong growth in Mexico, Canada and in the U.S. Orders in Europe increased 21 percent (18 percent in local currencies) with widespread demand pickup across the region including key markets such as Germany and Italy. Demand in Asia, Middle East and Africa increased 12 percent (8 percent in local currencies) with China and India contributing strongly despite continuing pandemic-related challenges.

Order backlog

In 2021, the order backlog increased 25 percent (29 percent in local currencies). The order backlog benefited from the strong order intake, but also reflected execution challenges caused by material shortages, transportation constraints as well as pandemic-related production pressures in some local markets.

Revenues

In 2021, revenues increased 11 percent (8 percent in local currencies). Revenues increased in all Divisions reflecting widespread market recovery across all regions, however growth was hampered by component shortage and logistic challenges, particularly for the project business. Revenue growth in short-cycle businesses was higher than in long-cycle businesses, reflecting some customer stockpiling. Pricing actions taken to mitigate increasing material and transportation costs also contributed to the higher revenue level. The revenue growth rate was led by the E-mobility Division mirroring the very high demand in this segment. There was also double-digit revenue growth in the Installation Products Division reflecting demand recovery in the U.S. and Canada, as well as in the Smart Power Division. Revenue growth was solid for the Smart Buildings Division, whereas revenues grew more modestly for the Distribution Solutions and Power Conversion Divisions.

The geographic distribution of revenues for our Electrification Business Area was as follows:

($ in millions)	2021	2020	2019
Europe	4,628	4,190	4,251
The Americas	4,503	4,093	4,635
of which: United States	3,322	3,115	3,555
Asia, Middle East and Africa	4,056	3,641	3,842
of which: China	2,110	1,858	1,749
Total	**13,187**	**11,924**	**12,728**

In 2021, revenues in the Americas increased 10 percent (9 percent in local currencies) led by a strong recovery in Canada and Mexico, while revenues in the U.S. recorded high single-digit growth. Revenues increased 11 percent (7 percent in local currencies) in Asia, Middle East and Africa, driven by growth in China and India. Revenues in Europe increased 10 percent (8 percent in local currencies) reflecting widespread growth across the region, including key markets such as Germany and Italy.

Income from operations

In 2021, income from operations increased 38 percent, supported by higher revenues. Pricing actions across the product businesses and the benefits of savings realized from ongoing restructuring and cost savings programs also positively influenced the income from operations. Restructuring related expenses and implementation costs in our operating Divisions were lower in 2021 than in 2020, mainly as the integration of GEIS is nearing completion. These positives were partially dampened by higher commodity prices in 2021, as well as increased costs for transportation and logistics. The income from operations was burdened by higher personnel expenses driven by a ramp-up of manufacturing capacity to meet higher demand. There was also negative comparable impact from the discontinuance of various pandemic-related government support programs that were more significant in 2020 compared to 2021. Changes in foreign currencies, including the impacts from FX/commodity timing differences summarized in the table below, positively impacted the income from operations by approximately 1 percentage point.

Operational EBITA

The reconciliation of Income from operations to Operational EBITA for the Electrification Business Area was as follows:

($ in millions)	2021	2020	2019
Income from operations	**1,841**	**1,335**	**1,049**
Acquisition-related amortization	117	115	115
Restructuring, related and implementation costs	66	145	112
Changes in obligations related to divested businesses	—	15	—
Changes in pre-acquisition estimates	(6)	11	22
Gains and losses from sale of businesses	13	4	(42)
Fair value adjustment on assets and liabilities held for sale	—	33	421
Favorable resolution of an uncertain purchase price adjustment	(5)	(36)	(92)
Acquisition- and divestment-related expenses and integration costs	70	71	119
Certain other non-operational items	—	9	3
FX/commodity timing differences in income from operations	25	(21)	(19)
Operational EBITA	**2,121**	**1,681**	**1,688**

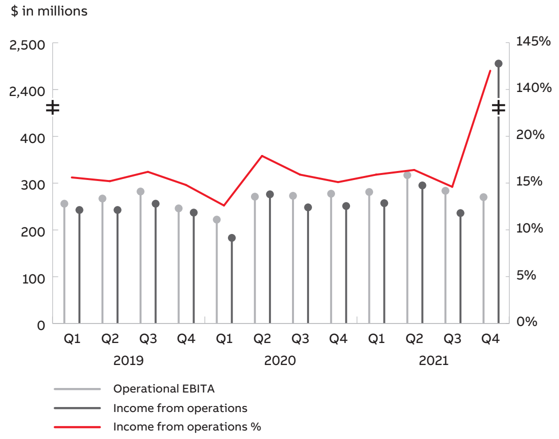
In 2021, Operational EBITA increased 26 percent (20 percent excluding the impact from changes in foreign currency exchange rates) compared to 2020, primarily due to the reasons described under “Income from operations”, excluding the explanations related to the reconciling items in the table above.

Motion Business Area

The financial results of our Motion Business Area were as follows:

Orders and Revenues

Income from operation & Operational EBITA



				% Change	
($ in millions)	2021	2020	2019	2021	2020
Orders	7,616	6,574	6,782	16%	(3)%
Order backlog at December 31,	3,749	3,320	2,967	13%	12%
Revenues	6,925	6,409	6,533	8%	(2)%
Income from operations	3,276	989	1,009	231%	(2)%
Operational EBITA	1,183	1,075	1,082	10%	(1)%

Orders

In 2021, orders increased 16 percent (13 percent in local currencies) compared to 2020. Order development had a strong performance across most of the market segments and Divisions. The Business Area benefited from high demand in food and beverage, HVACR (heating, ventilation, air conditioning and refrigeration), chemicals, metals, pulp and paper, cement, mining, wind and water segments. Oil and gas demand was flat but showed signs of recovery due to higher oil prices and emerging trends.

The geographic distribution of orders for our Motion Business Area was as follows:

($ in millions)	2021	2020	2019
Europe	2,617	2,219	2,355
The Americas	2,677	2,276	2,437
of which: United States	2,200	1,897	2,048
Asia, Middle East and Africa	2,322	2,079	1,990
of which: China	1,232	1,077	987
Total	**7,616**	**6,574**	**6,782**

In 2021, orders increased 18 percent (14 percent in local currencies) in Europe as orders increased mainly in Switzerland, Spain, Italy, Austria, Turkey and France partially offset by a decrease in Poland. In Asia, Middle East and Africa, orders increased 12 percent (7 percent in local currencies) driven by growth in China and India. In the Americas, orders increased 18 percent (17 percent in local currencies) as a result of recoveries in the U.S., Canada and Mexico.

Order backlog

The order backlog in 2021 increased 13 percent (19 percent in local currencies) compared to 2020. The order backlog increased across most Divisions, driven by both short and long-cycle order growth.

Revenues

In 2021, revenues increased 8 percent (5 percent in local currencies) compared to 2020 and were higher across all Divisions, recovering from the pandemic-related decline in 2020. Revenues also reflected strong execution from the order backlog as well as resilience in the short-cycle business.

The geographic distribution of revenues for our Motion Business Area was as follows:

($ in millions)	2021	2020	2019
Europe	2,258	2,196	2,162
The Americas	2,396	2,225	2,378
of which: United States	1,974	1,867	2,009
Asia, Middle East and Africa	2,271	1,988	1,993
of which: China	1,256	1,040	955
Total	**6,925**	**6,409**	**6,533**

In 2021, revenues in Europe increased 3 percent (flat in local currencies) driven by increases in Turkey, Germany, Poland, Switzerland, Austria and Spain while sales volumes declined in Sweden, Estonia, Italy and Finland. In Asia, Middle East and Africa revenues increased 14 percent (9 percent in local currencies) compared to 2020 driven by strong revenue growth in China, India and Australia. In the Americas, revenues increased 8 percent (7 percent in local currencies) on higher revenues in the U.S., particularly in the book-and-bill business in the NEMA Motors Division. The Mechanical Power Transmission Division also reported strong order growth prior to its divestment in November 2021.

Income from operations

In 2021, income from operations increased 231 percent compared to 2020 and included the gain of $2,195 million recognized on sale of the Mechanical Power Transmission Division. Excluding this gain, income from operations increased 9 percent driven primarily by higher revenues. The higher business volumes reflect the recovery from the pandemic-related slowdown in 2020. Profitability was also supported by active price management, continued cost discipline, a focus on operational performance and a positive divisional mix which offset increasing commodities and freight expenses and other cost inflation. Changes in foreign currencies, including the impacts from FX/commodity timing differences summarized in the table below, had no significant impact on the change in income from operations.

Operational EBITA

The reconciliation of Income from operations to Operational EBITA for the Motion Business Area was as follows:

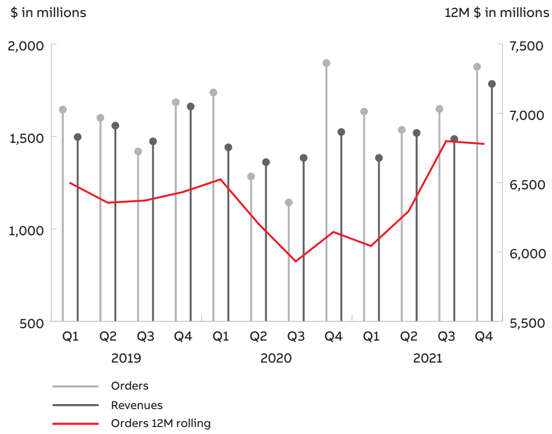
($ in millions)	2021	2020	2019
Income from operations	**3,276**	**989**	**1,009**
Acquisition-related amortization	43	52	53
Restructuring, related and implementation costs	22	44	12
Gains and losses from sale of businesses	(2,196)	—	—
Acquisition- and divestment-related expenses and integration costs	26	—	—
Certain other non-operational items	1	17	14
FX/commodity timing differences in income from operations	11	(27)	(6)
Operational EBITA	**1,183**	**1,075**	**1,082**

In 2021, Operational EBITA increased 10 percent (6 percent excluding the impact from changes in foreign currency exchange rates) primarily due to the reasons described under “Income from operations”, excluding the explanations related to the reconciling items in the table above.

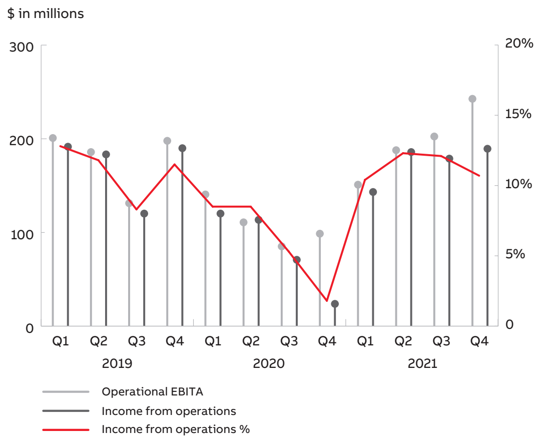
Process Automation Business Area

The financial results of our Process Automation Business Area were as follows:

Orders and Revenues



Income from operation & Operational EBITA



				% Change	
($ in millions)	2021	2020	2019	2021	2020
Orders	6,779	6,144	6,432	10%	(4)%
Order backlog at December 31,	6,079	5,805	5,077	5%	14%
Revenues	6,259	5,792	6,273	8%	(8)%
Income from operations	713	344	700	107%	(51)%
Operational EBITA	801	451	732	78%	(38)%

Orders

In 2021, orders increased 10 percent (7 percent in local currencies) compared to 2020. Orders grew double digit in almost all Divisions except the Marine & Ports Division where orders declined due to the receipt of a large capital investment order in 2020. Markets recovered to pre-pandemic levels and customers made capital and operational investments across almost all market segments. Demand for products, systems and services improved in the process-related segments like mining, pulp and paper, chemicals, and oil and gas. Demand for products and services recovered in the power generation market and operational investments improved in the marine sector.

The geographic distribution of orders for our Process Automation Business Area was as follows:

($ in millions)	2021	2020	2019
Europe	2,614	2,365	2,599
The Americas	1,645	1,360	1,627
of which: United States	1,047	770	995
Asia, Middle East and Africa	2,520	2,419	2,206
of which: China	821	590	631
Total	**6,779**	**6,144**	**6,432**

Orders in Europe increased 11 percent (6 percent in local currencies) driven by strong orders in the process-related businesses and increases in service activity. In local currencies, orders increased in Germany, Norway, France, Russia and the United Kingdom while orders decreased in Sweden and Italy. Orders in Asia, Middle East and Africa increased 4 percent (remained flat in local currencies). Higher orders in China, India and Australia were partly offset primarily by the lower order volumes in South Korea and Singapore due to large orders booked in 2020. In the Americas, orders increased 21 percent (20 percent in local currencies) supported by strong investments in the U.S. across all Divisions.

Order backlog

In 2021, the order backlog increased 5 percent (10 percent in local currencies) compared to 2020. Strong order growth drove significant increases in order backlog for all Divisions except the Marine & Ports Division which decreased mainly on lower orders and strong backlog execution.

Revenues

In 2021, revenues increased 8 percent (5 percent in local currencies) compared to 2020. Revenues increased in all Divisions, reflecting strong execution of the order backlog in the long-cycle businesses, partially offset by challenges from supply chain constraints.

The geographic distribution of revenues for our Process Automation Business Area was as follows:

($ in millions)	2021	2020	2019
Europe	2,439	2,395	2,494
The Americas	1,439	1,329	1,595
of which: United States	836	808	950
Asia, Middle East and Africa	2,381	2,068	2,184
of which: China	742	629	612
Total	**6,259**	**5,792**	**6,273**

In 2021, revenues were 15 percent higher (11 percent in local currencies) in Asia, Middle East and Africa, 8 percent higher (7 percent in local currencies) in the Americas and 2 percent higher (decrease of 2 percent in local currencies) in Europe compared to 2020. In Asia, Middle East and Africa, the Marine & Ports Division registered strong growth in South Korea and China while revenues also increased in the United Arab Emirates and South Africa in the Energy Industries Division. In Europe, revenues were higher in Russia and the United Kingdom while lower in France, Finland and Germany. In the Americas, revenues were higher in the U.S., Brazil and Canada while revenues declined in Mexico.

Income from operations

In 2021, income from operations increased 107 percent compared to 2020 primarily due to the significant charges recorded in 2020 for the Kusile power generation project in South Africa, legacy projects in India and other significant restructurings. This was partially offset by higher divestment-related expenses, mainly related to the planned exit of the Turbocharging Division. Excluding these items, income from operations improved significantly driven by volume, strong execution, savings from supply and operation excellence initiatives and continued overhead cost structure improvements. Changes in foreign currencies, including the effect from changes in the FX/commodity timing differences summarized in the table below,
decreased income from operations by 3 percent compared to 2020.

Operational EBITA

The reconciliation of Income from operations to Operational EBITA for the Process Automation Business Area was as follows:

($ in millions)	2021	2020	2019
Income from operations	**713**	**344**	**700**
Acquisition-related amortization	5	4	4
Restructuring, related and implementation costs	48	125	21
Gains and losses from sale of businesses	(13)	—	—
Acquisition- and divestment-related expenses and integration costs	35	2	—
Certain other non-operational items	1	1	2
FX/commodity timing differences in income from operations	12	(25)	5
Operational EBITA	**801**	**451**	**732**

In 2021, Operational EBITA increased 78 percent (70 percent excluding the impacts from changes in foreign currencies) compared to 2020. The change is due to the reasons described under "Income from operations", excluding the explanations related to the reconciling items in the table above.

Robotics & Discrete Automation Business Area

The financial results of our Robotics & Discrete Automation Business Area were as follows:

Orders and Revenues

Income from operation & Operational EBITA

				% Change	
($ in millions)	**2021**	**2020**	**2019**	**2021**	**2020**
Orders	3,844	2,868	3,260	34%	(12)%
Order backlog at December 31,	1,919	1,403	1,356	37%	3%
Revenues	3,297	2,907	3,314	13%	(12)%
Income (loss) from operations	269	(163)	298	n.a.	(155)%
Operational EBITA	355	237	393	50%	(40)%

Orders

In 2021, orders increased 34 percent (29 percent in local currencies). Demand levels in both the Robotics and Machine Automation Divisions recovered in 2021 after 2020 was impacted by the COVID-19 pandemic. Commencing in the second quarter, both Divisions reported significant increases in demand, including from traditional automotive and automotive-related sectors, general industry, machine builders and electronics market sectors. Orders continued to grow in the second half of the year benefiting from larger investments by customers in the machine automation sector.

The geographic distribution of orders for our Robotics & Discrete Automation Business Area was as follows:

($ in millions)	2021	2020	2019
Europe	1,978	1,424	1,717
The Americas	530	388	457
of which: United States	371	277	310
Asia, Middle East and Africa	1,336	1,056	1,086
of which: China	976	781	729
Total	**3,844**	**2,868**	**3,260**

In 2021, orders increased in all regions. Orders in Europe increased 39 percent (35 percent in local currencies) driven by increases in demand in Germany, Italy, Netherlands and Austria. Orders in the Americas increased 37 percent (35 percent in local currencies) compared to 2020, driven by the strong order intake in the U.S. in both Divisions. Orders in Asia, Middle East and Africa increased 27 percent (20 percent in local currencies) with strong demand in China and India.

Order backlog

In 2021, the order backlog increased 37 percent (43 percent in local currencies) compared to 2020. The order backlog increased in the Machine Automation Division, but was negatively impacted by our selectivity of orders in the automotive segment partially offset by positive momentum in the general industry and consumer segments.

Revenues

In 2021, revenues increased 13 percent (9 percent in local currencies) compared to 2020. Revenues increased in both Divisions due to higher volumes from book-and-bill business, however growth was hampered by component shortages (primarily related to semiconductors), logistic challenges which triggered longer lead times for some customer deliveries and a tight labor market. Service revenues also increased, driven by strong demand from all industry segments but especially from general industry.

The geographic distribution of revenues for our Robotics & Discrete Automation Business Area was as follows:

($ in millions)	2021	2020	2019
Europe	1,582	1,481	1,680
The Americas	441	389	464
of which: United States	309	273	293
Asia, Middle East and Africa	1,274	1,037	1,170
of which: China	950	719	829
Total	**3,297**	**2,907**	**3,314**

In 2021, revenues increased in all regions. The revenues from Asia, Middle East and Africa increased 23 percent (17 percent in local currencies) compared to 2020 due to higher book-and-bill revenues and a higher level of execution of automotive segment orders, particularly in China. Revenues in Europe increased 7 percent (4 percent in local currencies) with Austria and Spain performing strongly while revenues declined in the United Kingdom and France. In the Americas, revenues increased 13 percent (12 percent in local currencies) due to strong demand in the U.S. in both Divisions after recovery from the low levels in 2020.

Income (loss) from operations

In 2021, the Business Area recorded income from operations of $269 million compared to a loss of $163 million in 2020, as the improvement in underlying operating performance in 2020 was more than offset by the $290 million impairment of goodwill recorded in the Machine Automation Division in 2020. The operational performance in 2021 reflected improved sales volumes, a favorable change in the revenue mix and the benefit of cost reduction measures taken in 2020. Changes in foreign currencies, including the impacts from FX/commodity timing differences summarized in the table below, positively impacted the income from operations by approximately 6 percent.

Operational EBITA

The reconciliation of Income (loss) from operations to Operational EBITA for the Robotics & Discrete Automation Business Area was as follows:

($ in millions)	2021	2020	2019
Income (loss) from operations	**269**	**(163)**	**298**
Acquisition-related amortization	83	78	77
Restructuring, related and implementation costs	7	26	12
Acquisition- and divestment-related expenses and integration costs	1	—	1
Impairment of goodwill	—	290	—
Certain other non-operational items	—	5	4
FX/commodity timing differences in income from operations	(5)	1	1
Operational EBITA	**355**	**237**	**393**

In 2021, Operational EBITA increased 50 percent (41 percent excluding the impact from changes in foreign currency exchange rates) compared to 2020, primarily due to the reasons described under "Income (loss) from operations", excluding the explanations related to the reconciling items in the table above.

Corporate and Other

Net loss from operations for Corporate and Other was as follows:

($ in millions)	2021	2020	2019
Corporate headquarters and stewardship	(399)	(334)	(334)
Income (loss) from equity-accounted companies	(102)	(68)	1
Other corporate costs	(32)	(63)	56
Restructuring	(5)	(46)	(60)
Fair value adjustment on equity securities	94	71	(5)
Corporate brand income from Hitachi Energy	89	60	—
Corporate real estate	41	54	60
Costs for divestment of Power Grids	—	(86)	(141)
Corporate research and development	—	(49)	(185)
Digital program costs	—	(45)	(33)
OS implementation costs	—	(24)	(83)
Stranded corporate costs	—	(40)	(225)
Divested businesses and other non-core activities	(67)	(342)	(164)
Total Corporate and Other	**(381)**	**(912)**	**(1,113)**

In 2021, the net loss from operations within Corporate and Other decreased by $531 million to $381 million compared to 2020. This reflected several items including an elimination of stranded corporate costs and the high costs in 2020 related to the divestment of the Power Grids business. Additionally, corporate costs in 2021 reflect the ending in 2020 of the remaining corporate research and development and digital program costs, which were eliminated as part of the ABB Way program. In 2021, losses in non-core businesses decreased compared to 2020 as projects were completed and certain large losses were not repeated. This was partially offset by a higher loss from equity-accounted companies in 2021 compared to 2020 while corporate brand income of $89 million was higher than 2020 for the use of the ABB brand by the Hitachi Energy Ltd. joint venture.

Corporate

In 2021, corporate headquarters and stewardship costs increased compared to 2020, mainly driven by residual unallocated costs for the Global Business Services operations and continuous implementation of ABB Way.

Our investment in the Hitachi Energy Ltd. joint venture is accounted for using the equity method and presented as Income (loss) from equity-accounted companies. The amount in 2021 is for a full year compared to six months in 2020 and primarily represents the amortization of the notional purchase price accounting adjustments (net of tax) which were recorded due to the fair value accounting applied on initial investment in the joint venture (see “Note 4 - Acquisitions, divestments and equity-accounted companies” to our Consolidated Financial Statements for information on the accounting for the investment in Hitachi Energy Ltd).

During 2021, we recorded net revaluation gains totaling $94 million on investments in equity securities in our equity ventures investment portfolio.

Corporate brand income results from the granting of the use of the ABB brand to Hitachi Energy Ltd., the fair value of which was initially determined on the date of the divestment. A portion of the proceeds received for the sale of the Power Grids business was allocated to the fair value of the granting of the use of the brand and is being amortized over the expected period of use by Hitachi Energy Ltd.

Corporate real estate primarily includes income from property rentals and gains from the sale of real estate properties. In 2021, income from operations in corporate real estate included gains from the sale of real estate properties of $22 million compared to $27 million in 2020.

Other corporate costs consists of operational costs of our Corporate Treasury Operations and other minor items including elimination of changes to eliminated internal profit of Inventory.

Other - Divested businesses and other non-core activities

The results of operations for certain divested businesses and other non-core activities are presented in Corporate and Other. Divested businesses include the high-voltage cables business, steel structures business as well as the oil & gas EPC business. Other continuing non-core activities include the execution and wind-down of certain legacy EPC and other contracts.

In both 2021 and 2020, the amounts represent charges and losses relating to divested businesses and the winding down of the remaining EPC projects. In 2021, we recorded losses of $67 million which were mostly related to the full train retrofit business but also related to legacy EPC projects and the divested oil & gas EPC business. In 2020, we recorded $143 million for certain retained warranty obligations relating to the steel structures business and also recorded charges for certain retained commitments and guarantees in connection with the oil & gas EPC business. The loss in 2020 also reflects further operational challenges and customer obligations relating to several legacy projects including the full train retrofit business, substations and off-shore wind.

At December 31, 2021, our remaining non-core activities primarily include the completion of the remaining EPC contracts for substations and oil & gas as well as the completion of the remaining obligations for the full train retrofit business.

Restructuring and other cost savings initiatives

OS program

From December 2018 to December 2020, we executed a two-year restructuring program with the objective of simplifying our business model and structure through the implementation of a new organizational structure driven by our businesses. The program resulted in the elimination of the country and regional structures within the previous matrix organization, including the elimination of the three regional Executive Committee roles. The operating businesses are now responsible for both their customer-facing activities and business support functions, while the remaining Group-level corporate activities primarily focus on Group strategy, portfolio and performance management and capital allocation. As of December 31, 2020, we had incurred substantially all restructuring and related expenses related to the OS program.

During the course of the program, we implemented and executed various restructuring initiatives across all business support functions and all operating segments. The cumulative restructuring and related expenses under this program, originally estimated to be $350 million, were reduced by $41 million to $309 million, mainly due to the reductions in both estimated costs and number of projects planned.

The following table outlines the costs incurred in 2020, 2019 and the cumulative costs incurred under the program per operating segment and Corporate and Other as of December 31, 2020:

	Costs incurred in		Cumulative costs incurred up to December 31, 2020
($ in millions)	**2020**	**2019**	
Electrification	35	18	85
Motion	18	6	25
Process Automation(1)	37	3	61
Robotics & Discrete Automation	10	8	18
Corporate and Other	49	54	114
Total	**149**	**89**	**303**

(1) Formerly named the Industrial Automation operating segment.

The restructuring program resulted in run-rate cost savings of approximately $590 million, impacting all Business Areas and Corporate and Other. These cost savings were realized mainly as reductions in cost of sales, selling, general and administrative expenses, and non-order related research and development expenses.

The majority of the remaining cash outlays at December 31, 2020, occurred in 2021 and were primarily for employee severance benefits.

Liquidity and capital resources

Principal sources of funding

We meet our liquidity needs principally using cash from operations, proceeds from the issuance of debt instruments (bonds and commercial paper), and short-term bank borrowings. In 2021, we also received significant funds from the sale of the Mechanical Power Transmission Division, which was completed on November 1, 2021.

Our net debt/cash is shown in the table below:

December 31, ($ in millions)	2021	2020
Short-term debt and current maturities of long-term debt	1,384	1,293
Long-term debt	4,177	4,828
Cash and equivalents	(4,159)	(3,278)
Restricted cash - current	(30)	(323)
Marketable securities and short-term investments	(1,170)	(2,108)
Restricted cash - non-current	(300)	(300)
Net debt (cash) (defined as the sum of the above lines)	**(98)**	**112**

During 2021, we benefited from a significant increase in cash provided by operating activities compared to 2020 and cash proceeds from sales of businesses. A significant amount of these funds was paid to shareholders during 2021 through both the payment of the annual dividend and the continuation of share buyback activities.

During 2021, we changed from a net debt position of $112 million at December 31, 2020, to a net cash position of $98 million at December 31, 2021. Approximately $170 million of this movement is due to movements in foreign exchange rates with several other significant movements mostly offsetting over the year. In 2021, we received net proceeds of $2,862 million for the sale of the Dodge business later in the year. We generated cash flows from operating activities during 2021 of $3,330 million and sold treasury stock in relation to our employee share plans for $826 million. Mostly offsetting these items were amounts for purchases of treasury shares of $3,708 million, including $2,680 million relating to the announced buybacks of our shares, as well as $1,726 million for the payment of the dividend to our shareholders. We made net purchases of property, plant and equipment and intangible assets of $727 million and made payments of dividends to noncontrolling shareholders totaling $98 million. See "Financial position", "Investing activities" and "Financing activities" for further details.

Our Corporate Treasury Operations is responsible for providing a range of treasury management services to our group companies, including investing cash in excess of current business requirements. At December 31, 2021 and 2020, the proportion of our aggregate "Cash and equivalents" (including restricted cash) and "Marketable securities and short-term investments" managed by our Corporate Treasury Operations amounted to approximately 44 percent and 47 percent, respectively.

Our investment strategy for cash (in excess of current business requirements) has generally been to invest in short-term time deposits with maturities of less than 3 months, supplemented at times by investments in money market funds, and in some cases, government securities. We actively monitor credit risk in our investment portfolio and derivative portfolio. Credit risk exposures are controlled in accordance with policies approved by our senior management to identify, measure, monitor and control credit risks. We have minimum rating requirements for our counterparts and closely monitor developments in the credit markets making appropriate changes to our investment policy as deemed necessary. In addition to minimum rating criteria, we have strict investment parameters and specific approved instruments as well as restrictions on the types of investments we make. These parameters are closely monitored on an ongoing basis and amended as we consider necessary.

Our cash is held in various currencies around the world. Approximately 40 percent of our cash and cash equivalents held at December 31, 2021, was in U.S. dollars, while the most significant foreign currency cash and cash equivalents were held in Chinese renminbi (17 percent).

We believe the ongoing cash flows generated from our business, supplemented, when necessary, through access to the capital markets (including short-term commercial paper) and our credit facilities are sufficient to support business operations, capital expenditures, business acquisitions, the payment of dividends to shareholders and contributions to pension plans. Consequently, we believe that our ability to obtain funding from these sources will continue to provide the cash flows necessary to satisfy our working capital and capital expenditure requirements, as well as meet our debt repayments and other financial commitments for the next 12 months. See "Contractual obligations and commitments".

Due to the nature of our operations, including the timing of annual incentive payments to employees, our cash flow from operations generally tends to be weaker in the first half of the year than in the second half of the year.

Debt and interest rates

Total outstanding debt was as follows:

December 31, ($ in millions)	2021	2020
Short-term debt and current maturities of long-term debt	1,384	1,293
Long-term debt:		
Bonds	3,984	4,580
Other long-term debt	193	248
Total debt	**5,561**	**6,121**

The increase in short-term debt in 2021 was due to the reclassification to short-term of the USD 1,250 million 2.875% Notes mostly offset by the repayment at maturity of both the USD 650 million 4.0% Notes and the CHF 350 million 2.25% Bonds.

At December 31, 2021, Long-term debt decreased $651 million compared to the end of 2020 due to the reclassification to short-term described above offset partly by the issuance in 2021 of EUR 800 million 0% Notes.

Our debt has been obtained in a range of currencies and maturities and with various interest rate terms. For certain of our debt obligations, we use derivatives to manage the fixed interest rate exposure. For example, we use interest rate swaps to effectively convert fixed rate debt into floating rate liabilities. After considering the effects of interest rate swaps, at December 31, 2021, the effective average interest rate on our floating rate long-term debt (including current maturities) of $3,598 million and our fixed rate long-term debt (including current maturities) of $1,885 million was 0.3 percent and 3.1 percent, respectively. This compares with an effective rate of 0.2 percent for floating rate long-term debt of $3,330 million and 3.3 percent for fixed rate long-term debt of $2,638 million at December 31, 2020.

For a discussion of our use of derivatives to modify the interest characteristics of certain of our individual bond issuances, see “Note 12 - Debt” to our Consolidated Financial Statements.

Credit facility

In December 2019, we replaced our previous multicurrency revolving credit facility with a new $2 billion multicurrency revolving credit facility, maturing in 2024. In 2021 we exercised our option to further extend the maturity to 2026. No amount was drawn under the facility at December 31, 2021 and 2020. The facility is available for general corporate purposes and contains cross-default clauses whereby an event of default would occur if we were to default on indebtedness, as defined in the facility, at or above a specified threshold.

The credit facility does not contain financial covenants that would restrict our ability to pay dividends or raise additional funds in the capital markets. For further details of the credit facility, see “Note 12 - Debt” to our Consolidated Financial Statements.

Commercial paper

At December 31, 2021, we had two commercial paper programs in place:

- a $2 billion commercial paper program for the private placement of U.S. dollar denominated commercial paper in the United States, and
- a $2 billion Euro-commercial paper program for the issuance of commercial paper in a variety of currencies.

At December 31, 2021, no amount was outstanding under the $2 billion program in the United States, compared to $32 million outstanding at December 31, 2020.

At December 31, 2021 and 2020, no amount was outstanding under the $2 billion Euro-commercial paper program.

European program for the issuance of debt

The European program for the issuance of debt allows the issuance of up to the equivalent of $8 billion in certain debt instruments. The terms of the program do not obligate any third party to extend credit to us and the terms and possibility of issuing any debt under the program are determined with respect to, and as of the date of issuance of, each debt instrument. At December 31, 2021, three bonds (principal amount of EUR 700 million, due in 2023, principal amount of EUR 750 million, due in 2024, and principal amount of EUR 800 million, due in 2030) having a combined carrying amount of $2,522 million were outstanding under the program. The carrying amount of the bonds outstanding under the program at December 31, 2020, was $1,821 million.

Credit ratings

Credit ratings are assessments by the rating agencies of the credit risk associated with ABB and are based on information provided by us or other sources that the rating agencies consider reliable. Higher ratings generally result in lower borrowing costs and increased access to capital markets. Our ratings are of “investment grade” which is defined as Baa3 (or above) from Moody’s and BBB− (or above) from Standard & Poor’s.

At December 31, 2021 and 2020, our long-term debt was rated A3 by Moody’s and currently with a Stable outlook. At December 31, 2021 and 2020, our long-term debt was rated A- by Standard & Poor’s and currently with a Stable outlook.

Limitations on transfers of funds

Currency and other local regulatory limitations related to the transfer of funds exist in a number of countries where we operate, including: China, Egypt, India, Malaysia, the Philippines, the Russian Federation, South Africa, South Korea, Taiwan (Chinese Taipei), Thailand and Turkey. Funds, other than regular dividends, fees or loan repayments, cannot be readily transferred offshore

from these countries and are therefore deposited and used for working capital needs in those countries. In addition, there are certain countries where, for tax reasons, it is not considered optimal to transfer the cash offshore.
As a consequence, these funds are not available within our Corporate Treasury Operations to meet short-term cash obligations outside the relevant country. The above described funds are reported as cash in our Consolidated Balance Sheets, but we do not consider these funds immediately available for the repayment of debt outside the respective countries where the cash is situated, including those described above. At December 31, 2021 and 2020, the balance of "Cash and equivalents" and "Marketable securities and other short-term investments" under such limitations (either regulatory or sub-optimal from a tax perspective) totaled approximately $2,074 million and $1,751 million, respectively.

During 2021, we continued to direct our subsidiaries in countries with restrictions to place such cash with our core banks or investment grade banks, in order to minimize credit risk on such cash positions. We continue to closely monitor the situation to ensure bank counterparty risks are minimized.

Financial position

Balance sheets

December 31, ($ in millions)	2021	2020	% Change
Current assets			
Cash and equivalents	4,159	3,278	27%
Restricted cash	30	323	n.a.
Marketable securities and short-term investments	1,170	2,108	(44)%
Receivables, net	6,551	6,820	(4)%
Contract assets	990	985	1%
Inventories, net	4,880	4,469	9%
Prepaid expenses	206	201	2%
Other current assets	573	760	(25)%
Current assets held for sale and in discontinued operations	136	282	(52)%
Total current assets	**18,695**	**19,226**	**(3)%**

For a discussion on Cash and equivalents, see sections "Liquidity and Capital Resources—Principal sources of funding" and "Cash flows" for further details.

In 2021, the amount of cash subject to short-term restrictions decreased as restrictions on cash of $290 million were removed upon ABB completing certain obligations in connection with the sale of Power Grids to Hitachi. See "Note 3 - Discontinued operations" to our Consolidated Financial Statements.

Marketable securities and short-term investments decreased in 2021. The reduction primarily reflects lower amounts placed in money market funds classified as equity securities (see "Note 5 - Cash and equivalents, marketable securities and short-term investments" to our Consolidated Financial Statements).

Receivables, net, decreased 4 percent primarily due to changes in foreign currencies. In local currency, Receivables, net, remained flat.

Contract assets increased 1 percent (5 percent in local currencies). The increase reflects higher levels in the Process Automation and Motion Business Areas. This was partially offset by lower levels in the non-core businesses and in the Robotics & Discrete Automation Business Area.

Inventories, net, increased 9 percent (15 percent in local currencies). The increase reflects a significant build-up of raw materials and some increases in the price of components. Supply chain challenges and shortages in the availability of some items have created the need to stockpile certain key components and also have resulted in some delays in completing and delivering finished goods.

Current assets held for sale and in discontinued operations decreased to $136 million from $282 million. These amounts primarily relate to working capital for certain contracts which remain with ABB and are being executed for the direct benefit of the Power Grids business. For the details of the assets of the Power Grids business see "Note 3 - Discontinued operations" to our Consolidated Financial Statements.

December 31 ($ in millions)	2021	2020	% Change
Current liabilities			
Accounts payable, trade	4,921	4,571	8%
Contract liabilities	1,894	1,903	0%
Short-term debt and current maturities of long-term debt	1,384	1,293	7%
Current operating leases	230	270	(15)%
Provisions for warranties	1,005	1,035	(3)%
Other provisions	1,386	1,519	(9)%
Other current liabilities	4,367	4,181	4%
Current liabilities held for sale and in discontinued operations	381	644	(41)%
Total current liabilities	**15,568**	**15,416**	**1%**

Accounts payable, trade, increased 8 percent (11 percent in local currencies) due primarily to higher inventory purchases.

The increase in short-term debt in 2021 was due to the reclassification to short-term of the USD 1,250 million 2.875% Notes partially offset by the repayment at maturity of both the USD 650 million 4.0% Notes and the CHF 350 million 2.25% Bonds.

Current operating leases includes the portion of the operating lease liabilities that are due to be paid in the next 12 months. For a summary of operating lease liabilities, see "Note 14 - Leases" to our Consolidated Financial Statements.

Provisions for warranties decreased 3 percent (remained flat in local currencies). For details on the change in the Provisions for warranties, see "Note 15 - Commitments and contingencies" to our Consolidated Financial Statements.

Current liabilities held for sale and in discontinued operations decreased to $381 million from $644 million. These amounts primarily relate to certain working capital balances of the Power Grids business as described above as well as amounts recorded for certain guarantees provided for the benefit of Power Grids.

December 31, ($ in millions)	2021	2020	% Change
Non-current assets			
Restricted cash, non-current	300	300	0%
Property, plant and equipment, net	4,045	4,174	(3)%
Operating lease right-of-use assets	895	969	(8)%
Investments in equity-accounted companies	1,670	1,784	n.a.
Prepaid pension and other employee benefits	892	360	148%
Intangible assets, net	1,561	2,078	(25)%
Goodwill	10,482	10,850	(3)%
Deferred taxes	1,177	843	40%
Other non-current assets	543	504	8%
Total non-current assets	**21,565**	**21,862**	**(1)%**

Restricted cash at December 31, 2021 and 2020, represents certain amounts received on the sale of the Power Grids business which have been placed in escrow, pending resolution of certain of our contractual obligations to Hitachi Ltd. See "Note 3 - Discontinued operations" to our Consolidated Financial Statements.

In 2021, Property, plant and equipment, net, decreased 3 percent (increased 1 percent in local currencies). The sale of the Mechanical Power Transmission Division decreased Property, plant and equipment, net, by 3 percent.

In 2021, Goodwill decreased 3 percent (2 percent in local currencies). The sale of the Mechanical Power Transmission Division reduced Goodwill by 3 percent. Acquisitions of businesses increased Goodwill by 1 percent.

Intangible assets, net, decreased 25 percent (22 percent in local currencies). The sale of the Mechanical Power Transmission Division reduced Intangible assets, net, by 10 percent. Acquisitions of businesses increased Intangible assets, net, by 3 percent. For additional information on goodwill and intangible assets see "Note 11 - Goodwill and intangible assets" to our Consolidated Financial Statements.

The balance for Investment in equity-accounted companies at December 31, 2021 and 2020, primarily represents our remaining 19.9 percent interest in the Hitachi Energy joint venture. For additional information on investments in equity-accounted companies see "Note 4 - Acquisitions, divestments and equity-accounted companies" to our Consolidated Financial Statements.

Prepaid pension and other employee benefits increased 148 percent (150 percent in local currencies). For additional information on Pension and employee benefits see "Note 17 - Employee benefits" to our Consolidated Financial Statements.

In 2021, Deferred taxes, increased 40 percent (50 percent in local currencies). For details on deferred tax assets see "Note 16 - Income taxes" to our Consolidated Financial Statements.

December 31, ($ in millions)	2021	2020	% Change
Non-current liabilities			
Long-term debt	4,177	4,828	(13)%
Non-current operating leases	689	731	(6)%
Pension and other employee benefits	1,025	1,231	(17)%
Deferred taxes	685	661	4%
Other non-current liabilities	2,116	2,025	4%
Non-current liabilities held for sale and in discontinued operations	43	197	(78)%
Total non-current liabilities	**8,735**	**9,673**	**(10)%**

Long-term debt decreased 13 percent. This decrease reflects the reclassification to short-term described above offset mostly by the issuance in 2021 of EUR 800 million 0% Notes. Long-term debt also decreased 6 percent due to changes in currency exchange rates. For additional information on Long-term debt, see “Liquidity and Capital Resources—Debt and interest rates” as well as “Note 12 - Debt” to our Consolidated Financial Statements.

Non-current operating leases includes the portion of the operating lease liabilities that are due to be paid in more than 12 months.

Pension and employee benefits decreased 17 percent (12 percent in local currencies). For additional information on Pension and employee benefits see “Note 17 - Employee benefits” to our Consolidated Financial Statements.

For a breakdown of Other non-current liabilities, see “Note 13 - Other provisions, other current liabilities and other non-current liabilities” to our Consolidated Financial Statements.

Non-current liabilities held for sale and in discontinued operations relate to the sale in 2020 of the Power Grids business. The balance decreased compared to 2020 due to reclassification to current of certain amounts expected to be paid within the next year. The remaining amount at December 31, 2021, relates to certain amounts which are expected to be payable in more than one year. For the details of the liabilities of the Power Grids business see “Note 3 - Discontinued operations” to our Consolidated Financial Statements.

Cash flows

The Consolidated Statements of Cash Flows are shown on a continuing operations basis, with the effects of discontinued operations shown in aggregate for each major cash flow activity and also include the impact from changes in restricted cash.

The Consolidated Statements of Cash Flows can be summarized as follows:

($ in millions)	2021	2020	2019
Net cash provided by operating activities	3,330	1,693	2,325
Net cash provided by (used in) investing activities	2,307	6,760	(815)
Net cash used in financing activities	(4,968)	(8,175)	(1,383)
Effects of exchange rate changes on cash and equivalents	(81)	79	(28)
Net change in cash and equivalents and restricted cash	**588**	**357**	**99**

Operating activities

($ in millions)	2021	2020	2019
Net income	4,650	5,205	1,528
Loss (income) from discontinued operations, net of tax	80	(4,860)	(438)
Depreciation and amortization	893	915	961
Total adjustments to reconcile net income to net cash provided by operating activities (excluding depreciation and amortization)	(2,593)	263	220
Total changes in operating assets and liabilities	308	352	(372)
Net cash provided by operating activities — continuing operations	**3,338**	**1,875**	**1,899**
Net cash provided by (used in) operating activities — discontinued operations	**(8)**	**(182)**	**426**

Cash flows from operating activities in continuing operations in 2021 provided net cash of $3,338 million, an increase of 78 percent compared to 2020. In 2021, we had significantly higher cash effective net income (i.e. net income from continuing operations adjusted for depreciation, amortization and other non-cash items). The higher cash effective net income is due partly to the negative impacts in 2020 of payments made to settle certain international pension plans. The higher amount in 2021 was also driven by generally higher business volumes and higher profitability. In 2021, changes in operating assets and liabilities positively impacted cash flows primarily due to the timing of payments of higher accrued liabilities, including employee bonuses. Cash paid for income taxes increased to $1,292 million from $905 million, reflecting higher current income taxes, including tax impacts from the sales of businesses. In 2020, net cash provided by operating activities benefited from a reduction of inventory levels (in local currencies) and a more favorable timing of cash flows on long-term projects.

In 2021, there were no significant cash flows from operating activities of discontinued operations while in 2020, there were net outflows of $182 million. The amount in 2020 primarily reflects the cash flows of the Power Grids business in the first half of the year.

Investing activities

($ in millions)	2021	2020	2019
Purchases of investments	(1,528)	(5,933)	(748)
Purchases of property, plant and equipment and intangible assets	(820)	(694)	(762)
Acquisition of businesses (net of cash acquired) and increases in cost- and equity-accounted companies	(241)	(121)	(22)
Proceeds from sales of investments	2,272	4,341	749
Proceeds from maturity of investments	81	11	80
Proceeds from sales of property, plant and equipment	93	114	82
Proceeds from sales of businesses (net of transaction costs and cash disposed) and cost- and equity-accounted companies	2,958	(136)	69
Net cash from settlement of foreign currency derivatives	(121)	138	(76)
Other investing activities	(23)	8	(23)
Net cash provided by (used in) investing activities — continuing operations	**2,671**	**(2,272)**	**(651)**
Net cash provided by (used in) investing activities — discontinued operations	**(364)**	**9,032**	**(164)**

Net cash provided by investing activities for continuing operations in 2021 was $2,671 million compared to $2,272 million used in investing activities during 2020. In 2021, we received proceeds of $2,958 million in connection with sales of businesses, primarily from the sale of the Dodge business. The amount in 2020 reflects the net investment in money market funds of amounts received from the sale of the Power Grids business as well as cash payments for purchases of property, plant and equipment. In 2021, we also recorded net investing cash outflows of $121 million for settlements of derivatives compared to net inflows of $138 million in 2020.

The following presents purchases of property, plant and equipment and intangible assets by significant asset category:

($ in millions)	2021	2020	2019
Construction in progress	479	493	536
Purchase of machinery and equipment	150	134	156
Purchase of land and buildings	158	17	26
Purchase of intangible assets	33	50	44
Purchases of property, plant and equipment and intangible assets	**820**	**694**	**762**

Cash expenditures for acquisitions of businesses in 2021 primarily reflects the amount paid to acquire ASTI. The divestment of the solar inverters business resulted in a net cash outflow of $143 million in 2020.

Cash flows from investing activities for discontinued operations relates to the Power Grids business. We sold this business in 2020 and generated net cash proceeds of $9,168 million. Certain amounts related to the purchase price were subject to adjustment, including the final settlement for working capital balances. In 2021, certain elements of the purchase price were finalized and we made payments related to the purchase price and certain other obligations totaling $364 million.

Financing activities

($ in millions)	2021	2020	2019
Net changes in debt with maturities of 90 days or less	(83)	(587)	164
Increase in debt	1,400	343	2,406
Repayment of debt	(1,538)	(3,459)	(2,156)
Delivery of shares	826	412	10
Purchase of treasury stock	(3,708)	(3,048)	—
Dividends paid	(1,726)	(1,736)	(1,675)
Dividends paid to noncontrolling shareholders	(98)	(82)	(90)
Other financing activities	(41)	(49)	13
Net cash used in financing activities — continuing operations	**(4,968)**	**(8,206)**	**(1,328)**
Net cash provided by (used in) financing activities — discontinued operations	**—**	**31**	**(55)**

Our financing cash flow activities primarily include debt transactions (both from the issuance of debt securities and borrowings directly from banks), share transactions and payments of distributions to controlling and noncontrolling shareholders.

In 2021, the net outflow for debt with maturities of 90 days or less related to net repayments of amounts outstanding under the U.S. commercial paper program and various local country borrowings.

In 2021, “Increase in debt” primarily represents the issuance of EUR 800 million 0% Notes due 2030 and borrowings under commercial paper programs for terms longer than 90 days.

In 2021, “Repayment of debt” includes the repayment at maturity of the USD 650 million 4.0% Notes and the CHF 350 million 2.25% Bonds and repayments under commercial paper programs for terms longer than 90 days.

"Delivery of shares" in 2021 reflects cash received from the exercise of options in connection with our Management Incentive Plan (resulting in a delivery of 36 million shares) and in connection with our Employee Share Acquisition Plan (resulting in a delivery of 1.7 million shares). All shares were delivered out of Treasury stock.

In 2021, "Purchase of treasury stock" reflects $2,680 million of cash payments to purchase 78 million of our own shares in connection with both of the announced share buyback programs. It also reflects $1,028 million paid to purchase 33 million shares on the open market during 2021.

Contractual obligations and commitments

The contractual obligations presented in the table below represent our estimates of future payments under fixed contractual obligations and commitments. These amounts may differ from those reported in our Consolidated Balance Sheet at December 31, 2021. Changes in our business needs, cancellation provisions and changes in interest rates, as well as actions by third parties and other factors, may cause these estimates to change. Therefore, our actual payments in future periods may vary from those presented below. The table below summarizes certain of our cash requirements for known contractual obligations and principal and interest payments under our debt instruments and purchase obligations at December 31, 2021 and the timing thereof. For details of future operating and finance lease payments, see "Note 14 - Leases" to our Consolidated Financial Statements.

December 31, ($ in millions)	Current	Non-current	Total
Long-term debt obligations	1,271	4,091	5,362
Interest payments related to long-term debt obligations	73	638	711
Purchase obligations	3,500	992	4,492
Total	**4,844**	**5,721**	**10,565**

In the table above, the Long-term debt obligations reflect the cash amounts to be repaid upon maturity of those debt obligations. The cash obligations above will differ from Long-term debt due to the impacts of fair value hedge accounting adjustments and premiums or discounts on certain debt.

We have determined the interest payments related to long-term debt obligations by reference to the payments due under the terms of our debt obligations at the time such obligations were incurred. However, we use interest rate swaps to modify the interest characteristics of certain of our debt obligations. The net effect of these swaps may increase or decrease the actual amount of our cash interest payment obligations, which may differ from those stated in the above table. For further details on our debt obligations and the related hedges, see "Note 12 - Debt" to our Consolidated Financial Statements.

Purchase obligations are defined as agreements to purchase goods and services that are enforceable and legally binding, that specify all significant terms, including the quantities to be purchased, price provisions and the approximate timing of the transactions. Purchase obligations includes procurement contracts for raw materials, sub-contracted work, supplies and services. Purchase obligations include amounts recorded as well as amounts that are not recorded in the Consolidated Balance Sheets.

Off-balance sheet arrangements

Commercial commitments

We disclose the maximum potential exposure of certain guarantees, as well as possible recourse provisions that may allow us to recover from third parties amounts paid out under such guarantees. The maximum potential exposure does not allow any discounting of our assessment of actual exposure under the guarantees. The information below reflects our maximum potential exposure under the guarantees, which is higher than our assessment of the expected exposure.

Guarantees

The following table provides quantitative data regarding our third-party guarantees. The maximum potential payments represent a worst-case scenario, and do not reflect our expected outcomes.

	Maximum potential payments(1)	
December 31, ($ in millions)	**2021**	**2020**
Performance guarantees	4,540	6,726
Financial guarantees	52	339
Indemnification guarantees(2)	136	177
Total	**4,728**	**7,242**

(1) Maximum potential payments include amounts in both continuing and discontinued operations.
(2) Certain indemnifications provided to Hitachi in connection with the divestment of Power Grids are without limit.

The carrying amount of liabilities recorded in the Consolidated Balance Sheets reflects our best estimate of future payments, which we may incur as part of fulfilling our guarantee obligations. In respect of the above guarantees, the carrying amounts of liabilities at December 31, 2021 and 2020, amounted to $156 million and $135 million, respectively, the majority of which is included in discontinued operations.

In addition, in the normal course of bidding for and executing certain projects, we have entered into standby letters of credit, bid/performance bonds and surety bonds (collectively “performance bonds”) with various financial institutions. Customers can draw on such performance bonds in the event that we do not fulfill our contractual obligations. We would then have an obligation to reimburse the financial institution for amounts paid under the performance bonds. At December 31, 2021 and 2020, the total outstanding performance bonds aggregated to $3.6 billion and $4.3 billion, respectively, of which $0.1 billion and $0.3 billion, respectively, relate to discontinued operations. There have been no significant amounts reimbursed to financial institutions under these types of arrangements in 2021 and 2020.

For additional descriptions of our performance, financial and indemnification guarantees see “Note 15 - Commitments and contingencies” to our Consolidated Financial Statements.

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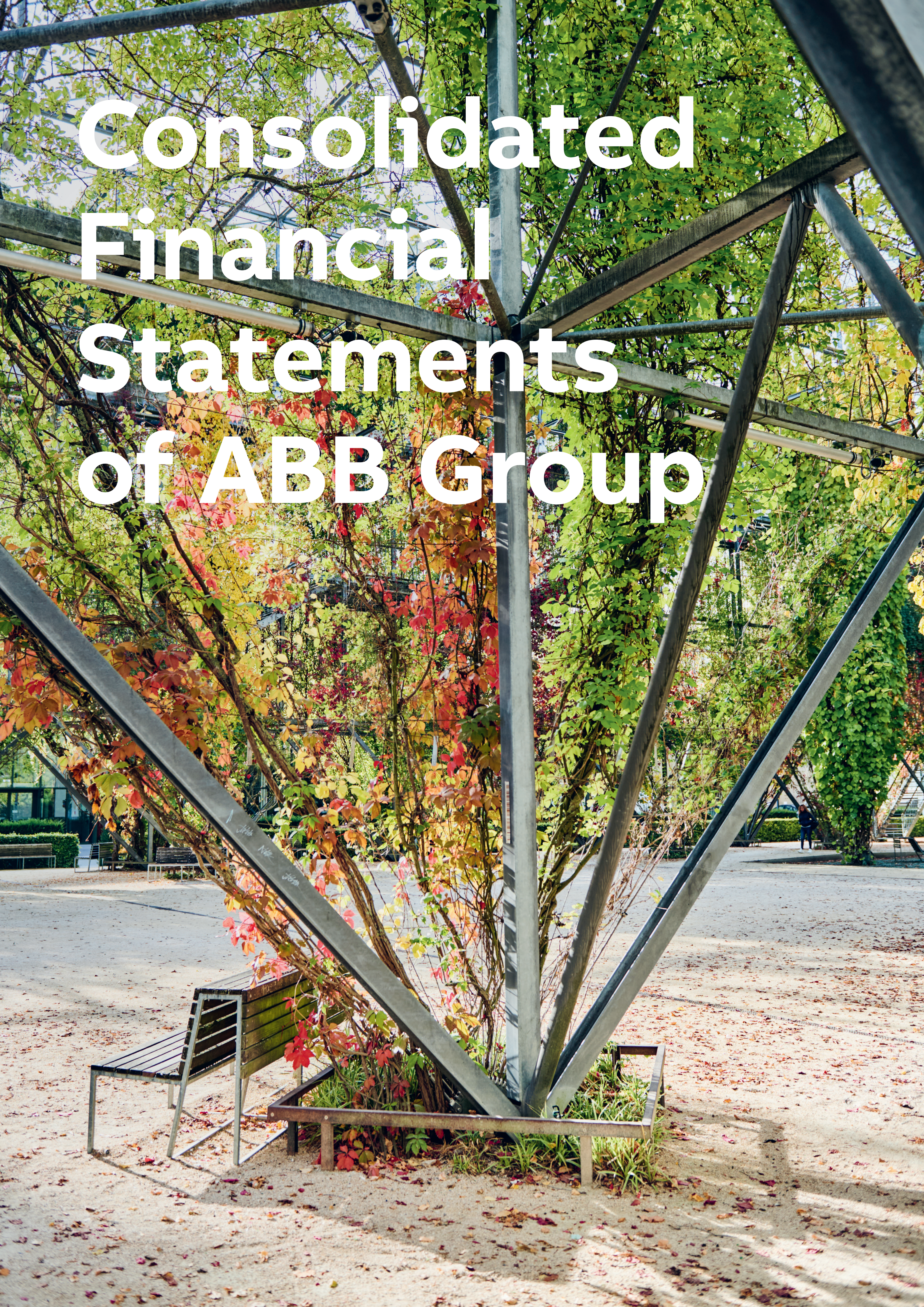
Consolidated Financial Statements of ABB Group



Report of management on internal control over financial reporting

The Board of Directors and Management of ABB Ltd and its consolidated subsidiaries ("ABB") are responsible for establishing and maintaining adequate internal control over financial reporting. ABB's internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation and fair presentation of the published Consolidated Financial Statements in accordance with U.S. generally accepted accounting principles.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with ABB's policies and procedures may deteriorate.

Management conducted an assessment of the effectiveness of internal control over financial reporting based on the criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework). Based on this assessment, management has concluded that ABB's internal control over financial reporting was effective as of December 31, 2021.

KPMG AG, the independent registered public accounting firm who audited the Company's consolidated financial statements, has issued an opinion on the effectiveness of ABB's internal control over financial reporting as of December 31, 2021, which is included on page 168-169 of this Annual Report.

Björn Rosengren	**Timo Ihamuotila**
Chief Executive Officer	Chief Financial Officer

Zurich, February 24, 2022

Report of the Statutory Auditor

To the General Meeting of ABB Ltd, Zurich

Report of the Statutory Auditor on the Consolidated Financial Statements

Opinion

As statutory auditor, we have audited the accompanying consolidated financial statements of ABB Ltd and its subsidiaries (the Group), which comprise the consolidated balance sheets as of December 31, 2021 and 2020, and the related consolidated income statements, statements of comprehensive income, cash flows and changes in stockholders' equity for each of the years in the three-year period ended December 31, 2021, and the related notes (collectively, the consolidated financial statements on pages (171 to 243). In our opinion, the consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as of December 31, 2021 and 2020, and the consolidated results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2021, in accordance with U.S. Generally Accepted Accounting Principles, and comply with Swiss law.

Board of Directors' Responsibility

The Board of Directors is responsible for the preparation of the consolidated financial statements in accordance with U.S. Generally Accepted Accounting Principles and the requirements of Swiss law. This responsibility includes designing, implementing and maintaining an internal control system relevant to the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error. The Board of Directors is further responsible for selecting and applying appropriate accounting policies and making accounting estimates that are reasonable in the circumstances.

Auditor's Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm and are required to be independent with respect to the Group. We conducted our audits in accordance with Swiss law, Swiss Auditing Standards and the standards of the Public Company Accounting Oversight Board (United States) (PCAOB). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement, whether due to fraud or error.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers the internal control system relevant to the entity's preparation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances. An audit also includes evaluating the appropriateness of the accounting policies used and the reasonableness of accounting estimates made, as well as evaluating the overall presentation of the consolidated financial statements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

KPMG

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Revenue recognition for long-term fixed price contracts using the percentage-of-completion method

Valuation of unrecognized tax benefits related to transfer pricing

Revenue recognition for long-term fixed price contracts using the percentage-of-completion method

Critical Audit Matter

As discussed in Note 2 to the consolidated financial statements, revenues from the sale of customized products, including long-term fixed price contracts for integrated automation and electrification systems and solutions are generally recognized on an over time basis using the percentage of completion method of accounting. For the year ended December 31, 2021, the Group reported $23,745 million of revenue from sales of products, a portion of which related to long-term fixed price contracts.

We identified the evaluation of estimated costs to complete related to revenue recognition of long-term fixed price contracts using the percentage of-completion method of accounting as a critical audit matter. In particular, a high degree of subjective auditor judgment was required to evaluate the Group's estimates regarding the amount of future direct materials, labor and subcontract costs, and indirect costs to complete the contracts.

Our response

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls related to the Group's revenue process including controls over the development of estimates regarding the amount of future direct materials, labor and subcontract costs, and indirect costs. We assessed the Group's historical ability to accurately estimate costs to complete by comparing historical estimates to actual results for a selection of contracts. We evaluated the estimate of remaining costs to be incurred for a selection of contracts by assessing progress to date and the nature and complexity of work to be performed through interviewing project managers and inspecting correspondence, if any, between the Group and the customer and/or subcontractors.

For further information on revenue recognition on long-term projects refer to the following:

— Note 2 "Significant accounting policies"

Valuation of unrecognized tax benefits related to transfer pricing

Critical Audit Matter

As discussed in Note 2 to the consolidated financial statements, the Group operates across multiple tax jurisdictions, is exposed to numerous tax laws and is regularly subject to tax audits by local tax authorities. As discussed in Note 16, the Group reported total unrecognized tax benefits of $1,322 million, a portion of which related to unrecognized tax benefits related to transfer pricing.

We identified the valuation of unrecognized tax benefits related to transfer pricing as a critical audit matter. A high degree of subjective auditor judgment and specialized skills and knowledge was required in assessing the Group's interpretation of international tax practice and developments in relation to intragroup charges and intragroup sales of goods and services and the Group's ability to estimate the ultimate resolution of the tax positions.

Our response

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls related to the Group's tax process including controls related to the Group's interpretation of international tax practice and developments in relation to intragroup charges and intragroup sale of goods and services and the estimate of the related unrecognized tax benefits. We tested the identified costs that have a higher likelihood of being challenged by tax authorities associated with intragroup arrangements and potential price adjustments for intragroup sales of goods and services. We involved tax professionals with specialized skills and knowledge, who assisted in evaluating (1) the Group's historical ability to accurately estimate the unrecognized tax benefits related to transfer pricing by comparing historical tax positions to subsequent settlements (2) the Group's transfer pricing documentation and methodology for compliance with applicable laws and regulations by assessing the documentation and relevant agreements, (3) the impact of new information or changes in international tax practice and developments on historical tax positions, and (4) developing an independent expectation of the unrecognized tax benefits estimate relating to current year tax positions in connection with the Group's intragroup charges and intragroup sales of goods and services and comparing the results to the Group's assessment.

For further information on unrecognized tax benefits refer to the following:

— Note 2 “Significant accounting policies”

— Note 16 “Income taxes”

Report on Other Legal and Regulatory Requirements

We are a public accounting firm registered with the Swiss Federal Audit Oversight Authority (FAOA) and the PCAOB and we confirm that we meet the legal requirements on licensing according to the Auditor Oversight Act (AOA). We are independent of the Group in accordance with Swiss law (article 728 CO and article 11 AOA) and U.S. federal securities laws as well as the applicable rules and regulations of the Swiss audit profession, the U.S. Securities and Exchange Commission and the PCAOB, and we have fulfilled our other ethical responsibilities in accordance with these requirements.

In accordance with article 728a paragraph 1 item 3 CO and Swiss Auditing Standard 890, we confirm that an internal control system exists, which has been designed for the preparation of consolidated financial statements according to the instructions of the Board of Directors.

We recommend that the consolidated financial statements submitted to you be approved.

We have also audited, in accordance with the standards of the PCAOB, the Group's internal control over financial reporting as of December 31, 2021, based on criteria established in Internal Control – Integrated Framework 2013 issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated February 24, 2022, expressed an unqualified opinion on the effectiveness of the Group's internal control over financial reporting.

We have served as the Group's auditor since 2018.

KPMG AG

Hans-Dieter Krauss
Licensed Audit Expert
Auditor in Charge

Mohammad Nafeie

Zurich, Switzerland
February 24, 2022

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of ABB Ltd

Opinion on Internal Control Over Financial Reporting

We have audited ABB Ltd and its subsidiaries' (the Group) internal control over financial reporting as of December 31, 2021, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). In our opinion the Group maintained, in all material respects, effective internal control over financial reporting as of December 31, 2021, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by COSO.

We also have audited, in accordance with Swiss law, Swiss Auditing Standards and the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Group as of December 31, 2021 and 2020, the related consolidated income statements, statements of comprehensive income, cash flows and changes in stockholders' equity for each of the years in the three-year period ended December 31, 2021, and the related notes (collectively, the consolidated financial statements), and our report dated February 24, 2022, expressed an unqualified opinion on those consolidated financial statements.

Basis for Opinion

The Group's Board of Directors and management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Report of management on internal control over financial reporting. Our responsibility is to express an opinion on the Group's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Group in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

KPMG AG

Hans-Dieter Krauss
Licensed Audit Expert
Auditor in Charge

Mohammad Nafeie

Zurich, Switzerland
February 24, 2022

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ABB Ltd Consolidated Income Statements

Year ended December 31 ($ in millions, except per share data in $)	2021	2020	2019
Sales of products	23,745	21,214	22,554
Sales of services and other	5,200	4,920	5,424
Total revenues	**28,945**	**26,134**	**27,978**
Cost of sales of products	(16,364)	(15,229)	(15,811)
Cost of services and other	(3,114)	(3,027)	(3,261)
Total cost of sales	**(19,478)**	**(18,256)**	**(19,072)**
Gross profit	**9,467**	**7,878**	**8,906**
Selling, general and administrative expenses	(5,162)	(4,895)	(5,447)
Non-order related research and development expenses	(1,219)	(1,127)	(1,198)
Impairment of goodwill	—	(311)	—
Other income (expense), net	2,632	48	(323)
Income from operations	**5,718**	**1,593**	**1,938**
Interest and dividend income	51	51	67
Interest and other finance expense	(148)	(240)	(215)
Losses from extinguishment of debt	—	(162)	—
Non-operational pension (cost) credit	166	(401)	72
Income from continuing operations before taxes	**5,787**	**841**	**1,862**
Income tax expense	(1,057)	(496)	(772)
Income from continuing operations, net of tax	**4,730**	**345**	**1,090**
Income (loss) from discontinued operations, net of tax	(80)	4,860	438
Net income	**4,650**	**5,205**	**1,528**
Net income attributable to noncontrolling interests	(104)	(59)	(89)
Net income attributable to ABB	**4,546**	**5,146**	**1,439**
Amounts attributable to ABB shareholders:			
Income from continuing operations, net of tax	4,625	294	1,043
Income (loss) from discontinued operations, net of tax	(79)	4,852	396
Net income	4,546	5,146	1,439
Basic earnings per share attributable to ABB shareholders:			
Income from continuing operations, net of tax	2.31	0.14	0.49
Income (loss) from discontinued operations, net of tax	(0.04)	2.30	0.19
Net income	2.27	2.44	0.67
Diluted earnings per share attributable to ABB shareholders:			
Income from continuing operations, net of tax	2.29	0.14	0.49
Income (loss) from discontinued operations, net of tax	(0.04)	2.29	0.19
Net income	2.25	2.43	0.67
Weighted-average number of shares outstanding (in millions) used to compute:			
Basic earnings per share attributable to ABB shareholders	2,001	2,111	2,133
Diluted earnings per share attributable to ABB shareholders	2,019	2,119	2,135

Due to rounding, numbers presented may not add to the totals provided.
See accompanying Notes to the Consolidated Financial Statements

ABB Ltd Consolidated Statements of Comprehensive Income

Year ended December 31 ($ in millions)	2021	2020	2019
Net income	**4,650**	**5,205**	**1,528**
Other comprehensive income (loss), net of tax:			
Foreign currency translation adjustments:			
Foreign currency translation adjustments	(521)	498	(130)
Changes attributable to divestments	(9)	519	(2)
Foreign currency translation adjustments	**(530)**	**1,017**	**(132)**
Available-for-sale securities:			
Net unrealized gains (losses) arising during the year	(10)	24	14
Reclassification adjustments for net (gains) losses included in net income	(5)	(14)	—
Changes attributable to divestments	—	(3)	—
Unrealized gains (losses) on available-for-sale securities	**(15)**	**7**	**14**
Pension and other postretirement plans:			
Prior service credits arising during the year	—	43	6
Net actuarial gains (losses) arising during the year	411	(200)	(220)
Amortization of prior service credit included in net income	(14)	(11)	(28)
Amortization of net actuarial loss included in net income	69	88	68
Net losses from settlements and curtailments included in net income	7	518	32
Changes attributable to divestments	(6)	151	—
Pension and other postretirement plan adjustments	**467**	**589**	**(142)**
Derivative instruments and hedges:			
Net unrealized gains arising during the year	8	2	20
Reclassification adjustments for net (gains) losses included in net income	(13)	—	(9)
Changes in derivative instruments and hedges	**(5)**	**2**	**11**
Total other comprehensive income (loss), net of tax	**(83)**	**1,615**	**(249)**
Total comprehensive income, net of tax	**4,567**	**6,820**	**1,279**
Total comprehensive income attributable to noncontrolling interests, net of tax	(108)	(86)	(83)
Total comprehensive income attributable to ABB, net of tax	**4,459**	**6,734**	**1,196**

Due to rounding, numbers presented may not add to the totals provided.

See accompanying Notes to the Consolidated Financial Statements

ABB Ltd Consolidated Balance Sheets

December 31 ($ in millions, except share data)	2021	2020
Cash and equivalents	4,159	3,278
Restricted cash	30	323
Marketable securities and short-term investments	1,170	2,108
Receivables, net	6,551	6,820
Contract assets	990	985
Inventories, net	4,880	4,469
Prepaid expenses	206	201
Other current assets	573	760
Current assets held for sale and in discontinued operations	136	282
Total current assets	**18,695**	**19,226**
Restricted cash, non-current	300	300
Property, plant and equipment, net	4,045	4,174
Operating lease right-of-use assets	895	969
Investments in equity-accounted companies	1,670	1,784
Prepaid pension and other employee benefits	892	360
Intangible assets, net	1,561	2,078
Goodwill	10,482	10,850
Deferred taxes	1,177	843
Other non-current assets	543	504
Total assets	**40,260**	**41,088**
Accounts payable, trade	4,921	4,571
Contract liabilities	1,894	1,903
Short-term debt and current maturities of long-term debt	1,384	1,293
Current operating leases	230	270
Provisions for warranties	1,005	1,035
Other provisions	1,386	1,519
Other current liabilities	4,367	4,181
Current liabilities held for sale and in discontinued operations	381	644
Total current liabilities	**15,568**	**15,416**
Long-term debt	4,177	4,828
Non-current operating leases	689	731
Pension and other employee benefits	1,025	1,231
Deferred taxes	685	661
Other non-current liabilities	2,116	2,025
Non-current liabilities held for sale and in discontinued operations	43	197
Total liabilities	**24,303**	**25,089**
Commitments and contingencies		
Stockholders' equity:		
Common stock, CHF 0.12 par value (2,053 million and 2,168 million shares issued at December 31, 2021 and 2020, respectively)	178	188
Additional paid-in capital	22	83
Retained earnings	22,477	22,946
Accumulated other comprehensive loss	(4,088)	(4,002)
Treasury stock, at cost (95 million and 137 million shares at December 31, 2021 and 2020, respectively)	(3,010)	(3,530)
Total ABB stockholders' equity	**15,579**	**15,685**
Noncontrolling interests	378	314
Total stockholders' equity	**15,957**	**15,999**
Total liabilities and stockholders' equity	**40,260**	**41,088**

Due to rounding, numbers presented may not add to the totals provided.

See accompanying Notes to the Consolidated Financial Statements

ABB Ltd Consolidated Statements of Cash Flows

Year ended December 31 ($ in millions)	2021	2020	2019
Operating activities:			
Net income	4,650	5,205	1,528
Loss (income) from discontinued operations, net of tax	80	(4,860)	(438)
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	893	915	961
Impairment of goodwill	—	311	—
Changes in fair values of investments	(123)	(99)	(5)
Pension and other employee benefits	(216)	50	(102)
Deferred taxes	(289)	(280)	(83)
Losses from extinguishment of debt	—	162	—
Loss (income) from equity-accounted companies	100	66	(8)
Net loss (gain) from derivatives and foreign exchange	49	(2)	1
Net gain from sale of property, plant and equipment	(38)	(37)	(51)
Net loss (gain) from sale of businesses	(2,193)	2	(55)
Fair value adjustment on assets and liabilities held for sale	—	33	421
Other	117	57	102
Changes in operating assets and liabilities:			
Trade receivables, net	(142)	(100)	(202)
Contract assets and liabilities	29	186	128
Inventories, net	(771)	196	(182)
Accounts payable, trade	659	(13)	130
Accrued liabilities	454	(92)	(76)
Provisions, net	(48)	243	(36)
Income taxes payable and receivable	117	(76)	(3)
Other assets and liabilities, net	10	8	(131)
Net cash provided by operating activities — continuing operations	**3,338**	**1,875**	**1,899**
Net cash provided by (used in) operating activities — discontinued operations	**(8)**	**(182)**	**426**
Net cash provided by operating activities	**3,330**	**1,693**	**2,325**
Investing activities:			
Purchases of investments	(1,528)	(5,933)	(748)
Purchases of property, plant and equipment and intangible assets	(820)	(694)	(762)
Acquisition of businesses (net of cash acquired) and increases in cost- and equity-accounted companies	(241)	(121)	(22)
Proceeds from sales of investments	2,272	4,341	749
Proceeds from maturity of investments	81	11	80
Proceeds from sales of property, plant and equipment	93	114	82
Proceeds from sales of businesses (net of transaction costs and cash disposed) and cost- and equity-accounted companies	2,958	(136)	69
Net cash from settlement of foreign currency derivatives	(121)	138	(76)
Other investing activities	(23)	8	(23)
Net cash provided by (used in) investing activities — continuing operations	**2,671**	**(2,272)**	**(651)**
Net cash provided by (used in) investing activities — discontinued operations	**(364)**	**9,032**	**(164)**
Net cash provided by (used in) investing activities	**2,307**	**6,760**	**(815)**

Year ended December 31 ($ in millions)	2021	2020	2019
Financing activities:			
Net changes in debt with maturities of 90 days or less	(83)	(587)	164
Increase in debt	1,400	343	2,406
Repayment of debt	(1,538)	(3,459)	(2,156)
Delivery of shares	826	412	10
Purchase of treasury stock	(3,708)	(3,048)	—
Dividends paid	(1,726)	(1,736)	(1,675)
Dividends paid to noncontrolling shareholders	(98)	(82)	(90)
Other financing activities	(41)	(49)	13
Net cash used in financing activities — continuing operations	**(4,968)**	**(8,206)**	**(1,328)**
Net cash provided by (used in) financing activities — discontinued operations	**—**	**31**	**(55)**
Net cash used in financing activities	**(4,968)**	**(8,175)**	**(1,383)**
Effects of exchange rate changes on cash and equivalents and restricted cash	(81)	79	(28)
Net change in cash and equivalents and restricted cash	**588**	**357**	**99**
Cash and equivalents and restricted cash, beginning of period	3,901	3,544	3,445
Cash and equivalents and restricted cash, end of period	**4,489**	**3,901**	**3,544**
Supplementary disclosure of cash flow information:			
Interest paid	132	189	284
Income taxes paid	1,292	905	1,005

Due to rounding, numbers presented may not add to the totals provided.

See accompanying Notes to the Consolidated Financial Statements

ABB Ltd Consolidated Statements of Changes in Stockholders' Equity

Years ended December 31, 2021, 2020 and 2019 ($ in millions)	Common stock	Additional paid-in capital
Balance at January 1, 2019	188	56
Adoption of accounting standard update		
Comprehensive income:		
Net income		
Foreign currency translation adjustments, net of tax		
Effect of change in fair value of available-for-sale securities, net of tax		
Unrecognized income (expense) related to pensions and other postretirement plans, net of tax		
Change in derivative instruments and hedges, net of tax		
Total comprehensive income		
Changes in noncontrolling interests		(17)
Fair value adjustment to noncontrolling interests recognized in business combination		
Changes in noncontrolling interests in connection with divestments		
Dividends to noncontrolling shareholders		
Dividends to shareholders		
Share-based payment arrangements		55
Delivery of shares		(24)
Call options		4
Balance at December 31, 2019	**188**	**73**
Adoption of accounting standard update		
Comprehensive income:		
Net income		
Foreign currency translation adjustments, net of tax		
Effect of change in fair value of available-for-sale securities, net of tax		
Unrecognized income (expense) related to pensions and other postretirement plans, net of tax		
Change in derivative instruments and hedges, net of tax		
Total comprehensive income		
Changes in noncontrolling interests		(16)
Changes in noncontrolling interests in connection with divestments		
Dividends to noncontrolling shareholders		
Dividends to shareholders		
Share-based payment arrangements		54
Purchase of treasury stock		
Delivery of shares		(24)
Other		(3)
Balance at December 31, 2020	**188**	**83**
Comprehensive income:		
Net income		
Foreign currency translation adjustments, net of tax		
Effect of change in fair value of available-for-sale securities, net of tax		
Unrecognized income (expense) related to pensions and other postretirement plans, net of tax		
Change in derivative instruments and hedges, net of tax		
Total comprehensive income		
Changes in noncontrolling interests		(37)
Dividends to noncontrolling shareholders		
Dividends to shareholders		
Cancellation of treasury shares	(10)	(17)
Share-based payment arrangements		60
Purchase of treasury stock		
Delivery of shares		(84)
Other		16
Balance at December 31, 2021	**178**	**22**

Due to rounding, numbers presented may not add to the totals provided.
See accompanying Notes to the Consolidated Financial Statements

Retained earnings	Accumulated other comprehensive loss	Treasury stock	Total ABB stockholders' equity	Noncontrolling interests	Total stockholders' equity
19,839	(5,311)	(820)	13,952	582	14,534
36	(36)		—		—
1,439			1,439	89	1,528
	(126)		(126)	(6)	(132)
	14		14		14
	(142)		(142)		(142)
	11		11		11
			1,196	83	1,279
			(17)	12	(5)
			—	(44)	(44)
			—	(55)	(55)
			—	(122)	(122)
(1,675)			(1,675)		(1,675)
			55		55
		34	10		10
			4		4
19,640	(5,590)	(785)	13,526	454	13,980
(82)			(82)	(9)	(91)
5,146			5,146	59	5,205
	990		990	27	1,017
	7		7		7
	589		589		589
	2		2		2
			6,734	86	6,820
			(16)	19	3
			—	(138)	(138)
			—	(98)	(98)
(1,758)			(1,758)		(1,758)
			54		54
		(3,181)	(3,181)		(3,181)
		436	412		412
			(3)		(3)
22,946	(4,002)	(3,530)	15,685	314	15,999
4,546			4,546	104	4,650
	(534)		(534)	4	(530)
	(15)		(15)		(15)
	467		467		467
	(5)		(5)		(5)
			4,459	108	4,567
(20)			(57)	55	(2)
			—	(98)	(98)
(1,730)			(1,730)		(1,730)
(3,130)		3,157	—		—
			60		60
		(3,682)	(3,682)		(3,682)
(136)		1,046	826		826
			16		16
22,477	(4,088)	(3,010)	15,579	378	15,957

Notes to the Consolidated Financial Statements

Note 1
The Company

ABB Ltd and its subsidiaries (collectively, the Company) together form a leading global technology company, connecting software to its electrification, robotics, automation and motion portfolio to drive performance to new levels.

Note 2
Significant accounting policies

The following is a summary of significant accounting policies followed in the preparation of these Consolidated Financial Statements.

Basis of presentation

The Consolidated Financial Statements are prepared in accordance with United States of America (United States or U.S.) generally accepted accounting principles (U.S. GAAP) and are presented in United States dollars ($ or USD) unless otherwise stated. Due to rounding, numbers presented may not add to the totals provided. The par value of capital stock is denominated in Swiss francs.

Reclassifications

Certain amounts reported for prior years in the Consolidated Financial Statements and the accompanying Notes have been reclassified to conform to the current year's presentation. These changes primarily relate to the reallocation of certain real estate assets, previously reported within Corporate and Other, into the operating segments which utilize the assets.

Scope of consolidation

The Consolidated Financial Statements include the accounts of ABB Ltd and companies which are directly or indirectly controlled by ABB Ltd. Additionally, the Company consolidates variable interest entities if it has determined that it is the primary beneficiary. Intercompany accounts and transactions are eliminated. Investments in joint ventures and affiliated companies in which the Company has the ability to exercise significant influence over operating and financial policies (generally through direct or indirect ownership of 20 percent to 50 percent of the voting rights), are recorded in the Consolidated Financial Statements using the equity method of accounting.

Translation of foreign currencies and foreign exchange transactions

The functional currency for most of the Company's subsidiaries is the applicable local currency. The translation from the applicable functional currencies into the Company's reporting currency is performed for balance sheet accounts using exchange rates in effect at the balance sheet date and for income statement accounts using average exchange rates prevailing during the year. The resulting translation adjustments are excluded from the determination of earnings and are recognized in "Accumulated other comprehensive loss" until the subsidiary is sold, substantially liquidated or evaluated for impairment in anticipation of disposal.

Foreign currency exchange gains and losses, such as those resulting from foreign currency denominated receivables or payables, are included in the determination of earnings, except as they relate to intercompany loans that are equity-like in nature with no reasonable expectation of repayment, which are recognized in “Accumulated other comprehensive loss”. Exchange gains and losses recognized in earnings are included in “Total revenues”, “Total cost of sales”, “Selling, general and administrative expenses” or “Interest and other finance expense” consistent with the nature of the underlying item.

Discontinued operations

The Company reports a disposal, or planned disposal, of a component or a group of components as a discontinued operation if the disposal represents a strategic shift that has or will have a major effect on the Company’s operations and financial results. A strategic shift could include a disposal of a major geographical area, a major line of business or other major parts of the Company. A component may be a reportable segment or an operating segment, a reporting unit, a subsidiary, or an asset group.

The assets and liabilities of a component reported as a discontinued operation are presented separately as held for sale and in discontinued operations in the Company’s Consolidated Balance Sheets.

Interest expense that is not directly attributable to or related to the Company’s continuing business or discontinued business is allocated to discontinued operations based on the ratio of net assets to be sold less debt that is required to be paid as a result of the planned disposal transaction to the sum of total net assets of the Company plus consolidated debt. General corporate overhead is not allocated to discontinued operations (see Note 3).

Operating cycle

A portion of the Company’s activities (primarily long-term system integration activities) has an operating cycle that exceeds one year. For classification of current assets and liabilities related to such activities, the Company elected to use the duration of the individual contracts as its operating cycle. Accordingly, there are accounts receivable, inventories and provisions related to these contracts which will not be realized within one year that have been classified as current.

Use of estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make assumptions and estimates that directly affect the amounts reported in the Consolidated Financial Statements and the accompanying Notes. These accounting assumptions and estimates include:

- growth rates, discount rates and other assumptions used to determine impairment of long-lived assets and in testing goodwill for impairment,
- estimates to determine valuation allowances for deferred tax assets and amounts recorded for unrecognized tax benefits,
- assumptions used in determining inventory obsolescence and net realizable value,
- estimates and assumptions used in determining the initial fair value of retained noncontrolling interest and certain obligations in connection with divestments,
- estimates and assumptions used in determining the fair values of assets and liabilities assumed in business combinations,
- assumptions used in the determination of corporate costs directly attributable to discontinued operations,
- estimates of loss contingencies associated with litigation or threatened litigation and other claims and inquiries, environmental damages, product warranties, self-insurance reserves, regulatory and other proceedings,
- estimates used to record expected costs for employee severance in connection with restructuring programs,
- estimates related to credit losses expected to occur over the remaining life of financial assets such as trade and other receivables, loans and other instruments,
- assumptions used in the calculation of pension and postretirement benefits and the fair value of pension plan assets, and

- assumptions and projections, principally related to future material, labor and project-related overhead costs, used in determining the percentage-of-completion on projects where revenue is recognized over time, as well as the amount of variable consideration the Company expects to be entitled to.

The actual results and outcomes may differ from the Company's estimates and assumptions.

Cash and equivalents

Cash and equivalents include highly liquid investments with maturities of three months or less at the date of acquisition.

Currency and other local regulatory limitations related to the transfer of funds exist in a number of countries where the Company operates. Funds, other than regular dividends, fees or loan repayments, cannot be readily transferred abroad from these countries and are therefore deposited and used for working capital needs locally. These funds are included in cash and equivalents as they are not considered restricted.

Cash and equivalents that are subject to contractual restrictions or other legal obligations and are not readily available are classified as "Restricted cash".

Marketable securities and short-term investments

Management determines the appropriate classification of held-to-maturity and available-for-sale debt securities at the time of purchase. Debt securities are classified as held-to-maturity when the Company has the positive intent and ability to hold the securities to maturity. Held-to-maturity debt securities are carried at amortized cost, adjusted for accretion of discounts or amortization of premiums to maturity computed under the effective interest method. Such accretion or amortization is included in "Interest and dividend income". Marketable debt securities not classified as held-to-maturity are classified as available-for-sale and reported at fair value.

Unrealized gains and losses on available-for-sale debt securities are excluded from the determination of earnings and are instead recognized in the "Accumulated other comprehensive loss" component of stockholders' equity, net of tax, until realized. Realized gains and losses on available-for-sale debt securities are computed based upon the historical cost of these securities, using the specific identification method.

Marketable debt securities are classified as either "Cash and equivalents" or "Marketable securities and short-term investments" according to their maturity at the time of acquisition.

Marketable equity securities are generally classified as "Marketable securities and short-term investments", however, any marketable securities held as a long-term investment rather than as an investment of excess liquidity are classified as "Other non-current assets". Equity securities are measured at fair value with fair value changes reported in net income. Fair value changes for equity securities are generally reported in "Interest and other finance expense", however, fair value changes for certain equity securities classified as long-term investments are reported in "Other income (expense), net".

For debt securities classified as available-for-sale where fair value has declined below amortized cost due to credit losses, the Company records an allowance for expected credit losses and adjusts the allowance in subsequent periods in "Interest and other finance expense". All fair value changes other than those related to credit risk are reported in "Accumulated other comprehensive loss" until the security is sold.

In addition, equity securities without readily determinable fair values are remeasured if there is an observable price change in an orderly transaction for the same investment, or if a qualitative assessment indicates that the investment is impaired and the fair value of the investment is less than its carrying amount. Similar to other fair value changes as described above, depending on the nature of the investment, this fair value change is either recorded in "Other income (expense), net" or "Interest and other finance expense".

Accounts receivable and allowance for expected credit losses

Accounts receivable are recorded at the invoiced amount. The Company has a group-wide policy on the management of credit risk. The policy includes a credit assessment methodology to assess the creditworthiness of customers and assign to those customers a risk category. Third-party agencies' ratings are considered, if available. For customers where agency ratings are not available, the customer's most recent financial statements, payment history and other relevant information are considered in the assignment to a risk category. Customers are assessed at least annually or more frequently when information on significant changes in the customer's financial position becomes known. In addition to the assignment to a risk category, a credit limit per customer is set.

The Company recognizes an allowance for credit losses to present the net amount of receivables expected to be collected at the balance sheet date. The allowance is based on the credit losses expected to arise over the asset's contractual term taking into account historical loss experience, customer-specific data as well as forward looking estimates. The Company's accounts receivable are first grouped by the individual legal entity which generally has a geographic concentration of receivables, resulting in different risk levels for different entities. Receivables are then further subdivided within the entity into pools based on similar risk characteristics to estimate expected credit losses. Expected credit losses are estimated individually when the related assets do not share similar risk characteristics.

Accounts receivable are written off when deemed uncollectible and are recognized as a deduction from the allowance for credit losses. Expected recoveries, which are not to exceed the amount previously written off, are considered in determining the allowance balance at the balance sheet date.

The Company, in its normal course of business, transfers receivables to third parties, generally without recourse. The transfer is accounted for as a sale when the Company has surrendered control over the receivables. Control is deemed to have been surrendered when (i) the transferred receivables have been put presumptively beyond the reach of the Company and its creditors, even in bankruptcy or other receivership, (ii) the third-party transferees have the right to pledge or exchange the transferred receivables, and (iii) the Company has relinquished effective control over the transferred receivables and does not retain the ability or obligation to repurchase or redeem the transferred receivables. At the time of sale, the sold receivables are removed from the Consolidated Balance Sheets and the related cash inflows are classified as operating activities in the Consolidated Statements of Cash Flows. Costs associated with the sale of receivables, including the related gains and losses from the sales, are included in "Interest and other finance expense". Transfers of receivables that do not meet the requirements for treatment as sales are accounted for as secured borrowings and the related cash flows are classified as financing activities in the Consolidated Statements of Cash Flows.

Concentrations of credit risk

The Company sells a broad range of products, systems, services and software to a wide range of industrial, commercial and utility customers as well as various government agencies and quasi-governmental agencies throughout the world. Concentrations of credit risk with respect to accounts receivable are limited, as the Company's customer base is comprised of a large number of individual customers. Ongoing credit evaluations of customers' financial positions are performed to determine whether the use of credit support instruments such as guarantees, letters of credit or credit insurance are necessary; collateral is not generally required. The Company maintains an allowance for credit losses as discussed above in "Accounts receivable and allowance for expected credit losses". Such losses, in the aggregate, are in line with the Company's expectations.

It is the Company's policy to invest cash in deposits with banks throughout the world with certain minimum credit ratings and in high quality, low risk, liquid investments. The Company actively manages its credit risk by routinely reviewing the creditworthiness of the banks and the investments held. The Company has not incurred significant credit losses related to such investments.

The Company's exposure to credit risk on derivative financial instruments is the risk that the counterparty will fail to meet its obligations. To reduce this risk, the Company has credit policies that require the establishment and periodic review of credit limits for individual counterparties. In addition, the Company has entered into close-out netting agreements with most derivative counterparties. Close-out netting agreements provide for the termination, valuation and net settlement of some or all outstanding transactions between two counterparties on the occurrence of one or more pre-defined trigger events. Derivative instruments are presented on a gross basis in the Consolidated Financial Statements.

Revenue recognition

A customer contract exists if collectability under the contract is considered probable, the contract has commercial substance, contains payment terms, as well as the rights and commitments of both parties, and has been approved.

The Company offers arrangements with multiple performance obligations to meet its customers' needs. These arrangements may involve the delivery of multiple products and/or performance of services (such as installation and training) and the delivery and/or performance may occur at different points in time or over different periods of time. Goods and services under such arrangements are evaluated to determine whether they form distinct performance obligations and should be accounted for as separate revenue transactions. The Company allocates the sales price to each distinct performance obligation based on the price of each item sold in separate transactions at the inception of the arrangement.

The Company generally recognizes revenues for the sale of non-customized products including circuit breakers, modular substation packages, control products, motors, generators, drives, robots, turbochargers, measurement and analytical instrumentation, and other goods which are manufactured on a standardized basis at a point in time. Revenues are recognized at the point in time that the customer obtains control of the goods, which is when it has taken title to the products and assumed the risks and rewards of ownership of the products specified in the purchase order or sales agreement. Generally, the transfer of title and risks and rewards of ownership are governed by the contractually defined shipping terms. The Company uses various International Commercial Terms (as promulgated by the International Chamber of Commerce) in its sales of products to third party customers, such as Ex Works (EXW), Free Carrier (FCA) and Delivered Duty Paid (DDP).

Billing terms for these point in time contracts vary but generally coincide with delivery to the customer. Payment is generally due upon receipt of the invoice, payable within 90 days or less.

The Company generally recognizes revenues for the sale of customized products, including integrated automation and electrification systems and solutions, on an over time basis using the percentage-of-completion method of accounting. These systems are generally accounted for as a single performance obligation as the Company is required to integrate equipment and services into one deliverable for the customer. Revenues are recognized as the systems are customized during the manufacturing or integration process and as control is transferred to the customer as evidenced by the Company's right to payment for work performed or by the customer's ownership of the work in process. The Company principally uses the cost-to-cost method to measure progress towards completion on contracts. Under this method, progress of contracts is measured by actual costs incurred in relation to the Company's best estimate of total costs based on the Company's history of manufacturing or constructing similar assets for customers. Estimated costs are reviewed and updated routinely for contracts in progress to reflect changes in quantity or pricing of the inputs. The cumulative effect of any change in estimate is recorded in the period when the change in estimate is determined. Contract costs include all direct materials, labor and subcontract costs and indirect costs related to contract performance, such as indirect labor, supplies, tools and depreciation costs.

The nature of the Company's contracts for the sale of customized products gives rise to several types of variable consideration, including claims, unpriced change orders, liquidated damages and penalties. These amounts are estimated based upon the most likely amount of consideration to which the customer or the Company will be entitled. The estimated amounts are included in the sales price to the extent it is probable that a significant reversal of cumulative revenues recognized will not occur when the uncertainty associated with the variable consideration is resolved. All estimates of variable consideration are reassessed periodically. Back charges to suppliers or subcontractors are recognized as a reduction of cost when it is determined that recovery of such cost is probable and the amounts can be reliably estimated.

Billing terms for these over-time contracts vary but are generally based on achieving specified milestones. The differences between the timing of revenues recognized and customer billings result in changes to contract assets and contract liabilities. Payment is generally due upon receipt of the invoice, payable within 90 days or less. Contractual retention amounts billed to customers are generally due upon expiration of the contractual warranty period.

Service revenues reflect revenues earned from the Company's activities in providing services to customers primarily subsequent to the sale and delivery of a product or complete system. Such revenues consist of maintenance type contracts, repair services, equipment upgrades, field service activities that include personnel and accompanying spare parts, training, and installation and commissioning of products as a stand-alone service or as part of a service contract. The Company generally recognizes revenues from service transactions as services are performed or at the point in time that the customer obtains control of the spare parts. For long-term service contracts including monitoring and maintenance services, revenues are recognized on a straight line basis over the term of the contract consistent with the nature, timing and extent of the services or, if the performance pattern is other than straight line, as the services are provided based on costs incurred relative to total expected costs.

In limited circumstances the Company sells extended warranties that extend the warranty coverage beyond the standard coverage offered on specific products. Revenues for these warranties are recorded over the length of the warranty period based on their stand-alone selling price.

Billing terms for service contracts vary but are generally based on the occurrence of a service event. Payment is generally due upon receipt of the invoice, payable within 90 days or less.

Revenues are reported net of customer rebates, early settlement discounts, and similar incentives. Rebates are estimated based on sales terms, historical experience and trend analysis. The most common incentives relate to amounts paid or credited to customers for achieving defined volume levels.

Taxes assessed by a governmental authority that are directly imposed on revenue-producing transactions between the Company and its customers, such as sales, use, value added and some excise taxes, are excluded from revenues.

The Company does not adjust the contract price for the effects of a financing component if the Company expects, at contract inception, that the time between control transfer and cash receipt is less than 12 months.

Sales commissions are expensed immediately when the amortization period for the costs to obtain the contract is less than a year.

Contract loss provisions

Losses on contracts are recognized in the period when they are identified and are based upon the anticipated excess of contract costs over the related contract revenues.

Shipping and handling costs

Shipping and handling costs are recorded as a component of cost of sales.

Inventories

Inventories are stated at the lower of cost or net realizable value. Cost is determined using the first-in, first-out method, the weighted-average cost method, or the specific identification method. Inventoried costs are stated at acquisition cost or actual production cost, including direct material and labor and applicable manufacturing overheads. Adjustments to reduce the cost of inventory to its net realizable value are made, if required, for decreases in sales prices, obsolescence or similar reductions in value.

Impairment of long-lived assets

Long-lived assets that are held and used are evaluated for impairment for each of the Company's asset groups when events or circumstances indicate that the carrying amount of the long-lived asset or asset group may not be recoverable. If the asset group's net carrying value exceeds the asset group's net undiscounted cash flows expected to be generated over its remaining useful life including net proceeds expected from disposition of the asset group, if any, the carrying amount of the asset group is reduced to its estimated fair value. The estimated fair value is determined using a market, income and/or cost approach.

Property, plant and equipment

Property, plant and equipment is stated at cost, less accumulated depreciation and is depreciated using the straight-line method. The estimated useful lives of the assets are generally as follows:

- factories and office buildings: 30 to 40 years,
- other facilities: 15 years,
- machinery and equipment: 3 to 15 years,
- furniture and office equipment: 3 to 8 years, and
- leasehold improvements are depreciated over their estimated useful life or, for operating leases, over the lease term, if shorter.

Goodwill and intangible assets

Goodwill is reviewed for impairment annually as of October 1, or more frequently if events or circumstances indicate that the carrying value may not be recoverable.

Goodwill is evaluated for impairment at the reporting unit level. A reporting unit is an operating segment or one level below an operating segment. For the annual impairment reviews performed in 2021 and 2020, respectively, the reporting units were determined to be one level below the operating segments.

When evaluating goodwill for impairment, the Company uses either a qualitative or quantitative assessment method for each reporting unit. The qualitative assessment involves determining, based on an evaluation of qualitative factors, if it is more likely than not that the fair value of a reporting unit is less than its carrying value. If, based on this qualitative assessment, it is determined to be more likely than not that the reporting unit's fair value is less than its carrying value, a quantitative impairment test is performed, otherwise no further analysis is required. If the Company elects not to perform the qualitative assessment for a reporting unit, then a quantitative impairment test is performed.

When performing a quantitative impairment test, the Company calculates the fair value of a reporting unit using an income approach based on the present value of future cash flows, applying a discount rate that represents the reporting unit's weighted-average cost of capital, and compares it to the reporting unit's carrying value. If the carrying value of the net assets of a reporting unit exceeds the fair value of the reporting unit then the Company records an impairment charge equal to the difference, provided that the loss recognized does not exceed the total amount of goodwill allocated to that reporting unit.

The cost of acquired intangible assets with a finite life is amortized using a method of amortization that reflects the pattern of intangible assets' expected contributions to future cash flows. If that pattern cannot be reliably determined, the straight-line method is used. The amortization periods range from 3 to 5 years for software and from 5 to 20 years for customer-, technology- and marketing-related intangibles. Intangible assets with a finite life are tested for impairment upon the occurrence of certain triggering events.

Derivative financial instruments and hedging activities

The Company uses derivative financial instruments to manage currency, commodity, interest rate and equity exposures, arising from its global operating, financing and investing activities (see Note 6).

The Company recognizes all derivatives, other than certain derivatives indexed to the Company's own stock, at fair value in the Consolidated Balance Sheets. Derivatives that are not designated as hedging instruments are reported at fair value with derivative gains and losses reported through earnings and classified consistent with the nature of the underlying transaction.

If the derivatives are designated as a hedge, depending on the nature of the hedge, changes in the fair value of the derivatives will either be offset against the change in fair value of the hedged item attributable to the risk being hedged through earnings (in the case of a fair value hedge) or recognized in “Accumulated other comprehensive loss” until the hedged item is recognized in earnings (in the case of a cash flow hedge). Where derivative financial instruments have been designated as cash flow hedges of forecasted transactions and such forecasted transactions are no longer probable of occurring, hedge accounting is discontinued and any derivative gain or loss previously included in “Accumulated other comprehensive loss” is reclassified into earnings consistent with the nature of the original forecasted transaction. Gains or losses from derivatives designated as hedging instruments in a fair value hedge are reported through earnings and classified consistent with the nature of the underlying hedged transaction.

Certain commercial contracts may grant rights to the Company or the counterparties, or contain other provisions that are considered to be derivatives. Such embedded derivatives are assessed at inception of the contract and depending on their characteristics, accounted for as separate derivative instruments and shown at their fair value in the Consolidated Balance Sheets with changes in their fair value reported in earnings consistent with the nature of the commercial contract to which they relate.

Derivatives are classified in the Consolidated Statements of Cash Flows in the same section as the underlying item. Cash flows from the settlement of undesignated derivatives used to manage the risks of different underlying items on a net basis are classified within “Net cash provided by operating activities”, as the underlying items are primarily operational in nature. Other cash flows on the settlement of derivatives are recorded within “Net cash provided by (used in) investing activities”.

Leases

The Company leases primarily real estate, vehicles and machinery.

The Company evaluates if a contract contains a lease at inception of the contract. A contract is or contains a lease if it conveys the right to control the use of identified property, plant, or equipment (an identified asset) for a period of time in exchange for consideration. To determine this, the Company assesses whether, throughout the period of use, it has both the right to obtain substantially all of the economic benefits from the use of the identified asset and the right to direct the use of the identified asset. Leases are classified as either finance or operating, with the classification determining the pattern of expense recognition in the Consolidated Income Statements. Lease expense for operating leases is recorded on a straight-line basis over the lease term. Lease expense for finance leases is separated between amortization of right-of-use assets and lease interest expense.

In many cases, the Company’s leases include one or more options to renew, with renewal terms that can extend up to 5 years. The exercise of lease renewal options is at the Company’s discretion. Renewal periods are included in the expected lease term if they are reasonably certain of being exercised by the Company. Certain leases also include options to purchase the leased property. None of the Company’s lease agreements contain material residual value guarantees or material restrictions or covenants.

Long-term leases (leases with terms greater than 12 months) are recorded in the Consolidated Balance Sheets at the commencement date of the lease based on the present value of the minimum lease payments. The present value of the lease payments is determined by using the interest rate implicit in the lease if available. As most of the Company’s leases do not provide an implicit rate, the Company’s incremental borrowing rate is used for most leases and is determined for portfolios of leases based on the remaining lease term, currency of the lease, and the internal credit rating of the subsidiary which entered into the lease.

Short-term leases (leases with an initial lease term of 12 months or less and where it is reasonably certain that the property will not be leased for a term greater than 12 months) are not recorded in the Consolidated Balance Sheets and are expensed on a straight-line basis over the lease term. The majority of short-term leases relate to real estate and machinery.

Assets under operating lease are included in “Operating lease right-of-use assets”. Operating lease liabilities are reported both as current and non-current operating lease liabilities. Right-of-use assets represent the Company’s right to use an underlying asset for the lease term and lease liabilities represent its obligation to make lease payments arising from the lease.

Assets under finance lease are included in "Property, plant and equipment, net" while finance lease liabilities are included in "Long-term debt" (including "Current maturities of long-term debt" as applicable).

Lease and non-lease components for leases other than real estate are not accounted for separately.

Income taxes

The Company uses the asset and liability method to account for deferred taxes. Under this method, deferred tax assets and liabilities are determined based on temporary differences between the financial reporting and the tax bases of assets and liabilities. Deferred tax assets and liabilities are measured using enacted tax rates and laws that are expected to be in effect when the differences are expected to reverse. The Company records a deferred tax asset when it determines that it is more likely than not that the deduction will be sustained based upon the deduction's technical merit. Deferred tax assets and liabilities that can be offset against each other are reported on a net basis. A valuation allowance is recorded to reduce deferred tax assets to the amount that is more likely than not to be realized.

Deferred taxes are provided on unredeemed retained earnings of the Company's subsidiaries. However, deferred taxes are not provided on such unredeemed retained earnings to the extent it is expected that the earnings are permanently reinvested. Such earnings may become taxable upon the sale or liquidation of these subsidiaries or upon the remittance of dividends.

The Company operates in numerous tax jurisdictions and, as a result, is regularly subject to audit by tax authorities. The Company provides for tax contingencies whenever it is deemed more likely than not that a tax asset has been impaired or a tax liability has been incurred. Contingency provisions are recorded based on the technical merits of the Company's filing position, considering the applicable tax laws and Organisation for Economic Co-operation and Development (OECD) guidelines and are based on its evaluations of the facts and circumstances as of the end of each reporting period.

The Company applies a two-step approach to recognize and measure uncertainty in income taxes. The first step is to evaluate the tax position for recognition by determining if the weight of available evidence indicates that it is more likely than not that the position will be sustained on audit, including resolution of related appeals or litigation processes, if any. The second step is to measure the tax benefit as the largest amount which is more than 50 percent likely of being realized upon ultimate settlement. Uncertain tax positions that could be settled against existing loss carryforwards or income tax credits are reported net.

Expenses related to tax penalties are classified in the Consolidated Income Statements as "Income tax expense" while interest thereon is classified as "Interest and other finance expense". Current income tax relating to certain items is recognized directly in "Accumulated other comprehensive loss" and not in earnings. In general, the Company applies the individual items approach when releasing income tax effects from "Accumulated other comprehensive loss".

Research and development

Research and development costs not related to specific customer orders are generally expensed as incurred.

Earnings per share

Basic earnings per share is calculated by dividing income by the weighted-average number of shares outstanding during the year. Diluted earnings per share is calculated by dividing income by the weighted-average number of shares outstanding during the year, assuming that all potentially dilutive securities were exercised, if dilutive. Potentially dilutive securities comprise outstanding written call options, outstanding options and shares granted subject to certain conditions under the Company's share-based payment arrangements. See further discussion related to earnings per share in Note 20 and of potentially dilutive securities in Note 18.

Share-based payment arrangements

The Company has various share-based payment arrangements for its employees, which are described more fully in Note 18. Such arrangements are accounted for under the fair value method. For awards that are equity-settled, total compensation is measured at grant date, based on the fair value of the award at that date, and recorded in earnings over the period the employees are required to render service. For awards that are cash-settled, compensation is initially measured at grant date and subsequently remeasured at each reporting period, based on the fair value and vesting percentage of the award at each of those dates, with changes in the liability recorded in earnings.

Fair value measures

The Company uses fair value measurement principles to record certain financial assets and liabilities on a recurring basis and, when necessary, to record certain non-financial assets at fair value on a non-recurring basis, as well as to determine fair value disclosures for certain financial instruments carried at amortized cost in the financial statements. Financial assets and liabilities recorded at fair value on a recurring basis include foreign currency, commodity and interest rate derivatives, as well as cash-settled call options and available-for-sale securities. Non-financial assets recorded at fair value on a non-recurring basis include long-lived assets that are reduced to their estimated fair value due to impairments.

Fair value is the price that would be received when selling an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. In determining fair value, the Company uses various valuation techniques including the market approach (using observable market data for identical or similar assets and liabilities), the income approach (discounted cash flow models) and the cost approach (using costs a market participant would incur to develop a comparable asset). Inputs used to determine the fair value of assets and liabilities are defined by a three-level hierarchy, depending on the nature of those inputs. The Company has categorized its financial assets and liabilities and non-financial assets measured at fair value within this hierarchy based on whether the inputs to the valuation technique are observable or unobservable. An observable input is based on market data obtained from independent sources, while an unobservable input reflects the Company's assumptions about market data.

The levels of the fair value hierarchy are as follows:

Level 1:
Valuation inputs consist of quoted prices in an active market for identical assets or liabilities (observable quoted prices). Assets and liabilities valued using Level 1 inputs include exchange-traded equity securities, listed derivatives which are actively traded such as commodity futures, interest rate futures and certain actively traded debt securities.

Level 2:
Valuation inputs consist of observable inputs (other than Level 1 inputs) such as actively quoted prices for similar assets, quoted prices in inactive markets and inputs other than quoted prices such as interest rate yield curves, credit spreads, or inputs derived from other observable data by interpolation, correlation, regression or other means. The adjustments applied to quoted prices or the inputs used in valuation models may be both observable and unobservable. In these cases, the fair value measurement is classified as Level 2 unless the unobservable portion of the adjustment or the unobservable input to the valuation model is significant, in which case the fair value measurement would be classified as Level 3. Assets and liabilities valued or disclosed using Level 2 inputs include investments in certain funds, certain debt securities that are not actively traded, interest rate swaps, cross-currency interest rate swaps, commodity swaps, cash-settled call options, forward foreign exchange contracts, foreign exchange swaps and forward rate agreements, time deposits, as well as financing receivables and debt.

Level 3:
Valuation inputs are based on the Company's assumptions of relevant market data (unobservable input).

Investments in private equity, real estate and collective funds held within the Company's pension plans are generally valued using the net asset value (NAV) per share as a practical expedient for fair value provided certain criteria are met. The NAVs are determined based on the fair values of the underlying investments in the funds. These assets are not classified in the fair value hierarchy but are separately disclosed.

Whenever quoted prices involve bid-ask spreads, the Company ordinarily determines fair values based on mid-market quotes. However, for the purpose of determining the fair value of cash-settled call options serving as hedges of the Company's management incentive plan (MIP), bid prices are used.

When determining fair values based on quoted prices in an active market, the Company considers if the level of transaction activity for the financial instrument has significantly decreased, or would not be considered orderly. In such cases, the resulting changes in valuation techniques would be disclosed. If the market is considered disorderly or if quoted prices are not available, the Company is required to use another valuation technique, such as an income approach.

Disclosures about the Company's fair value measurements of assets and liabilities are included in Note 7.

Contingencies

The Company is subject to proceedings, litigation or threatened litigation and other claims and inquiries, related to environmental, labor, product, regulatory, tax (other than income tax) and other matters, and is required to assess the likelihood of any adverse judgments or outcomes to these matters, as well as potential ranges of probable losses. A determination of the provision required, if any, for these contingencies is made after analysis of each individual issue, often with assistance from both internal and external legal counsel and technical experts. The required amount of a provision for a contingency of any type may change in the future due to new developments in the particular matter, including changes in the approach to its resolution.

The Company records a provision for its contingent obligations when it is probable that a loss will be incurred and the amount can be reasonably estimated. Any such provision is generally recognized on an undiscounted basis using the Company's best estimate of the amount of loss incurred or at the lower end of an estimated range when a single best estimate is not determinable. In some cases, the Company may be able to recover a portion of the costs relating to these obligations from insurers or other third parties; however, the Company records such amounts only when it is probable that they will be collected.

The Company generally provides for anticipated costs for warranties when it delivers the related products. Warranty costs include calculated costs arising from imperfections in design, material and workmanship in the Company's products. The Company makes individual assessments on contracts with risks resulting from order-specific conditions or guarantees and assessments on an overall, statistical basis for similar products sold in larger quantities.

The Company may have legal obligations to perform environmental clean-up activities related to land and buildings as a result of the normal operations of its business. In some cases, the timing or the method of settlement, or both, are conditional upon a future event that may or may not be within the control of the Company, but the underlying obligation itself is unconditional and certain. The Company recognizes a provision for these obligations when it is probable that a liability for the clean-up activity has been incurred and a reasonable estimate of its fair value can be made. In some cases, a portion of the costs expected to be incurred to settle these matters may be recoverable. An asset is recorded when it is probable that such amounts are recoverable. Provisions for environmental obligations are not discounted to their present value when the timing of payments cannot be reasonably estimated.

Pensions and other postretirement benefits

The Company has a number of defined benefit pension plans, defined contribution pension plans and termination indemnity plans. The Company recognizes an asset for such a plan's overfunded status or a liability for such a plan's underfunded status in its Consolidated Balance Sheets. Additionally, the Company measures such a plan's assets and obligations that determine its funded status as of the end of the year and recognizes the changes in the funded status in the year in which the changes occur. Those changes are reported in "Accumulated other comprehensive loss".

The Company uses actuarial valuations to determine its pension and postretirement benefit costs and credits. The amounts calculated depend on a variety of key assumptions, including discount rates and expected return on plan assets. Current market conditions are considered in selecting these assumptions.

The Company's various pension plan assets are assigned to their respective levels in the fair value hierarchy in accordance with the valuation principles described in the "Fair value measures" section above.

See Note 17 for further discussion of the Company's employee benefit plans.

Business combinations

The Company accounts for assets acquired and liabilities assumed in business combinations using the acquisition method and records these at their respective fair values. Contingent consideration is recorded at fair value as an element of purchase price with subsequent adjustments recognized in income.

Identifiable intangibles consist of intellectual property such as trademarks and trade names, customer relationships, patented and unpatented technology, in-process research and development, order backlog and capitalized software; these are amortized over their estimated useful lives. Such intangibles are subsequently subject to evaluation for potential impairment if events or circumstances indicate the carrying amount may not be recoverable. See "Goodwill and intangible assets" above. Acquisition-related costs are recognized separately from the acquisition and expensed as incurred. Upon gaining control of an entity in which an equity method or cost basis investment was held by the Company, the carrying value of that investment is adjusted to fair value with the related gain or loss recorded in income.

Deferred tax assets and liabilities based on temporary differences between the financial reporting and the tax base of assets and liabilities as well as uncertain tax positions and valuation allowances on acquired deferred tax assets assumed in connection with a business combination are initially estimated as of the acquisition date based on facts and circumstances that existed at the acquisition date. These estimates are subject to change within the measurement period (a period of up to 12 months after the acquisition date during which the acquirer may adjust the provisional acquisition amounts) with any adjustments to the preliminary estimates being recorded to goodwill. Changes in deferred taxes, uncertain tax positions and valuation allowances on acquired deferred tax assets that occur after the measurement period are recognized in income.

New accounting pronouncements

Applicable for current period

Simplifying the accounting for income taxes

In January 2021, the Company adopted a new accounting standard update, which enhances and simplifies various aspects of the income tax accounting guidance related to intraperiod tax allocations, ownership changes in investments and certain aspects of interim period tax accounting. Depending on the amendment, the adoption was applied on either a retrospective, modified retrospective, or prospective basis. This update does not have a significant impact on the Company's Consolidated Financial Statements.

Applicable for future periods

Facilitation of the effects of reference rate reform on financial reporting

In March 2020, an accounting standard update was issued which provides temporary optional expedients and exceptions to the current guidance on contract modifications and hedge accounting to ease the financial reporting burdens related to the expected market transition from the London Interbank Offered Rate (LIBOR) and other interbank offered rates to alternative reference rates. This update, along with clarifications outlined in a subsequent update issued in January 2021, can be adopted and applied no later than December 31, 2022, with early adoption permitted. The Company does not expect this update to have a significant impact on its Consolidated Financial Statements.

Business Combinations — Accounting for contract assets and contract liabilities from contracts with customers

In October 2021, an accounting standard update was issued which provides guidance on the accounting for revenue contracts acquired in a business combination. The update requires contract assets and liabilities acquired in a business combination to be recognized and measured at the date of acquisition in accordance with the principles for recognizing revenues from contracts with customers. This update is effective prospectively for the Company for annual and interim reporting periods beginning January 1, 2023, with early adoption permitted in any interim period. The Company does not expect this update to have a significant impact on its Consolidated Financial Statements.

Disclosures about government assistance

In November 2021, an accounting standard update was issued which requires entities to disclose certain types of government assistance. Under the update, the Company is required to annually disclose (i) the type of the assistance received, including any significant terms and conditions, (ii) its related accounting policy, and (iii) the effect such transactions have on its financial statements. The update is effective either prospectively for all in-scope transactions at the date of adoption or retrospectively, for annual periods beginning January 1, 2022, with early adoption permitted. The Company will adopt this update prospectively as of January 1, 2022. The Company does not expect this update to have a significant impact on its Consolidated Financial Statements.

Note 3
Discontinued operations

Divestment of the Power Grids business

On July 1, 2020, the Company completed the sale of 80.1 percent of its Power Grids business to Hitachi Ltd (Hitachi). The transaction was executed through the sale of 80.1 percent of the shares of Hitachi Energy Ltd, formerly Hitachi ABB Power Grids Ltd (“Hitachi Energy”). Cash consideration received at the closing date was $9,241 million net of cash disposed. Further, for accounting purposes, the 19.9 percent ownership interest retained by the Company was deemed to have been both divested and reacquired at its fair value on July 1, 2020. The Company also obtained a put option, exercisable with three-months’ notice commencing in April 2023 (to be effective from July 2023), allowing the Company to require Hitachi to purchase the remaining interest for fair value, subject to a minimum floor price equivalent to a 10 percent discount compared to the price paid for the initial 80.1 percent. The combined fair value of the retained investment and the related put option, which amounted to $1,779 million, was recorded as an equity-method investment and also accounted for as part of the proceeds for the sale of the entire Power Grids business (see Note 4).

In connection with the divestment, the Company recorded liabilities in discontinued operations for estimated future costs and other cash payments of $487 million for various contractual items relating to the sale of the business, including required future cost reimbursements payable to Hitachi Energy, costs to be incurred by the Company for the direct benefit of Hitachi Energy and an amount due to Hitachi Ltd in connection with the expected purchase price finalization of the closing debt and working capital balances. In October 2021, the Company and Hitachi concluded an agreement to settle the various amounts owing by the Company. The net difference between the agreed amounts and the amounts initially estimated by the Company was recorded in 2021 in discontinued operations as an adjustment to “Net gain recognized on sale of the Power Grids business” in the table below. During 2021 and 2020, total cash payments (including the amounts paid under the settlement agreement) of $364 million and $33 million, respectively, were made in connection with these liabilities. At December 31, 2021, the remaining amount recorded was $150 million.

As a result of the Power Grids sale, the Company recognized an initial net gain of $5,141 million, net of transaction costs, for the sale of the entire Power Grids business in Income from discontinued operations, net of tax, in 2020. Included in the calculation of the net gain was a cumulative translation loss relating to the Power Grids business of $420 million which was reclassified from Accumulated other comprehensive loss (see Note 21). Certain amounts included in the net gain were estimated or otherwise subject to change in value and in 2021 the Company recorded adjustments, including the agreed settlement amount referred to above, reducing the total net gain by $65 million. Certain remaining minor obligations relating to the divestment continue to be subject to uncertainty and will be adjusted in future periods but these adjustments are not expected to have a material impact on the Consolidated Financial Statements.

In 2020, the Company recorded $262 million in Income tax expense within discontinued operations in connection with the reorganization of the legal entity structure of the Power Grids business required to facilitate the sale.

Certain entities of the Power Grids business for which the legal process or other regulatory delays resulted in the Company not yet having transferred legal titles to Hitachi were accounted for as being sold from the initial divestment date since control of the business as well as all risks and rewards of the business were fully transferred to Hitachi Energy. At December 31, 2021, substantially all of these delayed entities have been legally transferred to Hitachi. The proceeds for these entities were included in the cash proceeds described above and certain funds were placed in escrow pending completion of the transfer process. At December 31, 2021 and 2020, current restricted cash includes $12 million and $302 million, respectively, relating to these proceeds.

In connection with the divestment, the Company recognized liabilities in discontinued operations for certain indemnities (see Note 15 for additional information) and also recorded an initial liability of $258 million representing the fair value of the right granted to Hitachi Energy for the use of the ABB brand for up to 8 years.

Upon closing of the sale, the Company entered into various transition services agreements (TSAs). Pursuant to these TSAs, the Company and Hitachi Energy provide to each other, on an interim, transitional basis, various services. The services provided by the Company primarily include finance, information technology, human resources and certain other administrative services. Under the current terms, the TSAs will continue for up to 3 years, and can only be extended on an exceptional basis for business-critical services for an additional period which is reasonably necessary to avoid a material adverse impact on the business. In 2021 and 2020, the Company recognized within its continuing operations, general and administrative expenses incurred to perform the TSAs, offset by $173 million and $91 million, respectively, in TSA-related income for such services that is reported in Other income (expense), net.

Discontinued operations

As a result of the sale of the Power Grids business, substantially all Power Grids-related assets and liabilities have been sold. As this divestment represented a strategic shift that would have a major effect on the Company's operations and financial results, the results of operations for this business have been presented as discontinued operations and the assets and liabilities are presented as held for sale and in discontinued operations for all periods presented. Certain of the business contracts in the Power Grids business continue to be executed by subsidiaries of the Company for the benefit/risk of Hitachi Energy. Assets and liabilities relating to, as well as the net financial results of, these contracts will continue to be included in discontinued operations until they have been completed or otherwise transferred to Hitachi Energy.

Prior to the divestment, interest expense that was not directly attributable to or related to the Company's continuing business or discontinued business was allocated to discontinued operations based on the ratio of net assets to be sold less debt that was required to be paid as a result of the planned disposal transaction to the sum of total net assets of the Company plus consolidated debt. General corporate overhead was not allocated to discontinued operations.

Operating results of the discontinued operations are summarized as follows:

($ in millions)	2021	2020	2019
Total revenues	—	4,008	9,037
Total cost of sales	—	(3,058)	(6,983)
Gross profit	**—**	**950**	**2,054**
Expenses	(18)	(808)	(1,394)
Change to net gain recognized on sale of the Power Grids business	(65)	5,141	—
Income (loss) from operations	**(83)**	**5,282**	**660**
Net interest income (expense) and other finance expense	2	(5)	(61)
Non-operational pension (cost) credit	—	(94)	5
Income (loss) from discontinued operations before taxes	**(81)**	**5,182**	**605**
Income tax	1	(322)	(167)
Income (loss) from discontinued operations, net of tax	**(80)**	**4,860**	**438**

Of the total income (loss) from discontinued operations before taxes in the table above, $(80) million, $5,170 million and $566 million in 2021, 2020, and 2019, respectively, are attributable to the Company, while the remainder is attributable to noncontrolling interests.

Until the date of the divestment, Income income (loss) from discontinued operations before taxes excluded stranded costs which were previously able to be allocated to the Power Grids operating segment. As a result, $40 million and $225 million in 2020 and 2019, respectively, of allocated overhead and other management costs which were previously included in the measure of segment profit for the Power Grids operating segment are now reported as part of Corporate and Other. In the table above, Net interest income (expense) and other finance expense in 2020 and 2019 includes $20 million and $44 million, respectively, of interest expense which has been recorded on an allocated basis in accordance with the Company's accounting policy election until the divestment date.

Included in the reported Total revenues of the Company for 2020 and 2019 are revenues for sales from the Company's operating segments to the Power Grids business of $108 million and $213 million, respectively, which represent intercompany transactions that, prior to Power Grids being classified as a discontinued operation, were eliminated in the Company's Consolidated Financial Statements (see Note 23). Subsequent to the divestment, sales to Hitachi Energy are reported as third-party revenues.

In addition, the Company also has retained obligations (primarily for environmental and taxes) related to other businesses disposed or otherwise exited that qualified as discontinued operations. Changes to these retained obligations are also included in Income (loss) from discontinued operations, net of tax, above.

The major components of assets and liabilities held for sale and in discontinued operations in the Company's Consolidated Balance Sheets are summarized as follows:

December 31, ($ in millions)	2021(1)	2020(1)
Receivables, net	131	280
Inventories, net	—	1
Other current assets	5	1
Current assets held for sale and in discontinued operations	**136**	**282**
Accounts payable, trade	71	188
Other liabilities	310	456
Current liabilities held for sale and in discontinued operations	**381**	**644**
Other non-current liabilities	43	197
Non-current liabilities held for sale and in discontinued operations	**43**	**197**

(1) At December 31, 2021 and 2020, the balances reported as held for sale and in discontinued operations pertain to Power Grids activities and other obligations which will remain with the Company until such time as the obligation is settled or the activities are fully wound down.

Note 4
Acquisitions, divestments and equity-accounted companies

Acquisition of controlling interests

Acquisitions of controlling interests were as follows:

($ in millions, except number of acquired businesses)	2021	2020	2019
Purchase price for acquisitions (net of cash acquired)	212	79	—
Aggregate excess of purchase price over fair value of net assets acquired(1)	161	92	92
Number of acquired businesses	2	3	—

(1) Recorded as goodwill (see Note 11). Includes adjustments of $92 million in 2019 arising during the measurement period of acquisitions, primarily reflecting changes in the valuation of net working capital, deferred tax liabilities and intangible assets acquired.

In the table above, the “Purchase price for acquisitions” and “Aggregate excess of purchase price over fair value of net assets acquired” amounts for 2021, relate primarily to the acquisition of ASTI Mobile Robotics Group SL (ASTI). In 2020 and 2019, there were no significant acquisitions.

Acquisitions of controlling interests have been accounted for under the acquisition method and have been included in the Company’s Consolidated Financial Statements since the date of acquisition.

On August 2, 2021, the Company acquired the shares of ASTI. ASTI is headquartered in Burgos, Spain, and is a global autonomous mobile robot (AMR) manufacturer. The resulting cash outflows for the Company amounted to $186 million (net of cash acquired). The acquisition expands the Company’s robotics and automation offering in its Robotics & Discrete Automation operating segment.

While the Company uses its best estimates and assumptions as part of the purchase price allocation process to value assets acquired and liabilities assumed at the acquisition date, the purchase price allocation for acquisitions is preliminary for up to 12 months after the acquisition date and is subject to refinement as more detailed analyses are completed and additional information about the fair values of the acquired assets and liabilities becomes available. The purchase price allocation relating to the acquisition in 2018 of GEIS (General Electric’s global electrification solutions business) was finalized during the second quarter of 2019 and resulted in $92 million of net measurement period adjustments, increasing goodwill, primarily related to changes in the valuation of net working capital, deferred tax liabilities and intangible assets acquired.

In addition, in November 2019, the Company recognized a gain of $92 million relating to the receipt of cash from General Electric for a favorable resolution of an uncertainty with respect to the price paid to acquire GEIS. This occurred after the end of the measurement period and as a result, the Company recorded a gain in “Other income (expense), net”.

Acquisition of noncontrolling interests

In connection with the divestment of its Power Grids business to Hitachi (see Note 3), the Company retained a 19.9 percent interest in the business. For accounting purposes the 19.9 percent interest is deemed to have been both divested and reacquired, with a fair value at the transaction date of $1,661 million. The fair value was based on a discounted cash flow model considering the expected results of the future business operations of Hitachi Energy and using relevant market inputs including a risk-adjusted weighted-average cost of capital. The Company also obtained a right to require Hitachi to purchase this investment (see Note 3) with a floor price equivalent to a 10 percent discount compared to the price paid by Hitachi for the initial 80.1 percent. This option was valued at $118 million using a standard option pricing model with inputs considering the nature of the investment and the expected period until option exercise. As this option is not separable from the investment the value has been combined with the value of the underlying investment and is accounted for together.

Hitachi also holds a call option which would require the Company to sell the remaining 19.9 percent interest in Hitachi Energy at a price consistent with what was paid by Hitachi to acquire the initial 80.1 percent or at fair value, if higher. The option is exercisable with three-months’ notice from April 2023, to be effective from July 2023.

The Company has concluded that based on its continuing involvement with the Power Grids business, including membership in its governing board of directors, it has significant influence over Hitachi Energy. As a result, the investment (including the value of the option) is accounted for using the equity method.

The difference between the initial carrying value of the Company's investment in Hitachi Energy at fair value and its proportionate share of the underlying net assets created basis differences of $8,570 million ($1,705 million for the Company's 19.9 percent ownership), which are allocated as follows:

($ in millions)	Allocated amounts	Weighted-average useful life
Inventories	169	5 months
Order backlog	727	2 years
Property, plant and equipment(1)	1,016	
Intangible assets(2)	1,731	9 years
Other contractual rights	251	2 years
Other assets	43	
Deferred tax liabilities	(942)	
Goodwill	6,026	
Less: Amount attributed to noncontrolling interest	(451)	
Basis difference	**8,570**	

(1) Property, plant and equipment includes assets subject to amortization having an initial fair value difference of $686 million and a weighted-average useful life of 14 years.
(2) Intangible assets include brand license agreement, technology and customer relationships.

For assets subject to depreciation or amortization, the Company amortizes these basis differences over the estimated remaining useful lives of the assets that gave rise to this difference, recording the amortization, net of related deferred tax benefit, as a reduction of income from equity-accounted companies. Certain other assets are recorded as an expense as the benefits from the assets are realized. At December 31, 2021, the Company determined that no impairment of its equity-accounted investments existed.

The carrying value of the Company's investments in equity-accounted companies and respective percentage of ownership is as follows:

($ in millions, except ownership share in %)	Ownership as of December 31, 2021	Carrying value at December 31,	
		2021	2020
Hitachi Energy Ltd	19.9%	1,609	1,710
Others		61	74
Total		**1,670**	**1,784**

In 2021, 2020 and 2019, the Company recorded its share of the earnings of investees accounted for under the equity method of accounting in Other income (expense), net, as follows:

($ in millions)	2021	2020	2019
Income from equity-accounted companies, net of taxes	38	29	8
Basis difference amortization (net of deferred income tax benefit)	(138)	(95)	—
Income (loss) from equity-accounted companies	**(100)**	**(66)**	**8**

Business divestments

In 2021, the Company received proceeds (net of transactions costs and cash disposed) of $2,958 million, relating to divestments of consolidated businesses and recorded gains of $2,193 million in “Other income (expense), net” on the sales of such businesses. These are primarily due to the divestment of the Company’s Mechanical Power Transmission Division (Dodge) to RBC Bearings Inc. Certain amounts included in the net gain for the sale of the Dodge business are estimated or otherwise subject to change in value and, as a result, the Company may record additional adjustments to the gain in future periods which are not expected to have a material impact on the Consolidated Financial Statements. In 2021, 2020 and 2019 “Income from continuing operations before taxes”, included net income of $115 million, $96 million and $111 million, respectively, from the Dodge business which, prior to its sale was part of the Company’s Motion operating segment.

In 2020, the Company completed the sale of its Power Grids business (see Note 3 for details) and its solar inverters business. In 2019, the Company recorded net gains (including transactions costs) of $55 million, primarily due to the divestment of two businesses in China.

Divestment of the solar inverters business

In February 2020, the Company completed the sale of its solar inverters business for no consideration. Under the agreement, which was reached in July 2019, the Company was required to transfer $143 million of cash to the buyer on the closing date. In addition, payments totaling EUR 132 million ($145 million) are required to be transferred to the buyer from 2020 through 2025. In 2019, the Company recorded a loss of $421 million, in “Other income (expense), net”, representing the excess of the carrying value, which includes a loss of $99 million arising from the cumulative translation adjustment, over the estimated fair value of this business. In 2020, a further loss of $33 million was recorded in “Other income (expense), net” for changes in fair value of this business. The loss in 2020 includes the $99 million reclassification from other comprehensive income of the currency translation adjustment related to the business.

The fair value was based on the estimated current market values using Level 3 inputs, considering the agreed-upon sale terms with the buyer. The solar inverters business, which includes the solar inverter business acquired as part of the Power-One acquisition in 2013, was part of the Company’s Electrification operating segment.

As this divestment does not qualify as a discontinued operation, the results of operations for this business prior to its disposal are included in the Company’s continuing operations for all periods presented.

Including the above loss of $33 million and $421 million in 2020 and 2019, respectively, Income from continuing operations before taxes includes net losses of $63 million and $490 million, from the solar inverters business.

Note 5
Cash and equivalents, marketable securities and short-term investments

Cash and equivalents and marketable securities and short-term investments consisted of the following:

December 31, 2021 ($ in millions)	Cost basis	Gross unrealized gains	Gross unrealized losses	Fair value	Cash and equivalents	Marketable securities and short-term investments
Changes in fair value recorded in net income						
Cash	2,752			**2,752**	2,752	
Time deposits	2,037			**2,037**	1,737	300
Equity securities	569	18		**587**		587
	5,358	**18**	**—**	**5,376**	**4,489**	**887**
Changes in fair value recorded in other comprehensive income						
Debt securities available-for-sale:						
—U.S. government obligations	203	7	(1)	**209**		209
—Corporate	74	1	(1)	**74**		74
	277	**8**	**(2)**	**283**	**—**	**283**
Total	**5,635**	**26**	**(2)**	**5,659**	**4,489**	**1,170**
Of which:						
—Restricted cash, current					30	
—Restricted cash, non-current					300	

December 31, 2020 ($ in millions)	Cost basis	Gross unrealized gains	Gross unrealized losses	Fair value	Cash and equivalents	Marketable securities and short-term investments
Changes in fair value recorded in net income						
Cash	2,388			**2,388**	2,388	
Time deposits	1,513			**1,513**	1,513	
Equity securities	1,704	12		**1,716**		1,716
	5,605	**12**	**—**	**5,617**	**3,901**	**1,716**
Changes in fair value recorded in other comprehensive income						
Debt securities available-for-sale:						
—U.S. government obligations	274	19		**293**		293
—European government obligations	24			**24**		24
—Corporate	69	6		**75**		75
	367	**25**	**—**	**392**	**—**	**392**
Total	**5,972**	**37**	**—**	**6,009**	**3,901**	**2,108**
Of which:						
—Restricted cash, current					323	
—Restricted cash, non-current					300	

Contractual maturities

Contractual maturities of debt securities consisted of the following:

	Available-for-sale	
December 31, 2021 ($ in millions)	**Cost basis**	**Fair value**
Less than one year	1	1
One to five years	178	181
Six to ten years	92	94
Due after ten years	6	7
Total	**277**	**283**

At December 31, 2021 and 2020, the Company pledged $66 million and $66 million, respectively, of available-for-sale marketable securities as collateral for issued letters of credit and other security arrangements.

Note 6
Derivative financial instruments

The Company is exposed to certain currency, commodity, interest rate and equity risks arising from its global operating, financing and investing activities. The Company uses derivative instruments to reduce and manage the economic impact of these exposures.

Currency risk

Due to the global nature of the Company’s operations, many of its subsidiaries are exposed to currency risk in their operating activities from entering into transactions in currencies other than their functional currency. To manage such currency risks, the Company’s policies require its subsidiaries to hedge their foreign currency exposures from binding sales and purchase contracts denominated in foreign currencies. For forecasted foreign currency denominated sales of standard products and the related foreign currency denominated purchases, the Company’s policy is to hedge up to a maximum of 100 percent of the forecasted foreign currency denominated exposures, depending on the length of the forecasted exposures. Forecasted exposures greater than 12 months are not hedged. Forward foreign exchange contracts are the main instrument used to protect the Company against the volatility of future cash flows (caused by changes in exchange rates) of contracted and forecasted sales and purchases denominated in foreign currencies. In addition, within its treasury operations, the Company primarily uses foreign exchange swaps and forward foreign exchange contracts to manage the currency and timing mismatches arising in its liquidity management activities.

Commodity risk

Various commodity products are used in the Company’s manufacturing activities. Consequently it is exposed to volatility in future cash flows arising from changes in commodity prices. To manage the price risk of commodities, the Company’s policies require that its subsidiaries hedge the commodity price risk exposures from binding contracts, as well as at least 50 percent (up to a maximum of 100 percent) of the forecasted commodity exposure over the next 12 months or longer (up to a maximum of 18 months). Primarily swap contracts are used to manage the associated price risks of commodities.

Interest rate risk

The Company has issued bonds at fixed rates. Interest rate swaps and cross-currency interest rate swaps are used to manage the interest rate and foreign currency risk associated with certain debt and generally such swaps are designated as fair value hedges. In addition, from time to time, the Company uses instruments such as interest rate swaps, interest rate futures, bond futures or forward rate agreements to manage interest rate risk arising from the Company’s balance sheet structure but does not designate such instruments as hedges.

Equity risk

The Company is exposed to fluctuations in the fair value of its warrant appreciation rights (WARs) issued under its MIP (Management Incentive Plan) (see Note 18). A WAR gives its holder the right to receive cash equal to the market price of an equivalent listed warrant on the date of exercise. To eliminate such risk, the Company has purchased cash-settled call options, indexed to the shares of the Company, which entitle the Company to receive amounts equivalent to its obligations under the outstanding WARs.

Volume of derivative activity

In general, while the Company's primary objective in its use of derivatives is to minimize exposures arising from its business, certain derivatives are designated and qualify for hedge accounting treatment while others either are not designated or do not qualify for hedge accounting.

Foreign exchange and interest rate derivatives

The gross notional amounts of outstanding foreign exchange and interest rate derivatives (whether designated as hedges or not) were as follows:

	Total notional amounts at December 31,		
Type of derivative ($ in millions)	2021	2020	2019
Foreign exchange contracts	11,276	12,610	15,015
Embedded foreign exchange derivatives	815	1,134	924
Cross-currency interest rate swaps	906	—	—
Interest rate contracts	3,541	3,227	5,188

Derivative commodity contracts

The Company uses derivatives to hedge its direct or indirect exposure to the movement in the prices of commodities which are primarily copper, silver and aluminum. The following table shows the notional amounts of outstanding derivatives (whether designated as hedges or not), on a net basis, to reflect the Company's requirements for these commodities:

		Total notional amounts at December 31,		
Type of derivative	Unit	2021	2020	2019
Copper swaps	metric tonnes	36,017	39,390	42,494
Silver swaps	ounces	2,842,533	1,966,677	2,508,770
Aluminum swaps	metric tonnes	7,125	8,112	8,388

Equity derivatives

At December 31, 2021, 2020 and 2019, the Company held 9 million, 22 million and 40 million cash-settled call options indexed to ABB Ltd shares (conversion ratio 5:1) with a total fair value of $29 million, $21 million and $26 million, respectively.

Cash flow hedges

As noted above, the Company mainly uses forward foreign exchange contracts to manage the foreign exchange risk of its operations, commodity swaps to manage its commodity risks and cash-settled call options to hedge its WAR liabilities. The Company applies cash flow hedge accounting in only limited cases. In these cases, the effective portion of the changes in their fair value is recorded in "Accumulated other comprehensive loss" and subsequently reclassified into earnings in the same line item and in the same period as the underlying hedged transaction affects earnings. In 2021, 2020 and 2019, there were no significant amounts recorded for cash flow hedge accounting activities.

Fair value hedges

To reduce its interest rate exposure arising primarily from its debt issuance activities, the Company uses interest rate swaps and cross-currency interest rate swaps. Where such instruments are designated as fair value hedges, the changes in the fair value of these instruments, as well as the changes in the fair value of the risk component of the underlying debt being hedged, are recorded as offsetting gains and losses in “Interest and other finance expense”.

The effect of derivative instruments, designated and qualifying as fair value hedges, on the Consolidated Income Statements was as follows:

($ in millions)		2021	2020	2019
Gains (losses) recognized in Interest and other finance expense:				
Interest rate contracts	Designated as fair value hedges	(55)	11	38
	Hedged item	56	(11)	(38)
Cross-currency interest rate swaps	Designated as fair value hedges	(37)	—	—
	Hedged item	34	—	—

Derivatives not designated in hedge relationships

Derivative instruments that are not designated as hedges or do not qualify as either cash flow or fair value hedges are economic hedges used for risk management purposes. Gains and losses from changes in the fair values of such derivatives are recognized in the same line in the income statement as the economically hedged transaction.

Furthermore, under certain circumstances, the Company is required to split and account separately for foreign currency derivatives that are embedded within certain binding sales or purchase contracts denominated in a currency other than the functional currency of the subsidiary and the counterparty.

The gains (losses) recognized in the Consolidated Income Statements on derivatives not designated in hedging relationships were as follows:

($ in millions)	Gains (losses) recognized in income			
Type of derivative not designated as a hedge	**Location**	**2021**	**2020**	**2019**
Foreign exchange contracts	Total revenues	3	94	(7)
	Total cost of sales	(53)	—	(64)
	SG&A expenses(1)	11	(11)	2
	Non-order related research and development	(2)	(2)	1
	Interest and other finance expense	(173)	207	(122)
Embedded foreign exchange contracts	Total revenues	(7)	(34)	17
	Total cost of sales	(2)	(1)	(6)
Commodity contracts	Total cost of sales	78	56	12
Other	Interest and other finance expense	—	1	—
Total		**(145)**	**310**	**(167)**

(1) SG&A expenses represent “Selling, general and administrative expenses”.

The fair values of derivatives included in the Consolidated Balance Sheets were as follows:

	Derivative assets		Derivative liabilities	
December 31, 2021 ($ in millions)	**Current in “Other current assets”**	**Non-current in “Other non-current assets”**	**Current in “Other current liabilities”**	**Non-current in “Other non-current liabilities”**
Derivatives designated as hedging instruments:				
Foreign exchange contracts	—	—	3	5
Interest rate contracts	9	20	—	—
Cross-currency interest rate swaps	—	—	—	109
Cash-settled call options	29	—	—	—
Total	**38**	**20**	**3**	**114**
Derivatives not designated as hedging instruments:				
Foreign exchange contracts	108	14	107	7
Commodity contracts	19	—	5	—
Interest rate contracts	1	—	2	—
Embedded foreign exchange derivatives	10	7	16	10
Total	**138**	**21**	**130**	**17**
Total fair value	**176**	**41**	**133**	**131**

	Derivative assets		Derivative liabilities	
December 31, 2020 ($ in millions)	**Current in “Other current assets”**	**Non-current in “Other non-current assets”**	**Current in “Other current liabilities”**	**Non-current in “Other non-current liabilities”**
Derivatives designated as hedging instruments:				
Foreign exchange contracts	—	1	2	4
Interest rate contracts	6	78	—	—
Cash-settled call options	10	11	—	—
Total	**16**	**90**	**2**	**4**
Derivatives not designated as hedging instruments:				
Foreign exchange contracts	221	22	106	26
Commodity contracts	59	—	7	—
Interest rate contracts	2	—	2	—
Embedded foreign exchange derivatives	10	2	28	16
Total	**292**	**24**	**143**	**42**
Total fair value	**308**	**114**	**145**	**46**

Close-out netting agreements provide for the termination, valuation and net settlement of some or all outstanding transactions between two counterparties on the occurrence of one or more pre-defined trigger events.

Although the Company is party to close-out netting agreements with most derivative counterparties, the fair values in the tables above and in the Consolidated Balance Sheets at December 31, 2021 and 2020, have been presented on a gross basis.

The Company’s netting agreements and other similar arrangements allow net settlements under certain conditions. At December 31, 2021 and 2020, information related to these offsetting arrangements was as follows:

December 31, 2021 ($ in millions)					
Type of agreement or similar arrangement	**Gross amount of recognized assets**	**Derivative liabilities eligible for set-off in case of default**	**Cash collateral received**	**Non-cash collateral received**	**Net asset exposure**
Derivatives	200	(104)	—	—	**96**
Total	**200**	**(104)**	**—**	**—**	**96**

December 31, 2021 ($ in millions)					
Type of agreement or similar arrangement	Gross amount of recognized liabilities	Derivative liabilities eligible for set-off in case of default	Cash collateral pledged	Non-cash collateral pledged	Net liability exposure
Derivatives	238	(104)	—	—	**134**
Total	**238**	**(104)**	**—**	**—**	**134**

December 31, 2020 ($ in millions)					
Type of agreement or similar arrangement	Gross amount of recognized assets	Derivative liabilities eligible for set-off in case of default	Cash collateral received	Non-cash collateral received	Net asset exposure
Derivatives	410	(106)	—	—	**304**
Total	**410**	**(106)**	**—**	**—**	**304**

December 31, 2020 ($ in millions)					
Type of agreement or similar arrangement	Gross amount of recognized liabilities	Derivative liabilities eligible for set-off in case of default	Cash collateral pledged	Non-cash collateral pledged	Net liability exposure
Derivatives	147	(106)	—	—	**41**
Total	**147**	**(106)**	**—**	**—**	**41**

Note 7
Fair values

Recurring fair value measures

The fair values of financial assets and liabilities measured at fair value on a recurring basis were as follows:

December 31, 2021 ($ in millions)	Level 1	Level 2	Level 3	Total fair value
Assets				
Securities in “Marketable securities and short-term investments”:				
Equity securities		587		**587**
Debt securities—U.S. government obligations	209			**209**
Debt securities—Corporate		74		**74**
Derivative assets—current in “Other current assets”		176		**176**
Derivative assets—non-current in “Other non-current assets”		41		**41**
Total	**209**	**878**	**—**	**1,087**
Liabilities				
Derivative liabilities—current in “Other current liabilities”		133		**133**
Derivative liabilities—non-current in “Other non-current liabilities”		131		**131**
Total	**—**	**264**	**—**	**264**

December 31, 2020 ($ in millions)	Level 1	Level 2	Level 3	Total fair value
Assets				
Securities in “Marketable securities and short-term investments”:				
Equity securities		1,716		**1,716**
Debt securities—U.S. government obligations	293			**293**
Debt securities—Other government obligations	24			**24**
Debt securities—Corporate		75		**75**
Derivative assets—current in “Other current assets”		308		**308**
Derivative assets—non-current in “Other non-current assets”		114		**114**
Total	**317**	**2,213**	**—**	**2,530**
Liabilities				
Derivative liabilities—current in “Other current liabilities”		145		**145**
Derivative liabilities—non-current in “Other non-current liabilities”		46		**46**
Total	**—**	**191**	**—**	**191**

During 2021, 2020 and 2019 there have been no reclassifications for any financial assets or liabilities between Level 1 and Level 2.

The Company uses the following methods and assumptions in estimating fair values of financial assets and liabilities measured at fair value on a recurring basis:

- Securities in “Marketable securities and short-term investments”: If quoted market prices in active markets for identical assets are available, these are considered Level 1 inputs; however, when markets are not active, these inputs are considered Level 2. If such quoted market prices are not available, fair value is determined using market prices for similar assets or present value techniques, applying an appropriate risk-free interest rate adjusted for non-performance risk. The inputs used in present value techniques are observable and fall into the Level 2 category.
- Derivatives: The fair values of derivative instruments are determined using quoted prices of identical instruments from an active market, if available (Level 1 inputs). If quoted prices are not available, price quotes for similar instruments, appropriately adjusted, or present value techniques, based on available market data, or option pricing models are used. Cash-settled call options hedging the Company’s WAR liability are valued based on bid prices of the equivalent listed warrant. The fair values obtained using price quotes for similar instruments or valuation techniques represent a Level 2 input unless significant unobservable inputs are used.

Non-recurring fair value measures

The Company elects to record private equity investments without readily determinable fair values at cost, less impairment, adjusted for observable price changes. The Company reassesses at each reporting period whether these investments continue to qualify for this treatment. In 2021 and 2020, the Company recognized, in “Other income (expense), net”, net fair value gains of $108 million and $73 million, respectively, related to certain of its private equity investments based on observable market price changes for an identical or similar investment of the same issuer. The fair values were determined using Level 2 inputs. The carrying values of these investments at December 31, 2021 and 2020 totaled $169 million and $105 million.

Based on valuations at July 1, 2020, the Company recorded goodwill impairment charges of $311 million in the third quarter of 2020. The fair value measurements used in the analyses were calculated using the income approach (discounted cash flow method). The discounted cash flow models were calculated using unobservable inputs, which classified the fair value measurement as Level 3 (see Note 11 for additional information including further detailed information related to these charges and significant unobservable inputs).

In June 2019, upon meeting the criteria as held for sale, the Company adjusted the carrying value of the solar inverters business which was sold in February 2020 (See Note 4 for details). Apart from the transactions above, there were no additional significant non-recurring fair value measurements during 2021 and 2020.

Disclosure about financial instruments carried on a cost basis

The fair values of financial instruments carried on a cost basis were as follows:

December 31, 2021 ($ in millions)	Carrying value	Level 1	Level 2	Level 3	Total fair value
Assets					
Cash and equivalents (excluding securities with original maturities up to 3 months):					
Cash	2,422	2,422			**2,422**
Time deposits	1,737		1,737		**1,737**
Restricted cash	30	30			**30**
Marketable securities and short-term investments (excluding securities):					
Time deposits	300		300		**300**
Restricted cash, non-current	300	300			**300**
Liabilities					
Short-term debt and current maturities of long-term debt (excluding finance lease obligations)	1,357	1,288	69		**1,357**
Long-term debt (excluding finance lease obligations)	4,043	4,234	58		**4,292**

December 31, 2020 ($ in millions)	Carrying value	Level 1	Level 2	Level 3	Total fair value
Assets					
Cash and equivalents (excluding securities with original maturities up to 3 months):					
Cash	1,765	1,765			**1,765**
Time deposits	1,513		1,513		**1,513**
Restricted cash	323	323			**323**
Restricted cash, non-current	300	300			**300**
Liabilities					
Short-term debt and current maturities of long-term debt (excluding finance lease obligations)	1,266	497	769		**1,266**
Long-term debt (excluding finance lease obligations)	4,668	4,909	89		**4,998**

The Company uses the following methods and assumptions in estimating fair values of financial instruments carried on a cost basis:

- Cash and equivalents (excluding securities with original maturities up to 3 months), Restricted cash, current and non-current, and Marketable securities and short-term investments (excluding securities): The carrying amounts approximate the fair values as the items are short-term in nature or, for cash held in banks, are equal to the deposit amount.
- Short-term debt and current maturities of long-term debt (excluding finance lease obligations): Short-term debt includes commercial paper, bank borrowings and overdrafts. The carrying amounts of short-term debt and current maturities of long-term debt, excluding finance lease obligations, approximate their fair values.
- Long-term debt (excluding finance lease obligations): Fair values of bonds are determined using quoted market prices (Level 1 inputs), if available. For bonds without available quoted market prices and other long-term debt, the fair values are determined using a discounted cash flow methodology based upon borrowing rates of similar debt instruments and reflecting appropriate adjustments for non-performance risk (Level 2 inputs).

Note 8
Receivables, net and Contract assets and liabilities

“Receivables, net” consisted of the following:

December 31, ($ in millions)	2021	2020
Trade receivables	6,206	6,417
Other receivables	684	760
Allowance	(339)	(357)
Total	**6,551**	**6,820**

“Trade receivables” in the table above includes contractual retention amounts billed to customers of $119 million and $146 million at December 31, 2021 and 2020, respectively. Management expects that the substantial majority of related contracts will be completed and the substantial majority of the billed amounts retained by the customer will be collected. Of the retention amounts outstanding at December 31, 2021, 60 percent and 29 percent are expected to be collected in 2022 and 2023, respectively.

“Other receivables” in the table above consists of value added tax, claims, rental deposits and other non-trade receivables.

The reconciliation of changes in the allowance for doubtful accounts is as follows:

($ in millions)	2021	2020	2019
Balance at January 1,	**357**	**228**	**219**
Transition adjustment	—	56	—
Current-period provision for expected credit losses	33	115	31
Write-offs charged against the allowance	(37)	(42)	(19)
Exchange rate differences	(14)	—	(3)
Balance at December 31,	**339**	**357**	**228**

The following table provides information about Contract assets and Contract liabilities:

($ in millions)	2021	2020	2019
Contract assets	990	985	1,025
Contract liabilities	1,894	1,903	1,719

Contract assets primarily relate to the Company’s right to receive consideration for work completed but for which no invoice has been issued at the reporting date. Contract assets are transferred to receivables when rights to receive payment become unconditional. Management expects that the majority of the amounts will be collected within one year of the respective balance sheet date.

Contract liabilities primarily relate to up-front advances received on orders from customers as well as amounts invoiced to customers in excess of revenues recognized predominantly on long-term projects. Contract liabilities are reduced as work is performed and as revenues are recognized.

The significant changes in the Contract assets and Contract liabilities balances were as follows:

	2021		2020	
($ in millions)	Contract assets	Contract liabilities	Contract assets	Contract liabilities
Revenue recognized, which was included in the Contract liabilities balance at January 1, 2021/2020		(1,086)		(1,011)
Additions to Contract liabilities - excluding amounts recognized as revenue during the period		1,136		1,129
Receivables recognized that were included in the Contract assets balance at January 1, 2021/2020	(566)		(680)	

The Company considers its order backlog to represent its unsatisfied performance obligations. At December 31, 2021, the Company had unsatisfied performance obligations totaling $16,607 million and, of this amount, the Company expects to fulfill approximately 75 percent of the obligations in 2022, approximately 14 percent of the obligations in 2023 and the balance thereafter.

Note 9
Inventories, net

“Inventories, net” consisted of the following:

December 31, ($ in millions)	2021	2020
Raw materials	2,136	1,785
Work in process	995	1,020
Finished goods	1,594	1,499
Advances to suppliers	155	165
Total	**4,880**	**4,469**

Note 10
Property, plant and equipment, net

“Property, plant and equipment, net” consisted of the following:

December 31, ($ in millions)	2021	2020
Land and buildings	3,925	3,889
Machinery and equipment	5,785	6,144
Construction in progress	522	505
	10,232	**10,538**
Accumulated depreciation	(6,187)	(6,364)
Total	**4,045**	**4,174**

Assets under finance leases included in “Property, plant and equipment, net” were as follows:

December 31, ($ in millions)	2021	2020
Land and buildings	164	169
Machinery and equipment	92	79
	256	**248**
Accumulated depreciation	(123)	(111)
Total	**133**	**137**

In 2021, 2020 and 2019 depreciation, including depreciation of assets under finance leases, was $575 million, $586 million and $616 million, respectively. In 2021, 2020 and 2019 there were no significant impairments of property, plant or equipment.

Note 11
Goodwill and intangible assets

The changes in “Goodwill” were as follows:

($ in millions)	Electrification	Motion	Process Automation	Robotics & Discrete Automation	Corporate and Other	Total
Balance at January 1, 2020	**4,372**	**2,436**	**1,615**	**2,381**	**21**	**10,825**
Goodwill acquired during the year	71	—	—	21	—	**92**
Impairment of Goodwill	—	—	—	(290)	(21)	**(311)**
Exchange rate differences and other	84	20	24	116	—	**244**
Balance at December 31, 2020(1)	**4,527**	**2,456**	**1,639**	**2,228**	**—**	**10,850**
Goodwill acquired during the year	11	—	—	150	—	**161**
Goodwill allocated to disposals	—	(338)	(7)	—	—	**(345)**
Exchange rate differences and other	(66)	(1)	(19)	(98)	—	**(184)**
Balance at December 31, 2021(1)	**4,472**	**2,117**	**1,613**	**2,280**	**—**	**10,482**

(1) At December 31, 2021 and 2020, the gross goodwill amounted to $10,760 million and $11,152 million, respectively. The accumulated impairment charges amounted to $278 million and $302 million, respectively, and related to the Robotics & Discrete Automation segment.

The Company adopted a new operating model on July 1, 2020, which resulted in a change to the identification of the goodwill reporting units. Previously, the reporting units were the same as the operating segments for Electrification, Motion and Robotics & Discrete Automation, while for the Process Automation operating segment the reporting units were determined to be at the Division level, which is one level below the operating segment. The new operating model provides the Divisions with full ownership and accountability for their respective strategies, performance and resources and based on these changes, the Company concluded that the reporting units would change and be the respective Divisions within each operating segment. This change resulted only in an allocation of goodwill within the operating segments and thus there is no change to segment level goodwill in the table above.

As a result of the new allocation of goodwill, an interim quantitative impairment test was conducted both before and after the changes which were effective July 1, 2020. In the “before” test, it was concluded that the fair value of the Company’s reporting units exceeded the carrying value under the historical reporting unit structure.

The impairment test was performed for the new reporting units and the fair value of each was determined using a discounted cash flow fair value estimate based on objective information available at the measurement date. The significant assumptions used to develop the estimates of fair value for each reporting unit included management’s best estimates of the expected future results and discount rates specific to the reporting unit. The fair value estimates were based on assumptions that the Company believed to be reasonable, but which are inherently uncertain and thus, actual results may differ from those estimates. The fair values for each of the individual reporting units and their associated goodwill were determined using Level 3 measurements.

The interim quantitative impairment test indicated that the estimated fair values of the reporting units were substantially in excess of their carrying value for all reporting units except for the Machine Automation reporting unit within the Robotics & Discrete Automation operating segment. The contraction of the global economy in 2020, particularly in end-customer industries related to this reporting unit and considerable uncertainty around the continued pace of macroeconomic recovery generally led to a reduction in the fair values of the reporting units, thus affecting this reporting unit. Also, at the Division level, this reporting unit does not benefit from shared cash flows generated within an entire operating segment. In addition, the book value of the Machine Automation Division includes a significant amount of intangible assets recognized in past acquisitions, resulting in a proportionately higher book value than the other reporting unit within the Robotics & Discrete Automation Business Area. With the fair value of the reporting unit lower due to the economic conditions, the existing book value of the intangible assets combined with the newly allocated reporting unit goodwill led to the carrying value of the Machine Automation reporting unit exceeding its fair value. During 2020, a goodwill impairment charge of $290 million was recorded to reduce the carrying value of this reporting unit to its implied fair value. The remaining goodwill for the Machine Automation reporting unit was $554 million as of December 31, 2020.

During 2021, certain reporting units were split into separate reporting units. For each change, an interim quantitative impairment test was conducted before and after the change and in all cases, it was concluded that the fair value of the relevant reporting units exceeded the carrying value by a significant amount.

At October 1, 2021 and 2020, respectively, the Company performed qualitative assessments and determined that it was not more likely than not that the fair value for each of these reporting units was below the carrying value. As a result, the Company concluded that it was not necessary to perform the quantitative impairment test.

"Intangible assets, net" consisted of the following:

	2021			2020		
December 31, ($ in millions)	**Gross carrying amount**	**Accumu-lated amort-ization**	**Net carrying amount**	**Gross carrying amount**	**Accumu-lated amor-tization**	**Net carrying amount**
Capitalized software for internal use	835	(732)	**103**	828	(694)	**134**
Capitalized software for sale	31	(29)	**2**	33	(32)	**1**
Intangibles other than software:						
Customer-related	1,716	(707)	**1,009**	2,557	(1,104)	**1,453**
Technology-related	1,122	(868)	**254**	1,170	(898)	**272**
Marketing-related	493	(327)	**166**	492	(304)	**188**
Other	56	(29)	**27**	63	(33)	**30**
Total	**4,253**	**(2,692)**	**1,561**	**5,143**	**(3,065)**	**2,078**

In 2021 and 2020, additions to intangible assets were $95 million and $78 million, respectively.

There were no significant intangible assets acquired in business combinations during 2021 and 2020.

Amortization expense of intangible assets consisted of the following:

($ in millions)	**2021**	**2020**	**2019**
Capitalized software for internal use	66	61	74
Intangibles other than software	252	268	271
Total	**318**	**329**	**345**

In 2021, 2020 and 2019, impairment charges on intangible assets were not significant.

At December 31, 2021, future amortization expense of intangible assets is estimated to be:

($ in millions)	
2022	276
2023	249
2024	199
2025	155
2026	142
Thereafter	540
Total	**1,561**

Note 12
Debt

The Company's total debt at December 31, 2021 and 2020, amounted to $5,561 million and $6,121 million, respectively.

Short-term debt and current maturities of long-term debt

"Short-term debt and current maturities of long-term debt" consisted of the following:

December 31, ($ in millions)	2021	2020
Short-term debt (weighted-average interest rate of 3.2% and 2.8%, respectively)	78	153
Current maturities of long-term debt (weighted-average nominal interest rate of 2.8% and 3.2%, respectively)	1,306	1,140
Total	**1,384**	**1,293**

Short-term debt primarily represents short-term loans from various banks and issued commercial paper.

At December 31, 2021, the Company had in place two commercial paper programs: a $2 billion Euro-commercial paper program for the issuance of commercial paper in a variety of currencies, and a $2 billion commercial paper program for the private placement of U.S. dollar denominated commercial paper in the United States. At December 31, 2021 and 2020, no amount was outstanding under the $2 billion Euro-commercial paper program. At December 31, 2021, no amount was outstanding under the $2 billion program in the United States, while $32 million was outstanding at December 31, 2020.

In December 2019, the Company replaced its previous multicurrency revolving credit facility with a new $2 billion multicurrency revolving credit facility maturing in 2024. In 2021, the Company exercised its option to further extend the maturity of this facility to 2026. The facility is for general corporate purposes. Interest costs on drawings under the facility are LIBOR (for drawings in currencies for which LIBOR is still published) and EURIBOR for EURO drawings, plus a margin of 0.175 percent, while commitment fees (payable on the unused portion of the facility) amount to 35 percent of the margin, which represents commitment fees of 0.06125 percent per annum. Utilization fees, payable on drawings, amount to 0.075 percent per annum on drawings up to one-third of the facility, 0.15 percent per annum on drawings in excess of one-third but less than or equal to two-thirds of the facility, or 0.30 percent per annum on drawings over two-thirds of the facility. The facility contains cross-default clauses whereby an event of default would occur if the Company were to default on indebtedness as defined in the facility, at or above a specified threshold. No amount was drawn at December 31, 2021 and 2020, under this facility.

Long-term debt

The Company raises long-term debt in various currencies, maturities and on various interest rate terms. For certain of its debt obligations, the Company utilizes derivative instruments to modify its interest rate exposure. In particular, the Company uses interest rate swaps to effectively convert certain fixed-rate long-term debt into floating rate obligations. For certain non-U.S. dollar denominated debt, the Company utilizes cross-currency interest rate swaps to effectively convert the debt into a U.S. dollar obligation. The carrying value of debt, designated as being hedged by fair value hedges, is adjusted for changes in the fair value of the risk component of the debt being hedged.

The following table summarizes the Company's long-term debt considering the effect of interest rate and cross-currency interest rate swaps. Consequently, a fixed-rate debt subject to a fixed-to-floating interest rate swap is included as a floating rate debt in the table below:

December 31, ($ in millions, except % data)	2021 Balance	2021 Nominal rate	2021 Effective rate	2020 Balance	2020 Nominal rate	2020 Effective rate
Floating rate	3,598	1.2%	0.3%	3,330	1.6%	0.2%
Fixed rate	1,885	3.0%	3.1%	2,638	3.2%	3.3%
	5,483			**5,968**		
Current portion of long-term debt	(1,306)	2.8%	1.0%	(1,140)	3.2%	2.6%
Total	**4,177**			**4,828**		

At December 31, 2021, the principal amounts of long-term debt repayable (excluding finance lease obligations) at maturity were as follows:

($ in millions)	
2022	1,271
2023	794
2024	1,156
2025	56
2026	—
Thereafter	2,085
Total	**5,362**

Details of outstanding bonds were as follows:

December 31, (in millions)	2021 Nominal outstanding		2021 Carrying value(1)		2020 Nominal outstanding		2020 Carrying value(1)	
Bonds:								
4.0% USD Notes, due 2021				—	USD	650	$	649
2.25% CHF Bonds, due 2021				—	CHF	350	$	403
2.875% USD Notes, due 2022	USD	1,250	$	1,258	USD	1,250	$	1,280
0.625% EUR Instruments, due 2023	EUR	700	$	800	EUR	700	$	875
0.75% EUR Instruments, due 2024	EUR	750	$	860	EUR	750	$	946
0.3% CHF Bonds, due 2024	CHF	280	$	306	CHF	280	$	317
3.8% USD Notes, due 2028(2)	USD	383	$	381	USD	383	$	381
1.0% CHF Bonds, due 2029	CHF	170	$	186	CHF	170	$	192
0% EUR Notes, due 2030	EUR	800	$	862				—
4.375% USD Notes, due 2042(2)	USD	609	$	589	USD	609	$	589
Total			$	**5,242**			**$**	**5,632**

(1) USD carrying values include unamortized debt issuance costs, bond discounts or premiums, as well as adjustments for fair value hedge accounting, where appropriate.
(2) Prior to completing a cash tender offer in 2020, the original principal amount outstanding, on each of the 3.8% USD Notes, due 2028, and the 4.375% USD Notes, due 2042, was $750 million.

During 2021, the Company repaid at maturity its 4.0% USD Notes and its 2.25% CHF Bonds. The 4.0% USD Notes paid interest semi-annually in arrears, while the 2.25% CHF Bonds paid interest annually in arrears. The Company had entered into interest rate swaps to hedge its interest obligations on the 2.25% CHF Bonds. After considering the impact of such swaps, these bonds effectively became floating rate Swiss franc obligations and consequently have been shown as floating rate debt at December 31, 2020, in the table of long-term debt above.

During 2020, in connection with exercising certain early redemption options on the $250 million 5.625% USD Notes due 2021 and $450 million 3.375% USD Notes due 2023, and the partial redemption through a cash tender offer of the 3.8% USD Notes due 2028 and 4.375% USD Notes due 2042, the Company recognized losses on extinguishment of debt of $162 million, representing the premium associated with the early redemption, as well as the recognition of the relevant remaining unamortized issuance premium or discounts and issuance costs.

The 2.875% USD Notes, due 2022, pay interest semi-annually in arrears at a fixed annual rate of 2.875 percent. The 4.375% USD Notes, due 2042, pay interest semi-annually in arrears at a fixed annual rate of 4.375 percent. The Company may redeem both of these notes (which were issued together in May 2012) prior to maturity, in whole or in part, at the greater of (i) 100 percent of the principal amount of the notes to be redeemed and (ii) the sum of the present values of remaining scheduled payments of principal and interest (excluding interest accrued to the redemption date) discounted to the redemption date at a rate defined in the note terms, plus interest accrued at the redemption date. These notes, registered with the U.S. Securities and Exchange Commission, were issued by ABB Finance (USA) Inc., a 100 percent owned finance subsidiary, and were fully and unconditionally guaranteed by ABB Ltd. There are no significant restrictions on the ability of the parent company to obtain funds from its subsidiaries by dividend or loan. In reliance on Rule 13-01 of Regulation S-X, the separate financial statements of ABB Finance (USA) Inc. are not provided. The Company has entered into interest rate swaps for an aggregate nominal amount of $1,050 million to partially hedge its interest obligations on the 2.875% USD Notes, due 2022. After considering the impact of such swaps, $1,050 million of the outstanding principal is shown as floating rate debt in the table of long-term debt above. During 2020, by way of a cash tender offer, the Company redeemed $141 million of the original $750 million 4.375% USD Notes due 2042 issued.

The 0.625% EUR Instruments, due 2023 pay interest annually in arrears at a fixed rate of 0.625 percent per annum. The Company may redeem these notes three months prior to maturity (Par call date), in whole or in part, at the greater of (i) 100 percent of the principal amount of the notes to be redeemed and (ii) the sum of the present values of remaining scheduled payments of principal and interest (excluding interest accrued to the redemption date) discounted to the redemption date at a rate defined in the note terms, plus interest accrued at the redemption date. The Company may redeem these instruments in whole or in part, after the Par call date at 100 percent of the principal amount of the notes to be redeemed. The Company entered into interest rate swaps to hedge its interest on these bonds. After considering the impact of such swaps, these notes effectively became floating rate euro obligations and consequently have been shown as floating rate debt, in the table of long-term debt above.

The 0.75% EUR Instruments, due 2024 pay interest annually in arrears at a fixed rate of 0.75 percent per annum and have the same early redemption terms as the 0.625% EUR Instruments above. The Company entered into interest rate swaps to hedge its interest on these bonds. After considering the impact of such swaps, these bonds effectively became floating rate euro obligations and consequently have been shown as floating rate debt in the table of long-term debt above.

In April 2018, the Company issued the following notes (i) $300 million of 2.8% USD Notes, due 2020, (ii) $450 million of 3.375% USD Notes, due 2023, and (iii) $750 million of 3.8% USD Notes, due 2028. Each of the respective notes pays interest semi-annually in arrears. The 2020 Notes were repaid at maturity in October 2020 and the 2023 Notes were redeemed in full in December 2020. The Company may redeem the remaining principal outstanding on the 2028 Notes up to three months prior to their maturity date, in whole or in part, at the greater of (i) 100 percent of the principal amount of the notes to be redeemed and (ii) the sum of the present values of remaining scheduled payments of principal and interest (excluding interest accrued to the redemption date) discounted to the redemption date at a rate defined in the Notes terms, plus interest accrued at the redemption date. On or after January 3, 2028 (three months prior to their maturity date), the Company may also redeem the 2028 Notes, in whole or in part, at any time at a redemption price equal to 100 percent of the principal amount of the notes to be redeemed plus unpaid accrued interest to, but excluding, the redemption date. During 2020 by way of a cash tender offer, the Company redeemed $367 million of the original $750 million 3.8% USD Notes due 2028 issued. These notes, registered with the U.S. Securities and Exchange Commission, were issued by ABB Finance (USA) Inc., a 100 percent owned finance subsidiary, and were fully and unconditionally guaranteed by ABB Ltd. There are no significant restrictions on the ability of the parent company to obtain funds from its subsidiaries by dividend or loan. In reliance on Rule 13-01 of Regulation S-X, the separate financial statements of ABB Finance (USA) Inc. are not provided.

In February 2019, the Company issued the following notes: (i) CHF 280 million of 0.3% CHF Bonds, due 2024 and (ii) CHF 170 million of 1.0% CHF Bonds, due 2029. Each of the respective notes pays interests annually in arrears. The Company recorded aggregate net proceeds, after underwriting discount and other fees, of CHF 449 million (equivalent to approximately $449 million on date of issuance).

In January 2021, the Company issued zero interest Notes having a principal amount of EUR 800 million and due in 2030. The Company recorded net proceeds (after underwriting fees) of EUR 791 million (equivalent to $960 million on the date of issuance). These instruments do not pay interest and have the same early redemption terms as the 0.625% EUR Instruments above. In line with the Company's policy of reducing its currency and interest rate exposures, cross-currency interest rate swaps have been used to modify the characteristics of these instruments. After considering the impact of these cross-currency interest rate swaps, the Company effectively has a floating rate U.S. dollar obligation.

The Company's various debt instruments contain cross-default clauses which would allow the bondholders to demand repayment if the Company were to default on any borrowing at or above a specified threshold. Furthermore, all such bonds constitute unsecured obligations of the Company and rank pari passu with other debt obligations.

In addition to the bonds described above, included in long-term debt at December 31, 2021 and 2020, are finance lease obligations, bank borrowings of subsidiaries and other long-term debt, none of which is individually significant.

Subsequent events

At February 23, 2022, the amount outstanding under the $2 billion Euro-commercial paper program was $475 million.

Note 13
Other provisions, other current liabilities and other non-current liabilities

"Other provisions" consisted of the following:

December 31, ($ in millions)	2021	2020
Contract-related provisions	762	754
Restructuring and restructuring-related provisions	188	292
Provision for insurance-related reserves	174	176
Provisions for contractual penalties and compliance and litigation matters	63	113
Other	199	184
Total	**1,386**	**1,519**

"Other current liabilities" consisted of the following:

December 31, ($ in millions)	2021	2020
Employee-related liabilities	1,547	1,467
Accrued expenses	768	650
Non-trade payables	644	622
Income taxes payable	378	395
Accrued customer rebates	322	317
Other tax liabilities	298	286
Derivative liabilities (see Note 6)	133	145
Deferred income	95	130
Pension and other employee benefits	41	42
Accrued interest	28	29
Other	113	98
Total	**4,367**	**4,181**

"Other non-current liabilities" consisted of the following:

December 31, ($ in millions)	2021	2020
Income tax related liabilities	1,458	1,423
Derivative liabilities (see Note 6)	130	46
Provisions for contractual penalties and compliance and litigation matters	129	120
Deferred income	74	138
Employee-related liabilities	59	70
Environmental provisions	39	38
Other	227	190
Total	**2,116**	**2,025**

Note 14 Leases

The Company's lease obligations primarily relate to real estate, machinery and equipment. The components of lease expense were as follows:

	Land and buildings			Machinery and equipment			Total		
($ in millions)	**2021**	**2020**	**2019**	**2021**	**2020**	**2019**	**2021**	**2020**	**2019**
Operating lease cost	240	287	268	73	89	101	**313**	**376**	**369**
Finance lease cost	17	13	14	20	16	22	**37**	**29**	**36**
Short-term lease cost	26	17	19	14	31	29	**40**	**48**	**48**
Sub-lease income	(24)	(20)	(2)	(1)	(1)	—	**(25)**	**(21)**	**(2)**
Total lease expense	**259**	**297**	**299**	**106**	**135**	**152**	**365**	**432**	**451**

The following table presents supplemental cash flow information related to leases:

	Land and buildings			Machinery and equipment			Total		
($ in millions)	**2021**	**2020**	**2019**	**2021**	**2020**	**2019**	**2021**	**2020**	**2019**
Operating leases:									
Cash paid under operating cash flows	223	263	252	68	83	96	**291**	**346**	**348**
Right-of-use assets obtained in exchange for new liabilities:	267	266	153	86	57	52	**353**	**323**	**205**

In 2021, 2020 and 2019 the cash flow amounts under finance leases were not significant.

At December 31, 2021, the future net minimum lease payments for operating and finance leases and the related present value of the net minimum lease payments consisted of the following:

	Operating Leases		Finance Leases	
($ in millions)	**Land and buildings**	**Machinery and equipment**	**Land and buildings**	**Machinery and equipment**
2022	197	71	21	15
2023	164	39	21	12
2024	134	21	19	8
2025	109	9	18	5
2026	81	1	16	1
Thereafter	154	1	54	—
Total minimum lease payments	**839**	**142**	**149**	**41**
Difference between undiscounted cash flows and discounted cash flows	(59)	(3)	(28)	(1)
Present value of minimum lease payments	**780**	**139**	**121**	**40**

The following table presents certain information related to lease terms and discount rates:

	Land and buildings			Machinery and equipment		
	2021	2020	2019	2021	2020	2019
Operating Leases:						
Weighted-average remaining term (months)	73	84	78	30	29	29
Weighted-average discount rate	2.6%	3.0%	3.0%	1.9%	2.0%	2.2%
Finance Leases:						
Weighted-average remaining term (months)	100	107	110	40	40	33
Weighted-average discount rate	7.7%	7.7%	8.2%	1.8%	2.3%	2.8%

The present value of minimum finance lease payments included in “Short-term debt and current maturities of long-term debt” and “Long-term debt” in the Consolidated Balance Sheets at December 31, 2021, amounts to $27 million and $134 million, respectively, and at December 31, 2020, amounts to $27 million and $160 million, respectively.

Note 15
Commitments and contingencies

Contingencies—Regulatory, Compliance and Legal

Regulatory

As a result of an internal investigation, the Company self-reported to the Securities and Exchange Commission (SEC) and the Department of Justice (DoJ) in the United States as well as to the Serious Fraud Office (SFO) in the United Kingdom concerning certain of its past dealings with Unaoil and its subsidiaries, including alleged improper payments made by these entities to third parties. In May 2020, the SFO closed its investigation, which it originally announced in February 2017, as the case did not meet the relevant test for prosecution. The Company continues to cooperate with the U.S. authorities as requested. At this time, it is not possible for the Company to make an informed judgment about the outcome of this matter.

Based on findings during an internal investigation, the Company self-reported to the SEC and the DoJ, in the United States, to the Special Investigating Unit (SIU) and the National Prosecuting Authority (NPA) in South Africa as well as to various authorities in other countries potential suspect payments and other compliance concerns in connection with some of the Company’s dealings with Eskom and related persons. Many of those parties have expressed an interest in, or commenced an investigation into, these matters and the Company is cooperating fully with them. The Company paid $104 million to Eskom in December 2020 as part of a full and final settlement with Eskom and the Special Investigating Unit relating to improper payments and other compliance issues associated with the Controls and Instrumentation Contract, and its Variation Orders for Units 1 and 2 at Kusile. The Company continues to cooperate fully with the authorities in their review of the Kusile project and is in discussions with them regarding a coordinated resolution. Although the Company believes that there could be an unfavorable outcome in one or more of these ongoing reviews, at this time it is not possible for the Company to make an informed judgment about the possible financial impact.

General

The Company is aware of proceedings, or the threat of proceedings, against it and others in respect of private claims by customers and other third parties with regard to certain actual or alleged anticompetitive practices. Also, the Company is subject to other claims and legal proceedings, as well as investigations carried out by various law enforcement authorities. With respect to the above-mentioned claims, regulatory matters, and any related proceedings, the Company will bear the related costs, including costs necessary to resolve them.

Liabilities recognized

At December 31, 2021 and 2020, the Company had aggregate liabilities of $104 million and $100 million, respectively, included in “Other provisions” and “Other non-current liabilities”, for the above regulatory, compliance and legal contingencies, and none of the individual liabilities recognized was significant. As it is not possible to make an informed judgment on, or reasonably predict, the outcome of certain matters and as it is not possible, based on information currently available to management, to estimate the maximum potential liability on other matters, there could be adverse outcomes beyond the amounts accrued.

Guarantees

General

The following table provides quantitative data regarding the Company’s third-party guarantees. The maximum potential payments represent a “worst-case scenario”, and do not reflect management’s expected outcomes.

	Maximum potential payments(1)	
December 31, ($ in millions)	**2021**	**2020**
Performance guarantees	4,540	6,726
Financial guarantees	52	339
Indemnification guarantees(2)	136	177
Total	**4,728**	**7,242**

(1) Maximum potential payments include amounts in both continuing and discontinued operations.
(2) Certain indemnifications provided to Hitachi in connection with the divestment of Power Grids are without limit.

The carrying amount of liabilities recorded in the Consolidated Balance Sheets reflects the Company’s best estimate of future payments, which it may incur as part of fulfilling its guarantee obligations. In respect of the above guarantees, the carrying amounts of liabilities at December 31, 2021 and 2020, amounted to $156 million and $135 million, respectively, the majority of which is included in discontinued operations.

The Company is party to various guarantees providing financial or performance assurances to certain third parties. These guarantees, which have various maturities up to 2035, mainly consist of performance guarantees whereby (i) the Company guarantees the performance of a third party’s product or service according to the terms of a contract and (ii) as member of a consortium/joint venture that includes third parties, the Company guarantees not only its own performance but also the work of third parties. Such guarantees may include guarantees that a project will be completed within a specified time. If the third party does not fulfill the obligation, the Company will compensate the guaranteed party in cash or in kind. The original maturity dates for the majority of these performance guarantees range from one to ten years.

In conjunction with the divestment of the high-voltage cable and cables accessories businesses, the Company has entered into various performance guarantees with other parties with respect to certain liabilities of the divested business. At December 31, 2021 and 2020, the maximum potential payable under these guarantees amounts to $911 million and $994 million, respectively, and these guarantees have various maturities ranging from five to ten years.

The Company retained obligations for financial, performance and indemnification guarantees related to the Power Grids business sold on July 1, 2020 (see Note 3 for details). The performance and financial guarantees have been indemnified by Hitachi at the same proportion of its ownership in Hitachi Energy Ltd, formerly Hitachi ABB Power Grids (80.1 percent). These guarantees, which have various maturities up to 2035, primarily consist of bank guarantees, standby letters of credit, business performance guarantees and other trade-related guarantees, the majority of which have original maturity dates ranging from one to ten years. The maximum amount payable under these guarantees at December 31, 2021 and 2020, is approximately $3.2 billion and $5.5 billion, respectively, and the carrying amounts of liabilities (recorded in discontinued operations) at December 31, 2021 and 2020, amounted to $136 million and $135 million, respectively.

Commercial commitments

In addition, in the normal course of bidding for and executing certain projects, the Company has entered into standby letters of credit, bid/performance bonds and surety bonds (collectively "performance bonds") with various financial institutions. Customers can draw on such performance bonds in the event that the Company does not fulfill its contractual obligations. The Company would then have an obligation to reimburse the financial institution for amounts paid under the performance bonds. At December 31, 2021 and 2020, the total outstanding performance bonds aggregated to $3.6 billion and $4.3 billion, respectively, of which $0.1 billion and $0.3 billion, respectively, relate to discontinued operations. There have been no significant amounts reimbursed to financial institutions under these types of arrangements in 2021 and 2020.

Product and order-related contingencies

The Company calculates its provision for product warranties based on historical claims experience and specific review of certain contracts.

The reconciliation of the "Provisions for warranties", including guarantees of product performance, was as follows:

($ in millions)	2021	2020	2019
Balance at January 1,	**1,035**	**816**	**948**
Net change in warranties due to acquisitions, divestments and liabilities held for sale[1]	1	8	(88)
Claims paid in cash or in kind	(222)	(209)	(310)
Net increase in provision for changes in estimates, warranties issued and warranties expired	226	369	276
Exchange rate differences	(35)	51	(10)
Balance at December 31,	**1,005**	**1,035**	**816**

(1) Includes adjustments to the initial purchase price allocation recorded during the measurement period.

In 2020, the Company determined that the provision for a product warranty related to a divested business was no longer sufficient to cover expected warranty costs in the remaining warranty period. Due to an unexpected level of product failure, the previously estimated product warranty provision was increased by $143 million during 2020. The corresponding increase was included in "Cost of sales of products". As these costs relate to a divested business, in accordance with the definition of the Company's primary measure of segment performance, Operational EBITA (see Note 23), the costs have been excluded from this measure.

The warranty liability has been recorded based on the information currently available and is subject to change in the future.

Related party transactions

The Company conducts business with certain companies where members of the Company's Board of Directors or Executive Committee act, or in recent years have acted, as directors or senior executives. The Company's Board of Directors has determined that the Company's business relationships with those companies do not constitute material business relationships. This determination was made in accordance with the Company's related party transaction policy which was prepared based on the Swiss Code of Best Practice and the independence criteria set forth in the corporate governance rules of the New York Stock Exchange.

Note 16
Income taxes

"Income tax expense" consisted of the following:

($ in millions)	2021	2020	2019
Current taxes	1,346	776	855
Deferred taxes	(289)	(280)	(83)
Income tax expense allocated to continuing operations	**1,057**	**496**	**772**
Income tax expense allocated to discontinued operations	**1**	**322**	**167**

Income tax expense from continuing operations is reconciled below from the Company's weighted-average global tax rate (rather than from the Swiss domestic statutory tax rate) as the parent company of the ABB Group, ABB Ltd, is domiciled in Switzerland and income generated in jurisdictions outside of Switzerland (hereafter "foreign jurisdictions") which has already been subject to corporate income tax in those foreign jurisdictions is, to a large extent, tax exempt in Switzerland. There is no requirement in Switzerland for any parent company of a group to file a tax return of the consolidated group determining domestic and foreign pre-tax income. As the Company's consolidated income from continuing operations is predominantly earned outside of Switzerland, the weighted-average global tax rate of the Company results from enacted corporate income tax rates in foreign jurisdictions.

The reconciliation of "Income tax expense from continuing operations" at the weighted-average tax rate to the effective tax rate is as follows:

($ in millions, except % data)	2021	2020	2019
Income from continuing operations before income taxes	**5,787**	**841**	**1,862**
Weighted-average global tax rate	**23.7%**	**22.9%**	**18.3%**
Income taxes at weighted-average tax rate	1,371	193	341
Items taxed at rates other than the weighted-average tax rate	176	3	(7)
Unrecognized tax benefits	151	(38)	133
Changes in valuation allowance, net	(95)	29	198
Effects of changes in tax laws and enacted tax rates	1	23	63
Non-deductible / non-taxable items	(542)	232	44
Other, net	(5)	54	—
Income tax expense from continuing operations	**1,057**	**496**	**772**
Effective tax rate for the year	**18.3%**	**59.0%**	**41.5%**

The allocation of consolidated income from continuing operations, which is predominantly earned outside of Switzerland, impacts the "weighted-average global tax rate". In 2021, gains on sales of businesses increased the weighted-average global tax rate by approximately 1 percent. In 2019, based on the enacted tax rates in the applicable jurisdictions, the loss recorded for the planned sale of the solar inverters business reduced the weighted-average global tax rate by approximately 2 percent.

In 2021, "Items taxed at rates other than the weighted-average tax rate" included $107 million, for certain amounts related to the divestment of the Dodge business. In 2020 and 2019, the amount was not significant.

In 2021, "Changes in valuation allowance, net" included positive impacts from changes in certain outlooks in Europe of $82 million.

In 2020, "Changes in valuation allowance, net" predominantly reflects increases in the valuation allowance resulting from changes in the expectations at that time of future economic conditions due to impacts at that time on the Company's business from the COVID-19 pandemic.

In 2019, "Changes in valuation allowance, net" included adjustments to the valuation allowance in certain jurisdictions where the Company updated its assessment that it was more likely than not that such deferred tax assets would be realized. In 2019, the Company recorded an increase of $158 million to the valuation allowance in certain operations in North America, including an amount to provide for certain deferred tax assets arising in 2019.

There were no significant impacts from “Effects of changes in tax laws and enacted tax rates” in 2021. In 2020, the amount primarily reflects the impact of changes to tax rates in certain countries in Asia for $16 million. In 2019, the amount primarily reflects a change in tax law applicable to a country in Europe. The benefit in 2019 was mostly offset by a related change in the valuation allowance, resulting in a net benefit of $17 million.

In 2021, “Non-deductible / non-taxable items” includes $567 million in benefits primarily due to impacts of divestments and internal reorganizations where the reported net gain from sale of businesses exceeded the related taxable gain as well as the impact of a recognition of previously unrecognized outside basis differences. In 2020, the negative impact was $232 million, and included $82 million for the impairment of non-deductible goodwill. In addition, the amount in 2020 includes $62 million relating to non-operational pension costs resulting from the settlement of certain defined benefit plans which were principally not deductible. “Non-deductible / non-taxable items” also includes other items that were deducted for financial accounting purposes but are typically not tax deductible, such as certain interest expense costs, local taxes on productive activities, disallowed amounts for meals and entertainment expenses and other similar items. The amounts in 2019 related primarily to these typically non-deductible items.

In 2021 and 2019, “Unrecognized tax benefits” in the table above included a net cost of $150 million and $91 million, respectively, related to the interpretation for tax law and double tax treaty agreements by competent tax authorities. In 2020, “Unrecognized tax benefits” included a benefit of $20 million.

In 2020, “Other, net” includes an expense of $54 million, related to finalization of tax audits in Europe.

Deferred tax assets and liabilities (excluding amounts held for sale and in discontinued operations) consisted of the following:

December 31, ($ in millions)	**2021**	**2020**
Deferred tax assets:		
Unused tax losses and credits	551	758
Provisions and other accrued liabilities	757	750
Other current assets including receivables	104	114
Pension	338	413
Inventories	266	370
Intangible assets	1,135	901
Other	57	48
Total gross deferred tax asset	**3,208**	**3,354**
Valuation allowance	(1,263)	(1,518)
Total gross deferred tax asset, net of valuation allowance	**1,945**	**1,836**
Deferred tax liabilities:		
Property, plant and equipment	(245)	(275)
Intangible assets	(281)	(419)
Other assets	(107)	(107)
Pension	(302)	(223)
Other liabilities	(175)	(268)
Inventories	(35)	(29)
Unremitted earnings of subsidiaries	(308)	(333)
Total gross deferred tax liability	**(1,453)**	**(1,654)**
Net deferred tax asset (liability)	**492**	**182**
Included in:		
“Deferred taxes”—non-current assets	1,177	843
“Deferred taxes”—non-current liabilities	(685)	(661)
Net deferred tax asset (liability)	**492**	**182**

Certain entities have deferred tax assets related to net operating loss carry-forwards and other items. As recognition of these assets in certain entities did not meet the more likely than not criterion, valuation allowances have been recorded. “Unused tax losses and credits” at December 31, 2021 and 2020, in the table above, included $93 million and $170 million, respectively, for which the Company has established a valuation allowance as, due to limitations imposed by the relevant tax law, the Company determined that, more likely than not, such deferred tax assets would not be realized.

The valuation allowance at December 31, 2021, 2020 and 2019, was $1,263 million, $1,518 million and $1,632 million, respectively.

At December 31, 2021 and 2020, deferred tax liabilities totaling $308 million and $333 million, respectively, have been provided for withholding taxes, dividend distribution taxes or additional corporate income taxes (hereafter "withholding taxes") on unremitted earnings which will be payable in foreign jurisdictions in the event of repatriation of the foreign earnings to Switzerland. Income which has been generated outside of Switzerland and has already been subject to corporate income tax in such foreign jurisdictions is, to a large extent, tax exempt in Switzerland and therefore, generally no or only limited Swiss income tax has to be provided for on the repatriated earnings of foreign subsidiaries.

Certain countries levy withholding taxes on dividend distributions and these taxes cannot always be fully reclaimed by the Company's relevant subsidiary receiving the dividend although the taxes have to be withheld and paid by the relevant subsidiary distributing such dividend. In 2021 and 2020, certain taxes arose in certain foreign jurisdictions for which the technical merits do not allow utilization of benefits. At December 31, 2021 and 2020, foreign subsidiary retained earnings subject to withholding taxes upon distribution of approximately $100 million and $100 million, respectively, were considered as indefinitely reinvested, as these funds are used for financing current operations as well as business growth through working capital and capital expenditure in those countries and, consequently, no deferred tax liability was recorded.

At December 31, 2021, net operating loss carry-forwards of $2,170 million and tax credits of $69 million were available to reduce future income taxes of certain subsidiaries. Of these amounts, $1,258 million of operating loss carry-forwards and $48 million of tax credits will expire in varying amounts through 2045, while the remainder are available for carryforward indefinitely. The largest amount of these carry-forwards related to the Company's Europe operations.

Unrecognized tax benefits consisted of the following:

($ in millions)	Unrecognized tax benefits	Penalties and interest related to unrecognized tax benefits	Total
Classification as unrecognized tax items on January 1, 2019	**961**	**239**	**1,200**
Net change due to acquisitions and divestments	11	7	**18**
Increase relating to prior year tax positions	202	85	**287**
Decrease relating to prior year tax positions	(82)	(63)	**(145)**
Increase relating to current year tax positions	163	6	**169**
Decrease due to settlements with tax authorities	(57)	(8)	**(65)**
Decrease as a result of the applicable statute of limitations	(83)	(28)	**(111)**
Exchange rate differences	(9)	(5)	**(14)**
Balance at December 31, 2019, which would, if recognized, affect the effective tax rate	**1,106**	**233**	**1,339**
Net change due to acquisitions and divestments	1	—	**1**
Increase relating to prior year tax positions	298	96	**394**
Decrease relating to prior year tax positions	(161)	(57)	**(218)**
Increase relating to current year tax positions	390	5	**395**
Decrease due to settlements with tax authorities	(340)	(75)	**(415)**
Decrease as a result of the applicable statute of limitations	(59)	(16)	**(75)**
Exchange rate differences	63	6	**69**
Balance at December 31, 2020, which would, if recognized, affect the effective tax rate	**1,298**	**192**	**1,490**
Net change due to acquisitions and divestments	16	(6)	**10**
Increase relating to prior year tax positions	240	58	**298**
Decrease relating to prior year tax positions	(42)	(3)	**(45)**
Increase relating to current year tax positions	98	7	**105**
Decrease due to settlements with tax authorities	(175)	(20)	**(195)**
Decrease as a result of the applicable statute of limitations	(72)	(22)	**(94)**
Exchange rate differences	(41)	(7)	**(48)**
Balance at December 31, 2021, which would, if recognized, affect the effective tax rate	**1,322**	**199**	**1,521**

In 2021, “Increase relating to current year tax positions” included a total of $72 million in taxes related to the interpretation of tax law and double tax treaty agreements by competent tax authorities.

In 2020 and 2019, “Increase relating to current year tax positions” included a total of $381 million and $163 million, respectively, in taxes related to the interpretation of tax law and double tax treaty agreements by competent tax authorities. In 2020, $301 million of the $381 million is reported as Income tax expense in discontinued operations.

In 2021, “Increase relating to prior year tax positions” included a total of $240 million related to the interpretation of tax law and double tax treaty agreements by competent tax authorities in Europe.

In 2020, “Increase relating to prior year tax positions” is predominantly related to the interpretation of tax law and double tax treaty agreements by competent tax authorities in Europe, of which $73 million is reported as Income tax expense in discontinued operations.

In 2021, “Decrease relating to prior year tax positions” included a total of $42 million related to tax risk assessments in Europe of $33 million.

In 2020, “Decrease relating to prior year tax positions” included a total of $85 million related to a change of interpretation of tax law in Asia and changed tax risk assessments in Europe of $59 million.

In 2021, “Decrease due to settlements with tax authorities” is predominantly related to tax assessments received in Europe.

In 2020, “Decrease due to settlements with tax authorities” is predominantly related to closed tax audits in Europe.

At December 31, 2021, the Company expected the resolution, within the next twelve months, of unrecognized tax benefits related to pending court cases amounting to $63 million for income taxes, penalties and interest. Otherwise, the Company had not identified any other significant changes which were considered reasonably possible to occur within the next twelve months.

At December 31, 2021, the earliest significant open tax years that remained subject to examination were the following:

Region	**Year**
Europe	2015
United States	2018
Rest of Americas	2017
China	2012
Rest of Asia, Middle East and Africa	2011

Note 17
Employee benefits

The Company operates defined benefit pension plans, defined contribution pension plans, and termination indemnity plans, in accordance with local regulations and practices. At December 31, 2021, the Company's most significant defined benefit pension plans are in Switzerland as well as in Germany, the United Kingdom, and the United States. These plans cover a large portion of the Company's employees and provide benefits to employees in the event of death, disability, retirement, or termination of employment. Certain of these plans are multi-employer plans. The Company also operates other postretirement benefit plans including postretirement health care benefits and other employee-related benefits for active employees including long-service award plans. The measurement date used for the Company's employee benefit plans is December 31. The funding policies of the Company's plans are consistent with local government and tax requirements.

During 2020, the Company took steps to transfer the defined benefit pension risks in three International countries to external financial institutions. Two of these plans were settled entirely for accounting purposes while the third plan involved the settlement of specific obligations for certain former employees. In connection with these transactions, the Company made net payments of $309 million and recorded non-operational pension charges of $520 million which were included in net periodic benefit cost as curtailments, settlements and special termination benefits. The Company also made cash payments of $143 million and recorded non-operational pension charges of $101 million in 2020 for the settlement of pension obligations in discontinued operations.

The Company recognizes in its Consolidated Balance Sheets the funded status of its defined benefit pension plans, postretirement plans and other employee-related benefits measured as the difference between the fair value of the plan assets and the benefit obligation.

Unless otherwise indicated, the following tables include amounts relating to both continuing and discontinued operations.

Obligations and funded status of the plans

The change in benefit obligation, change in fair value of plan assets, and funded status recognized in the Consolidated Balance Sheets were as follows:

	Defined pension benefits				Other postretirement benefits	
	Switzerland		International		International	
($ in millions)	**2021**	**2020**	**2021**	**2020**	**2021**	**2020**
Benefit obligation at January 1,	**3,870**	**4,308**	**5,527**	**7,878**	**98**	**110**
Service cost	61	74	47	92	1	1
Interest cost	(5)	6	72	111	2	3
Contributions by plan participants	36	72	8	12	—	—
Benefit payments	(130)	(160)	(207)	(295)	(9)	(12)
Settlements	(124)	(101)	(84)	(2,542)	—	—
Benefit obligations of businesses acquired (divested)	—	(765)	(46)	(165)	(11)	(5)
Actuarial (gain) loss	(140)	71	(15)	214	(8)	4
Plan amendments and other	—	—	13	(64)	(2)	(3)
Exchange rate differences	(134)	365	(200)	286	—	—
Benefit obligation at December 31,	**3,434**	**3,870**	**5,115**	**5,527**	**71**	**98**
Fair value of plan assets at January 1,	**4,133**	**4,189**	**4,608**	**6,246**	**—**	**—**
Actual return on plan assets	279	191	197	375	—	—
Contributions by employer	63	228	124	611	9	12
Contributions by plan participants	36	72	8	12	—	—
Benefit payments	(130)	(160)	(207)	(295)	(9)	(12)
Settlements	(124)	(101)	(84)	(2,542)	—	—
Plan assets of businesses acquired (divested)	—	(664)	(50)	(82)	—	—
Plan amendments and other	—	—	14	62	—	—
Exchange rate differences	(144)	378	(147)	221	—	—
Fair value of plan assets at December 31,	**4,113**	**4,133**	**4,463**	**4,608**	**—**	**—**
Funded status — overfunded (underfunded)	**679**	**263**	**(652)**	**(919)**	**(71)**	**(98)**

The amounts recognized in “Accumulated other comprehensive loss” and “Noncontrolling interests” were:

	Defined pension benefits			Other postretirement benefits		
December 31, ($ in millions)	**2021**	**2020**	**2019**	**2021**	**2020**	**2019**
Net actuarial (loss) gain	(1,540)	(2,038)	(2,782)	21	21	28
Prior service credit	72	75	59	7	11	13
Amount recognized in OCI(1) and NCI(2)	**(1,468)**	**(1,963)**	**(2,723)**	**28**	**32**	**41**
Taxes associated with amount recognized in OCI and NCI	352	374	536	—	—	—
Amount recognized in OCI and NCI, net of tax(3)	**(1,116)**	**(1,589)**	**(2,187)**	**28**	**32**	**41**

(1) OCI represents “Accumulated other comprehensive loss”.
(2) NCI represents “Noncontrolling interests”.
(3) NCI, net of tax, amounted to $0 million, $(1) million and $(1) million at December 31, 2021, 2020 and 2019.

In addition, the following amounts were recognized in the Company’s Consolidated Balance Sheets:

	Defined pension benefits				Other postretirement benefits	
	Switzerland		International		International	
December 31, ($ in millions)	**2021**	**2020**	**2021**	**2020**	**2021**	**2020**
Overfunded plans	683	267	208	92	—	—
Underfunded plans — current	—	—	(23)	(22)	(7)	(9)
Underfunded plans — non-current	(4)	(4)	(837)	(989)	(64)	(89)
Funded status - overfunded (underfunded)	**679**	**263**	**(652)**	**(919)**	**(71)**	**(98)**

December 31, ($ in millions)	**2021**	**2020**
Non-current assets		
Overfunded pension plans	891	359
Other employee-related benefits	1	1
Pension and other employee benefits	**892**	**360**

December 31, ($ in millions)	**2021**	**2020**
Current liabilities		
Underfunded pension plans	(23)	(22)
Underfunded other postretirement benefit plans	(10)	(9)
Other employee-related benefits	(8)	(11)
Pension and other employee benefits	**(41)**	**(42)**

December 31, ($ in millions)	**2021**	**2020**
Non-current liabilities		
Underfunded pension plans	(841)	(993)
Underfunded other postretirement benefit plans	(62)	(89)
Other employee-related benefits	(122)	(149)
Pension and other employee benefits	**(1,025)**	**(1,231)**

The accumulated benefit obligation (ABO) for all defined benefit pension plans was $8,452 million and $9,310 million at December 31, 2021 and 2020, respectively. The projected benefit obligation (PBO), ABO and fair value of plan assets, for pension plans with a PBO in excess of fair value of plan assets or ABO in excess of fair value of plan assets, was:

	PBO exceeds fair value of plan assets				ABO exceeds fair value of plan assets			
	Switzerland		International		Switzerland		International	
December 31, ($ in millions)	2021	2020	2021	2020	2021	2020	2021	2020
PBO	12	13	2,994	5,131	12	13	2,979	5,008
ABO	12	13	2,917	5,056	12	13	2,905	4,942
Fair value of plan assets	8	9	2,133	4,120	8	9	2,119	4,004

All of the Company's other postretirement benefit plans are unfunded.

Components of net periodic benefit cost

Net periodic benefit cost consisted of the following:

	Defined pension benefits						Other postretirement benefits		
	Switzerland			International			International		
($ in millions)	2021	2020	2019	2021	2020	2019	2021	2020	2019
Operational pension cost:									
Service cost	61	74	76	47	92	113	1	1	1
Operational pension cost	**61**	**74**	**76**	**47**	**92**	**113**	**1**	**1**	**1**
Non-operational pension cost (credit):									
Interest cost	(5)	6	15	72	111	174	2	3	4
Expected return on plan assets	(116)	(123)	(112)	(178)	(253)	(276)	—	—	—
Amortization of prior service cost (credit)	(9)	(11)	(14)	(2)	2	2	(3)	(2)	(5)
Amortization of net actuarial loss	—	7	—	67	109	108	(2)	(3)	(3)
Curtailments, settlements and special termination benefits	1	6	11	7	644	27	—	—	(10)
Non-operational pension cost (credit)	**(129)**	**(115)**	**(100)**	**(34)**	**613**	**35**	**(3)**	**(2)**	**(14)**
Net periodic benefit cost	**(68)**	**(41)**	**(24)**	**13**	**705**	**148**	**(2)**	**(1)**	**(13)**

The components of net periodic benefit cost other than the service cost component are included in the line Non-operational pension (cost) credit in the Consolidated Income Statements. Net periodic benefit cost includes $121 million and $47 million in 2020 and 2019, respectively, related to discontinued operations.

Assumptions

The following weighted-average assumptions were used to determine benefit obligations:

	Defined pension benefits				Other postretirement benefits	
	Switzerland		International		International	
December 31, (in %)	2021	2020	2021	2020	2021	2020
Discount rate	0.2	—	2.1	1.6	2.6	2.1
Rate of compensation increase	—	—	1.5	1.0	0.3	0.2
Rate of pension increase	—	—	1.7	1.4	—	—
Cash balance interest credit rate	1.0	1.0	2.1	2.1	—	—

For the Company's significant benefit plans, the discount rate used at each measurement date is set based on a high-quality corporate bond yield curve (derived based on bond universe information sourced from reputable third-party index and data providers and rating agencies) reflecting the timing, amount and currency of the future expected benefit payments for the respective plan. Consistent discount rates are used across all plans in each currency zone, based on the duration of the applicable plan(s) in that zone. For plans in the other countries, the discount rate is based on high quality corporate or government bond yields applicable in the respective currency, as appropriate at each measurement date with a duration broadly consistent with the respective plan's obligations.

The following weighted-average assumptions were used to determine the “Net periodic benefit cost”:

	Defined pension benefits						Other postretirement benefits		
	Switzerland			International			International		
(in %)	2021	2020	2019	2021	2020	2019	2021	2020	2019
Discount rate	—	0.3	0.8	1.6	1.9	2.8	2.1	2.8	3.9
Expected long-term rate of return on plan assets	3.0	3.0	3.0	4.0	4.3	4.9	—	—	—
Rate of compensation increase	—	—	—	1.0	2.2	2.4	0.2	0.2	0.2
Cash balance interest credit rate	1.0	1.0	1.0	2.1	1.6	1.6	—	—	—

The “Expected long-term rate of return on plan assets” is derived for each benefit plan by considering the expected future long-term return assumption for each individual asset class. A single long-term return assumption is then derived for each plan based upon the plan’s target asset allocation.

The Company maintains other postretirement benefit plans, which are generally contributory with participants’ contributions adjusted annually. The assumptions used were:

December 31,	2021	2020
Health care cost trend rate assumed for next year	5.1%	5.9%
Rate to which the trend rate is assumed to decline (the ultimate trend rate)	4.5%	4.9%
Year that the rate reaches the ultimate trend rate	2026	2028

Plan assets

The Company has pension plans in various countries with the majority of the Company’s pension liabilities deriving from a limited number of these countries.

The pension plans are typically funded by regular contributions from employees and the Company. These plans are typically administered by boards of trustees (which include Company representatives) whose primary responsibilities include ensuring that the plans meet their liabilities through contributions and investment returns. The boards of trustees have the responsibility for making key investment strategy decisions within a risk-controlled framework.

The pension plan assets are invested in diversified portfolios that are managed by third-party asset managers, in accordance with local statutory regulations, pension plan rules and the respective plans’ investment guidelines, as approved by the boards of trustees.

Plan assets are generally segregated from those of the Company and invested with the aim of meeting the respective plans’ projected future pension liabilities. Plan assets are measured at fair value at the balance sheet date.

The boards of trustees manage the assets of the pension plans in a risk-controlled manner and assess the risks embedded in the pension plans through asset/liability management studies. Asset/liability management studies typically take place every three years. However, the risks of the plans are monitored on an ongoing basis.

The boards of trustees’ investment goal is to maximize the long-term returns of plan assets within specified risk parameters, while considering the future liabilities and liquidity needs of the individual plans. Risk measures taken into account include the funding ratio of the plan, the likelihood of extraordinary cash contributions being required, the risk embedded in each individual asset class, and the plan asset portfolio as a whole.

The Company's global pension asset allocation is the result of the asset allocations of the individual plans, which are set by the respective boards of trustees. The target asset allocation of the Company's plans on a weighted-average basis is as follows:

	Target	
(in %)	**Switzerland**	**International**
Asset class		
Equity	15	15
Fixed income	54	72
Real estate	26	4
Other	5	9
Total	**100**	**100**

The actual asset allocations of the plans are in line with the target asset allocations.

Equity securities primarily include investments in large-cap and mid-cap publicly traded companies. Fixed income assets primarily include corporate bonds of companies from diverse industries and government bonds. Both fixed income and equity assets are invested either via funds or directly in segregated investment mandates, and include an allocation to emerging markets. Real estate consists primarily of investments in real estate in Switzerland held in the Swiss plans. The "Other" asset class includes investments in private equity, hedge funds, commodities, and cash, and reflects a variety of investment strategies.

Based on the above global asset allocation and the fair values of the plan assets, the expected long-term return on assets at December 31, 2021, is 3.4 percent. The Company and the local boards of trustees regularly review the investment performance of the asset classes and individual asset managers. Due to the diversified nature of the investments, the Company is of the opinion that no significant concentration of risks exists in its pension fund assets.

At December 31, 2021 and 2020, plan assets include ABB Ltd's shares (as well as an insignificant amount of the Company's debt instruments) with a total value of $8 million and $8 million, respectively.

The fair values of the Company's pension plan assets by asset class are presented below. For further information on the fair value hierarchy and an overview of the Company's valuation techniques applied, see the "Fair value measures" section of Note 2.

December 31, 2021 ($ in millions)	**Level 1**	**Level 2**	**Not subject to leveling[1]**	**Total fair value**
Asset class				
Equity				
Equity securities	124	1		**125**
Mutual funds/commingled funds		1,049		**1,049**
Emerging market mutual funds/commingled funds		218		**218**
Fixed income				
Government and corporate securities	314	1,366		**1,680**
Government and corporate—mutual funds/commingled funds		3,121		**3,121**
Emerging market bonds—mutual funds/commingled funds		428		**428**
Real estate			1,326	**1,326**
Insurance contracts		74		**74**
Cash and short-term investments	75	158		**233**
Private equity		65	257	**322**
Total	**513**	**6,480**	**1,583**	**8,576**

December 31, 2020 ($ in millions)	Level 1	Level 2	Not subject to leveling[1]	Total fair value
Asset class				
Equity				
Equity securities	180	5		**185**
Mutual funds/commingled funds		1,298		**1,298**
Emerging market mutual funds/commingled funds		243		**243**
Fixed income				
Government and corporate securities	389	1,415		**1,804**
Government and corporate—mutual funds/commingled funds		2,876		**2,876**
Emerging market bonds—mutual funds/commingled funds		547		**547**
Real estate			1,289	**1,289**
Insurance contracts		50		**50**
Cash and short-term investments	103	190		**293**
Private equity			156	**156**
Hedge funds			1	**1**
Total	**672**	**6,624**	**1,446**	**8,742**

(1) Amounts relate to assets measured using the NAV practical expedient which are not subject to leveling.

The Company applies accounting guidance related to the presentation of certain investments using the net asset value (NAV) practical expedient. This accounting guidance exempts investments using this practical expedient from categorization within the fair value hierarchy. Investments measured at NAV are primarily non exchange-traded commingled or collective funds in private equity and real estate where the fair value of the underlying assets is determined by the investment manager. Investments in private equity can never be redeemed, but instead the funds will make distributions through liquidation of the underlying assets. Total unfunded commitments for the private equity funds were approximately $125 million and $115 million at December 31, 2021 and 2020, respectively. The real estate funds are typically subject to a lock-in period of up to three years after subscribing. After this period, the real estate funds typically offer a redemption notice of three to twelve months.

Contributions

Employer contributions were as follows:

	Defined pension benefits				Other postretirement benefits	
	Switzerland		International		International	
($ in millions)	2021	2020	2021	2020	2021	2020
Total contributions to defined benefit pension and other postretirement benefit plans	63	228	124	611	9	12
Of which, discretionary contributions to defined benefit pension plans	—	152	61	520	—	—

The total contributions included non-cash contributions totaling $53 million and $224 million, respectively, for 2021 and 2020, of available-for-sale debt securities to certain of the Company's pension plans.

The Company expects to contribute approximately $108 million to its defined benefit pension plans in 2022. Of these discretionary contributions, $5 million are expected to be non-cash contributions. The Company expects to contribute approximately $7 million to its other postretirement benefit plans in 2022.

The Company also contributes to a number of defined contribution plans. The aggregate expense for these plans in continuing operations was $278 million, $205 million and $190 million in 2021, 2020 and 2019, respectively. Contributions to multi-employer plans were not significant in 2021, 2020 and 2019.

Estimated future benefit payments

The expected future cash flows to be paid by the Company’s plans in respect of pension and other postretirement benefit plans at December 31, 2021, are as follows:

	Defined pension benefits		Other postretirement benefits
($ in millions)	Switzerland	International	International
2022	256	265	7
2023	241	257	7
2024	226	255	6
2025	220	256	6
2026	213	259	5
Years 2027 - 2031	977	1,299	22

Note 18
Share-based payment arrangements

The Company has granted share-based instruments to its employees under three principal share-based payment plans, as more fully described in the respective sections below. Compensation cost for equity-settled awards is recorded in Total cost of sales and in Selling, general and administrative expenses and totaled $59 million, $44 million and $46 million in 2021, 2020 and 2019, respectively, while compensation cost for cash-settled awards, recorded in Selling, general and administrative expenses, was not significant, as mentioned in the WARs, LTIP and Other share-based payments sections of this note. The total tax benefit recognized in 2021, 2020 and 2019 was not significant.

At December 31, 2021, the Company had the ability to issue up to 94 million new shares out of contingent capital in connection with share-based payment arrangements. In addition, 23 million of the 95 million shares held by the Company as treasury stock at December 31, 2021, could be used to settle share-based payment arrangements.

As the primary trading market for the shares of ABB Ltd is the SIX Swiss Exchange (on which the shares are traded in Swiss francs) and substantially all the share-based payment arrangements with employees are based on the Swiss franc share or have strike prices set in Swiss francs, certain data disclosed below related to the instruments granted under share-based payment arrangements are presented in Swiss francs.

Management Incentive Plan

Up to 2019, the Company offered, under the MIP, options and cash-settled WARs to key employees for no consideration. Starting in 2020, the employee group previously eligible to receive grants under the MIP were granted shares under the LTIP (see LTIP section below) and consequently no grants were made in 2021 and 2020 under the MIP.

The options granted under the MIP allow participants to purchase shares of ABB Ltd at predetermined prices. Participants may sell the options rather than exercise the right to purchase shares. Equivalent warrants are listed by a third-party bank on the SIX Swiss Exchange, which facilitates pricing and transferability of options granted under this plan. The options entitle the holder to request that the third-party bank purchase such options at the market price of equivalent listed warrants related to that MIP launch. If the participant elects to sell the options, the options will thereafter be held by a third party and, consequently, the Company’s obligation to deliver shares will be toward this third party.

Each WAR gives the participant the right to receive, in cash, the market price of an equivalent listed warrant on the date of exercise of the WAR. Participants may exercise or sell options and exercise WARs after the vesting period, which is three years from the date of grant. All options and WARs expire six years from the date of grant.

Options

The fair value of each option was estimated on the date of grant using a lattice model that used the assumptions noted in the table below. Expected volatilities were based on implied volatilities from equivalent listed warrants on ABB Ltd shares. The expected term of the options granted is the contractual six-year life of each option, based on the fact that after the vesting period, a participant can elect to sell the option rather than exercise the right to purchase shares, thereby also realizing the time value of the options. The risk-free rate was based on a six-year Swiss franc interest rate, reflecting the six-year contractual life of the options. In estimating forfeitures, the Company used data from previous comparable MIP launches.

	2019
Expected volatility	19%
Dividend yield	4.7%
Expected term	6 years
Risk-free interest rate	-0.9%

Presented below is a summary of the activity related to options under the MIP:

	Number of options (in millions)	Number of shares (in millions)(1)	Weighted-average exercise price (in Swiss francs)(2)	Weighted-average remaining contractual term (in years)	Aggregate intrinsic value (in millions of Swiss francs)(3)
Outstanding at January 1, 2021	**336.1**	**67.2**	**21.16**		
Exercised(4)	(160.0)	(32.0)	20.25		
Forfeited	(1.7)	(0.3)	20.31		
Outstanding at December 31, 2021	**174.4**	**34.9**	**22.00**	**2.4**	**450**
Vested and expected to vest at December 31, 2021	**174.4**	**34.9**	**22.00**	**2.4**	**450**
Exercisable at December 31, 2021	**158.5**	**31.7**	**22.30**	**2.3**	**400**

(1) Information presented reflects the number of ABB Ltd shares that can be received upon exercise, as options have a conversion ratio of 5:1.
(2) Information presented reflects the exercise price per ABB Ltd share..
(3) Computed using the closing price, in Swiss francs, of ABB Ltd shares on the SIX Swiss Exchange and the exercise price of each option in Swiss francs.
(4) The cash received upon exercise amounted to approximately $693 million. The shares were delivered out of treasury stock.

At December 31, 2021, the total unrecognized compensation cost related to non-vested options granted under the MIP was not significant. The weighted-average grant-date fair value (per option) of options granted during 2019 was 0.34 Swiss francs. As mentioned previously, no options were granted in 2021 and 2020. In 2021 and 2020, the aggregate intrinsic value (on the date of exercise) of options exercised was approximately $313 million and $38 million, respectively, while the amount in 2019 was not significant.

Presented below is a summary, by launch, related to options outstanding at December 31, 2021:

Exercise price (in Swiss francs)(1)	Number of options (in millions)	Number of shares (in millions)(2)	Weighted-average remaining contractual term (in years)
21.50	9.3	1.9	0.7
22.50	63.4	12.7	1.6
23.50	61.6	12.3	2.7
19.00	40.1	8.0	3.7
Total number of options and shares	**174.4**	**34.9**	**2.4**

(1) Information presented reflects the exercise price per share of ABB Ltd.
(2) Information presented reflects the number of shares of ABB Ltd that can be received upon exercise.

WARs

As each WAR gives the holder the right to receive cash equal to the market price of the equivalent listed warrant on date of exercise, the Company records a liability based upon the fair value of outstanding WARs at each period end, accreted on a straight-line basis over the three-year vesting period. In Selling, general and administrative expenses, the Company records the changes in both the fair value and vested portion of the outstanding WARs. To hedge its exposure to fluctuations in the fair value of outstanding WARs, the Company purchased cash-settled call options, which entitle the Company to receive amounts equivalent to its obligations under the outstanding WARs. The cash-settled call options are recorded as derivatives measured at fair value (see Note 6), with subsequent changes in fair value recorded in Selling, general and administrative expenses to the extent that they offset the change in fair value of the liability for the WARs. The total impact in Selling, general and administrative expenses in 2021, 2020 and 2019 was not significant.

The aggregate fair value of outstanding WARs was $29 million and $21 million at December 31, 2021 and 2020, respectively. The fair value of WARs was determined based upon the trading price of equivalent warrants listed on the SIX Swiss Exchange.

Presented below is a summary of the activity related to WARs:

(in millions)	Number of WARs
Outstanding at January 1, 2021	**22.1**
Exercised	(12.6)
Forfeited	(0.1)
Outstanding at December 31, 2021	**9.4**
Exercisable at December 31, 2021	**3.8**

The aggregate fair value at date of grant of WARs granted in 2019 was not significant. As mentioned previously, no grants were made in 2021 and 2020 under the MIP. In 2021 and 2020, share-based liabilities of $25 million and $13 million, respectively, were paid upon exercise of WARs by participants. The amounts in 2019 were not significant.

Employee Share Acquisition Plan

The employee share acquisition plan (ESAP) is an employee stock-option plan with a savings feature. Employees save over a twelve-month period, by way of regular payroll deductions. At the end of the savings period, employees choose whether to exercise their stock options using their savings plus interest, if any, to buy ABB Ltd shares (American Depositary Shares (ADS) in the case of employees in the United States and Canada—each ADS representing one registered share of the Company) at the exercise price set at the grant date, or have their savings returned with any interest. The savings are accumulated in bank accounts held by a third-party trustee on behalf of the participants and earn interest, where applicable. Employees can withdraw from the ESAP at any time during the savings period and will be entitled to a refund of their accumulated savings.

The fair value of each option is estimated on the date of grant using the same option valuation model as described under the MIP, using the assumptions noted in the table below. The expected term of the option granted has been determined to be the contractual one-year life of each option, at the end of which the options vest and the participants are required to decide whether to exercise their options or have their savings returned with interest. The risk-free rate is based on one-year Swiss franc interest rates, reflecting the one-year contractual life of the options. In estimating forfeitures, the Company has used the data from previous ESAP launches.

	2021	2020	2019
Expected volatility	20%	24%	18%
Dividend yield	2.9%	3.8%	4.1%
Expected term	1 year	1 year	1 year
Risk-free interest rate	-0.6%	-0.7%	-0.7%

Presented below is a summary of activity under the ESAP:

	Number of shares (in millions)(1)	Weighted-average exercise price (in Swiss francs)(2)	Weighted-average remaining contractual term (in years)	Aggregate intrinsic value (in millions of Swiss francs)(2)(3)
Outstanding at January 1, 2021	**2.1**	**22.87**		
Granted	1.8	30.32		
Forfeited	(0.1)	22.87		
Exercised(4)	(1.7)	22.87		
Not exercised (savings returned plus interest)	(0.3)	22.87		
Outstanding at December 31, 2021	**1.8**	**30.32**	**0.8**	**8.3**
Vested and expected to vest at December 31, 2021	**1.7**	**30.32**	**0.8**	**7.9**
Exercisable at December 31, 2021	**—**	**—**	**—**	**—**

(1) Includes shares represented by ADS.
(2) Information presented for ADS is based on equivalent Swiss franc denominated awards.
(3) Computed using the closing price, in Swiss francs, of ABB Ltd shares on the SIX Swiss Exchange and the exercise price of each option in Swiss francs.
(4) The cash received in 2021 from exercises was approximately $42 million. The shares were delivered out of treasury stock.

The exercise prices per ABB Ltd share and per ADS of 30.32 Swiss francs and $33.35, respectively, for the 2021 grant, 22.87 Swiss francs and $24.93, respectively, for the 2020 grant, and 20.78 Swiss francs and $20.17, respectively, for the 2019 grant were determined using the closing price of the ABB Ltd share on the SIX Swiss Exchange and ADS on the New York Stock Exchange on the respective grant dates.

At December 31, 2021, the total unrecognized compensation cost related to non-vested options granted under the ESAP was not significant. The weighted-average grant-date fair value (per option) of options granted during 2021, 2020 and 2019 was 1.96 Swiss francs, 1.67 Swiss francs and 1.05 Swiss francs, respectively. The total intrinsic value (on the date of exercise) of options exercised in 2021 was approximately $14 million, while in 2020 and 2019 it was not significant.

Long-Term Incentive Plan

The long-term incentive plan (LTIP) involves annual grants of the Company's stock subject to certain conditions (Performance Shares) to members of the Company's Executive Committee and selected other senior executives, as defined in the terms of the LTIP. Starting with 2020, certain of the employee group previously eligible to receive grants under the MIP have been included in the LTIP. The ultimate amount delivered under the LTIP's Performance Shares grant is based on achieving certain results against targets, as set out below, over a three-year period from grant and the final amount is delivered to the participants at the end of this period. In addition, for certain awards to vest, the participant has to fulfill a three-year service condition as defined in the terms and conditions of the LTIP.

The Performance Shares under the 2021, 2020 and 2019 LTIP launches include a performance component, based on the Company's earnings per share performance, and a market component, based on the Company's relative total shareholder return.

For the relative total shareholder return component of the Performance Shares, the actual number of shares that will be delivered at a future date is based on the Company's total shareholder return performance relative to a peer group of companies over a three-year period starting with the year of grant. The actual number of shares that will ultimately be delivered will vary depending on the relative total shareholder return outcome achieved between a lower threshold (no shares delivered) and an upper threshold (the number of shares delivered is capped at 200 percent of the conditional grant).

For the earnings per share performance component of the Performance Shares, the actual number of shares that will be delivered at a future date is based on the Company's average earnings per share over three financial years, beginning with the year of launch. The actual number of shares that will ultimately be delivered will vary depending on the earnings per share outcome as computed under each LTIP launch, interpolated between a lower threshold (no shares delivered) and an upper threshold (the number of shares delivered is capped at 200 percent of the conditional grant).

Under the 2019 LTIP launches, participants receive 65 percent of the shares that have vested in the form of shares and 35 percent of the value of the shares that have vested in cash, with the possibility to elect to also receive the 35 percent portion in shares rather than in cash. Under the 2021 and 2020 LTIP launches, participants generally do not have the ability to receive any of the award in cash, subject to legal restrictions in certain jurisdictions.

Presented below is a summary of activity under the Performance Shares of the LTIP:

	Number of Performance Shares (in millions)	Weighted-average grant-date fair value per share (Swiss francs)
Nonvested at January 1, 2021	**1.3**	**12.76**
Granted	0.9	38.92
Vested	(0.4)	25.78
Forfeited	(0.3)	19.82
Nonvested at December 31, 2021	**1.5**	**23.23**

The aggregate fair value, at the dates of grant, of Performance Shares granted in 2021 and 2019 was $37 million and $18 million, respectively, while in 2020 it was not significant. The total grant-date fair value of shares that vested during 2019 was $21 million. The amounts in 2021 and 2020 were not significant. The weighted-average grant-date fair value (per share) of shares granted during 2021, 2020 and 2019 was 38.92 Swiss francs, 10.50 Swiss francs and 15.94 Swiss francs, respectively.

Starting in 2020, key employees which were previously eligible to participate in the MIP and which were not included in the employee group granted the Performance Shares described above, were granted Restricted Shares of the Company under the LTIP. The Restricted Shares do not have performance conditions and vest over a three-year period from the grant date.

Presented below is a summary of activity under the Restricted Shares of the LTIP:

	Number of Restricted Shares (in millions)	Weighted-average grant-date fair value per share (Swiss francs)
Nonvested at January 1, 2021	**1.2**	**15.80**
Granted	0.9	26.39
Forfeited	(0.1)	18.09
Nonvested at December 31, 2021	**2.0**	**20.61**

The aggregate fair value, at the dates of grant, of Restricted Shares granted in 2021 and 2020 was $26 million and $22 million, respectively. The weighted-average grant-date fair value (per share) of shares granted during 2021 and 2020 was 26.39 Swiss francs and 15.76 Swiss francs, respectively.

Equity-settled awards are recorded in the Additional paid-in capital component of Stockholders' equity, with compensation cost recorded in Selling, general and administrative expenses over the vesting period (which is from grant date to the end of the vesting period) based on the grant-date fair value of the shares. Cash-settled awards are recorded as a liability, remeasured at fair value at each reporting date for the percentage vested, with changes in the liability recorded in Selling, general and administrative expenses.

At December 31, 2021, total unrecognized compensation cost related to equity-settled awards under the LTIP was $59 million and is expected to be recognized over a weighted-average period of 2 years. The compensation cost recorded in 2021, 2020 and 2019 for cash-settled awards was not significant.

For the relative total shareholder return component of the LTIP launches, the fair value of granted shares at grant date, for equity-settled awards, and at each reporting date, for cash-settled awards, is determined using a Monte Carlo simulation model. The main inputs to this model are the Company's share price and dividend yield, the volatility of the Company's and the peer group's share price as well as the correlation between the peer companies. For the earnings per share component of the LTIP launches, the fair value of granted shares is based on the market price of the ABB Ltd share at grant date for equity-settled awards and at each reporting date for cash-settled awards, as well as the probable outcome of the earnings per share achievement, as computed using a Monte Carlo simulation model. The main inputs to this model are the Company's and external financial analysts' revenue growth rates and Operational EBITA margin expectations.

Other share-based payments

The Company has other minor share-based payment arrangements with certain employees. The compensation cost related to these arrangements in 2021, 2020 and 2019 was not significant.

Note 19
Stockholders' equity

At December 31, 2021, the Company had 2,557 million authorized shares, of which 2,053 million were registered and issued. At December 31, 2020, the Company had 2,672 million authorized shares, of which 2,168 million were registered and issued.

At the Annual General Meeting of Shareholders (AGM) in March 2021, the shareholders approved the proposal of the Board of Directors to distribute a total of 0.80 Swiss francs per share. The approved dividend distribution amounted to $1,730 million with the Company disbursing a portion in March 2021 and the remaining amounts in April 2021. At the AGM in March 2020, the shareholders approved the proposal of the Board of Directors to distribute a total of 0.80 Swiss francs per share. The approved dividend distribution amounted to $1,758 million and was paid in April 2020. At the AGM in March 2019, the shareholders approved the proposal of the Board of Directors to distribute a total of 0.80 Swiss francs per share. The approved dividend distribution amounted to $1,675 million and was paid in May 2019.

In July 2020, the Company announced it initially intends to buy 10 percent of its share capital (which at the time represented a maximum of 180 million shares, in addition to those already held in treasury) through the share buyback program that started in July 2020. The initial share buyback program was executed on a second trading line on the SIX Swiss Exchange and was completed in March 2021. Through this buyback program, the Company purchased a total of approximately 129 million shares for approximately $3.5 billion, of which approximately 20 million shares (resulting in an increase in Treasury stock of $628 million) were purchased in 2021 and approximately 109 million shares (resulting in an increase in Treasury Stock of $2,835 million) were purchased in 2020. At the AGM on March 25, 2021, shareholders approved the cancellation of 115 million of the shares purchased under this buyback program and the cancellation was completed in the second quarter of 2021, resulting in a decrease in Treasury stock of $3,157 million and a corresponding total decrease in Capital stock, Additional paid-in capital and Retained earnings.

In March 2021, the Company announced a follow-up share buyback program of up to $4.3 billion. This buyback program, which was launched in April 2021, is being executed on a second trading line on the SIX Swiss Exchange and is planned to run until the Company's AGM in March 2022. Through this follow-up buyback program, the Company purchased, in 2021, approximately 59 million shares, resulting in an increase in Treasury stock of $2,022 million. At the March 2022 AGM, the Company intends to request shareholder approval to cancel the shares purchased through this follow-up share buyback program as well as those shares purchased under the initial share buyback program that were not proposed for cancellation at the Company's AGM in March 2021.

In addition to the ongoing share buyback program, in 2021 and 2020, the Company purchased 33 million and 13 million, respectively, of its own shares on the open market, mainly for use in connection with its employee share plans, resulting in an increase in Treasury stock of $1,032 million and $346 million, respectively.

Upon and in connection with each launch of the Company's MIP, the Company sold call options to a bank at fair value, giving the bank the right to acquire shares equivalent to the number of shares represented by the MIP WAR awards to participants. Under the terms of the agreement with the bank, the call options can only be exercised by the bank to the extent that MIP participants have exercised their WARs. At December 31, 2021, such call options representing 5.4 million shares and with strike prices ranging from 19.00 to 23.50 Swiss francs (weighted-average strike price of 21.93 Swiss francs) were held by the bank. The call options expire in periods ranging from August 2022 to August 2025. However, only 3.5 million of these instruments, with strike prices ranging from 19.00 to 23.50 Swiss francs (weighted-average strike price of 22.64 Swiss francs), could be exercised at December 31, 2021, under the terms of the agreement with the bank.

In addition to the above, at December 31, 2021, the Company had further outstanding obligations to deliver:

- up to 2 million shares relating to the options granted under the 2016 launch of the MIP, with a strike price of 21.50 Swiss francs, vested in August 2019 and expiring in August 2022,
- up to 13 million shares relating to the options granted under the 2017 launch of the MIP, with a strike price of 22.50 Swiss francs, vested in August 2020 and expiring in August 2023,
- up to 12 million shares relating to the options granted under the 2018 launch of the MIP, with a strike price of 23.50 Swiss francs, vested in August 2021 and expiring in August 2024,
- up to 8 million shares relating to the options granted under the 2019 launch of the MIP, with a strike price of 19.00 Swiss francs, vesting in August 2022 and expiring in August 2025,
- up to 2 million shares relating to the ESAP, vesting and expiring in October 2022,
- up to 8 million shares to Eligible Participants under the 2021, 2020 and 2019 launches of the LTIP, vesting and expiring in April 2024, April 2023 and May 2022, respectively, and
- approximately 1 million shares in connection with certain other share-based payment arrangements with employees.

See Note 18 for a description of the above share-based payment arrangements.

In 2021 and 2020, the Company delivered approximately 36 million and 17 million shares, respectively, out of treasury stock, for options exercised in relation to the MIP, while in 2019 the amount was not significant. In addition, in 2021, 2020 and 2019, the Company delivered 1.7 million, 1.4 million and 0.5 million shares, respectively, out of treasury stock under the ESAP.

Amounts available to be distributed as dividends to the stockholders of ABB Ltd are based on the requirements of Swiss law and ABB Ltd's Articles of Incorporation, and are determined based on amounts presented in the unconsolidated financial statements of ABB Ltd, prepared in accordance with Swiss law. At December 31, 2021, the total unconsolidated stockholders' equity of ABB Ltd was 6,837 million Swiss francs ($7,490 million), including 246 million Swiss francs ($270 million) representing share capital, 9,443 million Swiss francs ($10,345 million) representing reserves and 2,853 million Swiss francs ($3,125 million) representing a reduction of equity for own shares (treasury stock). Of the reserves, 2,853 million Swiss francs ($3,125 million) relating to own shares and 49 million Swiss francs ($54 million) representing 20 percent of share capital, are restricted and not available for distribution.

In February 2022, the Company announced that a proposal will be put to the 2022 AGM for approval by the shareholders to distribute 0.82 Swiss francs per share to shareholders.

Subsequent events

Subsequent to December 31, 2021, and up to February 23, 2022, the Company purchased, under the follow-up share buyback program, an additional 21 million shares, for approximately $735 million, and, on the open market, an additional 9 million shares, for approximately $326 million.

Note 20
Earnings per share

Basic earnings per share is calculated by dividing income by the weighted-average number of shares outstanding during the year. Diluted earnings per share is calculated by dividing income by the weighted-average number of shares outstanding during the year, assuming that all potentially dilutive securities were exercised, if dilutive. Potentially dilutive securities comprise outstanding written call options and outstanding options and shares granted subject to certain conditions under the Company's share-based payment arrangements. In 2020 and 2019, outstanding securities representing a maximum of 79 million and 93 million shares, respectively, were excluded from the calculation of diluted earnings per share as their inclusion would have been antidilutive. None were excluded in 2021.

Basic earnings per share:

($ in millions, except per share data in $)	2021	2020	2019
Amounts attributable to ABB shareholders:			
Income from continuing operations, net of tax	4,625	294	1,043
Income (loss) from discontinued operations, net of tax	(79)	4,852	396
Net income	**4,546**	**5,146**	**1,439**
Weighted-average number of shares outstanding (in millions)	**2,001**	**2,111**	**2,133**
Basic earnings per share attributable to ABB shareholders:			
Income from continuing operations, net of tax	2.31	0.14	0.49
Income (loss) from discontinued operations, net of tax	(0.04)	2.30	0.19
Net income	**2.27**	**2.44**	**0.67**

Diluted earnings per share:

($ in millions, except per share data in $)	2021	2020	2019
Amounts attributable to ABB shareholders:			
Income from continuing operations, net of tax	4,625	294	1,043
Income (loss) from discontinued operations, net of tax	(79)	4,852	396
Net income	**4,546**	**5,146**	**1,439**
Weighted-average number of shares outstanding (in millions)	2,001	2,111	2,133
Effect of dilutive securities:			
Call options and shares	18	8	2
Adjusted weighted-average number of shares outstanding (in millions)	**2,019**	**2,119**	**2,135**
Diluted earnings per share attributable to ABB shareholders:			
Income from continuing operations, net of tax	2.29	0.14	0.49
Income (loss) from discontinued operations, net of tax	(0.04)	2.29	0.19
Net income	**2.25**	**2.43**	**0.67**

Note 21
Other comprehensive income

The following table includes amounts recorded within “Total other comprehensive income (loss)” including the related income tax effects:

	2021			2020			2019		
($ in millions)	**Before tax**	**Tax effect**	**Net of tax**	**Before tax**	**Tax effect**	**Net of tax**	**Before tax**	**Tax effect**	**Net of tax**
Foreign currency translation adjustments:									
Foreign currency translation adjustments	(521)	—	**(521)**	500	(2)	**498**	(130)	—	**(130)**
Changes attributable to divestments	(9)	—	**(9)**	519	—	**519**	(2)	—	**(2)**
Net change during the year	**(530)**	**—**	**(530)**	**1,019**	**(2)**	**1,017**	**(132)**	**—**	**(132)**
Available-for-sale securities:									
Net unrealized gains (losses) arising during the year	(13)	3	**(10)**	31	(7)	**24**	16	(2)	**14**
Reclassification adjustments for net (gains) losses included in net income	(6)	1	**(5)**	(18)	4	**(14)**	1	(1)	**—**
Changes attributable to divestments	—	—	**—**	(3)	—	**(3)**	—	—	**—**
Net change during the year	**(19)**	**4**	**(15)**	**10**	**(3)**	**7**	**17**	**(3)**	**14**
Pension and other postretirement plans:									
Prior service (costs) credits arising during the year	2	(2)	**—**	55	(12)	**43**	3	3	**6**
Net actuarial gains (losses) arising during the year	437	(26)	**411**	(243)	43	**(200)**	(293)	73	**(220)**
Amortization of prior service cost (credit) included in net income	(14)	—	**(14)**	(11)	—	**(11)**	(25)	(3)	**(28)**
Amortization of net actuarial loss included in net income	65	4	**69**	113	(25)	**88**	99	(31)	**68**
Net losses from settlements and curtailments included in net income	7	—	**7**	650	(132)	**518**	38	(6)	**32**
Changes attributable to divestments	(8)	2	**(6)**	186	(35)	**151**	—	—	**—**
Net change during the year	**489**	**(22)**	**467**	**750**	**(161)**	**589**	**(178)**	**36**	**(142)**
Derivative instruments and hedges:									
Net gains (losses) arising during the year	7	1	**8**	2	—	**2**	20	—	**20**
Reclassification adjustments for net (gains) losses included in net income	(13)	—	**(13)**	(2)	2	**—**	(9)	—	**(9)**
Net change during the year	**(6)**	**1**	**(5)**	**—**	**2**	**2**	**11**	**—**	**11**
Total other comprehensive income (loss)	**(66)**	**(17)**	**(83)**	**1,779**	**(164)**	**1,615**	**(282)**	**33**	**(249)**

The following table shows changes in “Accumulated other comprehensive loss” (OCI) attributable to ABB, by component, net of tax:

($ in millions)	Foreign currency translation adjustments	Unrealized gains (losses) on available-for-sale securities	Pension and other post-retirement plan adjustments	Derivative instruments and hedges	Accumulated other comprehensive loss
Balance at January 1, 2019	**(3,324)**	**(4)**	**(1,967)**	**(16)**	**(5,311)**
Cumulative effect of changes in accounting principles[(1)]	—	—	(36)	—	**(36)**
Other comprehensive (loss) income before reclassifications	(130)	14	(214)	20	**(310)**
Amounts reclassified from OCI	(2)	—	72	(9)	**61**
Total other comprehensive (loss) income	**(132)**	**14**	**(142)**	**11**	**(249)**
Less:					
Amounts attributable to noncontrolling interests	(6)	—	—	—	**(6)**
Balance at December 31, 2019	**(3,450)**	**10**	**(2,145)**	**(5)**	**(5,590)**
Other comprehensive (loss) income before reclassifications	498	24	(157)	2	**367**
Amounts reclassified from OCI	519	(17)	746	—	**1,248**
Total other comprehensive (loss) income	**1,017**	**7**	**589**	**2**	**1,615**
Less:					
Amounts attributable to noncontrolling interests	27	—	—	—	**27**
Balance at December 31, 2020	**(2,460)**	**17**	**(1,556)**	**(3)**	**(4,002)**
Other comprehensive (loss) income before reclassifications	(521)	(10)	411	8	**(112)**
Amounts reclassified from OCI	(9)	(5)	56	(13)	**29**
Total other comprehensive (loss) income	**(530)**	**(15)**	**467**	**(5)**	**(83)**
Less:					
Amounts attributable to noncontrolling interests	4	—	—	—	**4**
Balance at December 31, 2021[(2)]	**(2,993)**	**2**	**(1,089)**	**(8)**	**(4,088)**

(1) Amounts relate to the adoption of an accounting standard update in 2019 regarding the Tax Cuts and Jobs Act of 2017.
(2) Due to rounding, numbers presented may not add to the totals provided.

The following table reflects amounts reclassified out of OCI in respect of Foreign currency translation adjustments and Pension and other postretirement plan adjustments:

($ in millions) Details about OCI components	Location of (gains) losses reclassified from OCI	2021	2020	2019
Foreign currency translation adjustments:				
Changes attributable to divestments:				
- Losses (gains) on other divestments, net	Other income (expense), net	(9)	—	(2)
- Loss on solar inverters business (see Note 4)	Other income (expense), net	—	99	—
- Loss on Power Grids business (see Note 3)	Income (loss) from discontinued operations, net of tax	—	420	—
Amounts reclassified from OCI		**(9)**	**519**	**(2)**
Pension and other postretirement plan adjustments:				
Amortization of prior service cost (credit)	Non-operational pension (cost) credit(1)	(14)	(11)	(25)
Amortization of net actuarial loss	Non-operational pension (cost) credit(1)	65	113	99
Net losses from settlements and curtailments	Non-operational pension (cost) credit(1)	7	650	38
Changes attributable to divestments:				
- Losses (gains) on other divestments, net	Other income (expense), net	(8)	—	—
- Loss on Power Grids business (see Note 3)	Income (loss) from discontinued operations, net of tax(2)	—	186	—
Total before tax		**50**	**938**	**112**
Tax	Income tax expense	4	(157)	(40)
Changes in tax attributable to divestments:				
- Losses (gains) on other divestments, net	Other income (expense), net	2	—	—
- Loss on Power Grids business (see Note 3)	Income (loss) from discontinued operations, net of tax(2)	—	(35)	—
Amounts reclassified from OCI		**56**	**746**	**72**

(1) Amounts in 2020 and 2019, include a total of $94 million and $6 million, respectively, reclassified from OCI to Income (loss) from discontinued operations (see Note 3).
(2) Amounts represent the reclassification of OCI relating to pensions, including tax, on divestment of the Power Grids business.

The amounts reclassified out of OCI in respect of Unrealized gains (losses) on available-for-sale securities and Derivative instruments and hedges were not significant in 2021, 2020 and 2019.

Note 22
Restructuring and related expenses

OS program

From December 2018 to December 2020, the Company executed a two-year restructuring program with the objective of simplifying its business model and structure through the implementation of a new organizational structure driven by its businesses. The program resulted in the elimination of the country and regional structures within the previous matrix organization, including the elimination of the three regional Executive Committee roles. The operating businesses are now responsible for both their customer-facing activities and business support functions, while the remaining Group-level corporate activities primarily focus on Group strategy, portfolio and performance management and capital allocation.

As of December 31, 2020, the Company has incurred substantially all costs related to the OS program.

Liabilities associated with the OS program are included primarily in Other provisions. The following table shows the activity from the beginning of the program to December 31, 2021:

($ in millions)	Employee severance costs	Contract settlement, loss order and other costs	Total
Liability at January 1, 2018	—	—	—
Expenses	65	—	**65**
Liability at December 31, 2018	**65**	**—**	**65**
Expenses	111	1	**112**
Cash payments	(44)	(1)	**(45)**
Change in estimates	(30)	—	**(30)**
Exchange rate differences	(3)	—	**(3)**
Liability at December 31, 2019	**99**	**—**	**99**
Expenses	119	17	**136**
Cash payments	(91)	(15)	**(106)**
Change in estimates	(10)	—	**(10)**
Exchange rate differences	4	—	**4**
Liability at December 31, 2020	**121**	**2**	**123**
Expenses, net of change in estimates	2	2	**4**
Cash payments	(65)	(3)	**(68)**
Exchange rate differences	(6)	—	**(6)**
Liability at December 31, 2021	**52**	**1**	**53**

The following table outlines the costs incurred in 2020 and 2019, and the cumulative costs incurred under the program per operating segment as well as Corporate and Other:

	Costs incurred in		Cumulative costs incurred up to
($ in millions)	**2020**	**2019**	**December 31, 2020**
Electrification	35	18	85
Motion	18	6	25
Process Automation[1]	37	3	61
Robotics & Discrete Automation	10	8	18
Corporate and Other	49	54	114
Total	**149**	**89**	**303**

(1) Formerly named the Industrial Automation operating segment.

The Company recorded the following expenses, net of change in estimates, under this program:

	Costs incurred in		Cumulative costs incurred up to
($ in millions)	**2020**	**2019**	**December 31, 2020**
Employee severance costs	109	81	255
Estimated contract settlement, loss order and other costs	17	1	18
Inventory and long-lived asset impairments	23	7	30
Total	**149**	**89**	**303**

Restructuring expenses recorded for this program are included in the following line items in the Consolidated Income Statements:

($ in millions)	2020	2019
Total cost of sales	38	8
Selling, general and administrative expenses	37	46
Non-order related research and development expenses	4	1
Other income (expense), net	70	34
Total	**149**	**89**

Other restructuring-related activities

In addition, during 2021, 2020 and 2019, the Company executed various other restructuring-related activities and incurred the following charges, net of changes in estimates:

($ in millions)	2021	2020	2019
Employee severance costs	101	164	55
Estimated contract settlement, loss order and other costs	31	18	37
Inventory and long-lived asset impairments	24	12	22
Total	**156**	**194**	**114**

Expenses associated with these activities are recorded in the following line items in the Consolidated Income Statements:

($ in millions)	2021	2020	2019
Total cost of sales	71	95	46
Selling, general and administrative expenses	21	50	4
Non-order related research and development expenses	2	10	—
Other income (expense), net	62	39	64
Total	**156**	**194**	**114**

In 2021, the Company initiated a plan to fully exit a product group within one of its non-core businesses. The exit activities are expected to be completed by the end of 2022 and incur restructuring-related expenses of between $150 million and $200 million, primarily relating to contract settlements. The majority of these costs will be recorded in 2022 as certain required contractual elements will only be effective in 2022.

At December 31, 2021 and 2020, $212 million and $233 million, respectively, was recorded for other restructuring-related liabilities and is primarily included in “Other provisions”.

Note 23
Operating segment and geographic data

The Chief Operating Decision Maker (CODM) is the Chief Executive Officer. The CODM allocates resources to and assesses the performance of each operating segment using the information outlined below. The Company is organized into the following segments, based on products and services: Electrification, Motion, Process Automation and Robotics & Discrete Automation. The remaining operations of the Company are included in Corporate and Other.

Effective January 1, 2021, the Industrial Automation segment was renamed the Process Automation segment. In addition, the Company changed its method of allocating real estate assets to its operating segments whereby these assets are now accounted for directly in the individual operating segment which utilizes the asset rather than as a cost recharged to the operating segment from Corporate and Other. As a result, while this change had no impact on segment revenues or profits (Operational EBITA), certain real estate assets (including corresponding depreciation and capital expenditure), previously reported within Corporate and Other have been allocated to the total segment assets of each individual operating segment. Certain segment information for 2020 and 2019, as well as Total assets at December 31, 2020 and 2019, have been recast to reflect this allocation change.

A description of the types of products and services provided by each reportable segment is as follows:

- Electrification: manufactures and sells electrical products and solutions which are designed to provide safe, smart and sustainable electrical flow from the substation to the socket. The portfolio of increasingly digital and connected solutions includes electric vehicle charging infrastructure, renewable power solutions, modular substation packages, distribution automation products, switchboard and panelboards, switchgear, UPS solutions, circuit breakers, measuring and sensing devices, control products, wiring accessories, enclosures and cabling systems and intelligent home and building solutions, designed to integrate and automate lighting, heating, ventilation, security and data communication networks. The products and services are delivered through six operating Divisions: Distribution Solutions, Smart Power, Smart Buildings, E-mobility, Installation Products and Power Conversion.

- Motion: manufactures and sells drives, motors, generators, traction converters and mechanical power transmission products that are driving the low-carbon future for industries, cities, infrastructure and transportation. These products, digital technology and related services enable industrial customers to increase energy efficiency, improve safety and reliability, and achieve precise control of their processes. Building on over 130 years of cumulative experience in electric powertrains, the Business Area combines domain expertise and technology to deliver the optimum solution for a wide range of applications in all industrial segments. In addition, the Business Area, along with partners, has leading global service presence. These products and services are delivered through eight operating Divisions: Large Motors & Generators, IEC LV Motors, NEMA Motors, Drive Products, System Drives, Service, Traction and, until October 2021, Mechanical Power Transmission.

- Process Automation: develops and sells a broad range of industry-specific, integrated automation and electrification and digital systems and solutions, as well as digital solutions, lifecycle services, advanced industrial analytics and artificial intelligence applications and suites for the process, marine and hybrid industries. Products and solutions include process and discrete control technologies, advanced process control software and manufacturing execution systems, sensing, measurement and analytical instrumentation, marine propulsion systems and large turbochargers. In addition, the Business Area offers a comprehensive range of services ranging from repair to advanced services such as remote monitoring, preventive maintenance, asset performance management, emission monitoring and cybersecurity services. The products, systems and services are delivered through five operating Divisions: Energy Industries, Process Industries, Marine & Ports, Turbocharging, and Measurement & Analytics.

- Robotics & Discrete Automation: delivers its products, solutions and services through two operating Divisions: Robotics and Machine Automation. Robotics includes: industrial robots, software, robotic solutions and systems, field services, spare parts, and digital services. Machine Automation specializes in solutions based on its programmable logic controllers (PLC), industrial PCs (IPC), servo motion, transport systems and machine vision. Both Divisions offer engineering and simulation software as well as a comprehensive range of digital solutions.

Corporate and Other: includes headquarter costs, the Company's corporate real estate activities, Corporate Treasury Operations, historical operating activities of certain divested businesses and other non-core operating activities.

The primary measure of profitability on which the operating segments are evaluated is Operational EBITA, which represents income from operations excluding:

- amortization expense on intangibles arising upon acquisition (acquisition-related amortization),
- restructuring, related and implementation costs,
- changes in the amount recorded for obligations related to divested businesses occurring after the divestment date (changes in obligations related to divested businesses),
- changes in estimates relating to opening balance sheets of acquired businesses (changes in pre-acquisition estimates),
- gains and losses from sale of businesses (including fair value adjustment on assets and liabilities held for sale),
- acquisition- and divestment-related expenses and integration costs,
- other income/expense relating to the Power Grids joint venture,
- certain other non-operational items, as well as

- foreign exchange/commodity timing differences in income from operations consisting of: (a) unrealized gains and losses on derivatives (foreign exchange, commodities, embedded derivatives), (b) realized gains and losses on derivatives where the underlying hedged transaction has not yet been realized, and (c) unrealized foreign exchange movements on receivables/payables (and related assets/liabilities).

Certain other non-operational items generally includes certain regulatory, compliance and legal costs, certain asset write downs/impairments (including impairment of goodwill) and certain other fair value changes, as well as other items which are determined by management on a case-by-case basis.

The CODM primarily reviews the results of each segment on a basis that is before the elimination of profits made on inventory sales between segments. Segment results below are presented before these eliminations, with a total deduction for intersegment profits to arrive at the Company's consolidated Operational EBITA. Intersegment sales and transfers are accounted for as if the sales and transfers were to third parties, at current market prices.

The following tables present disaggregated segment revenues from contracts with customers for 2021, 2020 and 2019:

	2021					
($ in millions)	**Electrification**	**Motion**	**Process Automation**	**Robotics & Discrete Automation**	**Corporate and Other**	**Total**
Geographical markets						
Europe	4,517	2,015	2,416	1,578	3	**10,529**
The Americas	4,465	2,346	1,431	439	5	**8,686**
of which: United States	3,304	1,952	833	308	—	**6,397**
Asia, Middle East and Africa	3,975	2,111	2,367	1,270	7	**9,730**
of which: China	2,087	1,156	740	949	—	**4,932**
	12,957	**6,472**	**6,214**	**3,287**	**15**	**28,945**
Product type						
Products	10,706	5,555	1,496	2,159	4	**19,920**
Systems	1,367	—	1,802	645	11	**3,825**
Services and software	884	917	2,916	483	—	**5,200**
	12,957	**6,472**	**6,214**	**3,287**	**15**	**28,945**
Third-party revenues	12,957	6,472	6,214	3,287	15	**28,945**
Intersegment revenues	230	453	45	10	(738)	**—**
Total revenues	**13,187**	**6,925**	**6,259**	**3,297**	**(723)**	**28,945**

	2020					
($ in millions)	**Electrification**	**Motion**	**Process Automation**	**Robotics & Discrete Automation**	**Corporate and Other**	**Total**
Geographical markets						
Europe	4,008	1,934	2,322	1,429	15	**9,708**
The Americas	4,050	2,173	1,321	385	7	**7,936**
of which: United States	3,093	1,846	805	270	5	**6,019**
Asia, Middle East and Africa	3,506	1,807	2,038	1,024	7	**8,382**
of which: China	1,820	926	628	714	3	**4,091**
	11,564	**5,914**	**5,681**	**2,838**	**29**	**26,026**
Product type						
Products	9,951	5,040	1,263	1,635	53	**17,942**
Systems	743	—	1,665	780	(24)	**3,164**
Services and software	870	874	2,753	423	—	**4,920**
	11,564	**5,914**	**5,681**	**2,838**	**29**	**26,026**
Third-party revenues	11,564	5,914	5,681	2,838	29	**26,026**
Intersegment revenues[1]	360	495	111	69	(927)	**108**
Total revenues	**11,924**	**6,409**	**5,792**	**2,907**	**(898)**	**26,134**

	2019					
($ in millions)	**Electrification**	**Motion**	**Process Automation**	**Robotics & Discrete Automation**	**Corporate and Other**	**Total**
Geographical markets						
Europe	4,039	1,879	2,416	1,634	36	**10,004**
The Americas	4,568	2,315	1,582	453	1	**8,919**
of which: United States	3,522	1,972	948	290	3	**6,735**
Asia, Middle East and Africa	3,665	1,827	2,153	1,157	40	**8,842**
of which: China	1,729	876	608	825	1	**4,039**
	12,272	**6,021**	**6,151**	**3,244**	**77**	**27,765**
Product type						
Products	10,315	5,152	1,439	1,785	65	**18,756**
Systems	958	—	1,648	968	12	**3,586**
Services and software	999	869	3,064	491	—	**5,423**
	12,272	**6,021**	**6,151**	**3,244**	**77**	**27,765**
Third-party revenues	12,272	6,021	6,151	3,244	77	**27,765**
Intersegment revenues[(1)]	456	512	122	70	(947)	**213**
Total revenues	**12,728**	**6,533**	**6,273**	**3,314**	**(870)**	**27,978**

(1) Intersegment revenues until June 30, 2020, include sales to the Power Grids business, which is presented as discontinued operations, and are not eliminated from Total revenues (see Note 3).

Revenues by geography reflect the location of the customer. In 2021, 2020 and 2019 the United States and China are the only countries where revenue exceeded 10 percent of Total revenues. In each of 2021, 2020 and 2019 more than 98 percent of the Company’s total revenues were generated from customers outside Switzerland.

The following tables present Operational EBITA, the reconciliations of consolidated Operational EBITA to Income from continuing operations before taxes, as well as Depreciation and amortization, and Capital expenditure for 2021, 2020 and 2019, as well as Total assets at December 31, 2021, 2020 and 2019:

($ in millions)	2021	2020	2019
Operational EBITA:			
Electrification	2,121	1,681	1,688
Motion	1,183	1,075	1,082
Process Automation	801	451	732
Robotics & Discrete Automation	355	237	393
Corporate and Other:			
— Non-core and divested businesses	(39)	(133)	(145)
— Stranded corporate costs	—	(40)	(225)
— Corporate costs and Other intersegment elimination	(299)	(372)	(418)
Total	**4,122**	**2,899**	**3,107**
Acquisition-related amortization	(250)	(263)	(265)
Restructuring, related and implementation costs(1)	(160)	(410)	(300)
Changes in obligations related to divested businesses	(9)	(218)	(36)
Changes in pre-acquisition estimates	6	(11)	(22)
Gains and losses from sale of businesses	2,193	(2)	55
Fair value adjustment on assets and liabilities held for sale	—	(33)	(421)
Acquisition- and divestment-related expenses and integration costs	(132)	(74)	(121)
Other income/expenses relating to the Power Grids joint venture	(34)	(20)	—
Foreign exchange/commodity timing differences in income from operations:			
Unrealized gains and losses on derivatives (foreign exchange, commodities, embedded derivatives)	(54)	67	20
Realized gains and losses on derivatives where the underlying hedged transaction has not yet been realized	(2)	26	8
Unrealized foreign exchange movements on receivables/payables (and related assets/liabilities)	20	(33)	(7)
Certain other non-operational items:			
Costs for planned divestment of Power Grids	—	(86)	(141)
Regulatory, compliance and legal costs	—	(7)	(7)
Business transformation costs(2)	(92)	(37)	(19)
Executive Committee transition costs	(3)	(1)	(14)
Favorable resolution of an uncertain purchase price adjustment	6	36	92
Gain on sale of investments	—	—	15
Certain other fair value changes, including asset impairments(3)	119	(239)	(4)
Other non-operational items	(12)	(1)	(2)
Income from operations	**5,718**	**1,593**	**1,938**
Interest and dividend income	51	51	67
Interest and other finance expense	(148)	(240)	(215)
Losses from extinguishment of debt	—	(162)	—
Non-operational pension (cost) credit	166	(401)	72
Income from continuing operations before taxes	**5,787**	**841**	**1,862**

(1) Amounts in 2020 and 2019 include $67 million and $97 million, respectively, of implementation costs in relation to the OS program.
(2) Amounts in 2021 includes ABB Way process transformation costs of $80 million.
(3) Amount in 2020 includes goodwill impairment charges of $311 million.

	Depreciation and amortization[(1)]			Capital expenditures[(1), (2)]			Total assets[(1), (2), (3)] at December 31,		
($ in millions)	2021	2020	2019	2021	2020	2019	2021	2020	2019
Electrification	425	411	444	345	316	298	12,831	12,800	12,318
Motion	172	182	183	230	118	79	5,936	6,495	6,378
Process Automation	83	80	72	85	75	126	5,009	5,008	4,914
Robotics & Discrete Automation	144	131	129	96	65	62	4,860	4,794	4,784
Corporate and Other	69	111	133	64	120	197	11,624	11,991	17,714
Consolidated	**893**	**915**	**961**	**820**	**694**	**762**	**40,260**	**41,088**	**46,108**

(1) Amounts in 2020 and 2019 have been restated to reflect the reallocation of certain real estate assets, previously reported in Corporate and Other, to the individual operating segments utilizing these assets.
(2) Capital expenditures and Total assets are after intersegment eliminations and therefore reflect third-party activities only.
(3) At December 31, 2021, 2020 and 2019, Corporate and Other includes $136 million, $282 million and $9,840 million, respectively, of assets in the Power Grids business which is reported as discontinued operations (see Note 3). In addition, at December 31, 2021 and 2020, Corporate and Other includes $1,609 million and $1,710 million related to the equity investment in Hitachi Energy Ltd (see Note 4).

Other geographic information

Geographic information for long-lived assets was as follows:

	Long-lived assets at December 31,	
($ in millions)	2021	2020
Europe	2,670	2,822
The Americas	1,260	1,382
Asia, Middle East and Africa	1,009	940
Total	**4,939**	**5,144**

Long-lived assets represent “Property, plant and equipment, net” and “Operating lease right-of-use assets” and are shown by location of the assets. At December 31, 2021, approximately 19 percent, 12 percent and 11 percent of the Company’s long-lived assets were located in the United States, China and Switzerland, respectively. At December 31, 2020, approximately 21 percent, 10 percent and 11 percent of the Company’s long-lived assets were located in the United States, China and Switzerland, respectively.

05 ABB Ltd Statutory Financial Statements

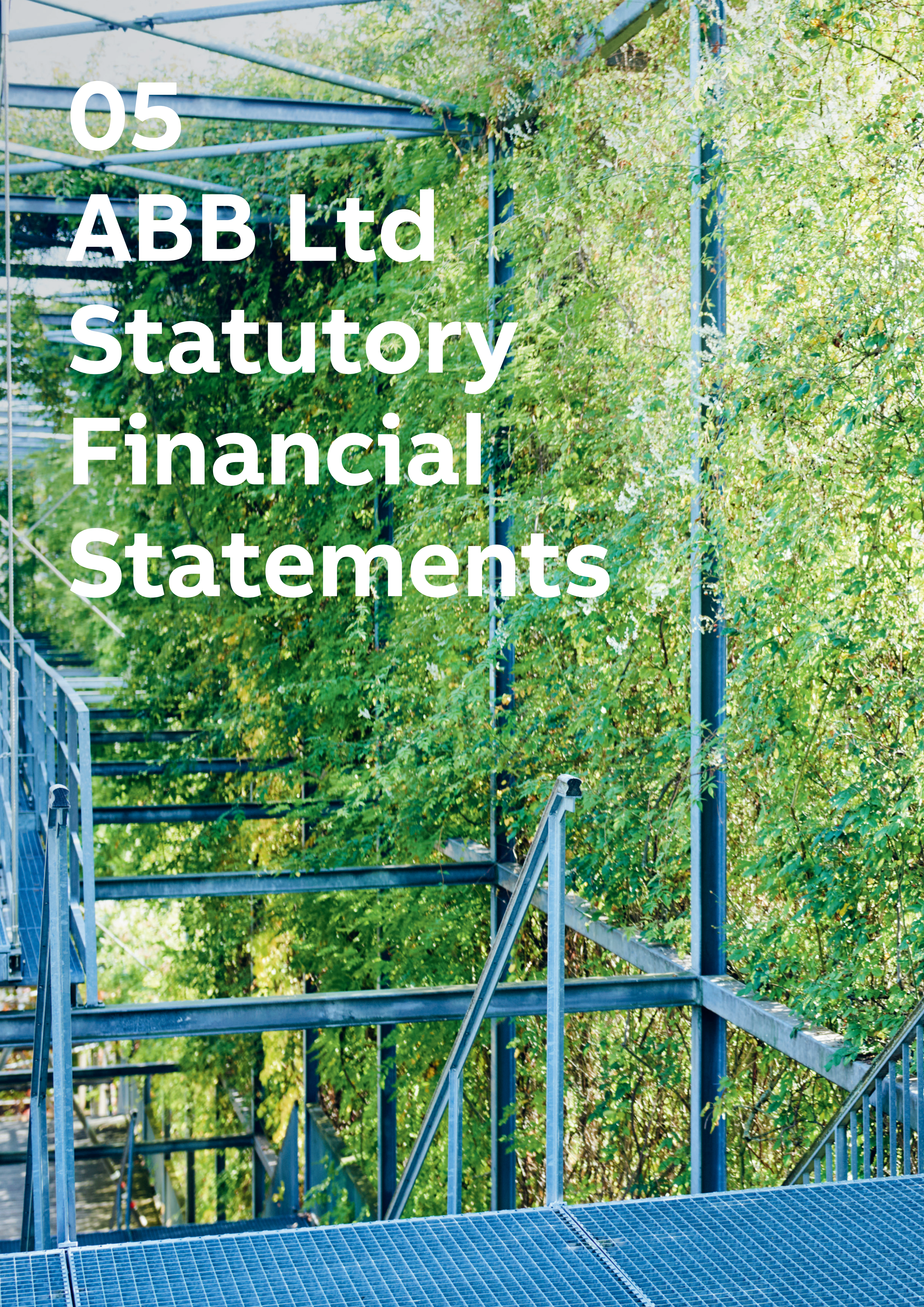

ABB Ltd Management Report 2021

ABB Ltd is the holding company of the ABB Group, owning directly or indirectly all subsidiaries globally.

The major business activities during 2021 can be summarized as follows:

Management services

The Company provided management services to a Group company for CHF 17 million.

Share transactions

- share deliveries in relation to employee share programs of CHF 963 million
- share cancellations of CHF 2,778 million: those shares were repurchased under a share buyback program in 2020-2021
- further share repurchases of CHF 2,425 million for cancellation purposes
- share repurchases for employee share programs of CHF 939 million

Dividend payment to external shareholders

- from retained earnings of CHF 1,436 million

Divestment of the Power Grids business

Further to its sale of 80.1% of the shares of Hitachi Energy Ltd on July 1, 2020, the Company transferred in 2021 ABB Power Technology Services Private Limited, India, ABB Power Products And Systems India Limited, India, and ABB Power Grids South Africa (Pty) Ltd to Hitachi Energy Ltd.

Other information

In 2021, the Company employed on average 19 employees.

Once a year, the Company's Board of Directors performs a risk assessment in accordance with the Group's risk management process and discusses appropriate actions if necessary.

The Company does not carry out any research and development activities.

In 2022, the Company will continue to operate as the holding company of the ABB Group. No change of business is expected.

February 24, 2022

Financial Statements 2021

Income Statement

Year ended December 31 (CHF in thousands)	Note	2021	2020
Dividend income	7	1,768,705	8,045,320
Finance income		177,551	107,326
Other operating income	8	68,357	83,603
Finance expense		(299,024)	(100,778)
Personnel expenses		(45,441)	(42,142)
Other operating expenses		(22,850)	(65,101)
Write down of participation	2	(110,836)	(3,263,742)
Gain and Loss on sale of participation		74,336	(308,073)
Net income before taxes		**1,610,798**	**4,456,413**
Income taxes		—	(906)
Net income		**1,610,798**	**4,455,507**

Balance Sheet

December 31 (CHF in thousands)	Note	2021	2020
Cash		570	781
Cash deposit with ABB Capital Ltd		292,883	3,573,027
Non-trade receivables		926	2,306
Non-trade receivables – Group		17,985	7,878
Short-term loans – Group		22,819	22,026
Accrued income and prepaid expenses		699	631
Accrued income and prepaid expenses – Group		46	4,155
Other short-term assets	2	10,644	266,281
Total current assets		**346,572**	**3,877,085**
Long-term loans – Group		319,462	330,394
Participations	2	7,088,533	7,086,247
Other long-term assets		289,897	266,143
Total non-current assets		**7,697,892**	**7,682,784**
Total assets		**8,044,464**	**11,559,869**
Interest-bearing liabilities	4	—	350,000
Interest-bearing liabilities – Group	4	22,819	22,026
Non-trade payables		107,419	145,435
Non-trade payables – Group		5,360	908
Deferred income and accrued expenses	2	36,713	533,787
Deferred income and accrued expenses – Group		26,079	50,367
Short-term provisions	2	221,120	349,453
Total current liabilities		**419,510**	**1,451,976**
Interest-bearing liabilities	4	450,210	450,251
Interest-bearing liabilities – Group	4	319,462	330,394
Long-term provisions		18,712	264,315
Total non-current liabilities		**788,384**	**1,044,960**
Total liabilities		**1,207,894**	**2,496,936**
Share capital	6	246,378	260,178
Legal reserves			
Legal other reserves	6	—	30,430
Legal reserves from retained earnings	6	1,000,000	1,000,000
Free reserves			
Retained earnings	6	6,832,045	6,545,827
Net income		1,610,798	4,455,507
Own shares	6	(2,852,651)	(3,229,009)
Total stockholders' equity		**6,836,570**	**9,062,933**
Total liabilities and stockholders' equity		**8,044,464**	**11,559,869**

Notes to Financial Statements

Note 1
General

ABB Ltd, Zurich, Switzerland (the Company) is the parent company of the ABB Group. Its stand-alone financial statements are prepared in accordance with Swiss law.

The financial statements have been prepared in accordance with Article 957 et seqq. of Title 32 of the Swiss Code of Obligations.

Group companies are all companies which are directly or indirectly controlled by the Company and variable interest entities if it is determined that the Company is the primary beneficiary.

Note 2
Participations

			Share capital	Ownership and voting rights	Share capital	Ownership and voting rights
Company name	**Purpose**	**Domicile**	**2021**	**2021**	**2020**	**2020**
ABB Asea Brown Boveri Ltd.	Holding	CH-Zurich	CHF 2,767,880,000	100.00%	CHF 2,767,880,000	100.00%
Hitachi Energy Ltd.	Holding	CH-Zurich	CHF 1,250,000	19.90%	CHF 1,250,000	19.90%

Development of participations	CHF in thousands	
	2021	**2020**
Opening balance January 1	**7,086,247**	**8,973,229**
Additions[(1)]	681,827	6,917,922
Disposals	(568,705)	(5,541,042)
Write offs	(110,836)	(3,263,862)
Closing balance December 31	**7,088,533**	**7,086,247**

(1) thereof dividend in kind from ABB Asea Brown Boveri Ltd CHF 568,705 in 2021 and CHF 6,745,619 in 2020

The participation is valued at the lower of cost or fair value, using generally accepted valuation principles.

On July 1, 2020, the Company completed the sale of 80.1 percent of Hitachi Energy Ltd (formerly Hitachi ABB Power Grids Ltd). The transaction was executed through the sale of 80.1 percent of the shares of Hitachi Energy Ltd. Cash consideration received directly by the Company at the closing date was USD 5,674 million (CHF 5,376 million) and USD 1,176 million (CHF 1,114 million) restricted cash. The Company also obtained a put option allowing the Company to require Hitachi to purchase the remaining interest for fair value, subject to a minimum floor price equivalent to a 10 percent discount compared to the total price paid for the initial 80.1 percent. The put option can be exercised commencing April 2023. It is not recognized in the accounts of the Company. The book value of the retained 19.9 percent investment for Hitachi Energy Ltd was CHF 1,379 million and CHF 1,377 million, as of December 31, 2021 and 2020, respectively.

Liabilities for estimated payments	CHF in thousands	
	2021	2020
Deferred income [(1)]	2,541	449,925
Short-term provisions [(2)]	221,120	349,453
Accrued expenses - Group [(3)]	8,611	45,569
Closing balance December 31	**232,272**	**844,947**

(1) Delayed closing countries
(2) Retention Bonus, Transitional Service Agreement, Working Capital (only in 2020)
(3) Internal cost reimbursement

For certain entities of the Power Grids business, the legal process or other regulatory delays resulted in the Company not having transferred legal title to Hitachi as at the date of this report. The proceeds for these entities are included in Other short-term assets of CHF 11 million and CHF 266 million at December 31, 2021 and 2020, respectively.

In 2021, the Company transferred ABB Power Technology Services Private Limited, India, and ABB Power Products And Systems India Limited, India, and ABB Power Grids South Africa (Pty) Ltd to Hitachi Energy Ltd. The remaining Power Grids entity ABB Engg. Technologies Co. (KSCC) in Kuwait is expected to be transferred by the first half of 2022.

Note 3
Indirect Participations

The following table sets forth the name, country of incorporation, ownership and voting rights, as well as share capital, of the significant indirect subsidiaries of the Company, as of December 31, 2021 and 2020.

Company name/location	Country	Company ownership and voting rights % 2021	Share capital in thousands 2021	Company ownership and voting rights % 2020	Share capital in thousands 2020	Currency
ABB S.A., Buenos Aires	Argentina	100.00	278,860	100.00	278,860	ARS
ABB Australia Pty Limited, Moorebank	Australia	100.00	131,218	100.00	131,218	AUD
ABB Group Holdings Pty. Ltd., Moorebank	Australia	100.00	552,982	—[(3)]	—[(3)]	AUD
ABB Group Investment Management Pty. Ltd., Moorebank	Australia	100.00	505,312	100.00	505,312	AUD
ABB AG, Wiener Neudorf	Austria	100.00	15,000	100.00	15,000	EUR
B&R Holding GmbH, Eggelsberg	Austria	100.00	35	100.00	35	EUR
B&R Industrial Automation GmbH, Eggelsberg	Austria	100.00	1,240	100.00	1,240	EUR
ABB N.V., Zaventem	Belgium	100.00	34,308	100.00	34,308	EUR
ABB Automacao Ltda, Sorocaba	Brazil	100.00	196,554	100.00	196,554	BRL
ABB Eletrificacao Ltda, Sorocaba	Brazil	100.00	268,759	100.00	268,759	BRL
ABB Bulgaria EOOD, Sofia	Bulgaria	100.00	65,110	100.00	65,110	BGN
ABB Electrification Canada ULC, Edmonton	Canada	100.00	—[(1)]	100.00	—[(1)]	CAD
ABB Inc., Saint-Laurent	Canada	100.00	—[(1)]	100.00	—[(1)]	CAD
ABB S.A., Santiago	Chile	100.00	5,484,348	100.00	5,484,348	CLP
ABB (China) Investment Limited, Beijing	China	100.00	95,000	100.00	95,000	USD
ABB (China) Ltd., Beijing	China	100.00	140,000	100.00	140,000	USD
ABB Beijing Drive Systems Co. Ltd., Beijing	China	90.00	5,000	90.00	5,000	USD
ABB Beijing Switchgear Limited, Beijing	China	60.00	16,500	60.00	16,500	USD
ABB Electrical Machines Ltd., Shanghai	China	100.00	14,400	100.00	14,400	USD
ABB Engineering (Shanghai) Ltd., Shanghai	China	100.00	40,000	100.00	40,000	USD
ABB LV Installation Materials Co. Ltd. Beijing, Beijing	China	85.70	17,100	—[(3)]	—[(3)]	USD
ABB Shanghai Free Trade Zone Industrial Co., Ltd., Shanghai	China	100.00	6,500	100.00	6,500	CNY
ABB Shanghai Motors Co. Ltd., Shanghai	China	75.00	11,217	75.00	11,217	USD
ABB Xiamen Low Voltage Equipment Co. Ltd., Xiamen	China	100.00	15,800	100.00	15,800	USD
ABB Xiamen Switchgear Co. Ltd., Xiamen	China	66.52	29,500	66.52	29,500	USD
ABB Xinhui Low Voltage Switchgear Co. Ltd., Xinhui	China	90.00	6,200	90.00	6,200	USD
ABB s.r.o., Prague	Czech Republic	100.00	400,000	100.00	400,000	CZK

Company name/location	Country	Company ownership and voting rights % 2021	Share capital in thousands 2021	Company ownership and voting rights % 2020	Share capital in thousands 2020	Currency
ABB A/S, Skovlunde	Denmark	100.00	100,000	100.00	100,000	DKK
ABB for Electrical Industries (ABB ARAB) S.A.E., Cairo	Egypt	100.00	353,479	100.00	353,479	EGP
Asea Brown Boveri S.A.E., Cairo	Egypt	100.00	166,000	100.00	166,000	USD
ABB AS, Jüri	Estonia	100.00	1,663	100.00	1,663	EUR
ABB Oy, Helsinki	Finland	100.00	10,003	100.00	10,003	EUR
ABB France, Cergy Pontoise	France	99.83	25,778	99.83	25,778	EUR
ABB SAS, Cergy Pontoise	France	100.00	45,921	100.00	45,921	EUR
ABB AG, Mannheim	Germany	100.00	167,500	100.00	167,500	EUR
ABB Automation GmbH, Mannheim	Germany	—(4)	—(4)	100.00	15,000	EUR
ABB Automation Products GmbH, Ladenburg	Germany	—(4)	—(4)	100.00	10,620	EUR
ABB Beteiligungs- und Verwaltungsges. mbH, Mannheim	Germany	100.00	61,355	100.00	61,355	EUR
ABB Stotz-Kontakt GmbH, Heidelberg	Germany	100.00	7,500	100.00	7,500	EUR
B + R Industrie-Elektronik GmbH, Bad Homburg	Germany	100.00	358	100.00	358	EUR
Busch-Jaeger Elektro GmbH, Lüdenscheid	Germany	100.00	1,535	100.00	1,535	EUR
ABB Engineering Trading and Service Ltd., Budapest	Hungary	100.00	436,281	100.00	26,436,281	HUF
Industrial C&S Hungary Kft., Budapest	Hungary	100.00	3,000	100.00	3,000	HUF
ABB Global Business Services and Contracting India Private Limited, Bangalore	India	100.00	5,200,100	—(3)	—(3)	INR
ABB Global Industries and Services Private Limited, Bangalore(5)	India	100.00	366,923	100.00	366,923	INR
ABB India Limited, Bangalore	India	75.00	423,817	75.00	423,817	INR
ABB S.p.A., Milan	Italy	100.00	110,000	100.00	110,000	EUR
ABB K.K., Tokyo	Japan	100.00	1,000,000	100.00	1,000,000	JPY
ABB Ltd., Seoul	Korea, Republic of	100.00	23,670,000	100.00	23,670,000	KRW
ABB Electrical Control Systems S. de R.L. de C.V., Monterrey	Mexico	100.00	315,134	100.00	315,134	MXN
ABB Mexico S.A. de C.V., San Luis Potosi	Mexico	100.00	683,418	100.00	683,418	MXN
Asea Brown Boveri S.A. de C.V., San Luis Potosi	Mexico	100.00	667,686	100.00	667,686	MXN
ABB B.V., Rotterdam	Netherlands	100.00	9,200	100.00	9,200	EUR
ABB Finance B.V., Rotterdam	Netherlands	100.00	20	100.00	20	EUR
ABB Holdings B.V., Rotterdam	Netherlands	100.00	363	100.00	119	EUR
ABB AS, Fornebu	Norway	100.00	134,550	100.00	134,550	NOK
ABB Electrification Norway AS, Skien	Norway	100.00	60,450	100.00	60,450	NOK
ABB Holding AS, Fornebu	Norway	100.00	240,000	100.00	240,000	NOK
ABB Business Services Sp. z o.o., Warsaw	Poland	99.94	24	99.93	24	PLN
ABB Industrial Solutions (Bielsko-Biala) Sp. z o.o., Bielsko-Biala	Poland	99.94	328,125	99.93	328,125	PLN
ABB Industrial Solutions (Klodzko) Sp. z o.o., Klodzko	Poland	99.94	50	99.93	50	PLN
ABB Sp. z o.o., Warsaw	Poland	99.94	245,461	99.93	245,461	PLN
Industrial C&S of P.R. LLC, San Juan	Puerto Rico	100.00	—(1)	100.00	—(1)	USD
ABB Ltd., Moscow	Russian Federation	100.00	23,000	100.00	5,686	RUB
ABB Electrical Industries Co. Ltd., Riyadh	Saudi Arabia	65.00	181,000	65.00	181,000	SAR
ABB Pte. Ltd., Singapore	Singapore	100.00	32,797	100.00	32,797	SGD
ABB Holdings (Pty) Ltd., Modderfontein	South Africa	100.00	217,758	100.00	4,050	ZAR
ABB Investments (Pty) Ltd, Modderfontein	South Africa	51.00	56,000	—(3)	—(3)	ZAR
ABB South Africa (Pty) Ltd., Modderfontein	South Africa	74.91	200,001	74.91	1	ZAR
Asea Brown Boveri S.A., Madrid	Spain	100.00	33,318	100.00	33,318	EUR
ABB AB, Västerås	Sweden	100.00	200,000	100.00	200,000	SEK
ABB Electrification Sweden AB, Västerås	Sweden	100.00	10,000	—(3)	—(3)	SEK
ABB Norden Holding AB, Västerås	Sweden	100.00	2,344,783	100.00	2,344,783	SEK
ABB Canada EL Holding GmbH, Zurich	Switzerland	100.00	1,000	100.00	1,000	CHF
ABB Capital AG, Zurich	Switzerland	100.00	100	100.00	100	CHF
ABB Information Systems Ltd., Zurich	Switzerland	100.00	500	100.00	500	CHF
ABB Investment Holding 2 GmbH, Zurich	Switzerland	100.00	20	100.00	20	CHF
ABB Management Services Ltd., Zurich	Switzerland	100.00	571	100.00	571	CHF
ABB Schweiz AG, Baden	Switzerland	100.00	55,000	100.00	55,000	CHF
ABB Ltd., Taipei	Taiwan (Chinese Taipei)	100.00	195,000	100.00	195,000	TWD

Company name/location	Country	Company ownership and voting rights % 2021	Share capital in thousands 2021	Company ownership and voting rights % 2020	Share capital in thousands 2020	Currency
ABB Elektrik Sanayi A.S., Istanbul	Turkey	99.99	13,410	99.99	13,410	TRY
ABB Industries (L.L.C.), Dubai	United Arab Emirates	49.00(2)	5,000	49.00(2)	5,000	AED
ABB Holdings Limited, Warrington	United Kingdom	100.00	226,014	100.00	226,014	GBP
ABB Limited, Warrington	United Kingdom	100.00	120,000	100.00	120,000	GBP
ABB Finance (USA) Inc., Wilmington, DE	United States	100.00	1	100.00	1	USD
ABB Holdings Inc., Cary, NC	United States	100.00	2	100.00	2	USD
ABB Inc., Cary, NC	United States	100.00	1	100.00	1	USD
ABB Installation Products Inc, Memphis, TN	United States	100.00	1	100.00	1	USD
ABB Installation Products International LLC., Wilmington, DE	United States	—(3)	—(3)	100.00	—	USD
ABB Motors and Mechanical Inc, Fort Smith, AR	United States	100.00	—(1)	100.00	—(1)	USD
ABB Treasury Center (USA), Inc., Wilmington, DE	United States	100.00	1	100.00	1	USD
Edison Holding Corporation, Wilmington, DE	United States	100.00	—(1)	100.00	—(1)	USD
Industrial Connections & Solutions LLC, Cary, NC	United States	100.00	—(1)	100.00	—(1)	USD

(1) Shares without par value.
(2) Company consolidated as ABB exercises full management control.
(3) Based on the internally defined thresholds, these indirect participations are considered not significant, and therefore no details to these participations are disclosed in the respective year.
(4) Participation was either sold, liquidated or merged in 2021.
(5) Participation was renamed from ABB Substations Contracting India Private Limited, Bangalore in 2021.

Note 4
Interest-bearing liabilities

December 31 (CHF in thousands)		2021	2020
Bonds 2011–2021 2.25% coupon	nominal value	—	350,000
Bonds 2019–2024 0.3% coupon	nominal value	280,000	280,000
	premium on issuance	54	75
Bonds 2019–2029 1.0% coupon	nominal value	170,000	170,000
	premium on issuance	156	176
Loan 2016-2024 USD 375 million (in 2020 USD 400 million)		342,281	352,420
Total		**792,491**	**1,152,671**

During 2021, the Company repaid its 2.25% bonds at maturity. The bonds paid interest annually in arrears. The Company had, through ABB Capital Ltd, entered into an interest rate swap with a bank to effectively convert those bonds into floating rate obligations. The interest swap was treated as an off-balance sheet item and was therefore not recorded. The swap agreement ended upon repayment of the bonds.

In February 2019, the Company issued the following bonds: (i) CHF 280 million 0.3% bonds due 2024 and (ii) CHF 170 million 1.0% bonds due 2029. Each of the respective bonds pays interest annually in arrears in August and May respectively. The Company has the option, one month before their maturity date in case of the 2024 bonds and three months before their maturity date in the case of the 2029 bonds, to redeem the bonds, in whole but not in part, at par plus accrued interest. Further, the Company has the option to redeem the above bonds prior to maturity, in whole but not in part, at par plus accrued interest, if 85% or more of the aggregate principal amount of the relevant bond issue has been redeemed or purchased and cancelled at the time of the option exercise notice.

In 2016, the Company entered into a borrowing agreement of USD 500 million with ABB Capital Ltd that expires in 2024 (with an amortization schedule of USD 25 million per annum) to hedge the USD 500 million loan granted to a Group company. In each of 2021 and 2020, the Company repaid USD 25 million. The average interest in 2021 and 2020 was 1.08% and 1.89%, respectively.

Note 5
Contingent liabilities

The Company has issued a support letter to a surety institution for the issuance of surety bonds on behalf of Group companies. No amount was issued under this letter at December 31, 2021, compared with CHF 889.9 million as of December 31, 2020.

With certain Group companies, the Company has keep-well agreements. A keep-well agreement is a shareholder agreement between the Company and a Group company. These agreements provide for maintenance of a minimum net worth in the Group company and the maintenance of 100% direct or indirect ownership by the Company.

The keep-well agreements additionally provide that if at any time the Group company has insufficient liquid assets to meet any payment obligation on its debt (as defined in the agreements) and has insufficient unused commitments under its credit facilities with its lenders, the Company will make available to the Group company sufficient funds to enable it to fulfill such payment obligation as it falls due. A keep-well agreement is not a guarantee by the Company for payment of the indebtedness, or any other obligation, of a Group company. No party external to the ABB Group is a party to any keep-well agreement.

The Company has also provided certain guarantees securing the performance of Group companies in connection with commercial paper programs, indentures or other debt instruments to enable them to fulfill the payment obligations under such instruments as they fall due. The amount guaranteed under these instruments was CHF 4,371.2 million as of December 31, 2021 and CHF 4,144.0 million as of December 31, 2020.

Additionally, the Company has provided certain guarantees securing the performance of contracts and undertakings of Group companies with third parties entered into in the normal course of business of an aggregate value of CHF 72.8 million as per December 31, 2021 and CHF 70.3 million as per December 31, 2020.

Furthermore, the Company is the guarantor in the Group's USD 2 billion multicurrency revolving credit facility ("Group Facility"). In December 2019, the Group Facility maturing in 2021 was replaced with a new Group Facility maturing in 2024, with the option in 2020 and 2021 to extend the maturity to 2025 and 2026, respectively. The Company exercised its option in 2021 to extend the maturity of the facility to 2026. No amounts were drawn under this Group Facility at December 31, 2021 and 2020.

The Company through certain of its direct and indirect subsidiaries is involved in various regulatory and legal matters. The Company's direct and indirect subsidiaries have made certain related provisions as further described in "Note 15 Commitments and contingencies" to the Consolidated Financial Statements of ABB Ltd. As described in the note, there is a risk of adverse outcomes beyond the provisioned amounts.

The Company is part of a value added tax Group and therefore is jointly liable to the Swiss Federal Tax Department for the value added tax liabilities of the other members.

Note 6
Stockholders' equity

		Legal reserves		Free reserves			
(CHF in thousands)	Share capital	Other reserves	from retained earnings	from retained earnings	Net income	Own shares	Total
Opening balance as of January 1, 2021	**260,178**	**30,430**	**1,000,000**	6,545,827	4,455,507	**(3,229,009)**	**9,062,933**
Allocation to retained earnings				4,455,507	(4,455,507)		—
Cancellation of shares	(13,800)	(30,430)		(2,733,599)		2,777,829	—
Dividend payment CHF 0.80 per share				(1,435,690)			**(1,435,690)**
Purchases of own shares						(3,364,344)	**(3,364,344)**
Delivery of own shares						962,873	**962,873**
Net income for the year					1,610,798		**1,610,798**
Closing balance as of December 31, 2021	**246,378**	**—**	**1,000,000**	**6,832,045**	**1,610,798**	**(2,852,651)**	**6,836,570**

Share capital as of December 31, 2021	Number of registered shares	Par value (CHF)	Total (CHF in thousands)
Issued shares	2,053,148,264	0.12	246,378
Contingent shares	304,038,800	0.12	36,485
Authorized shares	200,000,000	0.12	24,000

Share capital as of December 31, 2020	Number of registered shares	Par value (CHF)	Total (CHF in thousands)
Issued shares	2,168,148,264	0.12	260,178
Contingent shares	304,038,800	0.12	36,485
Authorized shares	200,000,000	0.12	24,000

The own shares are valued at acquisition cost. During 2021 and 2020, a loss from the delivery of own shares of CHF 155 million and CHF 14 million, respectively, was recorded in the Income Statement under Finance expense.

During 2021, a bank holding call options related to ABB Group's management incentive plan (MIP) exercised a portion of these options. Such options had been issued in 2015, 2016 and 2019 by the Group company that facilitates the MIP at fair value and had a strike price of CHF 19.50, CHF 21.50 and CHF 19.00, respectively. At issuance, the Group company had entered into an intercompany option agreement with the Company, having the same terms and conditions to enable it to meet its future obligations. As a result of the exercise by the bank, the Company delivered 17,507,403 shares at CHF 19.50, 14,194,305 shares at CHF 21.50 and 4,217,913 shares at CHF 19.00, out of own shares. During 2020, a bank holding call options related to ABB Group's MIP exercised a portion of these options. Such options had been issued in 2014 by the Group company that facilitates the MIP at fair value and had a strike price of CHF 21.00. At issuance, the Group company had entered into an intercompany option agreement with the Company, having the same terms and conditions to enable it to meet its future obligations. As a result of the exercise by the bank, the Company delivered 16,431,565 shares at CHF 21.00, out of own shares.

The ABB Group has an annual employee share acquisition plan (ESAP) which provides share options to employees globally. To enable the Group company that facilitates the ESAP to deliver shares to employees who have exercised their stock options, the Group company entered into an agreement with the Company to acquire the required number of shares at their then market value from the Company. Consequently, in 2021, the Company delivered, out of own shares, to the Group company 1,458,128 shares at CHF 32.24 and 270,504 shares at USD 34.88. In 2020, the Company delivered, out of own shares, to the Group company 1,149,891 shares at CHF 24.91 and 237,259 shares at USD 27.27.

In 2021 and 2020, the Company transferred 949,795 and 1,389,715 own shares at an average acquisition price per share of CHF 25.50 and CHF 21.97, respectively, to fulfill its obligations under other share-based arrangements.

In 2021, the Company purchased 33 million shares, for CHF 939 million, to support its employee share programs globally and 78 million shares, for CHF 2,425 million, as part of its share buyback program for capital reduction purposes as publicly disclosed on April 8, 2021, and July 22, 2020. In 2020, the Company purchased 13 million shares, for CHF 312 million, to support its employee share programs globally and 109 million shares, for CHF 2,578 million, as part of its share buyback program for capital reduction purposes as publicly disclosed on July 22, 2020.

At the AGM in March 2021, shareholders approved the proposal of the Board of Directors to reduce the share capital of the Company by cancelling 115,000,000 treasury shares which were acquired under the share buyback program. This cancellation was completed in June 2021, resulting in a decrease in Treasury stock (own shares) of CHF 2,778 million and a corresponding combined decrease in share capital and retained earnings.

The movement in the number of own shares during the year was as follows:

	2021		2020	
	Number of shares	Average acquisition price per share (in CHF)	Number of shares	Average acquisition price per share (in CHF)
Opening balance as of January 1	**137,314,095**	**23.52**	**34,647,153**	**21.94**
Purchases for employee share programs	32,668,987	28.74	13,046,013	23.95
Purchases for intended cancellation	78,418,830	30.93	108,829,359	23.69
Cancellation	(115,000,000)	24.16		
Delivery for employee share programs	(38,598,048)	24.95	(19,208,430)	21.97
Closing balance as of December 31	**94,803,864**	**30.09**	**137,314,095**	**23.52**
Thereof pledged for MIP	5,604,519		9,866,402	

—

Note 7
Dividend income

The Company received in 2021, dividend payments from ABB Asea Brown Boveri Ltd of CHF 1.2 billion in cash and CHF 569 million in kind (see note 2). The Company received in 2020, a dividend payment from ABB Asea Brown Boveri Ltd of CHF 1.3 billion in cash and CHF 6.7 billion in kind (see note 2).

—

Note 8
Other operating income

Other operating income includes mainly outgoing charges for Business Area and Division management services, income from share deliveries and guarantee compensation fees to Group companies.

—

Note 9
Shareholders

Shareholder structure

As of December 31, 2021, the total number of shareholders directly registered with ABB Ltd was approximately 96,000 and another 513,000 shareholders held shares indirectly through nominees. In total as of that date, ABB had approximately 609,000 shareholders.

Significant shareholders

Investor AB, Sweden, held 265,385,142 ABB shares as of December 31, 2021 (refer to Investor's year-end 2021 report available at https://www.investorab.com/investors-media/reports-presentations). This holding represented 12.9 percent of ABB's total share capital and voting rights as registered in the Commercial Register on December 31, 2021. The number of shares held by Investor AB does not include shares held by Mr. Jacob Wallenberg, the chairman of Investor AB and a director of ABB, in his individual capacity.

The Capital Group Companies Inc., USA, disclosed that as of July 1, 2021, it, together with its direct and indirect affiliates, held 115,841,336 ABB shares (refer to https://www.ser-ag.com/en/resources/notifications-market-participants/significant-shareholders.html#/shareholder-details/TAL7600020). This holding represented 5.64 percent of ABB's total share capital and voting rights as registered in the Commercial Register at that time.

Cevian Capital II GP Limited, Jersey, disclosed that as of August 3, 2020, it held 105,988,662 ABB shares (refer to https://www.sec.gov/Archives/edgar/data/1091587/000090266420002862/p20-1467sc13da.htm). This holding represented 4.89 percent of ABB's total share capital and voting rights as registered in the Commercial Register at that time.

BlackRock Inc., U.S., disclosed that as of August 31, 2017, it, together with its direct and indirect subsidiaries, held 72,900,737 ABB shares (refer to https://www.ser-ag.com/en/resources/notifications-market-participants/significant-shareholders.html#/shareholder-details/TAH91000F4). This holding represented 3.36 percent of ABB's total share capital and voting rights as registered in the Commercial Register at that time.

At December 31, 2021, to the best of ABB's knowledge, no other shareholder held 3 percent or more of ABB's total share capital and voting rights as registered in the Commercial Register on that date.

ABB Ltd has no cross shareholdings in excess of 5 percent of capital, or voting rights with any other company.

Announcements related to disclosure notifications made by shareholders during 2021 can be found via the search facility on the platform of the Disclosure Office of the SIX Swiss Exchange: https://www.ser-ag.com/en/resources/notifications-market-participants/significant-shareholders.html#/.

Under ABB's Articles of Incorporation (available at https://new.abb.com/about/corporate-governance), each registered share represents one vote. Significant shareholders do not have different voting rights. To our knowledge, we are not directly or indirectly owned or controlled by any government or by any other corporation or person.

Shareholders' rights

Shareholders have the right to receive dividends, to vote and to execute such other rights as granted under Swiss law and the Articles of Incorporation (available at https://new.abb.com/about/corporate-governance).

Right to vote

ABB has one class of shares and each registered share carries one vote at the general meeting. Voting rights may be exercised only after a shareholder has been registered in the share register of ABB as a shareholder with the right to vote, or with Euroclear Sweden AB (Euroclear), which maintains a subregister of the share register of ABB.

A shareholder may be represented at the Annual General Meeting by its legal representative, by another shareholder with the right to vote or by the independent proxy elected by the shareholders (unabhängiger Stimmrechtsvertreter). If the Company does not have an independent proxy, the Board of Directors shall appoint the independent proxy for the next General Meeting of Shareholders. All shares held by one shareholder may be represented by one representative only.

For practical reasons shareholders must be registered in the share register no later than 6 business days before the general meeting in order to be entitled to vote. Except for the cases described under "Limitations on transferability of shares and nominee registration" below, there are no voting rights restrictions limiting ABB's shareholders' rights.

Annual General Meeting/COVID-19

ABB's top priority is protecting the health of its shareholders and employees. Therefore, due to the extraordinary circumstances and in accordance with applicable Swiss COVID-19 legislation, shareholders were not able to attend ABB's Annual General Meeting 2021 in person, but could exercise their shareholder rights via the independent proxy only. The Board of Directors has resolved that for ABB's Annual General Meeting 2022, in accordance with applicable Swiss COVID-19 legislation, the same procedures shall apply. In addition, ABB will offer shareholders the opportunity to address questions on agenda items to the Board of Directors in writing ahead of the meeting.

Note 10
Shareholdings of Board and Executive Committee

At December 31, 2021 and 2020, the members of the Board of Directors as of that date, held the following numbers of shares (or American Depository Shares (ADSs) representing such shares):

Board ownership of ABB shares (audited)	Total number of shares held	
Name	December 31, 2021	December 31, 2020
Peter Voser(1)	191,946	314,648
Jacob Wallenberg	239,878	234,246
Matti Alahuhta(2)	n.a.	93,408
Gunnar Brock	33,399	26,951
David Constable	38,185	33,978
Frederico Curado	40,301	32,382
Lars Förberg	59,916	49,992
Jennifer Xin-Zhe Li	37,580	33,721
Geraldine Matchett	25,196	19,800
David Meline(3)	37,780	33,774
Satish Pai	28,432	24,618
Total	**732,613**	**897,518**

(1) Includes 2,000 shares held by spouse.
(2) Matti Alahuhta did not stand for re-election at ABB's Annual General Meeting in March 2021.
(3) Includes 3,150 shares held by spouse.

At December 31, 2021, the members of the Executive Committee, as of that date, held the following number of shares (or ADSs representing such shares), the conditional rights to receive ABB shares under the Long-term Incentive Plan (LTIP) and options (either vested or unvested as indicated) under the MIP and unvested shares in respect of other compensation arrangements.

		Vested at December 31, 2021	Unvested at December 31, 2021					
	Total number of shares held at December 31, 2021	Number of vested options held under the MIP	Number of unvested options held under the MIP	Reference number of shares deliverable under the 2019 performance factors (EPS and TSR) of the LTIP(1)	Reference number of shares deliverable under the 2020 performance factors (EPS and TSR) of the LTIP (1)	Reference number of shares deliverable under the 2021 performance factors (EPS and TSR) of the LTIP (1)	Replacement share grant for foregone benefits from former employer (2)	Replacement share grant for foregone benefits from former employer (2)
Name			**(vesting 2022)**	**(vesting 2022)**	**(vesting 2023)**	**(vesting 2024)**	**(vesting 2022)**	**(vesting 2023)**
Björn Rosengren	10,000	—	—	—	131,715	95,901	130,150	18,904
Timo Ihamuotila	150,440	—	—	49,071	49,071	36,480	—	—
Carolina Granat (EC member as of January 1, 2021)(3)	1,200	—	—	—	—	26,326	—	—
Maria Varsellona(4)	26,006	—	—	—	—	—	—	—
Theodor Swedjemark(3)(5)	1,360	—	148,750	—	6,209	15,044	—	—
Sami Atiya	51,472	—	—	49,587	41,323	30,087	—	—
Tarak Mehta	118,056	—	—	44,422	46,488	34,976	—	—
Peter Terwiesch	100,440	—	—	41,323	41,323	30,087	—	—
Morten Wierod	51,912	—	—	36,158	38,740	30,087	—	—
Total Executive Committee members at December 31, 2021	**510,886**	**—**	**148,750**	**220,561**	**354,869**	**298,988**	**130,150**	**18,904**

(1) The final LTIP 2019 award will be settled 65 percent in shares and 35 percent in cash. This applies to both performance factors (EPS and TSR). However, the participants have the possibility to elect to receive 100 percent of the vested award in shares. The final LTIP 2020 award and LTIP 2021 award will be settled 100 percent in shares, with an automatic sell-to-cover in place for employees who are subject to withholding taxes.
(2) It is expected that the replacement share grants will be settled 65 in shares and 35 percent in cash. However, the participants have the possibility to elect to receive 100 percent of the vested award in shares.
(3) This includes shares held by the spouse.
(4) Unvested share grants were forfeited as a result of the resignation provided and removed from the shareholding overview.
(5) In addition, his spouse holds unvested shares and options granted in connection with her role in the company.

At December 31, 2020, the members of the Executive Committee, as of that date, held the following number of shares (or ADSs representing such shares), the conditional rights to receive ABB shares under the LTIP and options (either vested or unvested as indicated) under the MIP and unvested shares in respect of other compensation arrangements.

		Vested at December 31, 2020	Unvested at December 31, 2020						
	Total number of shares held at December 31, 2020	Number of vested options held under the MIP	Number of unvested options held under the MIP	Reference number of shares deliverable under the 2018 performance factors (EPS and TSR) of the LTIP(1)	Reference number of shares deliverable under the 2019 performance factors (EPS and TSR) of the LTIP (1)	Reference number of shares deliverable under the 2020 performance factors (EPS and TSR) of the LTIP (1)	Replacement share grant for foregone benefits from former employer (2)	Replacement share grant for foregone benefits from former employer (2)	Replacement share grant for foregone benefits from former employer (2)
Name			(vesting 2021/ 2022)	(vesting 2021)	(vesting 2022)	(vesting 2023)	(vesting 2021)	(vesting 2022)	(vesting 2023)
Björn Rosengren (EC member as of January 27, 2020, CEO as of March 1, 2020)	5,000	—	—	—	—	131,715	—	130,150	18,904
Timo Ihamuotila	171,610	—	—	37,217	49,071	49,071	—	—	—
Sylvia Hill	2,265	796,875	318,750	—	36,158	37,707	—	—	—
Maria Varsellona	—	—	—	—	41,323	41,323	40,010	40,009	—
Theodor Swedjemark (EC member as of August 1, 2020)(3)	480	102,000	250,750	—	—	6,209	—	—	—
Sami Atiya	42,778	—	—	23,301	49,587	41,323	—	—	—
Tarak Mehta	179,636	—	—	34,790	44,422	46,488	—	—	—
Peter Terwiesch	142,338	—	—	37,379	41,323	41,323	—	—	—
Morten Wierod	1,544	—	—	15,292	36,158	38,740	—	—	—
Total Executive Committee members at December 31, 2020	**545,651**	**898,875**	**569,500**	**147,979**	**298,042**	**433,899**	**40,010**	**170,159**	**18,904**

(1) The final LTIP 2018 award and LTIP 2019 award will be settled 65 percent in shares and 35 percent in cash. This applies to both performance factors (EPS and TSR). However, the participants have the possibility to elect to receive 100 percent of the vested award in shares. The final LTIP 2020 award will be settled 100 percent in shares, with an automatic sell-to-cover in place for employees who are subject to withholding taxes.

(2) It is expected that the replacement share grants will be settled 65 percent in shares and 35 percent in cash. However, the participants have the possibility to elect to receive 100 percent of the vested award in shares.

(3) In addition, his spouse holds unvested shares and options granted in connection with her role in the company.

Note 11
Full time employees

During each of 2021 and 2020, the Company employed on average 19 employees.

At ABB, we believe that a culture of diversity, inclusion and equal opportunity is critical to our business success and makes us stronger. ABB has non-discriminatory pay policies which play an important part in minimizing any pay disparities based on gender. As part of its Diversity and Inclusion Strategy 2030 and in line with national legislation, ABB carried out an equal pay analysis for its Swiss entities with at least 100 employees. It showed that three of the in scope entities meet the equal pay requirements and are within the applicable thresholds and the fourth entity, the smallest, meets the equal pay requirements for salary and slightly underachieves the parity level for overall compensation (salary plus actual bonus).

Note 12
Subsequent events

Subsequent to December 31, 2021, and up to February 23, 2022, the Company purchased, under the follow-up share buyback program, an additional 21 million shares, for approximately CHF 677 million, and, on the open market, an additional 9 million shares, for approximately CHF 300 million. The purchases were partially financed via borrowings from ABB Capital Ltd.

Proposed appropriation of available earnings

Proposed appropriation of retained earnings (CHF in thousands)	2021	2020
Net income for the year	1,610,798	4,455,507
Carried forward from previous year	9,565,644	6,545,827
Cancellation of shares	(2,733,599)	—
Retained earnings available to the Annual General Meeting	**8,442,843**	**11,001,334**
Gross dividend of CHF 0.80 per share paid directly by the Company(1)	—	(1,435,690)
Gross dividend of CHF 0.82 per share on total number of registered shares(1)	(1,683,582)	—
Balance to be carried forward	**6,759,261**	**9,565,644**

(1) No dividend will be paid on own shares held by ABB Ltd. Shareholders who are resident in Sweden participating in the established dividend access facility will receive an amount in Swedish kronor from ABB Participation AB which corresponds to the dividend resolved on a registered share of ABB Ltd without deduction of the Swiss withholding tax. This amount however is subject to taxation according to Swedish law.

On February 3, 2022, the Company announced that the Board of Directors will recommend for approval at the March 24, 2022, Annual General Meeting that a dividend of CHF 0.82 per share be distributed out of the retained earnings available, to be paid in March 2022 and in April 2022 for residents in Sweden participating in the dividend access facility.

KPMG

Report of the Statutory Auditor

To the General Meeting of ABB Ltd, Zurich

Report of the Statutory Auditor on the Financial Statements

As statutory auditor, we have audited the accompanying financial statements of ABB Ltd, which comprise the balance sheet, income statement and notes to financial statements (pages 247 to 259) for the year ended December 31, 2021.

Board of Directors' Responsibility

The Board of Directors is responsible for the preparation of the financial statements in accordance with the requirements of Swiss law and the company's articles of incorporation. This responsibility includes designing, implementing and maintaining an internal control system relevant to the preparation of financial statements that are free from material misstatement, whether due to fraud or error. The Board of Directors is further responsible for selecting and applying appropriate accounting policies and making accounting estimates that are reasonable in the circumstances.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Swiss law and Swiss Auditing Standards. Those standards require that we plan and perform the audit to obtain reasonable assurance whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers the internal control system relevant to the entity's preparation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control system. An audit also includes evaluating the appropriateness of the accounting policies used and the reasonableness of accounting estimates made, as well as evaluating the overall presentation of the financial statements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements for the year ended December 31, 2021 comply with Swiss law and the company's articles of incorporation.

Report on Key Audit Matters based on the circular 1/2015 of the Federal Audit Oversight Authority

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the financial statements of the current period. We have determined that there are no key audit matters to communicate in our report.

Report on Other Legal Requirements

We confirm that we meet the legal requirements on licensing according to the Auditor Oversight Act (AOA) and independence (article 728 CO and article 11 AOA) and that there are no circumstances incompatible with our independence.

In accordance with article 728a paragraph 1 item 3 CO and Swiss Auditing Standard 890, we confirm that an internal control system exists, which has been designed for the preparation of financial statements according to the instructions of the Board of Directors.

We further confirm that the proposed appropriation of available earnings complies with Swiss law and the company's articles of incorporation. We recommend that the financial statements submitted to you be approved.

KPMG AG

Hans-Dieter Krauss
Licensed Audit Expert
Auditor in Charge

Mohammad Nafeie

Zurich, Switzerland
February 24, 2022

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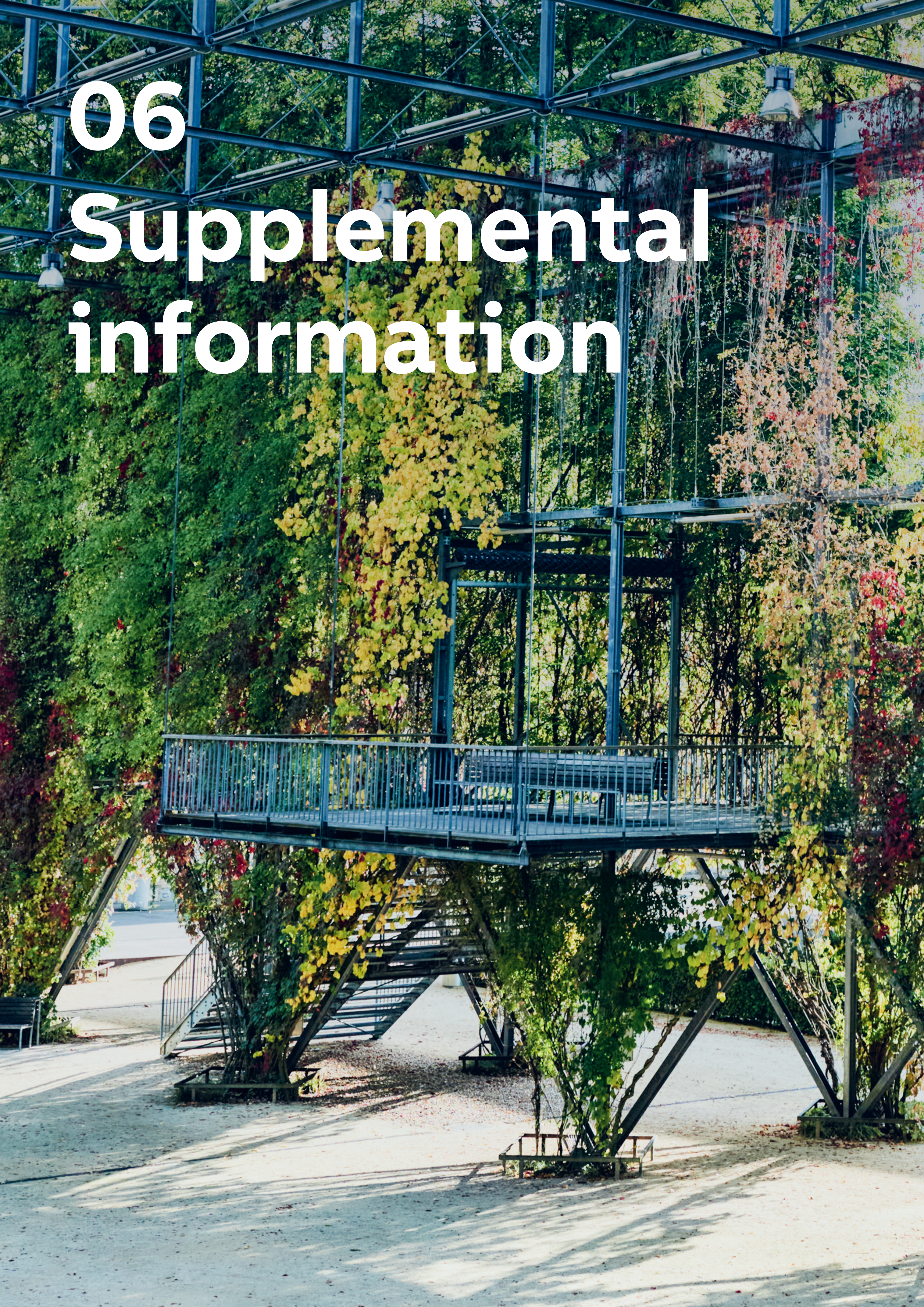
06 Supplemental information



266 Supplemental information

Supplemental information

The following are definitions of key financial measures used to evaluate ABB's operating performance. These financial measures are referred to in this Annual Report and are not defined under United States generally accepted accounting principles (U.S. GAAP).

While ABB's management believes that the non-GAAP financial measures herein are useful in evaluating ABB's operating results, this information should be considered as supplemental in nature and not as a substitute for the related financial information prepared in accordance with U.S. GAAP.

For a full reconciliation of ABB's non-GAAP measures, please refer to Supplemental Reconciliations and Definitions, ABB Q4 2021 Financial Information on global.abb/group/en/investors/results-and-reports/2021.

Comparable growth rates

Growth rates for certain key figures may be presented and discussed on a "comparable" basis. The comparable growth rate measures growth on a constant currency basis. Since we are a global company, the comparability of our operating results reported in U.S. dollars is affected by foreign currency exchange rate fluctuations. We calculate the impacts from foreign currency fluctuations by translating the current-year periods' reported key figures into U.S. dollar amounts using the exchange rates in effect for the comparable periods in the previous year.

Comparable growth rates are also adjusted for changes in our business portfolio. Adjustments to our business portfolio occur due to acquisitions, divestments, or by exiting specific business activities or customer markets. The adjustment for portfolio changes is calculated as follows: where the results of any business acquired or divested have not been consolidated and reported for the entire duration of both the current and comparable periods, the reported key figures of such business are adjusted to exclude the relevant key figures of any corresponding quarters which are not comparable when computing the comparable growth rate. Certain portfolio changes which do not qualify as divestments under U.S. GAAP have been treated in a similar manner to divestments. Changes in our portfolio where we have exited certain business activities or customer markets are adjusted as if the relevant business was divested in the period when the decision to cease business activities was taken. We do not adjust for portfolio changes where the relevant business has annualized revenues of less than $50 million.

Operational EBITA margin

Operational EBITA margin

Operational EBITA margin is Operational EBITA as a percentage of Operational revenues.

Operational EBITA

Operational earnings before interest, taxes and acquisition-related amortization (Operational EBITA) represents Income from operations excluding:

- acquisition-related amortization (as defined below),
- restructuring, related and implementation costs (as defined below),
- changes in the amount recorded for obligations related to divested businesses occurring after the divestment date (changes in obligations related to divested businesses),
- changes in estimates relating to opening balance sheets of acquired businesses (changes in pre-acquisition estimates),
- gains and losses from sale of businesses (including fair value adjustment on assets and liabilities held for sale),
- acquisition- and divestment-related expenses and integration costs,
- other income/expense relating to the Power Grids joint venture,
- certain other non-operational items, as well as
- foreign exchange/commodity timing differences in income from operations consisting of: (a) unrealized gains and losses on derivatives (foreign exchange, commodities, embedded derivatives), (b) realized gains and losses on derivatives where the underlying hedged transaction has not yet been realized, and (c) unrealized foreign exchange movements on receivables/payables (and related assets/liabilities).

Certain other non-operational items generally includes: certain regulatory, compliance and legal costs, certain asset impairments (including impairment of goodwill) and certain other fair value changes, as well as other items which are determined by management on a case-by-case basis.

Operational EBITA is our measure of segment profit but is also used by management to evaluate the profitability of the Company as a whole.

Acquisition-related amortization

Amortization expense on intangibles arising upon acquisitions.

Restructuring, related and implementation costs

Restructuring, related and implementation costs consists of restructuring and other related expenses, as well as internal and external costs relating to the implementation of group-wide restructuring programs.

Other income/expense relating to the Power Grids joint venture

Other income/expense relating to the Power Grids joint venture consists of amounts recorded in Income from continuing operations before taxes relating to the divested Power Grids business including the income/loss under the equity method for the investment in Hitachi Energy Ltd. (Hitachi Energy), amortization of deferred brand income as well as changes in value of other obligations relating to the divestment.

Operational revenues

We present Operational revenues solely for the purpose of allowing the computation of Operational EBITA margin. Operational revenues are Total revenues adjusted for foreign exchange/commodity timing differences in Total revenues of: (i) unrealized gains and losses on derivatives, (ii) realized gains and losses on derivatives where the underlying hedged transaction has not yet been realized, and (iii) unrealized foreign exchange movements on receivables (and related assets). Operational revenues are not intended to be an alternative measure to Total revenues, which represent our revenues measured in accordance with U.S. GAAP.

Free cash flow conversion to net income

Free cash flow conversion to net income

Free cash flow conversion to net income is calculated as free cash flow divided by Adjusted net income attributable to ABB.

Adjusted net income attributable to ABB

Adjusted net income attributable to ABB is calculated as net income attributable to ABB adjusted for: (i) impairment of goodwill, (ii) losses from extinguishment of debt, and (iii) the gains arising on the sale of both the Mechanical Power Transmission Division (Dodge) and Power Grids business, the latter being included in discontinued operations.

Free cash flow

Free cash flow is calculated as net cash provided by operating activities adjusted for: (i) purchases of property, plant and equipment and intangible assets, and (ii) proceeds from sales of property, plant and equipment.

Return on Capital employed (ROCE)

Return on Capital employed (ROCE)

Return on Capital employed is calculated as Operational EBITA after tax, divided by the average of the period's opening and closing Capital employed, adjusted to reflect impacts from the timing of significant acquisitions/divestments occurring during the period.

Capital employed

Capital employed is calculated as the sum of Adjusted total fixed assets and Net working capital (as defined below).

Adjusted total fixed assets

Adjusted total fixed assets is the sum of (i) property, plant and equipment, net, (ii) goodwill, (iii) other intangible assets, net, (iv) investments in equity-accounted companies, and (v) operating lease right-of-use assets, less (vi) deferred tax liabilities recognized in certain acquisitions.

Net working capital

Net working capital is the sum of (i) receivables, net, (ii) contract assets, (iii) inventories, net, and (iv) prepaid expenses; less (v) accounts payable, trade, (vi) contract liabilities, and (vii) other current liabilities (excluding primarily: (a) income taxes payable, (b) current derivative liabilities, (c) pension and other employee benefits), (d) payables under the share buyback program and (e) liabilities related to the divestment of the Power Grids business); and including the amounts related to these accounts which have been presented as either assets or liabilities held for sale but excluding any amounts included in discontinued operations.

Notional tax on Operational EBITA

The Notional tax on Operational EBITA is computed using the adjusted group effective tax rate multiplied by Operational EBITA.

Adjusted Group effective tax rate

The Adjusted Group effective tax rate is computed by dividing an adjusted income tax expense by an adjusted pre-tax income. Certain amounts recorded in income before taxes and the related income tax expense (primarily due to gains and losses from sale of businesses) are removed from the reported amounts when computing these adjusted amounts. Certain other amounts recorded in income tax expense are also excluded from the computation to determine the Adjusted Group effective tax rate

Book-to-bill ratio

Book-to-bill ratio is calculated as Orders received divided by Total revenues.

Parts of the ABB annual report 2021 have been translated into German. Please note that the English-language version of the ABB annual report is the binding version.

Caution concerning forward-looking statements
The ABB annual report 2021 includes “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. We have based these forward-looking statements largely on current expectations, estimates and projections about the factors that may affect our future performance, including global economic conditions as well as the economic conditions of the regions and the industries that are major markets for ABB. The words “believe,” “may,” “will,” “estimate,” “continue,” “target,” “anticipate,” “intend,” “expect”, “plan” and similar words and the express or implied discussion of strategy, plans or intentions are intended to identify forward-looking statements. These forward-looking statements are subject to risks, uncertainties and assumptions, including among other things, the following: (i) business risks related to the global volatile economic environment; (ii) costs associated with compliance activities; (iii) difficulties encountered in operating in emerging markets; (iv) risks inherent in large, long term projects served by parts of our business; (v) the timely development of new products, technologies, and services that are useful for our customers; (vi) our ability to anticipate and react to technological change and evolving industry standards in the markets in which we operate; (vii) changes in interest rates and fluctuations in currency exchange rates; (viii) changes in raw materials prices or limitations of supplies of raw materials; (ix) the weakening or unavailability of our intellectual property rights; (x) industry consolidation resulting in more powerful competitors and fewer customers; (xi) effects of competition and changes in economic and market conditions in the product markets and geographic areas in which we operate; (xii) effects of, and changes in, laws, regulations, governmental policies, taxation, or accounting standards and practices and (xiii) other factors described in documents that we may furnish from time to time with the US Securities and Exchange Commission, including our Annual Reports on Form 20-F. Although we believe that the expectations reflected in any such forward-looking statements are based on reasonable assumptions, we can give no assurance that they will be achieved. We undertake no obligation to update publicly or revise any forward-looking statements because of new information, future events or otherwise. In light of these risks and uncertainties, the forward-looking information, events and circumstances might not occur. Our actual results and performance could differ substantially from those anticipated in our forward-looking statements.

White

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