Financial Report 2022

Financial review of ABB Group

01

FINANCIAL REVIEW OF ABB GROUP

About ABB

ABB is a technology leader in electrification and automation, enabling a more sustainable and resource-efficient future. The company's solutions connect engineering know-how and software to optimize how things are manufactured, moved, powered and operated. Building on more than 130 years of excellence, ABB's approximately 105,000 employees are committed to driving innovations that accelerate industrial transformation.

Organizational structure

We operate in over 100 countries across three regions: Europe, the Americas, and Asia, Middle East and Africa, and generate revenues in numerous currencies. We are headquartered in Zurich, Switzerland and we govern 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 retained a 19.9 percent ownership interest through our investment in Hitachi Energy Ltd, (Hitachi Energy) which beneficially owns or controls all the subsidiaries of the Power Grids business until December 2022, when we sold the remaining investment in Hitachi Energy to Hitachi.

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,	2022	2021	2020
Europe	49,700	50,000	49,200
The Americas	26,400	25,600	27,600
Asia, Middle East and Africa	29,000	28,800	28,800
Total	**105,100**	**104,400**	**105,600**

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, and in December 2022, Hitachi purchased the remaining 19.9 percent of Hitachi Energy.

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 technology leader in electrification and automation enabling sustainability and resource efficiency, our offering is relevant for the global transition towards low-carbon energy, 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

ABB's purpose is to enable a more sustainable and resource-efficient future with our technology leadership in electrification and automation.

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 2022 amounted to approximately 4 percent of revenues. We focus our research and development expenditures on key areas of innovation and have spent approximately $7.8 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 create resource-efficient value.

All our four Business Areas are market leaders in their respective areas being in either the number 1 or 2 position. 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. 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.

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. During 2022, we completed the implementation of the decentralized way of working at ABB within all our Divisions. Our focus area in 2023 will be to increasingly shift our focus to profitable growth, and further increase the number of our Divisions with this mandate. 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 operational 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 900 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 we believe should reduce the risk and volatility in our earnings. This ongoing shift towards better quality of revenues is now an integral part of governance and business execution.

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 gradual strengthening of our growth profile.

Finally, environmental, social and governance (ESG) drivers are accelerating and translating into increased demand for our electrification and automation offering. The demand for electricity is growing twice as fast as other energy sources, resulting in approximately 50 percent higher average annual investments into distribution networks over the next 10 years (source: IEA World Energy Outlook 2021, Announced Pledges Scenario). The share of low-carbon sources in the global energy mix is expected to increase to 50 percent by 2050 from only 20 percent today (source: IEA World Energy Outlook 2021, Announced Pledges Scenario). The need to improve energy efficiency has never been more relevant, from both the perspective of sustainable operations and reducing operating costs in a high energy cost environment. Today approximately 45 percent of the world's electricity is converted into motion by electric motors yet only approximately 20 percent of the world's electric motors are optimized through the control of drives. Lastly, the global number of working age people (25 to 64 years) per retiree (65 years or over) is expected to fall by about 20 percent over the next 10 years (source: United Nations World Population Prospects 2019), supporting demand for robotics and automation solutions. We believe ABB's offering is well positioned to address these trends.

Businesses

Our markets

ABB is a technology leader in electrification and automation 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 our customer offering 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. Our advanced software is a key differentiation of our digital offering and about 60 percent of our approximately 7,500 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 further in 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 revenues are derived from customers within the industrial segment where 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. Demand for our electrification and automation offerings with embedded digital solutions increased as the energy crisis and tight labor markets served as a prominent reminder to companies of the importance of energy efficiency and flexibility in automated production. This has accelerated customer demand for the digital services and solutions we offer.

In discrete industries, demand from end-markets such as food and beverage, machine builders and general industry grew strongly in 2022 as did the automotive segment due to broadly accelerating investments in the EV segment. As supply chain constraints eased in the latter part of 2022, we saw a normalization of customers' order patterns following a period of pre-buying due to extended delivery lead times.

Later-cycle process industries improved across nearly all customer segments. We saw an increase in gas-related demand during the second half of the year. Early signs of headwind were noted in energy intensive industries such as metals as a result of higher energy prices.

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.

In transport & infrastructure, there was a very strong order development across data centers and the e-mobility business. The buildings segment improved in both the residential and non-residential segments, although softness in residential building in China was noted, as well as general weakness in residential-related demand towards the second half of the year. In the marine segment there were positive developments for the cruise ship sector as well as general marine and ports demand.

Utilities market

We deliver solutions mainly for distribution utilities and renewables customers, while continuing to service conventional power generation customers with our control and automation solutions.

During 2022, the renewables markets continued to see strong growth. Business levels in the conventional power generation market remained stable. Demand from electrical distribution utilities remained strong, with ongoing investments to increase grid reliability and resilience due to increased integration of 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.

Electrification Business Area

Overview

Electrification provides leading electrical distribution and management technologies, solutions and services to electrify the world in a safe, smart and sustainable way. The portfolio includes medium- and low-voltage electrical components, switchgear, digital devices, enclosures, breakers, power conversion products and charging solutions for electric vehicles, among others. With our products, solutions and services, we collaborate with customers to improve power delivery and security, enhance energy management, efficiency and operational reliability, as we seek to achieve a low carbon society.

The Electrification Business Area delivers products through a global network of channel partners and end customers. Approximately half 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 52,300 employees as of December 31, 2022, and generated $14.1 billion of revenues in 2022.

Customers

The Electrification Business Area serves a wide range of customer segments, including residential, commercial and industrial buildings, utilities, oil and gas, chemicals, data centers, e-mobility, renewables, food and beverage, transport and infrastructure, among others. From some of the world's tallest buildings to the busiest airports, the Business Area's products and solutions cover a wide range of applications and business segments.

Products and Services

The Electrification Business Area's products and services are delivered through seven 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 and project management.

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 enables optimization of energy efficiency, safety, security and comfort for any building type, through new installations or retrofit solutions. The Division offers integrated digital technologies for HVAC, lighting, shutters, and security, in addition to energy distribution solutions including DIN rail products, enclosures and emergency lighting through to industrial plugs and sockets and conventional wiring accessories, accommodating for single family homes, multiple dwellings, commercial buildings, infrastructure and industrial applications. The Division's highly innovative technologies and digital solutions serve rising global demand among real estate developers, owners, and investors for smart building technologies that optimize energy distribution and building automation. The scalable solutions aim to deliver significant sustainable and financial benefits, meeting social and environmental demands, while being able to address even the most complex of 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® cable ties, T&B Liquidtight Systems® protection products, PVC coated and nylon conduit systems, power connection and grounding systems, and 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. Manufacturing includes made-to-stock and custom-made solutions.

The Power Conversion Division designs, develops and manufactures end-to-end solutions to power and safeguard life's everyday moments. The Division supports customers in rapidly changing, disruptive industries where power reliability, efficiency, and quality matter most, and customers rely on the Division to solve their most difficult power challenges. Customers include businesses in telecom/5G, networking, data centers, and industrial applications such as EV charging, robotics, laser, test & measurement, and utilities. The Division is powering the technology behind today's connected world, helping to enable industrial advancement with the realization of 5G and to advance data center power architectures as the cloud becomes more business-critical than ever before.

The E-mobility Division is contributing to a zero-emission mobility future with smart, reliable and emission-free electric vehicle charging solutions including market leading charging hardware, ABB Ability™ enabled digital services and energy and fleet management solutions. ABB E-mobility offers a leading portfolio of EV charging solutions from smart chargers for the home to high-power chargers for the highway stations of the future, solutions for the electrification of fleets and opportunity charging for electric buses and trucks.

The Service Division partners with our customers to address their energy challenges for today and tomorrow. Our team of world-class engineers collaborate globally across ABB's Electrification portfolio to service customers in utilities, transportation, infrastructure and industry, assisting to maintain uninterrupted power supply, maximizing energy efficiency while lowering cost and carbon emissions. We bring greater reliability, predictability and sustainability to their operations, and through our digital service portfolio, we drive new levels of optimization, responsiveness and connectivity.

Sales and Marketing

Sales and marketing is generally conducted within the Divisions in Electrification. This enables the Divisions to manage their respective end-to-end activities and create demand across all channels, products and solutions. They increase focus and speed for our customers to drive faster growth. Where necessary, the Divisions work together on joint services, such as the management of accounts, channels, and segment-sales, engaging in a range of promotional activities, both internal and external.

Competition

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

Capital Expenditures

The Electrification Business Area's capital expenditures for property, plant and equipment totaled $385 million in 2022, compared to $345 million in 2021. Investments in 2022 were higher than in 2021 driven by capacity expansion for e-mobility products and some investments which were previously delayed in 2021 and 2020 due to the COVID-19 pandemic. Investments in 2022 principally related to real estate investments, capacity expansion, as well as equipment replacement and upgrades. Geographically, in 2022, Europe represented 55 percent of the capital expenditures, followed by the Americas (33 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 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.

The Motion Business Area had approximately 21,100 employees as of December 31, 2022, and generated $6.7 billion of revenues in 2022.

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.

Products and Services

At December 31, 2022, 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.

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 $150 million in 2022, compared to $230 million in 2021, which included the purchase of a formerly leased property in China. Principal expenditures in 2022 related to real estate investments, capacity expansion, equipment replacement and upgrades across various countries including Finland, the United States, China and India. Geographically, in 2022, Europe represented 60 percent of the capital expenditures, followed by the Americas (28 percent) and Asia, Middle East and Africa (12 percent).

Process Automation Business Area

Overview

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 into two categories, with approximately half of the offering related to solutions for new and brownfield projects and half related 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 20,100 employees as of December 31, 2022, and generated revenues of $6.0 billion in 2022.

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.

As of December 31, 2022, the Process Automation Business Area's products and services are delivered through four operating Divisions. The Business Area spun off its Turbocharging Division in October 2022, which manufactured and serviced turbochargers for diesel and gas engines for marine- and land-based power generation.

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 artificial intelligence (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 systems, 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.

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 and Valmet.

Capital Expenditures

The Process Automation Business Area's capital expenditures for property, plant and equipment totaled $100 million in 2022, compared to $85 million in 2021. Principal investments in 2022 primarily related to purchases of land and building, mainly in the Energy Industries Division. Geographically, in 2022, Europe represented 76 percent of the capital expenditures, followed by Asia, Middle East and Africa (13 percent) and the Americas (11 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 10,700 employees as of December 31, 2022, and generated $3.2 billion of revenues in 2022.

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.

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, autonomous mobile 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 life sciences care, restaurants and retail. Typical robotic applications include welding, material handling, machine tending, machining, painting, picking, packing, palletizing and assembly.

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.

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 $86 million in 2022, compared to $96 million in 2021. Principal investments in 2022 were primarily related to a new Robotics factory in Shanghai, China, and selective investments mainly in production facilities in the Robotics Division in Sweden and in the Machine Automation Division in Austria. In 2022, Europe represented 66 percent of capital expenditures, followed by Asia, Middle East and Africa (28 percent) and the Americas (6 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 (until December 2022) 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 certain 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 four hubs and consists of both expert and transactional services in the areas of human resources, finance and information services. GBS also staffs and maintains front offices in most countries. The costs in GBS are incurred primarily for the benefit of the Business Areas, which are charged for their use of such 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 are Hitachi Energy (the former Power Grids business) and Accelleron (the former Turbocharging Division).

A significant portion of the costs for GBS and other shared corporate overhead costs are charged to the operating businesses. Up to 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 1,000 employees at December 31, 2022, of which approximately 100 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 comprised 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 $762 million, $820 million and $694 million in 2022, 2021 and 2020, respectively. In 2022 and 2021, capital expenditures were 6 percent and 8 percent lower, respectively, than depreciation and amortization. Excluding acquisition-related amortization, capital expenditures were 30 percent higher in 2022 and 28 percent higher in 2021, respectively, than depreciation and amortization.

Capital expenditures in 2022 primarily focused in mature markets, reflecting the geographic distribution of our existing production facilities. Capital expenditures in Europe and North America in 2022 were driven primarily by upgrades and maintenance of existing production facilities, mainly in the U.S., Germany, Italy, Finland, Netherlands, and Switzerland. In Asia, Middle East and Africa, capital expenditures were made primarily to increase production capacity by investing in new or expanded facilities, the highest of which were in China and India. The share of emerging markets capital expenditures as a percentage of total capital expenditures in 2022 and 2021 was 24 percent and 33 percent, respectively.

At December 31, 2022, construction in progress for property, plant and equipment was $586 million, mainly in the U.S., Germany, Switzerland, Finland, Austria, China and Sweden, while 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.

Our capital expenditures relate primarily to property, plant and equipment and are funded primarily through cash flows from operating activities. For 2023, 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 are tasked with taking 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 2022, 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.

Through our Sustainable Supply Base Management (SSBM) approach, we assess ESG risks, compliance and the performance of our suppliers in these areas to make sure they meet our expectations. These expectations are detailed in the ABB Supplier Code of Conduct and the ABB Code of Conduct.

We manage our obligations in relation to conflict minerals through our Conflict Minerals policy and processes that we aim to continually improve and tailor to our value chain. We continue to work with our suppliers and customers to enable us to comply with the SEC's rules and disclosure obligations relating to conflict minerals. Further information on ABB's Conflict Minerals policy and supplier requirements can be found under "Material Compliance" at global.abb/group/en/about/supplying/material-compliance.

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. We continue to file new patent applications to protect our new inventions. As of December 31, 2022, we have a portfolio of approximately 25,000 pending patent applications and granted patents, of which approximately 5,500 are pending applications. This portfolio includes approximately 3,500 utility models and design rights, of which approximately 200 are pending applications. In 2022, we filed close to 500 priority patents, utility model and design applications, each covering a unique invention or unique angle on an invention. Additionally, we filed approximately 1,850 secondary patents, utility model and design applications, each extending the coverage of a previously filed priority application.

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

In 2022, we managed to navigate high customer activity in a complex macroeconomic environment marked by inflation, a strained value chain, an energy crisis, the war in Ukraine with the related economic sanctions on Russia as well as the lingering impacts of the COVID-19 pandemic. During the year, we also worked to fully implement the ABB Way operating model within our Divisions. Our new and more efficient ways of working combined with a strong market situation led to increased operational results. In the wake of the COVID-19 pandemic, ongoing supply chain, logistics and labor challenges emerged, but we were able to avoid major business disruptions with our more agile organization. Our strong price management processes proved effective as we quickly responded to rising input costs and were able to more than offset the higher costs of inflation through price increases during the year.

Active portfolio management continues to be 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. We continued to make strong progress in aligning our business portfolio with our purpose, and fully focus on the areas of electrification and automation. We completed the spin-off of the Turbocharging Division in October 2022 and sold the remaining 19.9 percent interest in Hitachi Energy to Hitachi in December. The net cash received from the sale further strengthened our balance sheet, giving us additional flexibility in our capital allocation decisions. Looking forward, after the end of the year, we also reached an agreement in January 2023 to sell our Power Conversion Division to AcBel Polytech Inc. The transaction is subject to regulatory approvals and is expected to be completed in the second half of 2023.

At the same time, we remain committed to our strategy to separately list our E-mobility business subject to constructive market conditions. In the meantime, we received gross proceeds of approximately CHF 200 million ($216 million) through a private placement of new shares in ABB E-mobility in November 2022. After the end of the year, we obtained an additional amount of funding through the private placement, increasing the total gross proceeds by an additional CHF 325 million ($351 million) in February 2023. We remain a committed partner to ABB E-mobility with a shareholding of 81 percent as of February 2023.

In addition, our active portfolio management process is driving decisions within the Divisions to improve or exit areas of underperformance and support improved performance ambitions. During 2022 we accelerated the pace of strategic partnerships as well as bolt-on acquisitions driven by the Divisions. The Motion Business Area announced their first two acquisitions in more than a decade, with a combined value of approximately $125 million. Both the planned acquisition of the Siemens low voltage NEMA motor business (closing in 2023) and the PowerTech Converter acquisition will help the respective Divisions to further strengthen their leading market positions. We have also made minority investments led by our Divisions. Both the InCharge Energy, Inc (In-Charge) and Numocity Technologies Private Ltd (Numocity) majority acquisitions made earlier this year are good examples that minority investments can later also become acquisition targets. As part of our future strategy, we continue to aim to complete five or more bolt-on acquisitions each year.

Business progress

During 2022, demand for ABB's offering was robust, driven by strong demand across all regions and most customer segments, leading to positive developments in both volumes and pricing, the latter of which was largely driven by our quick response to rising input costs which we were able to pass on to our customers. Orders increased in all Business Areas with higher demand in all regions with the Americas seeing the highest growth, while growth in Asia, Middle East, and Africa was lower, driven mainly by lower growth rates in China versus prior year. Overall demand increased for the short-cycle flow business and the systems-driven offerings as well as in service.

While our orders increased 7 percent (13 percent in local currencies) in 2022, revenue growth was lower at 2 percent (9 percent in local currencies). 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 of 20 percent to $19.9 billion at the end of the year.

Group profitability showed strong improvement during 2022 with segment profit (Operational EBITA) improving in all Business Areas but reflecting approximately 10 percent of negative currency translation impacts compared to 2021. The result was driven by strong pricing execution, increased volumes and improved internal efficiency. 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.

Cash flows from operating activities was $1.3 billion in 2022, a decrease of 61 percent compared to 2021. The profitability improvement was more than offset by the impact of a buildup of working capital, especially inventories, required to support our record high backlog and the impact of higher pay-out of employee bonuses due to the strong financial performance in 2021, as well as significant cash outflows relating to the exit of a non-core business, the payment for the settlement related to regulatory penalties for the Kusile project as well as ongoing restructuring and business transformation costs.

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 2022, or 4 percent of revenues.

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 strong 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 2023 Annual General Meeting (AGM), the Board of Directors is proposing a dividend of 0.84 Swiss francs per share. During the year we reached our goal of returning $7.8 billion of the cash proceeds from the Power Grids divestment to shareholders. Under the various share buyback programs we have now purchased in excess of our goal with $2.8 billion of shares purchased in 2022 in addition to the $5.5 billion purchased through the end of 2021.

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 2022, we announced a new emissions target for our supply chain. We aim to work with our main tier-one suppliers to achieve a 50 percent reduction in their CO_2e emissions by 2030. The target is focused on suppliers covering 70 percent of ABB's annual procurement expenditure. The new target is expected to make an important contribution to our goal of enabling a low carbon society as, in many cases, our suppliers have a bigger footprint than our company. For a detailed discussion of our sustainability strategy 2030 and our progress in 2022, see "See the Sustainability 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 $144 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 $140 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 2022 by $20 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. Our defined benefit pension plans were overfunded by $326 million and $27 million at December 31, 2022 and 2021, respectively. Our other postretirement plans were underfunded by $50 million and $71 million at December 31, 2022 and 2021, 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 2022, we added one new Division by creating a standalone Division from components of two existing Divisions resulting in twenty-one reporting units in total for the Group at October 1, 2022. Subsequently ABB completed the spin-off of the Turbocharging Division in October 2022. For each change in reporting unit which arose during 2022, 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.

During 2021, we added three new Divisions by splitting two existing ones into multiple standalone 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. As a result of the interim quantitative impairment test, a goodwill impairment charge of $290 million was recorded in 2020 to reduce the carrying value of the Machine Automation reporting unit to its implied fair value. For more information, please refer to “Note 11 – Goodwill and intangible assets” to ABB’s Consolidated Financial Statements.

At October 1, 2022 and 2021, 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 2022, we invested $1,166 million, or approximately 4 percent of our 2022 consolidated revenues, on research and development activities in our continuing operations. We also had expenditures of approximately $48 million 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. 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 across 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 strategic relationships with a number of leading institutions in various countries around the world.

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.

Acquisitions and divestments

Acquisitions

During 2022 and 2021, ABB paid $195 million and $212 million to purchase five and two businesses, respectively.

The principal acquisition in 2022 was InCharge Energy, Inc. (In-Charge), where we increased our ownership to a 60 percent controlling interest, expanding the market presence of the E-mobility Division within our Electrification operating segment, particularly in the North American market. In-Charge is headquartered in Santa Monica, United States, and is a provider of turn-key commercial electric vehicle charging hardware and software solutions. See "Note 4 - Acquisitions, divestments and equity-accounted companies" to our Consolidated Financial Statements.

The principal acquisition in 2021 was ASTI Mobile Robotics Group SL (ASTI). ASTI is headquartered in Burgos, Spain.

There were no significant acquisitions in 2020.

Divestments and spin-offs

Spin-off of the Turbocharging Division

In September 2022, the shareholders approved the spin-off of the Company's Turbocharging Division into an independent, publicly traded company, Accelleron Industries AG (Accelleron), which was completed through the distribution of common stock of Accelleron to the stockholders of ABB on October 3, 2022. As a result of the spin-off of this Division, the Company distributed net assets of $272 million, net of amounts attributable to noncontrolling interests of $12 million, which was reflected as a reduction in Retained earnings. In addition, total accumulated comprehensive income of $95 million, including the cumulative translation adjustment, was reclassified to Retained earnings. Cash and cash equivalents distributed with Accelleron was $172 million. Prior to being spun-off, the Turbocharging Division was part of our Process Automation Business Area. See “Note 4 - Acquisitions, divestments and equity-accounted companies” to our Consolidated Financial Statements.

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 transaction 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 Business Area. See “Note 4 - Acquisitions, divestments and equity-accounted companies” to our Consolidated Financial Statements.

Divestment of Power Grids

On July 1, 2020, we completed the divestment of 80.1 percent of our former Power Grids business (Hitachi Energy) to Hitachi. 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 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.

Hitachi held a call option which required ABB 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. In September 2022, we agreed with Hitachi that we would sell our remaining investment in Hitachi Energy and concurrently settle certain outstanding contractual obligations relating to the initial sale of the business, including certain indemnification guarantees (see Note 15 - Commitments and contingencies). The transaction was completed in December 2022, and we received proceeds of $1,552 million. See “Note 4 - Acquisitions, divestments and equity-accounted companies” to our Consolidated Financial Statements.

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, 2022, 2021 and 2020, were as follows:

Exchange rates into $	2022	2021	2020
EUR 1.00	1.07	1.13	1.23
CHF 1.00	1.08	1.10	1.14
CNY 1.00	0.14	0.16	0.15

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, 2022, 2021 and 2020, were as follows:

Exchange rates into $	2022	2021	2020
EUR 1.00	1.05	1.18	1.14
CHF 1.00	1.05	1.09	1.07
CNY 1.00	0.15	0.16	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 2022, approximately 75 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 22 percent, and
- Chinese renminbi, approximately 16 percent.

In 2022, approximately 72 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 19 percent, and
- Chinese renminbi, approximately 13 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.

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.

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. Prior to its sale in December 2022 our most significant equity method investment was 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.

Analysis of results of operations

The discussion in the following sections below provides a comparative analysis between 2022 and 2021. See the sections under “Operating and Financial Review and Prospects” in our 2021 Annual Report for a comparative discussion and analysis between 2021 and 2020.

Our consolidated results from operations were as follows:

Income Statement Data:

($ in millions, except per share data in $)	2022	2021	2020
Revenues	29,446	28,945	26,134
Cost of sales	(19,736)	(19,478)	(18,256)
Gross profit	**9,710**	**9,467**	**7,878**
Selling, general and administrative expenses	(5,132)	(5,162)	(4,895)
Non-order related research and development expenses	(1,166)	(1,219)	(1,127)
Impairment of goodwill	—	—	(311)
Other income (expense), net	(75)	2,632	48
Income from operations	**3,337**	**5,718**	**1,593**
Interest and dividend income	72	51	51
Interest and other finance expense	(130)	(148)	(240)
Losses from extinguishment of debt	—	—	(162)
Non-operational pension (cost) credit	115	166	(401)
Income tax expense	(757)	(1,057)	(496)
Income from continuing operations, net of tax	**2,637**	**4,730**	**345**
Income (loss) from discontinued operations, net of tax	(43)	(80)	4,860
Net income	**2,594**	**4,650**	**5,205**
Net income attributable to noncontrolling interests and redeemable noncontrolling interests	(119)	(104)	(59)
Net income attributable to ABB	**2,475**	**4,546**	**5,146**
Amounts attributable to ABB shareholders:			
Income from continuing operations, net of tax	2,517	4,625	294
Income (loss) from discontinued operations, net of tax	(42)	(79)	4,852
Net income	2,475	4,546	5,146
Basic earnings per share attributable to ABB shareholders:			
Income from continuing operations, net of tax	1.33	2.31	0.14
Income (loss) from discontinued operations, net of tax	(0.02)	(0.04)	2.30
Net income	1.30	2.27	2.44
Diluted earnings per share attributable to ABB shareholders:			
Income from continuing operations, net of tax	1.32	2.29	0.14
Income (loss) from discontinued operations, net of tax	(0.02)	(0.04)	2.29
Net income	1.30	2.25	2.43

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

($ in millions)	2022	2021	2020	% Change 2022	% Change 2021
Electrification	15,901	14,381	11,884	11%	21%
Motion	7,896	7,616	6,574	4%	16%
Process Automation	6,825	6,779	6,144	1%	10%
Robotics & Discrete Automation	4,116	3,844	2,868	7%	34%
Total Business Areas	**34,738**	**32,620**	**27,470**	**6%**	**19%**
Corporate and Other					
Non-core and divested businesses	46	(10)	(31)	n.a.	n.a.
Intersegment eliminations and other	(796)	(742)	(927)	n.a.	n.a.
Total	**33,988**	**31,868**	**26,512**	**7%**	**20%**

In 2022, total orders increased 7 percent compared to 2021 (13 percent in local currencies). All Business Areas contributed to the order growth driven by both higher business volumes and price increases, reflecting strong demand across most regions and most customer segments, as well as the impact of successfully passing on rising input costs to end customers. Orders were higher for product and project businesses as well as for service businesses. In addition to strong underlying market demand, orders were also supported by customers placing orders early to secure deliveries in an environment with a generally tight supply chain, especially earlier in the year. As supply chain constraints eased over the year, customer order patterns tended to normalize. Growth rates were highest in the Electrification and Robotics & Discrete Automation Business Areas. Both the Process Automation and Motion Business Areas contributed modest growth, with the former impacted by the spin-off of the Turbocharging Division in October 2022 and the latter impacted by the divestment of the Mechanical Power Transmission business sold in November 2021 which together had a combined negative impact on consolidated order growth of approximately 3 percent. 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:

($ in millions)	2022	2021	2020	% Change 2022	% Change 2021
Europe	11,778	11,857	9,618	(1)%	23%
The Americas	11,825	9,940	7,956	19%	25%
of which: United States	8,920	7,453	5,971	20%	25%
Asia, Middle East and Africa	10,385	10,071	8,938	3%	13%
of which: China	5,087	5,036	4,121	1%	22%
Total	**33,988**	**31,868**	**26,512**	**7%**	**20%**

In 2022, orders increased 19 percent in the Americas (20 percent in local currencies), with orders growing in the U.S., Canada, Brazil and Mexico. In Europe, orders decreased 1 percent (increased 13 percent in local currencies) with the Motion and Robotics & Discrete Automation Business Areas reporting order growth. Orders were higher in France, Switzerland, Italy and the United Kingdom while they declined in Germany, Sweden and Finland. In Asia, Middle East and Africa, orders increased 3 percent (9 percent in local currencies) with orders increasing in China, India, Singapore, South Korea and Saudi Arabia while they decreased in Australia.

Order backlog

December 31, ($ in millions)	2022	2021	2020	% Change 2022	% Change 2021
Electrification	6,933	5,458	4,358	27%	25%
Motion	4,726	3,749	3,320	26%	13%
Process Automation	6,229	6,079	5,805	2%	5%
Robotics & Discrete Automation	2,679	1,919	1,403	40%	37%
Total Business Areas	**20,567**	**17,205**	**14,886**	**20%**	**16%**
Corporate and Other					
Non-core and divested businesses	23	114	139	(80)%	(18)%
Intersegment eliminations	(723)	(712)	(722)	n.a.	n.a.
Total	**19,867**	**16,607**	**14,303**	**20%**	**16%**

At December 31, 2022, consolidated order backlog was 20 percent higher (26 percent in local currencies) compared to December 31, 2021. Order backlog increased significantly in most Business Areas with the Process Automation Business Area having only modest growth. The order backlog in the Motion Business Area was driven by order growth in both the short- and long-cycle businesses in most Divisions. Order backlog increased across all Divisions in the Electrification Business Area reflecting the very high order levels with the strongest growth in the E-mobility and Distribution Solutions Divisions. The order backlog in the Process Automation Business Area was supported by a strong order increase in most Divisions except the Marine & Ports Division, which was negatively impacted by an order reversal due to a customer bankruptcy in Germany. The low order backlog growth in the Process Automation Business Area also reflects the spin-off of the Turbocharging Division. The increase in the order backlog in the Robotics & Discrete Automation Business Area was driven by strong growth in both Divisions (Machine Automation and Robotics).

Revenues

($ in millions)	2022	2021	2020	% Change 2022	% Change 2021
Electrification	14,105	13,187	11,924	7%	11%
Motion	6,745	6,925	6,409	(3)%	8%
Process Automation	6,044	6,259	5,792	(3)%	8%
Robotics & Discrete Automation	3,181	3,297	2,907	(4)%	13%
Total Business Areas	**30,075**	**29,668**	**27,032**	**1%**	**10%**
Corporate and Other					
Non-core and divested businesses	135	11	(6)	n.a.	n.a.
Intersegment eliminations and other	(764)	(734)	(892)	n.a.	n.a.
Total	**29,446**	**28,945**	**26,134**	**2%**	**11%**

In 2022, revenues increased by 2 percent (9 percent in local currencies). During the first half of the year, revenues were hampered as component constraints slowed production and hindered customer deliveries. However, the supply chain challenges progressively eased, triggering higher revenue growth rates in the latter part of the year. All Business Areas benefited from increased volumes and price increases as we were able to pass on the impacts of higher cost inputs to the end customers. Growth rates were highest in the Electrification Business Area. In local currencies, the Motion Business Area achieved a single-digit growth rate despite the adverse impact from the divestment of the Mechanical Power Transmission Division in November 2021. The Process Automation Business Area saw moderate growth in local currencies despite the spin-off of the Turbocharging Division in October 2022. Revenues in the Robotics & Discrete Automation Business Area increased in local currencies, with revenues benefiting in the second half of the year from an easing of component constraints. 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)	**2022**	**2021**	**2020**	**2022**	**2021**
Europe	10,286	10,529	9,764	(2)%	8%
The Americas	9,572	8,686	7,949	10%	9%
of which: United States	7,021	6,397	6,027	10%	6%
Asia, Middle East and Africa	9,588	9,730	8,421	(1)%	16%
of which: China	4,696	4,932	4,098	(5)%	20%
Total	**29,446**	**28,945**	**26,134**	**2%**	**11%**

In 2022, the increase in revenues was driven by the Americas region, where revenues increased 10 percent (11 percent in local currencies) and were higher across all Business Areas except the Motion Business Area. Revenues increased in the U.S., Canada, Brazil, Mexico, Argentina and Peru. In Europe, revenues decreased 2 percent (increased 12 percent in local currencies) and were higher across all Business Areas except the Motion Business Area, which was flat. Sales were higher in Finland, the United Kingdom and France while revenues were lower in Sweden, Switzerland and Norway. Germany and Italy reported stable sales. In Asia, Middle East and Africa revenues decreased 1 percent (increased 5 percent in local currencies) and revenues grew in the Electrification Business Area while the Process Automation and Robotics & Discrete Automation Business Areas reported a decrease with the Motion Business Area being stable. Revenues increased in India and Singapore while they decreased in China, Saudi Arabia, Australia, Japan and South Korea.

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 2022, costs of sales increased 1 percent (8 percent in local currencies) to $19,736 million. Cost of sales as a percentage of revenues decreased to 67.0 percent from 67.3 percent in 2021, increasing the gross margin, primarily driven by price increases and certain cost savings actions taken to mitigate higher inflation in labor, commodity prices and freight costs. It is partly offset by a negative impact due to portfolio changes. In 2022, gross margin percentages were higher in the Electrification, Process Automation and Motion Business Areas. The gross margin percentages in the Robotics & Discrete Automation Business Areas were lower in 2022 compared to 2021 due to the impact of higher inflation and lower volume due to general supply chain constraints.

Selling, general and administrative expenses

The components of selling, general and administrative expenses were as follows:

($ in millions)	**2022**	**2021**	**2020**
Selling expenses	3,248	3,281	3,087
General and administrative expenses	1,884	1,881	1,808
Total	**5,132**	**5,162**	**4,895**

In 2022, general and administrative expenses were flat (increased 8 percent in local currencies) compared to 2021. The local currency increase principally represents an impact from inflation. As a percentage of revenues, general and administrative expenses slightly decreased to 6.4 percent from 6.5 percent in 2021 mainly due to strong revenue growth compared to more modest cost increases. General and administrative expenses in 2022 continue to include the ongoing costs required to deliver services to Hitachi Energy Ltd and Accelleron (commencing in October 2022) under transition service agreements for which we are compensated and have recorded $162 million in Other income (expense), net, during 2022 compared to $173 million in 2021.

In 2022, selling expenses decreased 1 percent (increased 6 percent in local currencies) compared to 2021 and was higher in local currencies across all Business Areas. Spending levels increased as pandemic-related restrictions were gradually relaxed and sales activities increased to keep pace with the strong growth in underlying demand. Selling expenses as a percentage of orders received decreased from 10.3 percent in 2021 to 9.6 percent in 2022 mainly due to strong order growth.

Non-order related research and development expenses

In 2022, non-order related research and development expenses decreased 4 percent (increase 4 percent in local currencies) compared to 2021. In 2022, non-order related research and development expenses as a percentage of revenues remained similar to prior year levels (4.0 percent in 2022 compared to 4.2 percent in 2021) as we continued investing in research and development in line with revenues growth.

Other income (expense), net

($ in millions)	2022	2021	2020
Income from provision of services under transition services agreements	221	173	91
Net gain from sale of property, plant and equipment	84	38	37
Gain (loss) from change in fair value of investments in equity securities	52	108	73
Brand income from Hitachi Energy	57	89	60
Favorable resolution of an uncertain purchase price adjustment	15	6	36
Fair value adjustment on assets and liabilities held for sale	—	—	(33)
Net gain (loss) from sale of businesses & equity-accounted investments(1)	36	2,193	(2)
Asset impairments	(55)	(33)	(35)
Income (loss) from equity-accounted companies	(102)	(100)	(66)
Restructuring and restructuring-related expenses(2)	(227)	(48)	(87)
Regulatory penalties in connection with Kusile project	(313)	—	—
Other income (expense)	157	206	(26)
Total	**(75)**	**2,632**	**48**

(1) Includes gain on sale of the remaining 19.9 percent investment in Hitachi Energy Ltd.
(2) Excluding asset impairments

In 2022, Other income (expense), net, was a loss of $75 million compared to a gain of $2,632 million in 2021. In 2022, we recorded costs of $313 million associated with regulatory penalties assessed in connection with the Kusile project and higher restructuring and restructuring-related expenses which included $195 million in connection with the exit of the full train retrofit business primarily for contract settlement costs. In 2022, we recorded a gain of $43 million relating to the sale of the remaining 19.9 percent of Hitachi Energy to Hitachi. In 2021, we recorded gains of $2,193 million in Other income (expense), net for net gains from sales of businesses. This was primarily due to the divestment of the Dodge business. In 2022 compared to 2021, we recorded lower gains for net fair value increases in various equity investments, the most significant of which in 2022 related to InCharge Energy, Inc and in 2021 related to CMR Surgical Ltd.

Income from operations

				% Change	
($ in millions)	2022	2021	2020	2022	2021
Electrification	2,159	1,841	1,335	17%	38%
Motion	1,092	3,276	989	(67)%	231%
Process Automation	663	713	344	(7)%	107%
Robotics & Discrete Automation	247	269	(163)	(8)%	n.a.
Total Business Areas	**4,161**	**6,099**	**2,505**	**(32)%**	**143%**
Corporate and Other	(823)	(385)	(927)	n.a.	n.a.
Intersegment elimination	(1)	4	15	n.a.	n.a.
Total	**3,337**	**5,718**	**1,593**	**(42)%**	**259%**

In 2022 and 2021, 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)	2022	2021	2020
Interest and dividend income	72	51	51
Interest and other finance expense	(130)	(148)	(240)
Losses from extinguishment of debt	—	—	(162)

In 2022, increases in market interest rates resulted in both higher interest income on cash deposits and higher interest expense on floating rate debt. Interest expense was lower primarily due to net reversals of interest expense in connection with income tax related contingencies. This was partially offset by the effect of higher rates of interest on floating rate debt as well as higher amounts of outstanding commercial paper.

Non-operational pension (cost) credit

A non-operational pension credit of $115 million was recorded in 2022 compared to a $166 million credit in 2021. Compared to 2021, the 2022 non-operational pension credit has decreased due to lower expected returns on plan assets and higher interest costs on the benefit obligations (see “Note 17 - Employee benefits” to our Consolidated Financial Statements).

Income tax expense

($ in millions)	2022	2021	2020
Income from continuing operations before taxes	3,394	5,787	841
Income tax expense	(757)	(1,057)	(496)
Effective tax rate for the year	22.3%	18.3%	59.0%

In 2022, the effective tax rate increased to 22.3 percent from 18.3 percent in 2021. The effective tax rate in 2022 was approximately 2 percentage points higher due to the non-deductible regulatory penalties in connection with the Kusile project and 3 percentage points due to not benefiting losses in entities having a participation exemption. The effective tax rate in 2022 also reflects a benefit of approximately 6 percentage points due to changes in assessment of recoverability of deferred tax assets. In 2021, the tax impacts related to the sale of the Dodge business reduced the effective tax rate by approximately 5 percentage points. We also realized certain benefits from internal reorganizations in anticipation of this divestment which reduced the effective tax rate by a further 4 percentage points.

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 2021, Income from continuing operations, net of tax, decreased by $2,093 million to $2,637 million in 2022.

Income from discontinued operations, net of tax

Income (loss) from discontinued operations, net of tax, in 2022, 2021 and 2020 was as follows:

($ in millions)	2022	2021	2020
Total revenues	—	—	4,008
Total cost of sales	—	—	(3,058)
Gross profit	**—**	**—**	**950**
Expenses	(38)	(18)	(808)
Change to net gain recognized on sale of the Power Grids business	(10)	(65)	5,141
Income (loss) from operations	**(48)**	**(83)**	**5,282**
Net interest income (expense) and other finance expense	—	2	(5)
Non-operational pension (cost) credit	—	—	(94)
Income (loss) from discontinued operations before taxes	**(48)**	**(81)**	**5,182**
Income tax	5	1	(322)
Income (loss) from discontinued operations, net of tax	**(43)**	**(80)**	**4,860**

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 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 2022 and 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.

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 2021, Net income attributable to ABB decreased by $2,071 million to $2,475 million in 2022.

Earnings per share attributable to ABB shareholders

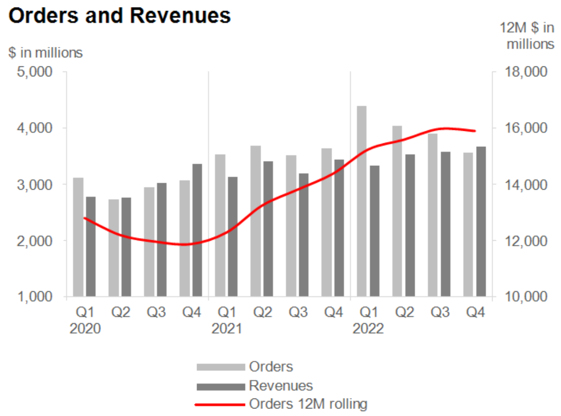
(in $)	2022	2021	2020
Basic earnings per share attributable to ABB shareholders:			
Income from continuing operations, net of tax	1.33	2.31	0.14
Income (loss) from discontinued operations, net of tax	(0.02)	(0.04)	2.30
Net income	1.30	2.27	2.44
Diluted earnings per share attributable to ABB shareholders:			
Income from continuing operations, net of tax	1.32	2.29	0.14
Income (loss) from discontinued operations, net of tax	(0.02)	(0.04)	2.29
Net income	1.30	2.25	2.43

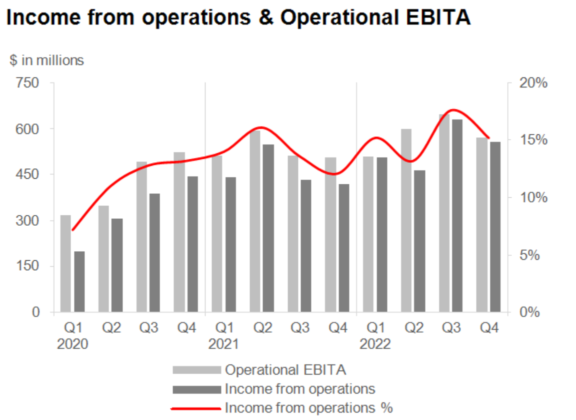
Basic earnings per share is calculated by dividing income by the weighted-average number of shares outstanding during the year. Diluted earnings per share is calculated by dividing income by the weighted-average number of shares outstanding during the year, assuming that all potentially dilutive securities 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:





($ in millions)	2022	2021	2020	% Change 2022	% Change 2021
Orders	15,901	14,381	11,884	11%	21%
Order backlog at December 31,	6,933	5,458	4,358	27%	25%
Revenues	14,105	13,187	11,924	7%	11%
Income from operations	2,159	1,841	1,335	17%	38%
Operational EBITA	2,328	2,121	1,681	10%	26%

Orders

Approximately two-thirds of the Business Area's orders are for products with short delivery times; these orders are usually recorded and delivered within a three-month period and thus are generally considered as short-cycle. The remainder is comprised of smaller project orders 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 2022, orders increased 11 percent (17 percent in local currencies) as demand improved across all key end-user segments. Demand in the buildings segment, the Electrification Business Area's largest end-user segment, was robust, with strong growth particularly in the non-residential building sector. Solid growth in the residential building sector in the first half of the year was partly offset by a slowdown in the second half of 2022, particularly in certain European markets. Substantial growth continues in the e-mobility segment along with strong growth in data centers, food and beverage, infrastructure and renewables. Demand from the oil and gas segment increased significantly during the year, while growth in the utilities and rail segments was solid even if geographically uneven.

The geographic distribution of orders for our Electrification Business Area was as follows:

($ in millions)	2022	2021	2020
Europe	4,973	5,022	4,149
The Americas	6,776	5,199	4,033
of which: United States	5,273	3,891	3,065
Asia, Middle East and Africa	4,152	4,160	3,702
of which: China	2,028	2,141	1,819
Total	**15,901**	**14,381**	**11,884**

In 2022, orders in local currencies increased in all regions. The pandemic-related challenges improved compared to 2021 in most geographies. Orders in the Americas increased 30 percent (31 percent in local currencies), with demand strengthening across all key markets, led by increases in the U.S. and Brazil. Orders in Europe decreased 1 percent, reflecting the weakening of many European currencies against the U.S. dollar, but increased 13 percent in local currencies, with growth across the region including in key markets such as Italy and Germany. Orders in Asia, Middle East and Africa were on the same level as in 2021, but increased 6 percent in local currencies, with strong order growth in India throughout the year offsetting a slowdown in China. Orders in China were lower in most end-user segments mainly as business activity was hampered by pandemic-related measures, but also reflected a challenging comparable due to strong order performance in 2021.

Order backlog

In 2022, order backlog increased 27 percent (33 percent in local currencies). Order backlog benefited from strong order intake, but was also impacted by execution challenges caused by material shortages, transportation constraints as well as pandemic-related production pressures in some local markets.

Revenues

In 2022, revenues increased 7 percent (14 percent in local currencies). Revenues in local currencies increased in all Divisions reflecting the strong demand across regions and end-user segments, however growth was still hampered by component shortages, logistics challenges and a tight labor market. Pricing actions taken to mitigate increasing material, labor and transportation costs contributed strongly to the higher revenue level and accounted for around three quarters of the revenue growth in 2022. The revenue growth was led by the E-mobility Division, mirroring the very high demand in this segment. There was also strong double-digit revenue growth in local currencies in the Power Conversion Division as well as in the Installation Products and Smart Power Divisions.

The geographic distribution of revenues for our Electrification Business Area was as follows:

($ in millions)	**2022**	**2021**	**2020**
Europe	4,544	4,628	4,190
The Americas	5,372	4,503	4,093
of which: United States	3,940	3,322	3,115
Asia, Middle East and Africa	4,189	4,056	3,641
of which: China	2,004	2,110	1,858
Total	**14,105**	**13,187**	**11,924**

In 2022, revenues in the Americas increased 19 percent (20 percent in local currencies) with widespread regional growth. Revenues increased 3 percent (10 percent in local currencies) in Asia, Middle East and Africa, supported by strong growth in India, while revenues in China were lower than the previous year. Revenues in Europe decreased 2 percent, impacted by weakening currencies in many European countries versus the U.S. dollar, while revenues in the region grew 13 percent in local currencies.

Income from operations

In 2022, income from operations increased 17 percent (28 percent in local currencies), supported by higher volumes as well as strong price management, which helped offset the adverse impact from cost inflation in raw materials, freight and labor. Benefits of savings realized from ongoing restructuring and cost savings programs also positively influenced income from operations. Restructuring-related expenses and implementation costs in our operating Divisions were lower in 2022 than in 2021, mainly due to the substantial completion of the integration of GEIS, which we acquired in 2018. Also contributing to the higher income from operations in 2022 compared to 2021 were higher gains from net fair value increases in various equity investments, the most significant being InCharge Energy, Inc., as well as lower GEIS integration costs. These positive effects were partially dampened by widespread inflationary cost pressures in 2022, as well as higher personnel expenses driven by a ramp-up of manufacturing capacity to meet higher demand. Changes in foreign currencies, including the impacts from FX/commodity timing differences summarized in the table below, negatively impacted income from operations by approximately 6 percent.

Operational EBITA

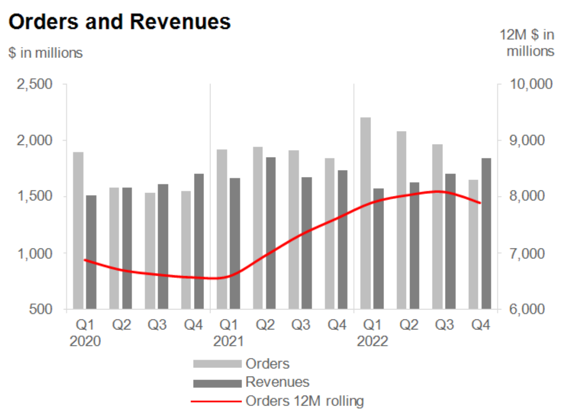
The reconciliation of Income from operations to Operational EBITA for the Electrification Business Area was as follows:

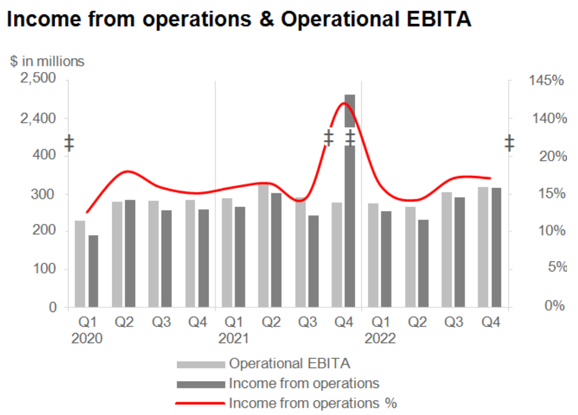
($ in millions)	2022	2021	2020
Income from operations	**2,159**	**1,841**	**1,335**
Acquisition-related amortization	116	117	115
Restructuring, related and implementation costs	28	66	145
Changes in obligations related to divested businesses	1	—	15
Changes in pre-acquisition estimates	11	(6)	11
Gains and losses from sale of businesses	(1)	13	4
Fair value adjustment on assets and liabilities held for sale	—	—	33
Favorable resolution of an uncertain purchase price adjustment	—	(5)	(36)
Acquisition- and divestment-related expenses and integration costs	40	70	71
Changes in fair value of investments in equity securities	(57)	(15)	—
Certain other non-operational items	33	15	9
FX/commodity timing differences in income from operations	(2)	25	(21)
Operational EBITA	**2,328**	**2,121**	**1,681**

In 2022, Operational EBITA increased 10 percent (20 percent excluding the impact from changes in foreign currency exchange rates) compared to 2021, 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:





				% Change	
($ in millions)	**2022**	**2021**	**2020**	**2022**	**2021**
Orders	7,896	7,616	6,574	4%	16%
Order backlog at December 31,	4,726	3,749	3,320	26%	13%
Revenues	6,745	6,925	6,409	(3)%	8%
Income from operations	1,092	3,276	989	(67)%	231%
Operational EBITA	1,163	1,183	1,075	(2)%	10%

Orders

In 2022, orders increased 4 percent (11 percent in local currencies) compared to 2021. Strong market activity as well as effective price management offset negative impacts from both exchange rates and the divestment in November 2021 of the Mechanical Power Transmission Division which negatively impacted the growth rate by approximately 9 percent. The Business Area recorded strong double-digit order growth in local currencies across all Divisions and in key customer segments and benefited from strong order growth in the buildings segment (heating, ventilation, air conditioning and refrigeration) as well as in rail, with solid demand recovery and high year-on-year growth in the chemical, and oil and gas segments. Other segments supporting strong order development include metals, pulp and paper, marine and other segments such as power generation (including wind), food and beverage, and mining. The market shift towards carbon reduction, energy efficiency and digitalization continued to support business growth.

The geographic distribution of orders for our Motion Business Area was as follows:

($ in millions)	2022	2021	2020
Europe	2,710	2,617	2,219
The Americas	2,583	2,677	2,276
of which: United States	2,128	2,200	1,897
Asia, Middle East and Africa	2,603	2,322	2,079
of which: China	1,314	1,232	1,077
Total	**7,896**	**7,616**	**6,574**

In 2022, orders increased 4 percent (18 percent in local currencies) in Europe as orders increased across the region particularly in Turkiye, Italy, Sweden, Germany, France and Poland. In Asia, Middle East and Africa, orders increased 12 percent (18 percent in local currencies) driven by growth in India, China and Australia. In the Americas, orders decreased 4 percent (2 percent in local currencies) reflecting the impact of the divestment of the Mechanical Power Transmission Division, which operated principally in the United States.

Order backlog

Order backlog in 2022 increased 26 percent (33 percent in local currencies) compared to 2021 reaching $4.7 billion. Order backlog increased across all Divisions and was driven mainly by the large orders received in the long-cycle business. Additionally, supply chain constraints impacted customer deliveries, particularly in the short-cycle business, further adding to the order backlog.

Revenues

In 2022, revenues declined 3 percent (up 5 percent in local currencies) compared to 2021, negatively impacted by approximately 9 percent by the divestment of the Mechanical Power Transmission Division in November 2021. The growth in the other Divisions was supported by strong demand and solid price management particularly in the products business.

The geographic distribution of revenues for our Motion Business Area was as follows:

($ in millions)	2022	2021	2020
Europe	2,271	2,258	2,196
The Americas	2,208	2,396	2,225
of which: United States	1,823	1,974	1,867
Asia, Middle East and Africa	2,266	2,271	1,988
of which: China	1,245	1,256	1,040
Total	**6,745**	**6,925**	**6,409**

In 2022, revenues in Europe increased 1 percent (16 percent in local currencies) compared to 2021. Revenue increases in local currencies were driven by Turkiye, Germany, the United Kingdom, Finland and Italy while sales volumes declined in Poland, Switzerland and Austria. In Asia, Middle East and Africa revenues were flat (up 6 percent in local currencies) as revenue growth in India and China was partly offset by declines in Australia and Japan. In the Americas, revenues decreased 8 percent (7 percent in local currencies) impacted by the divestment of the Mechanical Power Transmission Division, which was partially offset by growth in the U.S., particularly in the book-and-bill business in the NEMA Motors Division.

Income from operations

In 2022, income from operations declined 67 percent compared to 2021 as the previous year included a gain of $2,195 million on the sale of the Mechanical Power Transmission Division. Excluding this gain, income from operations increased 1 percent as higher volume in 2022 offset the impact of the divestment. The higher revenues reflected strong demand and active price management during 2022 which more than offset increasing commodities and freight expenses and other cost inflation. Profitability was also supported by continued cost discipline, focus on operational performance and a positive divisional mix. Changes in foreign currencies, including the impacts from FX/commodity timing differences summarized in the table below, negatively impacted income from operations by approximately 4 percent.

Operational EBITA

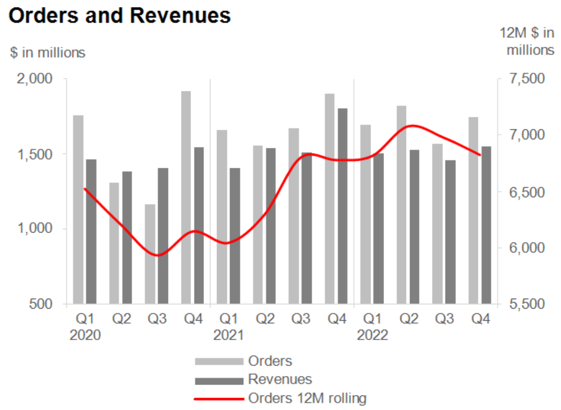
The reconciliation of Income from operations to Operational EBITA for the Motion Business Area was as follows:

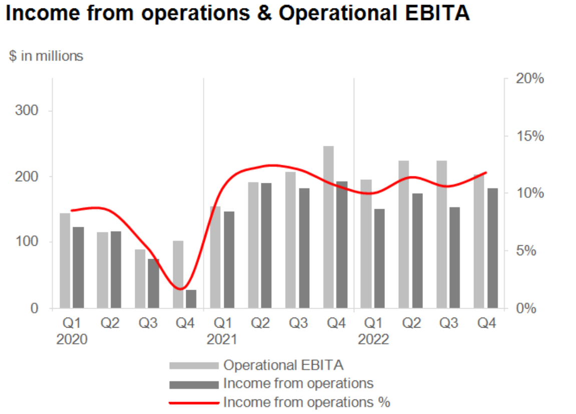
($ in millions)	**2022**	**2021**	**2020**
Income from operations	**1,092**	**3,276**	**989**
Acquisition-related amortization	31	43	52
Restructuring, related and implementation costs	16	22	44
Gains and losses from sale of businesses	8	(2,196)	—
Acquisition- and divestment-related expenses and integration costs	15	26	—
Certain other non-operational items	—	1	17
FX/commodity timing differences in income from operations	1	11	(27)
Operational EBITA	**1,163**	**1,183**	**1,075**

In 2022, Operational EBITA decreased 2 percent (increased 6 percent excluding the impact from changes in foreign currency exchange rates) compared to 2021, 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:





				% Change	
($ in millions)	**2022**	**2021**	**2020**	**2022**	**2021**
Orders	6,825	6,779	6,144	1%	10%
Order backlog at December 31,	6,229	6,079	5,805	2%	5%
Revenues	6,044	6,259	5,792	(3)%	8%
Income from operations	663	713	344	(7)%	107%
Operational EBITA	848	801	451	6%	78%

Orders

In 2022, orders increased 1 percent (8 percent in local currencies) compared to 2021. Order growth was impacted approximately 3 percent due to the spin-off of the Turbocharging Division. Orders grew in all Divisions and were especially strong in the Measurement & Analytics and Process Industries Divisions. Strong demand was seen for the product, systems and service businesses and supported by most customer segments. Demand was particularly strong in sectors such as chemicals and refining, with positive developments also recorded in the areas of mining, metals, and oil and gas, including the liquefied natural gas sector. Customer activities increased in power generation, pulp and paper, and ports segments, whereas demand in marine was lower. Customer interest was high in the hydrogen segment, which remains a small but growing part of the business.

The geographic distribution of orders for our Process Automation Business Area was as follows:

($ in millions)	2022	2021	2020
Europe	2,361	2,614	2,365
The Americas	1,994	1,645	1,360
of which: United States	1,201	1,047	770
Asia, Middle East and Africa	2,470	2,520	2,419
of which: China	748	821	590
Total	**6,825**	**6,779**	**6,144**

Orders in Europe decreased 10 percent (increased 2 percent in local currencies). In local currencies and excluding the impact of the spin-off of the Turbocharging Division, orders increased in Poland, Norway, the Netherlands and the United Kingdom while orders decreased in Russia where the ABB Group is winding down remaining business activities and Germany where a customer bankruptcy resulted in an order reversal of approximately $170 million. Orders in Asia, Middle East and Africa decreased 2 percent (increased 5 percent in local currencies). Higher orders in India, South Korea, Singapore and Saudi Arabia were partly offset by lower order volumes in China and Australia both of which had a higher order intake in 2021. In the Americas, orders increased 21 percent (23 percent in local currencies) supported by strong demand in the U.S., Canada, Argentina and Brazil.

Order backlog

In 2022, order backlog increased 2 percent (8 percent in local currencies) compared to 2021. Order backlog increased in all Divisions due to strong order intake during 2022.

Revenues

In 2022, revenues decreased 3 percent (increased 4 percent in local currencies) compared to 2021 due to foreign currency translation and the impact from the spin-off of the Turbocharging Division business. Revenues increased in all Divisions, reflecting strong execution of the order backlog in the long-cycle businesses and strong underlying demand that was partially held back by challenges from supply chain constraints which hampered customer deliveries.

The geographic distribution of revenues for our Process Automation Business Area was as follows:

($ in millions)	2022	2021	2020
Europe	2,266	2,439	2,395
The Americas	1,569	1,439	1,329
of which: United States	943	836	808
Asia, Middle East and Africa	2,209	2,381	2,068
of which: China	668	742	629
Total	**6,044**	**6,259**	**5,792**

In 2022, revenues were 7 percent lower (1 percent in local currencies) in Asia, Middle East and Africa, 9 percent higher (11 percent in local currencies) in the Americas and 7 percent lower (5 percent higher in local currencies) in Europe compared to 2021. In Asia, Middle East and Africa, revenues were higher in India and Australia but declined in China, Singapore and South Korea. In the Americas, revenue growth was driven by the U.S. and Argentina while revenues in Brazil were steady. Growth in Europe was reported in key markets including Italy, Germany, France, Norway and the United Kingdom.

Income from operations

In 2022, income from operations decreased 7 percent compared to 2021 driven largely by unfavorable foreign currency exchange changes and the impact of the spin-off of the Turbocharging Division. Excluding these impacts, all Divisions reported higher operating income. In local currencies, income growth was driven by higher revenue volumes, operational improvements in project execution, a favorable business mix and discipline in cost controls. The impact from inflation on costs was offset by pricing actions taken to secure gross margin levels, mainly in the short-cycle business. Changes in foreign currencies, including the effect from changes in the FX/commodity timing differences summarized in the table below, negatively impacted income from operations by approximately 10 percent.

Operational EBITA

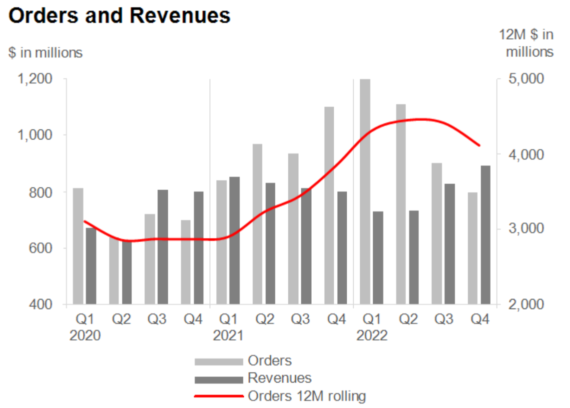
The reconciliation of Income from operations to Operational EBITA for the Process Automation Business Area was as follows:

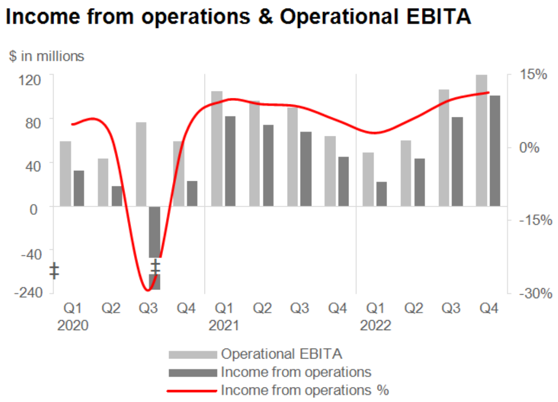
($ in millions)	2022	2021	2020
Income from operations	**663**	**713**	**344**
Acquisition-related amortization	4	5	4
Restructuring, related and implementation costs	29	48	125
Gains and losses from sale of businesses	—	(13)	—
Acquisition- and divestment-related expenses and integration costs	134	35	2
Certain other non-operational items	—	1	1
FX/commodity timing differences in income from operations	18	12	(25)
Operational EBITA	**848**	**801**	**451**

In 2022, Operational EBITA increased 6 percent (15 percent excluding the impact from changes in foreign currency exchange rates) compared to 2021, primarily 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:





				% Change	
($ in millions)	**2022**	**2021**	**2020**	**2022**	**2021**
Orders	4,116	3,844	2,868	7%	34%
Order backlog at December 31,	2,679	1,919	1,403	40%	37%
Revenues	3,181	3,297	2,907	(4)%	13%
Income (loss) from operations	247	269	(163)	(8)%	n.a.
Operational EBITA	340	355	237	(4)%	50%

Orders

In 2022, orders increased 7 percent (16 percent in local currencies). Both the Robotics and the Machine Automation Divisions contributed to the robust order growth driven by positive developments in both volumes and pricing, reflecting strong demand across all regions and most of the customer segments. In the automotive sector, demand was particularly driven by EV investments. Strength was also noted in the automotive-related sectors, general industry, machine builders and electronics market sectors. In addition to strong underlying market demand, the order intake was also supported by customers placing orders early in an effort to secure deliveries in an environment with a generally tight supply chain, especially earlier in the year. As supply chain constraints progressively eased over the year, customer order patterns tended to normalize.

The geographic distribution of orders for our Robotics & Discrete Automation Business Area was as follows:

($ in millions)	2022	2021	2020
Europe	2,043	1,978	1,424
The Americas	609	530	388
of which: United States	404	371	277
Asia, Middle East and Africa	1,464	1,336	1,056
of which: China	1,151	976	781
Total	**4,116**	**3,844**	**2,868**

In 2022, orders increased in all regions. Orders in Europe increased 3 percent (16 percent in local currencies) driven by increased demand, mainly in Germany. Orders in the Americas increased 15 percent (15 percent in local currencies) compared to 2021, driven by strong order intake in the U.S. in the Robotics Division. Orders in Asia, Middle East and Africa increased 10 percent (15 percent in local currencies) with strong demand in the Robotics Division in China.

Order backlog

In 2022, order backlog increased 40 percent (49 percent in local currencies) compared to 2021. Order backlog increased in both Divisions. The order backlog benefited from strong order intake, despite our selectivity of orders in the automotive EV segment and also reflected customer deliveries being hampered by material shortages, transportation constraints as well as pandemic-related production pressures in some local markets.

Revenues

In 2022, revenues decreased 4 percent (increased 5 percent in local currencies) compared to 2021. Revenues increased in both Divisions due to higher volumes from book-and-bill business and price increases to compensate for higher input expenses. However, growth in the first half of the year was hindered by component shortages (primarily related to semiconductors) and logistic challenges. Additionally, the COVID-19 related shutdown of the robotics factory in Shanghai, China, in April, with the subsequent gradual ramp up of production during May, had a significant impact on customer deliveries in the second quarter. Service revenues also increased, driven by strong demand from all industry segments.

The geographic distribution of revenues for our Robotics & Discrete Automation Business Area was as follows:

($ in millions)	2022	2021	2020
Europe	1,498	1,582	1,481
The Americas	525	441	389
of which: United States	374	309	273
Asia, Middle East and Africa	1,158	1,274	1,037
of which: China	898	950	719
Total	**3,181**	**3,297**	**2,907**

Revenues from Asia, Middle East and Africa decreased 9 percent (decreased 4 percent in local currencies) compared to 2021 due to the impact from the factory shutdown in Shanghai, China, described above. Revenues in Europe decreased 5 percent (increased 8 percent in local currencies) with Austria, Italy and the Czech Republic performing strongly while revenues declined in the United Kingdom. In the Americas, revenues increased 19 percent (increased 19 percent in local currencies) due to strong demand in both Divisions in the U.S. and in the Robotics Division in Brazil, following the recovery from the lower levels in 2021.

Income (loss) from operations

In 2022, the Business Area recorded income from operations of $247 million compared to $269 million in 2021, with both Divisions contributing to the higher income level. The operational performance in 2022 reflected improved sales volumes, price increases, a favorable change in the revenue mix, and the benefit of cost reduction measures taken in the second half of 2022. These positive drivers were partially offset by widespread inflationary cost pressures in 2022 as well as under absorption of fixed costs due to volumes being hampered by component shortages, particularly in the first half of the year. Changes in foreign currencies, including the impacts from FX/commodity timing differences summarized in the table below, negatively impacted income from operations by approximately 14 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)	2022	2021	2020
Income (loss) from operations	**247**	**269**	**(163)**
Acquisition-related amortization	78	83	78
Restructuring, related and implementation costs	11	7	26
Changes in pre-acquisition estimates	(1)	—	—
Favorable resolution of an uncertain purchase price adjustment	(15)	—	—
Acquisition- and divestment-related expenses and integration costs	6	1	—
Impairment of goodwill	—	—	290
Certain other non-operational items	8	—	5
FX/commodity timing differences in income from operations	6	(5)	1
Operational EBITA	**340**	**355**	**237**

In 2022, Operational EBITA decreased 4 percent (increased 8 percent excluding the impact from changes in foreign currency exchange rates) compared to 2021, 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)	2022	2021	2020
Corporate headquarters and stewardship	(430)	(399)	(334)
Regulatory penalty in connection with Kusile project	(313)	—	—
Loss from equity-accounted companies	(101)	(102)	(68)
Other corporate costs	(25)	(29)	(65)
Corporate brand income from Hitachi Energy	57	89	60
Net gain (loss) from sale of businesses(1)	43	(3)	2
Corporate real estate	66	41	54
Restructuring costs in Corporate	—	(5)	(46)
Fair value adjustment on equity securities	(4)	94	71
OS implementation costs	—	—	(24)
Digital program costs	—	—	(45)
Corporate research and development	—	—	(49)
Costs for divestment of Power Grids	—	—	(86)
Stranded corporate costs	—	—	(40)
Divested businesses and other non-core activities	(117)	(67)	(342)
Total Corporate and Other	**(824)**	**(381)**	**(912)**

(1) Includes gain on sale of the remaining 19.9 percent investment in Hitachi Energy Ltd.

In 2022, the net loss from operations within Corporate and Other increased by $443 million to $824 million compared to 2021. This increase was driven by costs associated with regulatory penalties assessed in connection with the Kusile project, restructuring expenses in connection with the exit of the full train retrofit business and lower gains for fair value adjustments on equity investments. Partly offsetting these negative impacts was the reversal of a provision that we had previously recorded related to one of our divested businesses and the gain in December 2022 from the sale of the remaining 19.9 percent of Hitachi Energy to Hitachi.

Corporate

In 2022, Corporate headquarters and stewardship costs increased by $31 million, mainly due to higher external consulting costs as part of the implementation of the ABB Way operating model. Excluding this, Corporate headquarters and stewardship costs were lower, supported by lower costs especially in the corporate legal function.

During 2022, we did not have any significant revaluations of equity investments while in 2021 we recognized gains of $94 million for investments in our corporate equity ventures portfolio.

Corporate brand income results from the granting of use of the ABB Brand to Hitachi Energy, the fair value of which was initially determined on the date of the divestment of the former Power Grids business in 2020. A portion of the proceeds received for the sale was allocated to the fair value of the granting of the use of the brand and is being amortized over the expected period of benefit received by Hitachi Energy.

Corporate real estate primarily includes income and expenses from property rentals and gains from the sale of real estate properties. In 2022, income from operations in corporate real estate included gains from the sale of real estate properties of approximately $73 million compared to $22 million in 2021.

Other corporate costs consists of operational costs of our Corporate Treasury Operations and other minor items including changes of the elimination related to 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 and the oil & gas EPC business. Other continuing non-core activities include the execution and wind-down of certain legacy EPC and other contracts.

In 2022 and 2021, the amounts represent charges and losses relating to divested businesses and the winding down of the remaining EPC projects. In 2022, we recorded a restructuring expense of $195 million in connection with the exit of the full train retrofit business primarily for contract settlement costs. This was offset in part by the reversal of a provision of $61 million that we had previously recorded related to one of our divested businesses based on a settlement proposal issued by the ruling court. 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.

At December 31, 2022, our remaining non-core activities primarily include the completion of the remaining EPC contracts for substations and oil & gas.

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 2022, we also received significant funds from the sale of our remaining investment in Hitachi Energy which was sold in December 2022.

Our net debt/cash is shown in the table below:

December 31, ($ in millions)	2022	2021
Short-term debt and current maturities of long-term debt	2,535	1,384
Long-term debt	5,143	4,177
Cash and equivalents	(4,156)	(4,159)
Restricted cash - current	(18)	(30)
Marketable securities and short-term investments	(725)	(1,170)
Restricted cash - non-current	—	(300)
Net debt (cash) (defined as the sum of the above lines)	**2,779**	**(98)**

During 2022, cash generation from operating activities was lower than in 2021 while we increased our total cash payments to shareholders in the form of dividends and purchases of treasury stock. These factors were the primary contributors to the change in net debt as presented in the table above.

During 2022, we changed from a net cash position of $98 million at December 31, 2021, to a net debt position of $2,779 million at December 31, 2022. The effect of the exchange rate movements reduced net debt by approximately $30 million. In 2022, we received net proceeds of $1,552 million for the sale of our remaining investment in Hitachi Energy. We generated cash flows from operating activities during 2022 of $1,287 million and sold treasury stock in relation to our employee share plans for $394 million. We also issued shares in our subsidiary ABB E-Mobility to third parties in private placements for $216 million. These items were more than offset by amounts for purchases of treasury shares of $3,553 million, including $2,891 million relating to the announced buybacks of our shares, as well as $1,698 million for the payment of the dividend to our shareholders. We made net purchases of property, plant and equipment and intangible assets of $635 million and made payments of dividends to noncontrolling shareholders totaling $99 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, 2022 and 2021, 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 51 percent and 44 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 and derivative portfolios. 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 41 percent of our cash and equivalents held at December 31, 2022, was in U.S. dollars, while the most significant foreign currencies in which cash and equivalents was held was euros (21 percent) and Indian rupees (10 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)	2022	2021
Short-term debt and current maturities of long-term debt	2,535	1,384
Long-term debt:		
Bonds	4,944	3,984
Other long-term debt	199	193
Total debt	**7,678**	**5,561**

The increase in short-term debt in 2022 was due primarily to the increase in commercial paper outstanding offset partially by a reduction in Current maturities of long-term debt.

At December 31, 2022, Long-term debt was $966 million higher compared to the end of 2021 due to the issuance of five new instruments which remain classified as Long-term debt at December 31, 2022 (EUR 700 million 0.625% Instruments due 2024, EUR 500 million floating rate Instruments due 2024, CHF 150 million 2.1% Bonds due 2025, CHF 425 million 0.75% Bonds due 2027 and CHF 150 million 2.375% Bonds due 2030) offset partially by the reclassification to current of the EUR 700 million 0.625% Instruments, due 2023. The increase in interest rates also resulted in a reduction in our long-term debt of approximately $200 million due to the application of fair value hedge accounting on certain outstanding instruments.

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 and cross-currency interest rate swaps to effectively convert fixed rate debt into floating rate liabilities. After considering the effects of interest rate swaps and cross-currency interest rate swaps, at December 31, 2022, the effective average interest rate on our floating rate long-term debt (including current maturities) of $3,459 million and our fixed rate long-term debt (including current maturities) of $2,771 million was 2.8 percent and 2.2 percent, respectively. This compares with an effective rate of 0.3 percent for floating rate long-term debt of $3,598 million and 3.1 percent for fixed rate long-term debt of $1,885 million at December 31, 2021.

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, 2022 and 2021. 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, 2022, 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, 2022 and 2021, there was no amount outstanding under the $2 billion program in the United States.

At December 31, 2022, $1,383 million was outstanding under the $2 billion Euro-commercial paper program. There was no amount outstanding at December 31, 2021.

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, 2022, five bonds (principal amount of EUR 700 million, due in 2023, principal amount of EUR 700 million, due in 2024, principal amount of EUR 500 million, due in 2024, 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 $3,444 million were outstanding under the program. The carrying amount of the three bonds outstanding under the program at December 31, 2021, was $2,522 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, 2022 and 2021, our long-term debt was rated A3 by Moody’s and currently with a Stable outlook. At December 31, 2022 and 2021, 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 or otherwise have bank deposits, including: China, Egypt, India, Malaysia, the Russian Federation, South Africa, South Korea, Taiwan (Chinese Taipei), Thailand, Turkiye and Vietnam. 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, 2022 and 2021, 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 $1,381 million and $2,074 million, respectively.

During 2022, 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)	2022	2021	% Change
Current assets			
Cash and equivalents	4,156	4,159	0%
Restricted cash	18	30	(40)%
Marketable securities and short-term investments	725	1,170	(38)%
Receivables, net	6,858	6,551	5%
Contract assets	954	990	(4)%
Inventories, net	6,028	4,880	24%
Prepaid expenses	230	206	12%
Other current assets	505	573	(12)%
Current assets held for sale and in discontinued operations	96	136	(29)%
Total current assets	**19,570**	**18,695**	**5%**

For a discussion on Cash and equivalents, see sections “Liquidity and Capital Resources—Principal sources of funding” and “Cash flows” for further details.

Marketable securities and short-term investments decreased in 2022. The change primarily reflects lower amounts placed in bank time deposits and a reduction in 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, increased 5 percent (12 percent in local currencies) reflecting the higher revenues (due to both higher business volumes and higher prices) at the end of 2022 compared to 2021. Receivables also decreased 3 percent due to the spin-off of the Turbocharging Division.

Contract assets decreased 4 percent (increased 2 percent in local currencies). Contract assets decreased 2 percent due to the spin-off of the Turbocharging Division with the remaining local currency increase of 4 percent reflecting higher levels of business activity at the end of 2022 compared to 2021.

Inventories, net, increased 24 percent (32 percent in local currencies) and were significantly higher in all inventory categories. A portion of this increase reflects higher business activities at the end of 2022 compared to 2021 as well as higher inventories in order to fulfil the higher order backlog. We also had a significant build-up in the amount of raw materials as well as cost increases for materials. Supply chain challenges and shortages in the availability of some items have created the need for our businesses to stockpile certain key components. These challenges have also resulted in some delays in completing and delivering finished goods. The impact of the spin-off of the Turbocharging Division was a reduction of Inventories, net, of 3 percent.

Current assets held for sale and in discontinued operations decreased to $96 million from $136 million. These amounts primarily relate to working capital for certain contracts relating to the former Power Grids business which remain with ABB and are being executed over time for the direct benefit of Hitachi Energy. 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)	2022	2021	% Change
Current liabilities			
Accounts payable, trade	4,904	4,921	0%
Contract liabilities	2,216	1,894	17%
Short-term debt and current maturities of long-term debt	2,535	1,384	83%
Current operating leases	220	230	(4)%
Provisions for warranties	1,028	1,005	2%
Other provisions	1,171	1,386	(16)%
Other current liabilities	4,323	4,367	(1)%
Current liabilities held for sale and in discontinued operations	132	381	(65)%
Total current liabilities	**16,529**	**15,568**	**6%**

Accounts payable, trade, remained flat (increase 6 percent in local currencies) while the spin-off of the Turbocharging Division reduced the balance by 2 percent. The local currency increase reflects higher inventory purchases but the increase was muted as payment terms with suppliers have become somewhat less favorable in a constrained supply chain environment.

Contract liabilities increased 17 percent (increased 24 percent in local currency) reflecting higher levels of business activity at the end of 2022 compared to 2021. The spin-off of the Turbocharging Division reduced the amount by 1 percent.

The increase in short-term debt and current maturities of long-term debt in 2022 was due to an increase of commercial paper borrowings under the Euro-commercial paper program and the reclassification to current of the EUR 700 million 0.625% Instruments, due 2023, offset partially by the repayment at maturity of the USD 1,250 million 2.875% Notes, due 2022.

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 increased 2 percent (7 percent in local currencies). The spin-off of the Turbocharging Division reduced the amount by 2 percent. The local currency increase reflects the higher provisioning in 2022 on increased revenues as well as increases in expected costs for certain newer product lines. 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 $132 million from $381 million. The decrease included the settlement of $136 million for certain indemnification guarantees which were provided in connection with the original sale of the Power Grids business to Hitachi. The remaining amounts primarily relate to certain working capital balances of the former Power Grids business as described above.

December 31, ($ in millions)	**2022**	**2021**	**% Change**
Non-current assets			
Restricted cash, non-current	—	300	(100)%
Property, plant and equipment, net	3,911	4,045	(3)%
Operating lease right-of-use assets	841	895	(6)%
Investments in equity-accounted companies	130	1,670	(92)%
Prepaid pension and other employee benefits	916	892	3%
Intangible assets, net	1,406	1,561	(10)%
Goodwill	10,511	10,482	0%
Deferred taxes	1,396	1,177	19%
Other non-current assets	467	543	(14)%
Total non-current assets	**19,578**	**21,565**	**(9)%**

The non-current Restricted cash at December 31, 2021, related to certain amounts received on the initial sale of the Power Grids business in 2020 which were placed in escrow, pending resolution of certain of our contractual obligations to Hitachi. See “Note 3 - Discontinued operations” to our Consolidated Financial Statements. In connection with the sale of the remaining ownership in Hitachi Energy to Hitachi in December 2022, the restrictions on the bank account where this cash was deposited were removed.

In 2022, Property, plant and equipment, net, decreased 3 percent (increased 2 percent in local currencies). The spin-off of the Turbocharging Division reduced this balance by 4 percent.

In 2022, Goodwill remained flat (increased 2 percent in local currencies). The local currency increase primarily reflects the purchase of In-Charge.

Intangible assets, net, decreased 10 percent (8 percent in local currencies). Acquisitions of businesses, primarily In-Charge, increased Intangible assets, net, by 5 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, primarily represented our remaining 19.9 percent interest in the Hitachi Energy joint venture. We sold this remaining interest in December 2022. 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 3 percent (6 percent in local currencies). The spin-off of the Turbocharging Division reduced this balance by 10 percent. For additional information on Pension and employee benefits see “Note 17 - Employee benefits” to our Consolidated Financial Statements.

In 2022, Deferred taxes increased 19 percent (26 percent in local currencies). For details on deferred tax assets see “Note 16 - Income taxes” to our Consolidated Financial Statements.

December 31, ($ in millions)	2022	2021	% Change
Non-current liabilities			
Long-term debt	5,143	4,177	23%
Non-current operating leases	651	689	(6)%
Pension and other employee benefits	719	1,025	(30)%
Deferred taxes	729	685	6%
Other non-current liabilities	2,085	2,116	(1)%
Non-current liabilities held for sale and in discontinued operations	20	43	(53)%
Total non-current liabilities	**9,347**	**8,735**	**7%**

Long-term debt increased 23 percent. The balance at December 31, 2022, includes five instruments newly issued in 2022: i) EUR 700 million 0.625% Instruments due 2024, ii) EUR 500 million floating rate Instruments due 2024, iii) CHF 150 million 2.1% Bonds due 2025, iv) CHF 425 million 0.75% Bonds due 2027 and v) CHF 150 million 2.375% Bonds due 2030. This was partially offset by the reclassification to current of the EUR 700 million 0.625% Instruments, due 2023, as well as a reduction of 5 percent in reported amounts due to fair value hedge accounting adjustments. Foreign currency movements also reduced the balance by 3 percent over the year. 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 30 percent (26 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. 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)	2022	2021	2020
Net cash provided by operating activities	1,287	3,330	1,693
Net cash provided by investing activities	981	2,307	6,760
Net cash used in financing activities	(2,394)	(4,968)	(8,175)
Effects of exchange rate changes on cash and equivalents	(189)	(81)	79
Net change in cash and equivalents and restricted cash	**(315)**	**588**	**357**

Operating activities

($ in millions)	2022	2021	2020
Net income	2,594	4,650	5,205
Loss (income) from discontinued operations, net of tax	43	80	(4,860)
Depreciation and amortization	814	893	915
Total adjustments to reconcile net income to net cash provided by operating activities (excluding depreciation and amortization)	(434)	(2,593)	263
Total changes in operating assets and liabilities	(1,683)	308	352
Net cash provided by operating activities — continuing operations	**1,334**	**3,338**	**1,875**
Net cash used in operating activities — discontinued operations	**(47)**	**(8)**	**(182)**

Cash flows from operating activities in continuing operations in 2022 provided net cash of $1,334 million, a decrease of 60 percent compared to 2021 of which 7 percent was due to movements in exchange rates. In addition, in 2022, we had lower cash effective net income (i.e. net income from continuing operations adjusted for depreciation, amortization and other non-cash items) partially due to costs associated with business transformation activities, higher costs relating to business restructuring and costs for the spin-off of the Turbocharging Division and other business portfolio transactions. In 2022, this reduction was also impacted by payments of approximately $315 million in relation to regulatory penalties for the Kusile project.

In 2022, an increase in both business volumes and inflation-driven cost and price changes resulted in growth in our working capital. Changes in operating assets and liabilities reflected a high buildup of inventory with a less favorable timing of inventory payments, an increase in amounts receivable from customers as well as the timing of payments for accrued liabilities, including higher employee bonuses paid in 2022 compared to 2021. Cash paid for income taxes decreased to $1,188 million from $1,292 million, reflecting the higher current income taxes in 2021, including tax impacts from the sales of businesses. In 2022 and 2021, there were no significant cash flows from operating activities of discontinued operations.

Investing activities

($ in millions)	2022	2021	2020
Purchases of investments	(321)	(1,528)	(5,933)
Purchases of property, plant and equipment and intangible assets	(762)	(820)	(694)
Acquisition of businesses (net of cash acquired) and increases in cost- and equity-accounted companies	(288)	(241)	(121)
Proceeds from sales of investments	697	2,272	4,341
Proceeds from maturity of investments	73	81	11
Proceeds from sales of property, plant and equipment	127	93	114
Proceeds from sales of businesses (net of transaction costs and cash disposed) and cost- and equity-accounted companies	1,541	2,958	(136)
Net cash from settlement of foreign currency derivatives	(166)	(121)	138
Changes in loans receivable, net	320	(19)	(3)
Other investing activities	(14)	(4)	11
Net cash provided by (used in) investing activities — continuing operations	**1,207**	**2,671**	**(2,272)**
Net cash provided by (used in) investing activities — discontinued operations	**(226)**	**(364)**	**9,032**

Net cash provided by investing activities for continuing operations in 2022 was $1,207 million compared to $2,671 million during 2021, a decrease of $1,464 million. In 2022, we received net proceeds in connection with the sale of our remaining equity-method investment in Hitachi Energy of $1,552 million. In addition, included in Changes in loans receivable, net, are funds collected from a subsidiary of Accelleron in October 2022, related to a short-term intercompany loan granted in anticipation of the Turbocharging Division spin off. In 2021, we received proceeds of $2,958 million in connection with sales of businesses, primarily from the sale of the Dodge business.

The following presents purchases of property, plant and equipment and intangible assets by significant asset category:

($ in millions)	2022	2021	2020
Construction in progress	540	479	493
Purchase of machinery and equipment	127	150	134
Purchase of land and buildings	26	158	17
Purchase of intangible assets	69	33	50
Purchases of property, plant and equipment and intangible assets	**762**	**820**	**694**

Cash expenditures for acquisitions of businesses in 2022 primarily reflects the amount paid to acquire In-Charge while the amount in 2021 primarily reflects the acquisition of ASTI.

Cash flows used in investing activities for discontinued operations includes amounts relating to the original sale of the Power Grids business to Hitachi. We sold this business in 2020 and reported net cash proceeds of $9,168 million in that year. Certain amounts related to the purchase price were subject to adjustment, including the final settlement for working capital balances as well as other payments which were contractually due to be transferred to Hitachi in periods after the initial sale. In 2022 and 2021, these uncertain elements of the purchase price, including the original indemnification guarantees, were finalized and we made payments related to the purchase price and certain other obligations totaling $227 million and $364 million, respectively.

Financing activities

($ in millions)	2022	2021	2020
Net changes in debt with maturities of 90 days or less	1,366	(83)	(587)
Increase in debt	3,849	1,400	343
Repayment of debt	(2,703)	(1,538)	(3,459)
Delivery of shares	394	826	412
Purchase of treasury stock	(3,553)	(3,708)	(3,048)
Dividends paid	(1,698)	(1,726)	(1,736)
Cash associated with the spin-off of the Turbocharging Division	(172)	—	—
Dividends paid to noncontrolling shareholders	(99)	(98)	(82)
Proceeds from issuance of subsidiary shares	216	—	—
Other financing activities	6	(41)	(49)
Net cash used in financing activities — continuing operations	**(2,394)**	**(4,968)**	**(8,206)**
Net cash provided by financing activities — discontinued operations	**—**	**—**	**31**

Our financing cash flow activities primarily include debt transactions (both from the issuance of debt securities and borrowings directly from banks), share transactions (including share transactions in consolidated subsidiaries) and payments of distributions to controlling and noncontrolling shareholders. In 2022, we also distributed cash as part of the spin-off of the Turbocharging Division.

In 2022, the net inflow for debt with maturities of 90 days or less related to net borrowings of amounts outstanding under the Euro-commercial paper program and various local country borrowings.

In 2022, “Increase in debt” primarily represents initial borrowings for terms longer than 90 days under the Euro-commercial paper program of $1,425 million and borrowings under the following six long-term debt transactions (total cashflow amount at date of borrowings of $2,390 million):

- CHF 275 million 0% Bonds due 2023
- EUR 700 million 0.625% Instruments due 2024
- EUR 500 million floating rate Instruments due 2024
- CHF 150 million 2.1% Bonds due 2025
- CHF 425 million 0.75% Bonds due 2027
- CHF 150 million 2.375% Bonds due 2030

In 2022, “Repayment of debt” includes the repayment at maturity of the USD 1,250 million Notes and repayments of $1,345 million under the Euro-commercial paper program for borrowings having terms longer than 90 days.

“Delivery of shares” in 2022 primarily reflects cash received from the exercise of options in connection with our Management Incentive Plan (resulting in a delivery of 16 million shares). All shares were delivered out of Treasury stock.

"Proceeds from issuance of subsidiary shares" in 2022 relates to the sale of shares by ABB E-mobility Holdings Ltd through a private placement of $216 million.

In 2022, "Purchase of treasury stock" reflects $2,891 million of cash payments to purchase 91 million of our own shares in connection with the announced share buyback programs. It also reflects $662 million paid to purchase 20 million shares on the open market during the year.

"Cash associated with the spin-off of the Turbocharging Division" represents the amount of cash and cash equivalents which were directly owned by the entities in the spin-off of the Turbocharging Division at the date of the spin-off.

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, 2022. 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, 2022, and the timing thereof. For details of future operating and finance lease payments, see "Note 14 - Leases" to our Consolidated Financial Statements.

At December 31, 2022 ($ in millions)	Current	Non-current	Total
Long-term debt obligations	1,058	5,235	6,293
Interest payments related to long-term debt obligations	70	629	699
Purchase obligations	3,519	949	4,468
Total	**4,647**	**6,813**	**11,460**

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)	**2022**	**2021**
Performance guarantees	4,300	4,540
Financial guarantees	96	52
Indemnification guarantees(2)	—	136
Total	**4,396**	**4,728**

(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 were 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, 2022 and 2021, amounted to $1 million and $156 million, respectively, the majority of which in 2021 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, 2022 and 2021, the total outstanding performance bonds aggregated to $2.9 billion and $3.6 billion, respectively; of each of these amounts, $0.1 billion relates to discontinued operations. There have been no significant amounts reimbursed to financial institutions under these types of arrangements in 2022 and 2021.

For additional descriptions of our performance, financial and indemnification guarantees see “Note 15 - Commitments and contingencies” to our Consolidated Financial Statements.

Consolidated Financial Statements of ABB Group

02

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, 2022.

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, 2022, which is included on page 66 of this Annual Report.

Björn Rosengren

Chief Executive Officer

Timo Ihamuotila

Chief Financial Officer

Zurich, February 23, 2023

Statutory Auditor's Report

To the General Meeting of ABB Ltd, Zurich

Report on the Audit of the Consolidated Financial Statements

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of ABB Ltd and subsidiaries (the Group) as of December 31, 2022 and 2021, 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, 2022, and the related notes (collectively, the consolidated financial statements on page 69 to 137), including a summary of significant accounting policies. In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Group as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2022, in conformity with U.S. generally accepted accounting principles (US GAAP) and comply with Swiss law.

Basis for Opinion

We conducted our audit in accordance with Swiss law, Swiss Standards on Auditing (SA-CH) and the standards of the Public Company Accounting Oversight Board (United States) (PCAOB). Our responsibility is to express an opinion on these consolidated financial statements based on our audit and our responsibilities under those provisions and standards are further described in the "Auditor's Responsibilities for the Audit of the Consolidated Financial Statements" section of our report. We are a public accounting firm and are independent of the Group in accordance with the provisions of Swiss law and U.S. federal securities laws, together with the requirements 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.

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

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.

Critical Audit Matters

Revenue recognition for certain long-term fixed price contracts using the percentage-of-completion method

Valuation of unrecognized tax benefits related to transfer pricing

Revenue recognition for certain 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, 2022, the Group reported $24,471 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 certain 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 for long-term fixed price contracts 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 $1,350 million, a portion of which 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 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"

Other Information in the ABB Annual Reporting Suite

The Board of Directors is responsible for the other information. The other information comprises the information included in the ABB Annual Reporting Suite (consisting of the Integrated Report, the Financial Report, the Corporate Governance Report, and the Compensation Report), but does not include the consolidated financial statements, the stand-alone financial statements of the company, the compensation report and our auditor's reports thereon.

Our opinion on the consolidated financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the consolidated financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the consolidated financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated.

If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of the Board of Directors for the Consolidated Financial Statements

The Board of Directors is responsible for the preparation and fair presentation of consolidated financial statements in accordance with US GAAP and the provisions of Swiss law, and for such internal control as the Board of Directors determines is necessary to enable the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, the Board of Directors is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Board of Directors either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

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Auditor’s Responsibilities for the Audit of the Consolidation Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor’s report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Swiss law, SA-CH and PCAOB standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As part of an audit in accordance with Swiss law, SA-CH and PCAOB standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

— Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

— Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances.

— Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made.

— Conclude on the appropriateness of the Board of Directors’ use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group’s ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor’s report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor’s report. However, future events or conditions may cause the Group to cease to continue as a going concern.

— Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

— Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the Group audit. We remain solely responsible for our audit opinion.

We communicate with the Board of Directors and the Audit Committee regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies or material weaknesses in internal control that we identify during our audit.

We also provide the Board of Directors and the Audit Committee with a statement that we have complied with relevant ethical requirements regarding independence, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, actions taken to eliminate threats or safeguards applied.

From the matters arising from the audit of the financial statements that were communicated or required to be communicated to the Board of Directors and the Audit Committee, we determine those matters that related to accounts or disclosures that are material to the financial statements and involved especially challenging, subjective, or complex auditor judgment in current period and are therefore critical audit matters.

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Report on Other Legal and Regulatory Requirement

In accordance with article 728a para. 1 item 3 CO and PS-CH 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 also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Group's internal control over financial reporting as of December 31, 2022, 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 23, 2023, 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 23, 2023

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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, 2022, 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, 2022, based on criteria established in Internal Control – Integrated Framework (2013) issued by COSO.

We also have audited, in accordance with Swiss law, Swiss Standards on Auditing (SA-CH) and the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Group as of December 31, 2022 and 2021, 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, 2022, and the related notes (collectively, the consolidated financial statements), and our report dated February 23, 2023, 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.

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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 23, 2023

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ABB Ltd Consolidated Income Statements

Year ended December 31 ($ in millions, except per share data in $)	2022	2021	2020
Sales of products	24,471	23,745	21,214
Sales of services and other	4,975	5,200	4,920
Total revenues	**29,446**	**28,945**	**26,134**
Cost of sales of products	(16,804)	(16,364)	(15,229)
Cost of services and other	(2,932)	(3,114)	(3,027)
Total cost of sales	**(19,736)**	**(19,478)**	**(18,256)**
Gross profit	**9,710**	**9,467**	**7,878**
Selling, general and administrative expenses	(5,132)	(5,162)	(4,895)
Non-order related research and development expenses	(1,166)	(1,219)	(1,127)
Impairment of goodwill	—	—	(311)
Other income (expense), net	(75)	2,632	48
Income from operations	**3,337**	**5,718**	**1,593**
Interest and dividend income	72	51	51
Interest and other finance expense	(130)	(148)	(240)
Losses from extinguishment of debt	—	—	(162)
Non-operational pension (cost) credit	115	166	(401)
Income from continuing operations before taxes	**3,394**	**5,787**	**841**
Income tax expense	(757)	(1,057)	(496)
Income from continuing operations, net of tax	**2,637**	**4,730**	**345**
Income (loss) from discontinued operations, net of tax	(43)	(80)	4,860
Net income	**2,594**	**4,650**	**5,205**
Net income attributable to noncontrolling interests and redeemable noncontrolling interests	(119)	(104)	(59)
Net income attributable to ABB	**2,475**	**4,546**	**5,146**
Amounts attributable to ABB shareholders:			
Income from continuing operations, net of tax	2,517	4,625	294
Income (loss) from discontinued operations, net of tax	(42)	(79)	4,852
Net income	2,475	4,546	5,146
Basic earnings per share attributable to ABB shareholders:			
Income from continuing operations, net of tax	1.33	2.31	0.14
Income (loss) from discontinued operations, net of tax	(0.02)	(0.04)	2.30
Net income	1.30	2.27	2.44
Diluted earnings per share attributable to ABB shareholders:			
Income from continuing operations, net of tax	1.32	2.29	0.14
Income (loss) from discontinued operations, net of tax	(0.02)	(0.04)	2.29
Net income	1.30	2.25	2.43
Weighted-average number of shares outstanding (in millions) used to compute:			
Basic earnings per share attributable to ABB shareholders	1,899	2,001	2,111
Diluted earnings per share attributable to ABB shareholders	1,910	2,019	2,119

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)	2022	2021	2020
Net income	**2,594**	**4,650**	**5,205**
Other comprehensive income (loss), net of tax:			
Foreign currency translation adjustments:			
Foreign currency translation adjustments	(685)	(521)	498
Net loss on complete or substantially complete liquidations of foreign subsidiaries	5	—	—
Changes attributable to divestments	41	(9)	519
Foreign currency translation adjustments	**(639)**	**(530)**	**1,017**
Available-for-sale securities:			
Net unrealized gains (losses) arising during the year	(23)	(10)	24
Reclassification adjustments for net (gains) losses included in net income	2	(5)	(14)
Changes attributable to divestments	—	—	(3)
Unrealized gains (losses) on available-for-sale securities	**(21)**	**(15)**	**7**
Pension and other postretirement plans:			
Prior service credits arising during the year	—	—	43
Net actuarial gains (losses) arising during the year	226	411	(200)
Amortization of prior service credit included in net income	(16)	(14)	(11)
Amortization of net actuarial loss included in net income	44	69	88
Net losses from settlements and curtailments included in net income	9	7	518
Changes attributable to divestments	(8)	(6)	151
Pension and other postretirement plan adjustments	**255**	**467**	**589**
Derivative instruments and hedges:			
Net unrealized gains (losses) arising during the year	(12)	8	2
Reclassification adjustments for net (gains) losses included in net income	12	(13)	—
Changes in derivative instruments and hedges	**—**	**(5)**	**2**
Total other comprehensive income (loss), net of tax	**(405)**	**(83)**	**1,615**
Total comprehensive income, net of tax	**2,189**	**4,567**	**6,820**
Total comprehensive (income) loss attributable to noncontrolling interests and redeemable noncontrolling interests, net of tax	(87)	(108)	(86)
Total comprehensive income attributable to ABB, net of tax	**2,102**	**4,459**	**6,734**

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)	2022	2021
Cash and equivalents	4,156	4,159
Restricted cash	18	30
Marketable securities and short-term investments	725	1,170
Receivables, net	6,858	6,551
Contract assets	954	990
Inventories, net	6,028	4,880
Prepaid expenses	230	206
Other current assets	505	573
Current assets held for sale and in discontinued operations	96	136
Total current assets	**19,570**	**18,695**
Restricted cash, non-current	—	300
Property, plant and equipment, net	3,911	4,045
Operating lease right-of-use assets	841	895
Investments in equity-accounted companies	130	1,670
Prepaid pension and other employee benefits	916	892
Intangible assets, net	1,406	1,561
Goodwill	10,511	10,482
Deferred taxes	1,396	1,177
Other non-current assets	467	543
Total assets	**39,148**	**40,260**
Accounts payable, trade	4,904	4,921
Contract liabilities	2,216	1,894
Short-term debt and current maturities of long-term debt	2,535	1,384
Current operating leases	220	230
Provisions for warranties	1,028	1,005
Other provisions	1,171	1,386
Other current liabilities	4,323	4,367
Current liabilities held for sale and in discontinued operations	132	381
Total current liabilities	**16,529**	**15,568**
Long-term debt	5,143	4,177
Non-current operating leases	651	689
Pension and other employee benefits	719	1,025
Deferred taxes	729	685
Other non-current liabilities	2,085	2,116
Non-current liabilities held for sale and in discontinued operations	20	43
Total liabilities	**25,876**	**24,303**
Commitments and contingencies		
Redeemable noncontrolling interest	85	—
Stockholders' equity:		
Common stock, CHF 0.12 par value (1,965 million and 2,053 million shares issued at December 31, 2022 and 2021, respectively)	171	178
Additional paid-in capital	141	22
Retained earnings	20,082	22,477
Accumulated other comprehensive loss	(4,556)	(4,088)
Treasury stock, at cost (100 million and 95 million shares at December 31, 2022 and 2021, respectively)	(3,061)	(3,010)
Total ABB stockholders' equity	**12,777**	**15,579**
Noncontrolling interests	410	378
Total stockholders' equity	**13,187**	**15,957**
Total liabilities and stockholders' equity	**39,148**	**40,260**

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)	2022	2021	2020
Operating activities:			
Net income	2,594	4,650	5,205
Loss (income) from discontinued operations, net of tax	43	80	(4,860)
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	814	893	915
Impairment of goodwill	—	—	311
Changes in fair values of investments	(33)	(123)	(99)
Pension and other employee benefits	(125)	(216)	50
Deferred taxes	(344)	(289)	(280)
Losses from extinguishment of debt	—	—	162
Loss from equity-accounted companies	102	100	66
Net loss (gain) from derivatives and foreign exchange	(23)	49	(2)
Net gain from sale of property, plant and equipment	(84)	(38)	(37)
Net loss (gain) from sale of businesses	7	(2,193)	2
Other	66	117	90
Changes in operating assets and liabilities:			
Trade receivables, net	(831)	(142)	(100)
Contract assets and liabilities	416	29	186
Inventories, net	(1,599)	(771)	196
Accounts payable, trade	395	659	(13)
Accrued liabilities	136	454	(92)
Provisions, net	(70)	(48)	243
Income taxes payable and receivable	(94)	117	(76)
Other assets and liabilities, net	(36)	10	8
Net cash provided by operating activities — continuing operations	**1,334**	**3,338**	**1,875**
Net cash used in operating activities — discontinued operations	**(47)**	**(8)**	**(182)**
Net cash provided by operating activities	**1,287**	**3,330**	**1,693**
Investing activities:			
Purchases of investments	(321)	(1,528)	(5,933)
Purchases of property, plant and equipment and intangible assets	(762)	(820)	(694)
Acquisition of businesses (net of cash acquired) and increases in cost- and equity-accounted companies	(288)	(241)	(121)
Proceeds from sales of investments	697	2,272	4,341
Proceeds from maturity of investments	73	81	11
Proceeds from sales of property, plant and equipment	127	93	114
Proceeds from sales of businesses (net of transaction costs and cash disposed) and cost- and equity-accounted companies	1,541	2,958	(136)
Net cash from settlement of foreign currency derivatives	(166)	(121)	138
Changes in loans receivable, net	320	(19)	(3)
Other investing activities	(14)	(4)	11
Net cash provided by (used in) investing activities — continuing operations	**1,207**	**2,671**	**(2,272)**
Net cash provided by (used in) investing activities — discontinued operations	**(226)**	**(364)**	**9,032**
Net cash provided by investing activities	**981**	**2,307**	**6,760**

Year ended December 31 ($ in millions)	2022	2021	2020
Financing activities:			
Net changes in debt with maturities of 90 days or less	1,366	(83)	(587)
Increase in debt	3,849	1,400	343
Repayment of debt	(2,703)	(1,538)	(3,459)
Delivery of shares	394	826	412
Purchase of treasury stock	(3,553)	(3,708)	(3,048)
Dividends paid	(1,698)	(1,726)	(1,736)
Cash associated with the spin-off of the Turbocharging Division	(172)	—	—
Dividends paid to noncontrolling shareholders	(99)	(98)	(82)
Proceeds from issuance of subsidiary shares	216	—	—
Other financing activities	6	(41)	(49)
Net cash used in financing activities — continuing operations	**(2,394)**	**(4,968)**	**(8,206)**
Net cash provided by financing activities — discontinued operations	**—**	**—**	**31**
Net cash used in financing activities	**(2,394)**	**(4,968)**	**(8,175)**
Effects of exchange rate changes on cash and equivalents and restricted cash	(189)	(81)	79
Net change in cash and equivalents and restricted cash	**(315)**	**588**	**357**
Cash and equivalents and restricted cash, beginning of period	4,489	3,901	3,544
Cash and equivalents and restricted cash, end of period	**4,174**	**4,489**	**3,901**
Supplementary disclosure of cash flow information:			
Interest paid	90	132	189
Income taxes paid	1,188	1,292	905

Due to rounding, numbers presented may not add to the totals provided.

See accompanying Notes to the Consolidated Financial Statement

ABB Ltd Consolidated Statements of Changes in Stockholders' Equity

Years ended December 31, 2022, 2021 and 2020

($ in millions)	Common stock	Additional paid-in capital	Retained earnings	Accumulated other Comprehensive loss	Treasury stock	Total ABB stockholders' equity	Noncontrolling interests	Total stockholders' equity
Balance at January 1, 2020	**188**	**73**	**19,640**	**(5,590)**	**(785)**	**13,526**	**454**	**13,980**
Adoption of accounting standard update			(82)			**(82)**	**(9)**	**(91)**
Net income			5,146			**5,146**	59	**5,205**
Foreign currency translation adjustments, net of tax				990		**990**	27	**1,017**
Effect of change in fair value of available-for-sale securities, net of tax				7		**7**		**7**
Unrecognized income (expense) related to pensions and other postretirement plans, net of tax				589		**589**		**589**
Change in derivative instruments and hedges, net of tax				2		**2**		**2**
Changes in noncontrolling interests		(16)				**(16)**	19	**3**
Changes in noncontrolling interests in connection with divestments						**—**	(138)	**(138)**
Dividends to noncontrolling shareholders						**—**	(98)	**(98)**
Dividends to shareholders			(1,758)			**(1,758)**		**(1,758)**
Share-based payment arrangements		54				**54**		**54**
Purchase of treasury stock					(3,181)	**(3,181)**		**(3,181)**
Delivery of shares		(24)			436	**412**		**412**
Call options		(3)				**(3)**		**(3)**
Balance at December 31, 2020	**188**	**83**	**22,946**	**(4,002)**	**(3,530)**	**15,685**	**314**	**15,999**
Net income			4,546			**4,546**	104	**4,650**
Foreign currency translation adjustments, net of tax				(534)		**(534)**	4	**(530)**
Effect of change in fair value of available-for-sale securities, net of tax				(15)		**(15)**		**(15)**
Unrecognized income (expense) related to pensions and other postretirement plans, net of tax				467		**467**		**467**
Change in derivative instruments and hedges, net of tax				(5)		**(5)**		**(5)**
Changes in noncontrolling interests		(37)	(20)			**(57)**	55	**(2)**
Dividends to noncontrolling shareholders						**—**	(98)	**(98)**
Dividends to shareholders			(1,730)			**(1,730)**		**(1,730)**
Cancellation of treasury shares	(10)	(17)	(3,130)		3,157	**—**		**—**
Share-based payment arrangements		60				**60**		**60**
Purchase of treasury stock					(3,682)	**(3,682)**		**(3,682)**
Delivery of shares		(84)	(136)		1,046	**826**		**826**
Other		16				**16**		**16**
Balance at December 31, 2021	**178**	**22**	**22,477**	**(4,088)**	**(3,010)**	**15,579**	**378**	**15,957**
Net income(1)			2,475			**2,475**	124	**2,599**
Foreign currency translation adjustments, net of tax				(608)		**(608)**	(31)	**(639)**
Effect of change in fair value of available-for-sale securities, net of tax				(21)		**(21)**		**(21)**
Unrecognized income (expense) related to pensions and other postretirement plans, net of tax				256		**256**	(1)	**255**
Change in derivative instruments and hedges, net of tax				—		**—**		**—**
Issuance of subsidiary shares		120				**120**	86	**206**
Other changes in noncontrolling interests		10				**10**	(34)	**(24)**
Dividends to noncontrolling shareholders						**—**	(100)	**(100)**
Dividends to shareholders			(1,700)			**(1,700)**		**(1,700)**
Spin-off of the Turbocharging Division			(177)	(95)		**(272)**	(12)	**(284)**
Cancellation of treasury shares	(8)	(4)	(2,864)		2,876	**—**		**—**
Share-based payment arrangements		42				**42**		**42**
Purchase of treasury stock					(3,502)	**(3,502)**		**(3,502)**
Delivery of shares		(51)	(130)		575	**394**		**394**
Other		2				**2**		**2**
Balance at December 31, 2022	**171**	**141**	**20,082**	**(4,556)**	**(3,061)**	**12,777**	**410**	**13,187**

(1) Amounts attributable to noncontrolling interests in 2022 exclude net losses of $5 million related to redeemable noncontrolling interests, which are reported in the mezzanine equity section on the Consolidated Balance Sheets. See Note 4 for details.

Due to rounding, numbers presented may not add to the totals provided.

See accompanying Notes to the Consolidated Financial Statements

Notes to the Consolidated Financial Statements

Note 1
The Company

ABB Ltd and its subsidiaries (collectively, the Company) together form a technology leader in electrification and automation, enabling a more sustainable and resource-efficient future. The Company's solutions connect engineering know-how and software to optimize how things are manufactured, moved, powered and operated.

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.

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 are recognized in earnings and classified in the line item consistent with the underlying transaction or 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:

- estimates to determine valuation allowances for deferred tax assets and amounts recorded for unrecognized tax benefits,
- 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,
- estimates used to record expected costs for employee severance in connection with restructuring programs,
- 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,
- 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,
- assumptions used in the calculation of pension and postretirement benefits and the fair value of pension plan assets,
- assumptions used in determining inventory obsolescence and net realizable value,
- growth rates, discount rates and other assumptions used to determine impairment of long-lived assets and in testing goodwill for impairment,
- estimates and assumptions used in determining the fair values of assets and liabilities assumed in business combinations, and
- estimates and assumptions used in determining the initial fair value of retained noncontrolling interests and certain obligations in connection with divestments.

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”. Marketable equity securities are measured at fair value with fair value changes reported in net income. Fair value changes for marketable equity securities are generally reported in “Interest and other finance expense”, however, fair value changes for certain marketable 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 2022 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, machinery and equipment.

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 identified asset 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 method) 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. For plans accounted for as a defined benefit pension plan, 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. 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.

Estimated fair values of acquired assets and liabilities 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.

New accounting pronouncements

Applicable for current period

Business Combinations — Accounting for contract assets and contract liabilities from contracts with customers

In January 2022, the Company early adopted a new accounting standard update, 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. The Company has applied this accounting standard update prospectively starting with acquisitions closing after January 1, 2022.

Disclosures about government assistance

In January 2022, the Company adopted a new accounting standard update, 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 Company has applied this accounting standard update prospectively. 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 subsequent updates issued during January 2021 and December 2022, can be adopted and applied no later than December 31, 2024, with early adoption permitted. The Company expects to adopt this update during the second half of 2023 and does not expect this update to have a significant impact on its Consolidated Financial Statements.

Disclosure about supplier finance program obligations

In September 2022, an accounting standard update was issued which requires entities to disclose information related to supplier finance programs. Under the update, the Company is required to annually disclose (i) the key terms of the program, (ii) the amount of the supplier finance obligations outstanding and where those obligations are presented in the balance sheet at the reporting date, and (iii) a rollforward of the supplier finance obligation program within the reporting period. This update is effective for the Company retrospectively for all in-scope transactions for annual periods beginning January 1, 2023, with the exception of the rollforward disclosures, which are effective prospectively for annual periods beginning January 1, 2024, with early adoption permitted. The Company does not expect this update to have a significant impact on its Consolidated Financial Statements. The total outstanding supplier finance obligation included in "Accounts payable, trade" in the Consolidated Balance Sheet at December 31, 2022 amounted to $477 million.

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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. The combined fair value of the retained investment and the related put option amounted to $1,779 million and was recorded as both an equity-method investment and 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 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 owed 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 2022, 2021 and 2020, total cash payments (including the amounts paid under the settlement agreement) of $102 million, $364 million and $33 million, respectively, were made in connection with these liabilities. At December 31, 2022, the remaining amount recorded was $53 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 and in 2022 such adjustments reduced the gain by a further $10 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.

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 2022, 2021 and 2020, the Company recognized within its continuing operations, general and administrative expenses incurred to perform the TSAs, offset by $162 million, $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)	2022	2021	2020
Total revenues	—	—	4,008
Total cost of sales	—	—	(3,058)
Gross profit	**—**	**—**	**950**
Expenses	(38)	(18)	(808)
Change to net gain recognized on sale of the Power Grids business	(10)	(65)	5,141
Income (loss) from operations	**(48)**	**(83)**	**5,282**
Net interest income (expense) and other finance expense	—	2	(5)
Non-operational pension (cost) credit	—	—	(94)
Income (loss) from discontinued operations before taxes	**(48)**	**(81)**	**5,182**
Income tax	5	1	(322)
Income (loss) from discontinued operations, net of tax	**(43)**	**(80)**	**4,860**

Of the total Income (loss) from discontinued operations before taxes in the table above, $(47) million, $(80) million and $5,170 million in 2022, 2021 and 2020, respectively, are attributable to the Company, while the remainder is attributable to noncontrolling interests.

Until the date of the divestment, 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 in 2020 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 includes $20 million 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 are revenues for sales from the Company's operating segments to the Power Grids business of $108 million 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, 2022 ($ in millions)	2022(1)	2021(1)
Receivables, net	92	131
Other current assets	4	5
Current assets held for sale and in discontinued operations	**96**	**136**
Accounts payable, trade	44	71
Other liabilities	88	310
Current liabilities held for sale and in discontinued operations	**132**	**381**
Other non-current liabilities	20	43
Non-current liabilities held for sale and in discontinued operations	**20**	**43**

(1) At December 31, 2022 and 2021, 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

Acquisitions of controlling interests

Acquisitions of controlling interests were as follows:

($ in millions, except number of acquired businesses)	2022	2021	2020
Purchase price for acquisitions (net of cash acquired)(1)	195	212	79
Aggregate excess of purchase price over fair value of net assets acquired(2)	229	161	92
Number of acquired businesses	5	2	3

(1) Excluding changes in cost- and equity-accounted companies.
(2) Recorded as goodwill (see Note 11).

In the table above, the “Purchase price for acquisitions” and “Aggregate excess of purchase price over fair value of net assets acquired” amounts for 2022, relate primarily to the acquisition of InCharge Energy, Inc. (In-Charge) and in 2021, relate primarily to the acquisition of ASTI Mobile Robotics Group SL (ASTI). In 2020, 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 January 26, 2022, the Company increased its ownership in In-Charge to a 60 percent controlling interest through a stock purchase agreement. In-Charge is headquartered in Santa Monica, USA, and is a provider of turn-key commercial electric vehicle charging hardware and software solutions. The resulting cash outflows for the Company amounted to $134 million (net of cash acquired of $4 million). The acquisition expands the market presence of the E-mobility Division of its Electrification operating segment, particularly in the North American market. In connection with the acquisition, the Company’s pre-existing 13.2 percent ownership of In-Charge was revalued to fair value and a gain of $32 million was recorded in Other income (expense), net. The Company entered into an agreement with the remaining noncontrolling shareholders allowing either party to put or call the remaining 40 percent of the shares until 2027. The amount for which either party can exercise their option is dependent on a formula based on revenues and thus, the amount is subject to change. As a result of this agreement, the noncontrolling interest is classified as Redeemable noncontrolling interest (i.e. mezzanine equity) in the Consolidated Balance Sheets and was initially recognized at fair value.

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.

Business divestments and spin-offs

On September 7, 2022, the shareholders approved the spin-off of the Company’s Turbocharging Division into an independent, publicly traded company, Accelleron Industries AG (Accelleron), which was completed through the distribution of common stock of Accelleron to the stockholders of ABB on October 3, 2022. As a result of the spin-off of this Division, the Company distributed net assets of $272 million, net of amounts attributable to noncontrolling interests of $12 million, which was reflected as a reduction in Retained earnings. In addition, total accumulated comprehensive income of $95 million, including the cumulative translation adjustment, was reclassified to Retained earnings. Cash and cash equivalents distributed with Accelleron was $172 million.

The results of operations of the Turbocharging Division, are included in the continuing operations of the Process Automation operating segment for all periods presented through to the spin-off date. In 2022, 2021 and 2020 Income continuing operations before taxes, included income of $134 million, $186 million and $139 million, respectively, from this Division. In anticipation of the spin-off, the Company granted to a subsidiary of Accelleron access to funds in the form of a short-term intercompany loan. At the spin-off date, this loan, having a principal amount of 300 million Swiss francs ($306 million at the date of spin-off), was due to the Company and subsequently collected in October 2022.

In 2021, the Company received proceeds (net of transaction 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 and 2020 Income from continuing operations before taxes, included net income of $115 million and $96 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.

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 in 2020, Income from continuing operations before taxes includes net losses of $63 million, from the solar inverters business.

Investments in equity-accounted companies

In connection with the divestment of its Power Grids business to Hitachi in 2020 (see Note 3), the Company retained a 19.9 percent interest in the business. For accounting purposes the 19.9 percent interest was 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 an option, exercisable with three-months' notice commencing April 2023, granting it the right to require Hitachi to purchase this investment at 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. This option was initially 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 received a call option requiring the Company to sell the remaining 19.9 percent interest in Hitachi Energy at any time at a price consistent with what was paid by Hitachi to acquire the initial 80.1 percent or at fair value, if higher.

In September 2022, the Company and Hitachi agreed terms to sell the Company's remaining investment in Hitachi Energy to Hitachi and simultaneously settle certain outstanding contractual obligations relating to the initial sale of the Power Grids business, including certain indemnification guarantees (see Note 15). The sale of the remaining investment was completed in December 2022, resulting in cash proceeds of $1,552 million and a gain of $43 million which was recorded in "Other income (expense), net".

In July 2020, the Company concluded that based on its continuing involvement with the Power Grids business, including the membership in its governing board of directors, it had significant influence over Hitachi Energy. As a result, the investment (including the value of the option) was accounted for using the equity method through the date of its sale in December 2022.

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 were 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, 2022, 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:

	Ownership as of	Carrying value at December 31,	
($ in millions, except ownership share in %)	December 31, 2021	2022	2021
Hitachi Energy Ltd	19.9%	—	1,609
Others		130	61
Total		**130**	**1,670**

In 2022, 2021 and 2020, 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)	2022	2021	2020
Income (loss) from equity-accounted companies, net of taxes	(22)	38	29
Basis difference amortization (net of deferred income tax benefit)	(80)	(138)	(95)
Loss from equity-accounted companies	**(102)**	**(100)**	**(66)**

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, 2022 ($ 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	1,715			**1,715**	1,715	
Time deposits	2,459			**2,459**	2,459	
Equity securities	345	10		**355**		355
	4,519	**10**	**—**	**4,529**	**4,174**	**355**
Changes in fair value recorded in other comprehensive income						
Debt securities available-for-sale:						
—U.S. government obligations	269	1	(15)	**255**		255
—Other government obligations	58			**58**		58
—Corporate	64		(7)	**57**		57
	391	**1**	**(22)**	**370**	**—**	**370**
Total	**4,910**	**11**	**(22)**	**4,899**	**4,174**	**725**
Of which:						
—Restricted cash, current					18	

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	

Contractual maturities

Contractual maturities of debt securities consisted of the following:

	Available-for-sale	
December 31, 2022 ($ in millions)	**Cost basis**	**Fair value**
Less than one year	139	138
One to five years	157	148
Six to ten years	90	80
Due after ten years	4	4
Total	**390**	**370**

At December 31, 2022 and 2021, the Company pledged $69 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 Management Incentive Plan (MIP) (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:

Type of derivative	Total notional amounts at December 31,		
($ in millions)	2022	2021	2020
Foreign exchange contracts	13,509	11,276	12,610
Embedded foreign exchange derivatives	933	815	1,134
Cross-currency interest rate swaps	855	906	—
Interest rate contracts	2,830	3,541	3,227

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	2022	2021	2020
Copper swaps	metric tonnes	29,281	36,017	39,390
Silver swaps	ounces	2,012,213	2,842,533	1,966,677
Aluminum swaps	metric tonnes	6,825	7,125	8,112

Equity derivatives

At December 31, 2022, 2021 and 2020, the Company held 8 million, 9 million and 22 million cash-settled call options indexed to ABB Ltd shares (conversion ratio 5:1) with a total fair value of $15 million, $29 million and $21 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 2022, 2021 and 2020, 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)		2022	2021	2020
Gains (losses) recognized in Interest and other finance expense:				
Interest rate contracts	Designated as fair value hedges	(91)	(55)	11
	Hedged item	93	56	(11)
Cross-currency interest rate swaps	Designated as fair value hedges	(134)	(37)	—
	Hedged item	135	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**	**2022**	**2021**	**2020**
Foreign exchange contracts	Total revenues	(56)	3	94
	Total cost of sales	21	(53)	—
	SG&A expenses[(1)]	27	11	(11)
	Non-order related research and development	—	(2)	(2)
	Interest and other finance expense	(128)	(173)	207
Embedded foreign exchange contracts	Total revenues	(3)	(7)	(34)
	Total cost of sales	(11)	(2)	(1)
Commodity contracts	Total cost of sales	(47)	78	56
Other	Interest and other finance expense	4	—	1
Total		**(193)**	**(145)**	**310**

(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, 2022 ($ 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	—	—	4	4
Interest rate contracts	—	—	5	57
Cross-currency interest rate swaps	—	—	—	288
Cash-settled call options	15	—	—	—
Total	**15**	**—**	**9**	**349**
Derivatives not designated as hedging instruments:				
Foreign exchange contracts	140	21	80	5
Commodity contracts	13	—	12	—
Interest rate contracts	5	—	3	—
Embedded foreign exchange derivatives	11	6	17	13
Total	**169**	**27**	**112**	**18**
Total fair value	**184**	**27**	**121**	**367**

December 31, 2021 ($ in millions)	Derivative assets		Derivative liabilities	
	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**

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, 2022 and 2021, 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, 2022 and 2021, information related to these offsetting arrangements was as follows:

December 31, 2022 ($ 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	194	(96)	—	—	**98**
Total	**194**	**(96)**	**—**	**—**	**98**

December 31, 2022 ($ 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	458	(96)	—	—	**362**
Total	**458**	**(96)**	**—**	**—**	**362**

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**

—

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, 2022 ($ in millions)	Level 1	Level 2	Level 3	Total fair value
Assets				
Securities in "Marketable securities and short-term investments":				
Equity securities		355		**355**
Debt securities—U.S. government obligations	255			**255**
Debt securities—Other government obligations		58		**58**
Debt securities—Corporate		57		**57**
Derivative assets—current in "Other current assets"		184		**184**
Derivative assets—non-current in "Other non-current assets"		27		**27**
Total	**255**	**681**	**—**	**936**
Liabilities				
Derivative liabilities—current in "Other current liabilities"		121		**121**
Derivative liabilities—non-current in "Other non-current liabilities"		367		**367**
Total	**—**	**488**	**—**	**488**

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**

During 2022, 2021 and 2020 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 2022 and 2021, the Company recognized, in Other income (expense), net, net fair value gains of $52 million and $108 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, 2022 and 2021, totaled $106 million and $169 million, respectively.

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).

Apart from the transactions above, there were no additional significant non-recurring fair value measurements during 2022 and 2021.

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, 2022 ($ 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	1,697	1,697			**1,697**
Time deposits	2,459		2,459		**2,459**
Restricted cash	18	18			**18**
Liabilities					
Short-term debt and current maturities of long-term debt (excluding finance lease obligations)	2,500	1,068	1,432		**2,500**
Long-term debt (excluding finance lease obligations)	4,976	4,813	30		**4,843**

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**

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)	2022	2021
Trade receivables	6,478	6,206
Other receivables	688	684
Allowance	(308)	(339)
Total	**6,858**	**6,551**

“Trade receivables” in the table above includes contractual retention amounts billed to customers of $100 million and $119 million at December 31, 2022 and 2021, 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, 2022, 52 percent and 34 percent are expected to be collected in 2023 and 2024, 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)	2022	2021	2020
Balance at January 1,	**339**	**357**	**228**
Transition adjustment	—	—	56
Current-period provision for expected credit losses	37	33	115
Write-offs charged against the allowance	(48)	(37)	(42)
Exchange rate differences	(20)	(14)	—
Balance at December 31,	**308**	**339**	**357**

The following table provides information about Contract assets and Contract liabilities:

December 31, ($ in millions)	2022	2021	2020
Contract assets	954	990	985
Contract liabilities	2,216	1,894	1,903

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. In addition to the amounts presented as Contract liabilities in the table above, $59 million are non-current and are included in Other non-current liabilities in the Balance Sheet.

The significant changes in the Contract assets and Contract liabilities balances were as follows:

	2022		2021	
($ in millions)	Contract assets	Contract liabilities	Contract assets	Contract liabilities
Revenue recognized, which was included in the Contract liabilities balance at January 1, 2022/2021		(1,043)		(1,086)
Additions to Contract liabilities - excluding amounts recognized as revenue during the period		1,481		1,136
Receivables recognized that were included in the Contract assets balance at January 1, 2022/2021	(591)		(566)	

The Company considers its order backlog to represent its unsatisfied performance obligations. At December 31, 2022, the Company had unsatisfied performance obligations totaling $19,867 million and, of this amount, the Company expects to fulfill approximately 77 percent of the obligations in 2023, approximately 13 percent of the obligations in 2024 and the balance thereafter.

Note 9
Inventories, net

"Inventories, net" consisted of the following:

December 31, ($ in millions)	2022	2021
Raw materials	2,626	2,136
Work in process	1,189	995
Finished goods	2,036	1,594
Advances to suppliers	177	155
Total	**6,028**	**4,880**

Note 10
Property, plant and equipment, net

"Property, plant and equipment, net" consisted of the following:

December 31, ($ in millions)	2022	2021
Land and buildings	3,622	3,925
Machinery and equipment	5,495	5,785
Construction in progress	586	522
	9,703	**10,232**
Accumulated depreciation	(5,792)	(6,187)
Total	**3,911**	**4,045**

Assets under finance leases included in "Property, plant and equipment, net" were as follows:

December 31, ($ in millions)	2022	2021
Land and buildings	178	164
Machinery and equipment	135	92
	313	**256**
Accumulated depreciation	(135)	(123)
Total	**178**	**133**

In 2022, 2021 and 2020 depreciation, including depreciation of assets under finance leases, was $531 million, $575 million and $586 million, respectively. In 2022, 2021 and 2020 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	Total
Balance at January 1, 2021	**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**
Goodwill acquired during the year	220	9	—	—	**229**
Goodwill allocated to disposals[2]	(2)	—	(6)	—	**(8)**
Exchange rate differences and other	(92)	(8)	(20)	(72)	**(192)**
Balance at December 31, 2022[1]	**4,598**	**2,118**	**1,587**	**2,208**	**10,511**

(1) At December 31, 2022 and 2021, the gross goodwill amounted to $10,774 million and $10,760 million, respectively. The accumulated impairment charges amounted to $263 million and $278 million, respectively, and related to the Robotics & Discrete Automation segment.

(2) Includes goodwill of $6 million relating to the Turbocharging Division which, prior to its spin-off, was included in the Process Automation operating segment.

The Company adopted a new operating model on July 1, 2020, which resulted in a change to the goodwill reporting units being identified at the Division level. 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. 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. 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.

During 2022 and 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, 2022 and 2021, respectively, the Company performed qualitative assessments and determined that it was not more likely than not that the fair value for each of the 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:

	2022			2021		
December 31, ($ in millions)	**Gross carrying amount**	**Accumu-lated amort-ization**	**Net carrying amount**	**Gross carrying amount**	**Accumu-lated amort-ization**	**Net carrying amount**
Capitalized software for internal use	830	(720)	**110**	835	(732)	**103**
Capitalized software for sale	26	(26)	**—**	31	(29)	**2**
Intangibles other than software:						
Customer-related	1,743	(808)	**935**	1,716	(707)	**1,009**
Technology-related	997	(812)	**185**	1,122	(868)	**254**
Marketing-related	498	(347)	**151**	493	(327)	**166**
Other	55	(30)	**25**	56	(29)	**27**
Total	**4,149**	**(2,743)**	**1,406**	**4,253**	**(2,692)**	**1,561**

Additions to intangible assets other than goodwill consisted of the following:

($ in millions)	2022	2021
Capitalized software for internal use	53	32
Capitalized software for sale	—	2
Intangibles other than software:		
Customer-related	79	13
Technology-related	16	35
Marketing-related	20	11
Other	7	2
Total	**175**	**95**

There were no significant intangible assets acquired in business combinations in 2021. Included in the additions of $175 million in 2022 are intangible assets of $116 million acquired in business combinations, primarily consisting of customer-related and marketing-related intangibles.

Amortization expense of intangible assets consisted of the following:

($ in millions)	2022	2021	2020
Capitalized software for internal use	52	66	61
Intangibles other than software	230	252	268
Total	**282**	**318**	**329**

In 2022, 2021 and 2020 impairment charges on intangible assets were not significant.

At December 31, 2022, future amortization expense of intangible assets is estimated to be:

($ in millions)	
2023	296
2024	221
2025	174
2026	153
2027	145
Thereafter	417
Total	**1,406**

Note 12 Debt

The Company's total debt at December 31, 2022 and 2021, amounted to $7,678 million and $5,561 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)	2022	2021
Short-term debt (weighted-average interest rate of 1.9% and 3.2%, respectively)	1,448	78
Current maturities of long-term debt (weighted-average nominal interest rate of 0.5% and 2.8%, respectively)	1,087	1,306
Total	**2,535**	**1,384**

Short-term debt primarily represents short-term loans from various banks and issued commercial paper.

At December 31, 2022, the Company had two commercial paper programs in place: 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, 2022, $1,383 million was outstanding under the $2 billion Euro-commercial paper program and no amount was outstanding under the $2 billion program in the United States. At December 31, 2021, no amount was outstanding under either program.

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 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, 2022 and 2021, under this facility.

The Company amended and restated its facility in February 2023 for the purpose of addressing the discontinuation of LIBOR. Under the amended and restated credit facility, the margin is unchanged, but advances in USD are referenced to CME Term SOFR, whilst advances in CHF and GBP are referenced to overnight SARON and SONIA respectively, subject to applicable credit adjustment spreads.

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)	2022 Balance	2022 Nominal rate	2022 Effective rate	2021 Balance	2021 Nominal rate	2021 Effective rate
Floating rate	3,459	0.4%	2.8%	3,598	1.2%	0.3%
Fixed rate	2,771	2.2%	2.2%	1,885	3.0%	3.1%
	6,230			**5,483**		
Current portion of long-term debt	(1,087)	0.5%	1.5%	(1,306)	2.8%	1.0%
Total	**5,143**			**4,177**		

At December 31, 2022, the principal amounts of long-term debt repayable (excluding finance lease obligations) at maturity were as follows:

($ in millions)	
2023	1,058
2024	2,387
2025	193
2026	—
2027	461
Thereafter	2,194
Total	**6,293**

Details of outstanding bonds were as follows:

December 31, (in millions)	2022 Nominal outstanding		Carrying value (1)		2021 Nominal outstanding		Carrying value(1)	
Bonds:								
2.875% USD Notes, due 2022				—	USD	1,250	$	1,258
0.625% EUR Instruments, due 2023	EUR	700	$	742	EUR	700	$	800
0% CHF Bonds, due 2023	CHF	275	$	298				—
0.625% EUR Instruments, due 2024	EUR	700	$	720				—
Floating Rate EUR Instruments, due 2024	EUR	500	$	536				—
0.75% EUR Instruments, due 2024	EUR	750	$	769	EUR	750	$	860
0.3% CHF Bonds, due 2024	CHF	280	$	303	CHF	280	$	306
2.1% CHF Bonds, due 2025	CHF	150	$	162				—
0.75% CHF Bonds, due 2027	CHF	425	$	460				—
3.8% USD Notes, due 2028(2)	USD	383	$	381	USD	383	$	381
1.0% CHF Bonds, due 2029	CHF	170	$	184	CHF	170	$	186
0% EUR Instruments, due 2030	EUR	800	$	677	EUR	800	$	862
2.375% CHF Bonds, due 2030	CHF	150	$	162				—
4.375% USD Notes, due 2042(2)	USD	609	$	590	USD	609	$	589
Total			**$**	**5,984**			**$**	**5,242**

(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 2022, the Company repaid at maturity its 2.875% USD Notes, which paid interest semi-annually in arrears. The Company had entered into interest rate swaps for an aggregate nominal amount of $1,050 million to partially hedge its interest obligations on these Notes and after considering the impact of such swaps, $1,050 million of the outstanding principal at December 31, 2021, is shown as floating rate debt, 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 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 up to 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 modify the characteristics of 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 modify the characteristics of 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.

The 0.3% CHF Bonds, due 2024, and 1.0% CHF Bonds, due 2029, each pay interest annually in arrears. The Company may redeem these bonds, one month prior to maturity in the case of the 2024 Bonds and three months prior to maturity in the case of the 2029 Bonds, in whole but not in part, at par plus accrued interest. Further, the Company has the option to redeem these instruments prior to maturity, in whole but not in part, at par plus accrued interest, if 85 percent or more of the aggregate principal amount of the relevant bond issue have been redeemed or purchased and cancelled at the time of the option exercise notice.

The 3.8% USD Notes, due 2028, were issued in April 2018, along with $300 million of 2.8% USD Notes, due 2020, and $450 million of 3.375% USD Notes, due 2023, each paying interest semi-annually in arrears. The 2020 Notes were repaid at maturity in October 2020 and the 2023 Notes were redeemed early in full in December 2020. The Company may redeem the remaining principal outstanding of 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 are 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 0% EUR Instruments, due 2030, do not pay interest and have the same early redemption terms as the 0.625% EUR Instruments above. 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 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 these notes 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 are 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. 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.

In March 2022, the Company issued the following CHF bonds: (i) CHF 275 million zero interest Bonds, due 2023, and (ii) CHF 425 million Bonds, due 2027, with a coupon of 0.75 percent payable annually in arrears. The Company may redeem the CHF 425 million Bonds, one month prior to maturity, in whole but not in part, at par plus accrued interest. Further, the Company has the option to redeem these instruments prior to maturity, in whole but not in part, at par plus accrued interest, if 85 percent or more of the aggregate principal amount have been redeemed or purchased and cancelled at the time of the option exercise notice. The aggregate net proceeds of these CHF bond issues, after discount and fees, amounted to CHF 699 million (equivalent to approximately $751 million on date of issuance).

Also in March 2022, the Company issued the following EUR Instruments, both due in 2024: (i) EUR 700 million, paying interest annually in arrears at a fixed rate of 0.625 percent per annum, and (ii) EUR 500 million floating rate notes, paying interest quarterly in arrears at a variable rate of 0.7 percentage points above the 3-month EURIBOR, subject to a minimum rate of interest of zero percent. The Company may redeem the EUR 700 million Instruments prior to maturity 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. In relation to these EUR Instruments, the Company recorded net proceeds (after the respective discount and premium, as well as fees) of EUR 1,203 million (equivalent to $1,335 million on the date of issuance). Interest rate swaps have been used to modify the characteristics of the EUR 700 million Instruments, due 2024. After considering the impact of these interest rate swaps, the EUR 700 million Instruments, effectively become floating rate obligations.

In October 2022, the Company issued the following CHF bonds: (i) CHF 150 million 2.1 percent Bonds, due 2025, and (ii) CHF 150 million 2.375 percent Bonds, due 2030. Each of the respective bonds pays interest annually in arrears. The Company may redeem these bonds, three months prior to maturity, in whole but not in part, at par plus accrued interest. Further, the Company has the option to redeem these instruments prior to maturity, in whole but not in part, at par plus accrued interest, if 85 percent 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. The aggregate net proceeds of these CHF bond issues, after underwriting discount and other fees, amounted to CHF 299 million (equivalent to approximately $304 million on date of issuance).

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, 2022 and 2021, are finance lease obligations, bank borrowings of subsidiaries and other long-term debt, none of which is individually significant.

Note 13
Other provisions, other current liabilities and other non-current liabilities

"Other provisions" consisted of the following:

December 31, ($ in millions)	2022	2021
Contract-related provisions	615	762
Provision for insurance-related reserves	171	174
Restructuring and restructuring-related provisions	145	188
Provisions for contractual penalties and compliance and litigation matters	49	63
Other	191	199
Total	**1,171**	**1,386**

"Other current liabilities" consisted of the following:

December 31, ($ in millions)	2022	2021
Employee-related liabilities	1,490	1,547
Accrued expenses	872	768
Non-trade payables	681	644
Accrued customer rebates	315	322
Income taxes payable	312	378
Other tax liabilities	285	298
Derivative liabilities (see Note 6)	121	133
Deferred income	102	95
Pension and other employee benefits	38	41
Accrued interest	38	28
Other	69	113
Total	**4,323**	**4,367**

"Other non-current liabilities" consisted of the following:

December 31, ($ in millions)	2022	2021
Income tax related liabilities	1,287	1,458
Derivative liabilities (see Note 6)	367	130
Provisions for contractual penalties and compliance and litigation matters	67	129
Contract liabilities (see Note 8)	59	—
Employee-related liabilities	45	59
Environmental provisions	42	39
Deferred income	33	74
Other	185	227
Total	**2,085**	**2,116**

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)	**2022**	**2021**	**2020**	**2022**	**2021**	**2020**	**2022**	**2021**	**2020**
Operating lease cost	217	240	287	71	73	89	**288**	**313**	**376**
Finance lease cost	15	17	13	22	20	16	**37**	**37**	**29**
Short-term lease cost	20	26	17	18	14	31	**38**	**40**	**48**
Sub-lease income	(18)	(24)	(20)	(1)	(1)	(1)	**(19)**	**(25)**	**(21)**
Total lease expense	**234**	**259**	**297**	**110**	**106**	**135**	**344**	**365**	**432**

The following table presents supplemental cash flow information related to leases:

	Land and buildings			Machinery and equipment			Total		
($ in millions)	**2022**	**2021**	**2020**	**2022**	**2021**	**2020**	**2022**	**2021**	**2020**
Operating leases:									
Cash paid under operating cash flows	200	223	263	66	68	83	**266**	**291**	**346**
Right-of-use assets obtained in exchange for new liabilities	285	267	266	50	86	57	**335**	**353**	**323**

In 2022, 2021 and 2020 the cash flow amounts under finance leases were not significant.

At December 31, 2022, 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**
2023	203	54	21	23
2024	168	34	21	20
2025	138	18	21	17
2026	104	6	17	6
2027	70	1	17	1
Thereafter	151	1	68	—
Total minimum lease payments	**834**	**114**	**165**	**67**
Difference between undiscounted cash flows and discounted cash flows	(74)	(3)	(27)	(3)
Present value of minimum lease payments	**760**	**111**	**138**	**64**

The following table presents certain information related to lease terms and discount rates:

	Land and buildings			Machinery and equipment		
	2022	**2021**	**2020**	**2022**	**2021**	**2020**
Operating leases:						
Weighted-average remaining term (months)	73	73	84	31	30	29
Weighted-average discount rate	3.3%	2.6%	3.0%	1.9%	1.9%	2.0%
Finance leases:						
Weighted-average remaining term (months)	135	100	107	33	40	40
Weighted-average discount rate	5.5%	7.7%	7.7%	2.3%	1.8%	2.3%

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, 2022, amounts to $35 million and $167 million, respectively, and at December 31, 2021, amounts to $27 million and $134 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 and in December 2022 this matter was closed without action by the DOJ as part of the Kusile settlement.

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 SIU 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 made a provision of approximately $325 million, which was recorded in Other income (expense), net, during the third quarter of 2022. In December 2022, the Company settled with the SEC and DoJ as well as the authorities in South Africa and Switzerland. The matter is still pending with the authorities in Germany, but the Company does not believe that it will need to record any additional provisions for this matter.

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, 2022 and 2021, the Company had aggregate liabilities of $86 million and $104 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)	**2022**	**2021**
Performance guarantees	4,300	4,540
Financial guarantees	96	52
Indemnification guarantees(2)	—	136
Total	**4,396**	**4,728**

(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, 2022 and 2021, amounted to $1 million and $156 million, respectively, the majority of which in 2021 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, 2022 and 2021, the maximum potential payable under these guarantees amounts to $843 million and $911 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 sale of the Power Grids business (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, (increasing from 80.1 percent at December 31, 2021, to 100 percent at December 31, 2022). 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, 2022 and 2021, is approximately $3.0 billion and $3.2 billion, respectively. On completing the sale of the Company's remaining 19.9 percent interest in Hitachi Energy to Hitachi, the Company also settled certain existing indemnification guarantees that were due to be settled concurrent with such transaction. As a result, in 2022, the Company recorded $136 million of cash outflows for the settlement of these liabilities (recorded in discontinued operations).

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, 2022 and 2021, the total outstanding performance bonds aggregated to $2.9 billion and $3.6 billion, respectively; of each of these amounts, $0.1 billion relates to discontinued operations. There have been no significant amounts reimbursed to financial institutions under these types of arrangements in 2022 and 2021.

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)	**2022**	**2021**	**2020**
Balance at January 1,	**1,005**	**1,035**	**816**
Net change in warranties due to acquisitions, divestments, spin-offs and liabilities held for sale[(1)]	(24)	1	8
Claims paid in cash or in kind	(157)	(222)	(209)
Net increase in provision for changes in estimates, warranties issued and warranties expired	252	226	369
Exchange rate differences	(48)	(35)	51
Balance at December 31,	**1,028**	**1,005**	**1,035**

(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)	2022	2021	2020
Current taxes	1,101	1,346	776
Deferred taxes	(344)	(289)	(280)
Income tax expense allocated to continuing operations	**757**	**1,057**	**496**
Income tax expense (benefit) allocated to discontinued operations	**(5)**	**(1)**	**322**

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)	2022	2021	2020
Income from continuing operations before income taxes	**3,394**	**5,787**	**841**
Weighted-average global tax rate	**23.6%**	**23.7%**	**22.9%**
Income taxes at weighted-average tax rate	800	1,371	193
Items taxed at rates other than the weighted-average tax rate	127	176	3
Unrecognized tax benefits	(83)	151	(38)
Changes in valuation allowance, net	(195)	(95)	29
Effects of changes in tax laws and enacted tax rates	(19)	1	23
Non-deductible / non-taxable items	97	(542)	232
Other, net	30	(5)	54
Income tax expense from continuing operations	**757**	**1,057**	**496**
Effective tax rate for the year	**22.3%**	**18.3%**	**59.0%**

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 2022, “Items taxed at rates other than the weighted-average tax rate” included $53 million for dividends received in holding entities which could not fully benefit from the participation exemption. In 2021, this included $107 million for certain amounts related to the divestment of the Dodge business, while in 2020 the amount was not significant.

In 2022, “Changes in valuation allowance, net” included positive impacts from changes in certain outlooks in Asia of $22 million, Europe of $23 million and the Americas of $208 million, offset by negative impacts from changes in certain outlooks in Europe of $55 million. In 2021, the amount included positive impacts from changes in certain outlooks in Europe of $82 million. In 2020, the amount 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 2022, “Effects of changes in tax laws and enacted tax rates” primarily reflect the impact of changes to tax rates in Europe for $25 million. In 2021, the amount was not significant. In 2020, the amount primarily reflects the impact of changes to tax rates in certain countries in Asia for $16 million.

In 2022, “Non-deductible / non-taxable items” includes the tax impact of $65 million for the non-deductible regulatory penalties in connection with the Kusile project offset partially by the impact of the non-taxable gain from the sale of the remaining investment in Hitachi Energy. In 2021, this includes $567 million in reported income tax 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 from these items was $232 million and included $82 million for the impairment of non-deductible goodwill. The amount in 2020 also includes $62 million relating to non-operational pension costs resulting from the settlement of certain defined benefit plans which were principally not deductible. In all periods, the amounts reported also include 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.

In 2022 and 2021, “Unrecognized tax benefits” in the table above included a net benefit of $95 million and $150 million, respectively, related to the interpretation for tax law and double tax treaty agreements by competent tax authorities. The amount in 2020 included a benefit of $20 million.

In 2020 “Other, net” included an expense of $54 million, related to the 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)	2022	2021
Deferred tax assets:		
Unused tax losses and credits	462	551
Provisions and other accrued liabilities	756	757
Other current assets including receivables	100	104
Pension	283	338
Inventories	304	266
Intangible assets	1,154	1,135
Other	66	57
Total gross deferred tax asset	**3,125**	**3,208**
Valuation allowance	(1,000)	(1,263)
Total gross deferred tax asset, net of valuation allowance	**2,125**	**1,945**
Deferred tax liabilities:		
Property, plant and equipment	(232)	(245)
Intangible assets	(237)	(281)
Other assets	(91)	(107)
Pension	(318)	(302)
Other liabilities	(200)	(175)
Inventories	(44)	(35)
Unremitted earnings of subsidiaries	(336)	(308)
Total gross deferred tax liability	**(1,458)**	**(1,453)**
Net deferred tax asset (liability)	**667**	**492**
Included in:		
"Deferred taxes"—non-current assets	1,396	1,177
"Deferred taxes"—non-current liabilities	(729)	(685)
Net deferred tax asset (liability)	**667**	**492**

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, 2022 and 2021, in the table above, included $80 million and $93 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, 2022, 2021 and 2020, was $1,000 million, $1,263 million and $1,518 million, respectively.

Certain amounts included in deferred tax assets for intangible assets result from intercompany transactions occurring at fair market value for which no corresponding accounting basis exists.

At December 31, 2022 and 2021, deferred tax liabilities totaling $336 million and $308 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 2022 and 2021, certain taxes arose in certain foreign jurisdictions for which the technical merits do not allow utilization of benefits. At December 31, 2022 and 2021, foreign subsidiary retained earnings which would be subject to withholding taxes upon distribution were approximately $100 million and $100 million, respectively. These earnings 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, 2022, net operating loss carry-forwards of $1,806 million and tax credits of $57 million were available to reduce future income taxes of certain subsidiaries. Of these amounts, $809 million of operating loss carry-forwards and $47 million of tax credits will expire in varying amounts through 2046, 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, 2020	**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**
Increase relating to prior year tax positions	26	36	**62**
Decrease relating to prior year tax positions	(98)	(12)	**(110)**
Increase relating to current year tax positions	80	4	**84**
Decrease due to settlements with tax authorities	(31)	(14)	**(45)**
Decrease as a result of the applicable statute of limitations	(71)	(23)	**(94)**
Exchange rate differences	(58)	(10)	**(68)**
Balance at December 31, 2022, which would, if recognized, affect the effective tax rate	**1,170**	**180**	**1,350**

In 2022 and 2021, "Increase relating to current year tax positions" included a total of $69 million and $72 million, respectively, in taxes related to the interpretation of tax law and double tax treaty agreements by competent tax authorities.

In 2020, "Increase relating to current year tax positions", included a total of $381 million 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 2022, "Increase relating to prior year tax positions" included $26 million, predominantly from Asia and Europe.

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 2022, "Decrease relating to prior year tax positions" included $94 million for a decrease in tax risk assessments in Europe.

In 2021, "Decrease relating to prior year tax positions" of $42 million included $33 million related to tax risk assessments in Europe.

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 2022, “Decrease due to settlements with tax authorities” is predominantly related to tax assessments received in Asia and Europe.

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, 2022, 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, 2022, the earliest significant open tax years that remained subject to examination were the following:

Region	**Year**
Europe	2015
United States	2019
Rest of Americas	2018
China	2013
Rest of Asia, Middle East and Africa	2017

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, 2022, 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)	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**
Benefit obligation at January 1,	**3,434**	**3,870**	**5,115**	**5,527**	**71**	**98**
Service cost	50	61	38	47	—	1
Interest cost	13	(5)	87	72	1	2
Contributions by plan participants	34	36	10	8	—	—
Benefit payments	(96)	(130)	(234)	(207)	(7)	(9)
Settlements	(92)	(124)	(36)	(84)	—	—
Benefit obligations of businesses acquired (divested)	(328)	—	(2)	(46)	—	(11)
Actuarial (gain) loss	(478)	(140)	(1,075)	(15)	(14)	(8)
Plan amendments and other	—	—	(3)	13	—	(2)
Exchange rate differences	(80)	(134)	(328)	(200)	(1)	—
Benefit obligation at December 31,	**2,457**	**3,434**	**3,572**	**5,115**	**50**	**71**
Fair value of plan assets at January 1,	**4,113**	**4,133**	**4,463**	**4,608**	**—**	**—**
Actual return on plan assets	(310)	279	(789)	197	—	—
Contributions by employer	37	63	58	124	7	9
Contributions by plan participants	34	36	10	8	—	—
Benefit payments	(96)	(130)	(234)	(207)	(7)	(9)
Settlements	(92)	(124)	(36)	(84)	—	—
Plan assets of businesses acquired (divested)	(414)	—	(1)	(50)	—	—
Plan amendments and other	—	—	—	14	—	—
Exchange rate differences	(89)	(144)	(299)	(147)	—	—
Fair value of plan assets at December 31,	**3,183**	**4,113**	**3,172**	**4,463**	**—**	**—**
Funded status — overfunded (underfunded)	**726**	**679**	**(400)**	**(652)**	**(50)**	**(71)**

The amounts recognized in "Accumulated other comprehensive loss" and "Noncontrolling interests" were:

	Defined pension benefits			Other postretirement benefits		
December 31, ($ in millions)	**2022**	**2021**	**2020**	**2022**	**2021**	**2020**
Net actuarial (loss) gain	(1,183)	(1,540)	(2,038)	32	21	21
Prior service credit	56	72	75	5	7	11
Amount recognized in OCI[(1)] and NCI[(2)]	**(1,127)**	**(1,468)**	**(1,963)**	**37**	**28**	**32**
Taxes associated with amount recognized in OCI and NCI	266	352	374	—	—	—
Amount recognized in OCI and NCI, net of tax[(3)]	**(861)**	**(1,116)**	**(1,589)**	**37**	**28**	**32**

(1) OCI represents “Accumulated other comprehensive loss”.
(2) NCI represents “Noncontrolling interests”.
(3) NCI, net of tax, amounted to $(1) million, $0 million and $(1) million at December 31, 2022, 2021 and 2020.

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)	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**
Overfunded plans	726	683	189	208	—	—
Underfunded plans — current	—	—	(22)	(23)	(6)	(7)
Underfunded plans — non-current	—	(4)	(567)	(837)	(44)	(64)
Funded status — overfunded (underfunded)	**726**	**679**	**(400)**	**(652)**	**(50)**	**(71)**

December 31, ($ in millions)	2022	2021
Non-current assets		
Overfunded pension plans	915	891
Other employee-related benefits	1	1
Pension and other employee benefits	**916**	**892**

December 31, ($ in millions)	2022	2021
Current liabilities		
Underfunded pension plans	(22)	(23)
Underfunded other postretirement benefit plans	(6)	(10)
Other employee-related benefits	(10)	(8)
Pension and other employee benefits	**(38)**	**(41)**

December 31, ($ in millions)	2022	2021
Non-current liabilities		
Underfunded pension plans	(567)	(841)
Underfunded other postretirement benefit plans	(44)	(62)
Other employee-related benefits	(108)	(122)
Pension and other employee benefits	**(719)**	**(1,025)**

The accumulated benefit obligation (ABO) for all defined benefit pension plans was $5,953 million and $8,452 million at December 31, 2022 and 2021, 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			
December 31,	Switzerland		International		Switzerland		International	
($ in millions)	2022	2021	2022	2021	2022	2021	2022	2021
PBO	9	12	2,274	2,994	9	12	2,274	2,979
ABO	9	12	2,222	2,917	9	12	2,222	2,905
Fair value of plan assets	9	8	1,689	2,133	9	8	1,689	2,119

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)	2022	2021	2020	2022	2021	2020	2022	2021	2020
Operational pension cost:									
Service cost	50	61	74	38	47	92	—	1	1
Operational pension cost	**50**	**61**	**74**	**38**	**47**	**92**	**—**	**1**	**1**
Non-operational pension cost (credit):									
Interest cost	13	(5)	6	87	72	111	1	2	3
Expected return on plan assets	(117)	(116)	(123)	(153)	(178)	(253)	—	—	—
Amortization of prior service cost (credit)	(9)	(9)	(11)	(2)	(2)	2	(2)	(3)	(2)
Amortization of net actuarial loss	—	—	7	58	67	109	(3)	(2)	(3)
Curtailments, settlements and special termination benefits	4	1	6	7	7	644	—	—	—
Non-operational pension cost (credit)	**(109)**	**(129)**	**(115)**	**(3)**	**(34)**	**613**	**(4)**	**(3)**	**(2)**
Net periodic benefit cost	**(59)**	**(68)**	**(41)**	**35**	**13**	**705**	**(4)**	**(2)**	**(1)**

The components of net periodic benefit cost other than the service cost component are included in Non-operational pension (cost) credit in the Consolidated Income Statements. Net periodic benefit cost includes $121 million in 2020, 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 %)	2022	2021	2022	2021	2022	2021
Discount rate	2.2	0.2	4.8	2.1	5.3	2.6
Rate of compensation increase	—	—	1.8	1.5	0.3	0.3
Rate of pension increase	—	—	1.8	1.7	—	—
Cash balance interest credit rate	2.0	1.0	2.7	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 %)	2022	2021	2020	2022	2021	2020	2022	2021	2020
Discount rate	0.7	—	0.3	2.1	1.6	1.9	2.0	2.1	2.8
Expected long-term rate of return on plan assets	3.3	3.0	3.0	3.7	4.0	4.3	—	—	—
Rate of compensation increase	—	—	—	1.5	1.0	2.2	0.1	0.2	0.2
Cash balance interest credit rate	1.3	1.0	1.0	2.1	2.1	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,	2022	2021
Health care cost trend rate assumed for next year	5.6%	5.1%
Rate to which the trend rate is assumed to decline (the ultimate trend rate)	4.5%	4.5%
Year that the rate reaches the ultimate trend rate	2029	2026

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	16
Fixed income	54	72
Real estate	26	4
Other	5	8
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, 2022, is 4.5 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, 2022 and 2021, plan assets include ABB Ltd's shares (as well as an insignificant amount of the Company's debt instruments) with a total value of $7 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, 2022 ($ in millions)	**Level 1**	**Level 2**	**Not subject to leveling(1)**	**Total fair value**
Asset class				
Equity				
Equity securities	77			**77**
Mutual funds/commingled funds		748		**748**
Emerging market mutual funds/commingled funds		96		**96**
Fixed income				
Government and corporate securities	121	1,036		**1,157**
Government and corporate—mutual funds/commingled funds		2,189		**2,189**
Emerging market bonds—mutual funds/commingled funds		315		**315**
Real estate			1,172	**1,172**
Insurance contracts		57		**57**
Cash and short-term investments	124	129		**253**
Private equity		54	237	**291**
Total	**322**	**4,624**	**1,409**	**6,355**

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**

(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 $114 million and $125 million at December 31, 2022 and 2021, 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)	2022	2021	2022	2021	2022	2021
Total contributions to defined benefit pension and other postretirement benefit plans	37	63	58	124	7	9
Of which, discretionary contributions to defined benefit pension plans	—	—	18	61	—	—

The total contributions included non-cash contributions totaling $12 million and $53 million, respectively, for 2022 and 2021, of available-for-sale debt securities to certain of the Company's pension plans.

The Company expects to contribute approximately $69 million to its defined benefit pension plans in 2023. Of these contributions, $4 million are expected to be non-cash contributions. The Company expects to contribute approximately $6 million to its other postretirement benefit plans in 2023.

The Company also contributes to a number of defined contribution plans. The aggregate expense for these plans in continuing operations was $269 million, $278 million and $205 million in 2022, 2021 and 2020, respectively. Contributions to multi-employer plans were not significant in 2022, 2021 and 2020.

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, 2022, are as follows:

	Defined pension benefits		Other postretirement benefits
($ in millions)	Switzerland	International	International
2023	212	245	6
2024	211	251	6
2025	195	248	6
2026	195	251	5
2027	186	258	5
Years 2028 - 2032	870	1,254	18

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 $42 million, $59 million and $44 million in 2022, 2021 and 2020, 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 2022, 2021 and 2020 was not significant.

At December 31, 2022, 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, 25 million of the 100 million shares held by the Company as treasury stock at December 31, 2022, 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 2022, 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.

In connection with the spin-off of the Turbocharging Division in October 2022, the strike prices of the options outstanding under the MIP program were reduced to neutralize the effect of the spin-off on the Company's share price. The amount of the reduction in the strike price was determined to result in an equivalent fair value before and after the spin-off. New equivalent warrants, with the reduced strike prices, were listed by the third-party bank, allowing continued pricing and transferability. For the options held by the third-party bank, to effect the reduction in the exercise price, the Company settled, for cash, the options held by the bank that were outstanding at September 30, 2022, immediately prior to the spin-off, and simultaneously issued an equivalent number of new options for cash to the bank with lower strike prices.

Options

The fair value of each option was estimated on the date of grant using a lattice model. As mentioned previously, no options were granted in 2022, 2021 and 2020. In 2022, 69 million options were exercised, representing 14 million shares, with the shares delivered out of treasury stock. Cash received upon exercise amounted to approximately $330 million. In 2022, 2021 and 2020, the aggregate intrinsic value (on the date of exercise) of options exercised was approximately $143 million, $313 million and $38 million, respectively. In 2022, there were no significant forfeitures, and at December 31, 2022, all options granted under the MIP were vested and exercisable. The aggregate intrinsic value at December 31, 2022, of options outstanding was approximately $166 million.

Presented below is a summary, by launch, related to options outstanding at December 31, 2022:

Exercise price (in Swiss francs)(1)	Number of options (in millions)	Number of shares (in millions)(2)	Weighted-average remaining contractual term (in years)
21.23	6.6	1.3	0.6
22.05	61.5	12.3	1.7
17.63	33.8	6.8	2.7
Total number of options and shares	**101.9**	**20.4**	**1.9**

(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 2022, 2021 and 2020 was not significant.

At December 31, 2022, 8 million WARs were outstanding, all vested and exercisable. In 2022, there were no significant forfeitures. The aggregate fair value of outstanding WARs was $15 million and $29 million at December 31, 2022 and 2021, respectively. The fair value of WARs was determined based upon the trading price of equivalent warrants listed on the SIX Swiss Exchange.

As mentioned previously, no WARs were granted in 2022, 2021 and 2020. In 2021, share-based liabilities of $25 million were paid upon exercise of WARs by participants. The amount in 2022 was 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.

	2022	2021	2020
Expected volatility	25%	20%	24%
Dividend yield	3.0%	2.9%	3.8%
Expected term	1 year	1 year	1 year
Risk-free interest rate	1.1%	-0.6%	-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, 2022	**1.8**	**30.32**		
Granted	1.8	27.99		
Forfeited	(0.2)	30.28		
Exercised(4)	(0.1)	29.16		
Not exercised (savings returned plus interest)	(1.5)	29.16		
Outstanding at December 31, 2022	**1.8**	**27.99**	**0.8**	**0.1**
Vested and expected to vest at December 31, 2022	**1.8**	**27.99**	**0.8**	**0.1**
Exercisable at December 31, 2022	**—**	**—**	**—**	**—**

(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 2022 from exercises was not significant. The shares were delivered out of treasury stock.

The exercise prices per ABB Ltd share and per ADS of 27.99 Swiss francs and $28.09, respectively, for the 2022 grant, 30.32 Swiss francs and $33.35, respectively, for the 2021 grant, and 22.87 Swiss francs and $24.93, respectively, for the 2020 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. In connection with the spin-off of the Turbocharging Division in October 2022, the strike prices of the ESAP options outstanding at the time of spin-off were reduced, as per the terms and conditions of the original grant, to neutralize the effect of the spin-off on the Company's share price, resulting in an equivalent fair value before and after the spin-off. Consequently, the exercise prices per ABB Ltd share and per ADS for the 2021 grant, were adjusted to 29.16 Swiss francs and $32.10, respectively.

At December 31, 2022, 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 2022, 2021 and 2020 was 2.47 Swiss francs, 1.96 Swiss francs and 1.67 Swiss francs, respectively. The total intrinsic value (on the date of exercise) of options exercised in 2021 was approximately $14 million, while in 2022 and 2020 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 2022 LTIP launch include a component based on the Company's earnings per share performance (weighted 50 percent), a component based on the Company's relative total shareholder return (weighted 30 percent) and an environmental, social and governance (ESG) component based on the Company's CO_2e emissions reductions (weighted 20 percent). The Performance Shares under the 2021 and 2020 LTIP launches comprise of a component based on the Company's earnings per share performance and a component based on the Company's relative total shareholder return, both with equal weighting.

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).

For the ESG component of the Performance Shares, the actual number of shares that will be delivered at a future date is based on the Company's scope 1 and 2 CO_2e emissions reduction over three financial years, beginning with the year of launch, compared to the 2019 baseline emissions. The actual number of shares that will ultimately be delivered will vary depending on the ESG outcome as computed under the 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).

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.

Under the 2022, 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.

In connection with the spin-off of the Turbocharging Division in October 2022, the number of shares granted to employees under the LTIP launches was adjusted, as per the terms and conditions of the original grant, to neutralize the effect of the spin-off, resulting in an equivalent fair value before and after the spin-off.

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, 2022	**1.5**	**23.23**
Granted	0.7	33.33
Turbocharging Division spin-off	0.1	
Vested	(0.3)	23.12
Forfeited	(0.1)	26.96
Nonvested at December 31, 2022	**1.9**	**27.01**

The aggregate fair value, at the dates of grant, of Performance Shares granted in 2022 and 2021 was $26 million and $37 million, respectively, while in 2020 it was not significant. The total grant-date fair value of shares that vested during 2022, 2021 and 2020 was not significant. The weighted-average grant-date fair value (per share) of shares granted during 2022, 2021 and 2020 was 33.33 Swiss francs, 38.92 Swiss francs and 10.50 Swiss francs, respectively.

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, 2022	**2.0**	**20.61**
Granted	0.8	30.52
Turbocharging Division spin-off	0.1	
Vested	(0.1)	19.60
Forfeited	(0.2)	23.72
Nonvested at December 31, 2022	**2.6**	**23.65**

The aggregate fair value, at the dates of grant, of Restricted Shares granted in 2022, 2021 and 2020 was $27 million, $26 million and $22 million, respectively. The total grant-date fair value of shares that vested during 2022, 2021 and 2020 was not significant. The weighted-average grant-date fair value (per share) of shares granted during 2022 and 2021 was 30.52 Swiss francs, 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, 2022, total unrecognized compensation cost related to equity-settled awards under the LTIP was $50 million and is expected to be recognized over a weighted-average period of 1.8 years. The compensation cost recorded in 2022, 2021 and 2020 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. For the ESG component of the LTIP launch, 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 ESG component achievement, as determined by internal modelling based on the Company's CO_2e emissions.

Other share-based payments

The Company has other minor share-based payment arrangements with certain employees. The compensation cost related to these arrangements in 2022, 2021 and 2020 was not significant.

Note 19
Stockholders' equity

Capital

At December 31, 2022, the Company had 2,469 million authorized shares, of which 1,965 million were registered and issued. At December 31, 2021, the Company had 2,557 million authorized shares, of which 2,053 million were registered and issued.

Dividends

At the Annual General Meeting of Shareholders (AGM) in March 2022, the shareholders approved the proposal of the Board of Directors to distribute a total of 0.82 Swiss francs per share. The approved dividend distribution amounted to $1,700 million, with the Company disbursing a portion in March 2022 and the remaining amounts in April 2022. At the 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.

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, 2022, the total unconsolidated stockholders' equity of ABB Ltd was 6,219 million Swiss francs ($6,742 million), including 236 million Swiss francs ($256 million) representing share capital, 8,852 million Swiss francs ($9,597 million) representing reserves and 2,869 million Swiss francs ($3,111 million) representing a reduction of equity for treasury shares. Of the reserves, 2,869 million Swiss francs ($3,111 million) relating to treasury shares and 47 million Swiss francs ($51 million) representing 20 percent of share capital, at December 31, 2022, are restricted by law and not available for distribution.

Treasury stock transactions

In July 2020, the Company announced it intended to initially 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 129 million shares for approximately $3.5 billion. At the March 2021 AGM, 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, was executed on a second trading line on the SIX Swiss Exchange and was completed in March 2022. Through this follow-up buyback program, the Company purchased a total of 90 million shares for approximately $3.1 billion. At the March 2022 AGM, shareholders approved the cancellation of 88 million shares which had been purchased under the share buyback programs launched in July 2020 and April 2021. The cancellation was completed in the second quarter of 2022, resulting in a decrease in Treasury stock of $2,876 million and a corresponding total decrease in Capital stock, Additional paid-in capital and Retained earnings.

In March 2022, the Company announced a new share buyback program of up to $3 billion. This program, which was launched in April 2022, is being executed on a second trading line on the SIX Swiss Exchange and is planned to run until the Company's 2023 AGM.

Under these buyback programs, in 2022, 2021 and 2020, the Company purchased 91 million, 78 million and 109 million, respectively, of its own shares, resulting in an increase in Treasury stock of $2,842 million, $2,651 million and $2,835 million, respectively.

In addition to the share buyback programs, in 2022, 2021 and 2020, the Company purchased a combined total of 20 million, 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 $660 million, $1,032 million and $346 million, respectively.

Obligations to issue shares relating to employee incentive programs

At December 31, 2022, the Company had outstanding obligations to deliver:

- up to 1 million shares relating to the options granted under the 2017 launch of the MIP, with a strike price of 21.23 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 22.05 Swiss francs, vested in August 2021 and expiring in August 2024,
- up to 7 million shares relating to the options granted under the 2019 launch of the MIP, with a strike price of 17.63 Swiss francs, vested in August 2022 and expiring in August 2025,
- up to 2 million shares relating to the ESAP, vesting and expiring in October 2023,
- up to 8 million shares to Eligible Participants under the 2022, 2021 and 2020 launches of the LTIP, vesting and expiring in April 2025, April 2024 and April 2023, respectively, and
- less than 1 million shares in connection with certain other share-based payment arrangements with employees.

In addition to the above obligations, the Company had sold, upon and in connection with each launch of the MIP, 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. In connection with the spin-off of the Turbocharging Division in October 2022, the Company settled, for cash, the options outstanding at September 30, 2022, immediately prior to the spin-off, and simultaneously issued to the bank for cash an equivalent number of new options with lower strike prices. The strike price of these new options was determined so as to neutralize the effect of the spin-off on the Company’s share price. At December 31, 2022, such call options representing 3.3 million shares and with strike prices ranging from 17.63 to 22.05 Swiss francs (weighted-average strike price of 20.58 Swiss francs) were held by the bank. The call options expire in periods ranging from August 2023 to August 2025.

See Note 18 for a description of the above share-based payment arrangements.

In 2022, 2021 and 2020, the Company delivered 16 million, 36 million and 17 million shares, respectively, out of treasury stock, for options exercised in relation to the MIP. In addition, in 2021 and 2020, the Company delivered 1.7 million and 1.4 million shares, respectively, out of treasury stock under the ESAP. The number of shares delivered in 2022 under the ESAP was not significant.

Issuance of subsidiary shares

In November 2022, the Company received gross proceeds of 203 million Swiss francs ($216 million) through a private placement of shares in its ABB E-Mobility subsidiary, ABB E-mobility Holding Ltd (ABB E-Mobility), reducing the Company's beneficial ownership in the subsidiary from 100 percent to 92 percent. This resulted in an increase in Additional paid-in capital of $120 million.

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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 2022 and 2020, outstanding securities representing a maximum of 2 million and 79 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 $)	2022	2021	2020
Amounts attributable to ABB shareholders:			
Income from continuing operations, net of tax	2,517	4,625	294
Income (loss) from discontinued operations, net of tax	(42)	(79)	4,852
Net income	**2,475**	**4,546**	**5,146**
Weighted-average number of shares outstanding (in millions)	**1,899**	**2,001**	**2,111**
Basic earnings per share attributable to ABB shareholders:			
Income from continuing operations, net of tax	1.33	2.31	0.14
Income (loss) from discontinued operations, net of tax	(0.02)	(0.04)	2.30
Net income	**1.30**	**2.27**	**2.44**

Diluted earnings per share:

($ in millions, except per share data in $)	2022	2021	2020
Amounts attributable to ABB shareholders:			
Income from continuing operations, net of tax	2,517	4,625	294
Income (loss) from discontinued operations, net of tax	(42)	(79)	4,852
Net income	**2,475**	**4,546**	**5,146**
Weighted-average number of shares outstanding (in millions)	1,899	2,001	2,111
Effect of dilutive securities:			
Call options and shares	11	18	8
Adjusted weighted-average number of shares outstanding (in millions)	**1,910**	**2,019**	**2,119**
Diluted earnings per share attributable to ABB shareholders:			
Income from continuing operations, net of tax	1.32	2.29	0.14
Income (loss) from discontinued operations, net of tax	(0.02)	(0.04)	2.29
Net income	**1.30**	**2.25**	**2.43**

Note 21
Other comprehensive income

The following table includes amounts recorded within “Total other comprehensive income (loss)” including the related income tax effects:

($ in millions)	2022			2021			2020		
	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	(685)	—	**(685)**	(521)	—	**(521)**	500	(2)	**498**
Net loss on complete or substantially complete liquidations of foreign subsidiaries	5	—	**5**	—	—	**—**	—	—	**—**
Changes attributable to divestments	41	—	**41**	(9)	—	**(9)**	519	—	**519**
Net change during the year	**(639)**	**—**	**(639)**	**(530)**	**—**	**(530)**	**1,019**	**(2)**	**1,017**
Available-for-sale securities:									
Net unrealized gains (losses) arising during the year	(28)	5	**(23)**	(13)	3	**(10)**	31	(7)	**24**
Reclassification adjustments for net (gains) losses included in net income	2	—	**2**	(6)	1	**(5)**	(18)	4	**(14)**
Changes attributable to divestments	—	—	**—**	—	—	**—**	(3)	—	**(3)**
Net change during the year	**(26)**	**5**	**(21)**	**(19)**	**4**	**(15)**	**10**	**(3)**	**7**
Pension and other postretirement plans:									
Prior service (costs) credits arising during the year	(2)	2	**—**	2	(2)	**—**	55	(12)	**43**
Net actuarial gains (losses) arising during the year	298	(72)	**226**	437	(26)	**411**	(243)	43	**(200)**
Amortization of prior service cost (credit) included in net income	(13)	(3)	**(16)**	(14)	—	**(14)**	(11)	—	**(11)**
Amortization of net actuarial loss included in net income	55	(11)	**44**	65	4	**69**	113	(25)	**88**
Net losses from settlements and curtailments included in net income	11	(2)	**9**	7	—	**7**	650	(132)	**518**
Changes attributable to divestments	(8)	—	**(8)**	(8)	2	**(6)**	186	(35)	**151**
Net change during the year	**341**	**(86)**	**255**	**489**	**(22)**	**467**	**750**	**(161)**	**589**
Derivative instruments and hedges:									
Net gains (losses) arising during the year	(10)	(2)	**(12)**	7	1	**8**	2	—	**2**
Reclassification adjustments for net (gains) losses included in net income	12	—	**12**	(13)	—	**(13)**	(2)	2	**—**
Net change during the year	**2**	**(2)**	**—**	**(6)**	**1**	**(5)**	**—**	**2**	**2**
Total other comprehensive income (loss)	**(322)**	**(83)**	**(405)**	**(66)**	**(17)**	**(83)**	**1,779**	**(164)**	**1,615**

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, 2020	**(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[1]	**(2,993)**	**2**	**(1,089)**	**(8)**	**(4,088)**
Other comprehensive (loss) income before reclassifications	(685)	(23)	226	(12)	**(494)**
Amounts reclassified from OCI	46	2	29	12	**89**
Total other comprehensive (loss) income	**(639)**	**(21)**	**255**	**—**	**(405)**
Spin-off of the Turbocharging Division	(93)	—	(5)	—	**(98)**
Less:					
Amounts attributable to noncontrolling interests and redeemable noncontrolling interests	(34)	—	(1)	—	**(35)**
Balance at December 31, 2022	**(3,691)**	**(19)**	**(838)**	**(8)**	**(4,556)**

(1) 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	2022	2021	2020
Foreign currency translation adjustments:				
Net loss on complete or substantially complete liquidations of foreign subsidiaries	Other income (expense), net	5	—	—
Changes attributable to divestments:				
- Loss on solar inverters business (see Note 4)	Other income (expense), net	—	—	99
- Losses (gains) on other divestments, net	Other income (expense), net	41	(9)	—
- Loss on Power Grids business (see Note 3)	Income (loss) from discontinued operations, net of tax	—	—	420
Amounts reclassified from OCI		**46**	**(9)**	**519**
Pension and other postretirement plan adjustments:				
Amortization of prior service cost (credit)	Non-operational pension (cost) credit(1)	(13)	(14)	(11)
Amortization of net actuarial loss	Non-operational pension (cost) credit(1)	55	65	113
Net losses from settlements and curtailments	Non-operational pension (cost) credit(1)	11	7	650
Changes attributable to divestments:				
- Losses (gains) on divestments, net	Other income (expense), net	(8)	(8)	—
- Loss on Power Grids business (see Note 3)	Income (loss) from discontinued operations, net of tax(2)	—	—	186
Total before tax		**45**	**50**	**938**
Tax	Income tax expense	(16)	4	(157)
Changes in tax attributable to divestments:				
- Losses (gains) on 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		**29**	**56**	**746**

(1) Amounts in 2020, include a total of $94 million, 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 2022, 2021 and 2020.

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, 2022:

($ 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**
Expenses, net of change in estimates	(7)	1	**(6)**
Cash payments	(22)	(1)	**(23)**
Exchange rate differences	(3)	—	**(3)**
Liability at December 31, 2022	**20**	**1**	**21**

The following table outlines the costs incurred in 2020 and the cumulative costs incurred under the program per operating segment as well as Corporate and Other:

($ in millions)	Costs incurred in 2020	Cumulative costs incurred up to December 31, 2020
Electrification	35	85
Motion	18	25
Process Automation	37	61
Robotics & Discrete Automation	10	18
Corporate and Other	49	114
Total	**149**	**303**

The Company recorded the following expenses, net of change in estimates, under this program:

($ in millions)	Costs incurred in 2020	Cumulative costs incurred up to December 31, 2020
Employee severance costs	109	255
Estimated contract settlement, loss order and other costs	17	18
Inventory and long-lived asset impairments	23	30
Total	**149**	**303**

Restructuring expenses recorded for this program are included in the following line items in the Consolidated Income Statements:

($ in millions)	2020
Total cost of sales	38
Selling, general and administrative expenses	37
Non-order related research and development expenses	4
Other income (expense), net	70
Total	**149**

Other restructuring-related activities

In addition, during 2022, 2021 and 2020, the Company executed various other restructuring-related activities and incurred the following charges, net of changes in estimates:

($ in millions)	2022	2021	2020
Employee severance costs	81	101	164
Estimated contract settlement, loss order and other costs	209	31	18
Inventory and long-lived asset impairments	7	24	12
Total	**297**	**156**	**194**

Expenses associated with these activities are recorded in the following line items in the Consolidated Income Statements:

($ in millions)	2022	2021	2020
Total cost of sales	24	71	95
Selling, general and administrative expenses	40	21	50
Non-order related research and development expenses	2	2	10
Other income (expense), net	231	62	39
Total	**297**	**156**	**194**

In 2022, the Company completed a plan (initiated in 2021) to fully exit its full train retrofit business by transferring the remaining contracts to a third party. The Company recorded $195 million of restructuring expenses in connection with this business exit primarily for contract settlement costs. Prior to exiting this business, the business was reported as part of the Company's non-core business activities within Corporate and Other.

At December 31, 2022 and 2021, $198 million and $212 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.

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 seven operating Divisions: Distribution Solutions, Smart Power, Smart Buildings, E-mobility, Installation Products, Power Conversion and Service.

- Motion: designs, manufactures, and sells drives, motors, generators and traction converters 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 its partners, has a leading global service presence. These products and services are delivered through seven operating Divisions: Large Motors and Generators, IEC LV Motors, NEMA Motors, Drive Products, System Drives, Service and Traction, as well as, prior to its sale in November 2021, the Mechanical Power Transmission Division.

- Process Automation: develops and sells a broad range of industry-specific, integrated automation, 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 control technologies, advanced process control software and manufacturing execution systems, sensing, measurement and analytical instrumentation, marine propulsion systems and 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 and Measurement & Analytics, as well as, prior to its spin-off in October 2022, the Turbocharging Division (Accelleron).

- Robotics & Discrete Automation: delivers its products, solutions and services through two operating Divisions: Robotics and Machine Automation. Robotics includes industrial robots, autonomous mobile robotics, software, robotic solutions, 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 2022, 2021 and 2020:

	2022					
($ in millions)	Electrification	Motion	Process Automation	Robotics & Discrete Automation	Corporate and Other	Total
Geographical markets						
Europe	4,449	2,031	2,248	1,494	63	**10,285**
The Americas	5,332	2,148	1,566	524	3	**9,573**
of which: United States	3,918	1,787	943	373	2	**7,023**
Asia, Middle East and Africa	4,123	2,101	2,199	1,155	10	**9,588**
of which: China	1,984	1,147	666	897	2	**4,696**
	13,904	**6,280**	**6,013**	**3,173**	**76**	**29,446**
Product type						
Products	12,179	5,380	1,337	1,863	7	**20,766**
Systems	830	—	1,974	832	69	**3,705**
Services and software	895	900	2,702	478	—	**4,975**
	13,904	**6,280**	**6,013**	**3,173**	**76**	**29,446**
Third-party revenues	13,904	6,280	6,013	3,173	76	**29,446**
Intersegment revenues	201	465	31	8	(705)	**—**
Total revenues	**14,105**	**6,745**	**6,044**	**3,181**	**(629)**	**29,446**

	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**

($ in millions)	Electrification	Motion	Process Automation	Robotics & Discrete Automation	Corporate and Other	Total
	2020					
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**

(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 2022, 2021 and 2020 the United States and China are the only countries where revenue exceeded 10 percent of Total revenues. In each of 2022, 2021 and 2020 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 2022, 2021 and 2020, as well as Total assets at December 31, 2022, 2021 and 2020:

($ in millions)	2022	2021	2020
Operational EBITA:			
Electrification	2,328	2,121	1,681
Motion	1,163	1,183	1,075
Process Automation	848	801	451
Robotics & Discrete Automation	340	355	237
Corporate and Other:			
— Non-core and divested businesses	5	(39)	(133)
— Stranded corporate costs	—	—	(40)
— Corporate costs and Other intersegment elimination	(174)	(299)	(372)
Total	**4,510**	**4,122**	**2,899**
Acquisition-related amortization	(229)	(250)	(263)
Restructuring, related and implementation costs(1)	(347)	(160)	(410)
Changes in obligations related to divested businesses	88	(9)	(218)
Changes in pre-acquisition estimates	(10)	6	(11)
Gains and losses from sale of businesses	(7)	2,193	(2)
Fair value adjustment on assets and liabilities held for sale	—	—	(33)
Acquisition- and divestment-related expenses and integration costs	(195)	(132)	(74)
Other income/expenses relating to the Power Grids joint venture	(57)	(34)	(20)
Foreign exchange/commodity timing differences in income from operations:			
Unrealized gains and losses on derivatives (foreign exchange, commodities, embedded derivatives)	32	(54)	67
Realized gains and losses on derivatives where the underlying hedged transaction has not yet been realized	(48)	(2)	26
Unrealized foreign exchange movements on receivables/payables (and related assets/liabilities)	(15)	20	(33)
Certain other non-operational items:			
Costs for divestment of Power Grids	—	—	(86)
Regulatory, compliance and legal costs	(317)	—	(7)
Business transformation costs(2)	(152)	(92)	(37)
Favorable resolution of an uncertain purchase price adjustment	15	6	36
Gains and losses from sale of investments in equity-accounted companies	43	—	—
Certain other fair value changes, including asset impairments(3)	45	119	(239)
Other non-operational items	(19)	(15)	(2)
Income from operations	**3,337**	**5,718**	**1,593**
Interest and dividend income	72	51	51
Interest and other finance expense	(130)	(148)	(240)
Losses from extinguishment of debt	—	—	(162)
Non-operational pension (cost) credit	115	166	(401)
Income from continuing operations before taxes	**3,394**	**5,787**	**841**

(1) Amount in 2022 includes impairment of certain assets. Amount in 2020 includes $67 million of implementation costs in relation to the OS program.

(2) Amounts in 2022 and 2021 include ABB Way process transformation costs of $131 million and $80 million, respectively.

(3) Amount in 2020 includes goodwill impairment charges of $311 million.

	Depreciation and amortization			Capital expenditures(1)			Total assets(1), (2) at December 31,		
($ in millions)	**2022**	**2021**	**2020**	**2022**	**2021**	**2020**	**2022**	**2021**	**2020**
Electrification	406	425	411	385	345	316	13,992	12,831	12,800
Motion	141	172	182	150	230	118	6,565	5,936	6,495
Process Automation	75	83	80	100	85	75	4,598	5,009	5,008
Robotics & Discrete Automation	141	144	131	86	96	65	4,901	4,860	4,794
Corporate and Other	51	69	111	41	64	120	9,092	11,624	11,991
Consolidated	**814**	**893**	**915**	**762**	**820**	**694**	**39,148**	**40,260**	**41,088**

(1) Capital expenditures and Total assets are after intersegment eliminations and therefore reflect third-party activities only.

(2) At December 31, 2022, 2021 and 2020, Corporate and Other includes $96 million, $136 million and $282 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 included $1,609 million and $1,710 million, respectively, related to the equity investment in Hitachi Energy, which was subsequently sold in December 2022 (see Note 4).

Other geographic information

Geographic information for long-lived assets was as follows:

	Long-lived assets at December 31,	
($ in millions)	2022	2021
Europe	2,533	2,670
The Americas	1,256	1,260
Asia, Middle East and Africa	963	1,009
Total	**4,752**	**4,939**

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, 2022, approximately 20 percent, 13 percent and 8 percent of the Company’s long-lived assets were located in the United States, China and Switzerland, respectively. 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.

2023 Realignment of segments

Commencing in January 2023, the E-mobility Division is no longer managed within the Electrification Business Area and has become an independent Division and a separate operating segment. The Division does not currently meet any of the size thresholds to be considered a reportable segment and will be presented within Corporate and Other.

Note 24
Subsequent events

Divestments

On January 19, 2023, the Company reached an agreement to sell its Power Conversion Division to AcBel Polytech Inc. for $505 million in cash. The transaction is subject to regulatory approvals and is expected to be completed in the second half of 2023.

Debt

On January 16, 2023, the Company issued the following EUR Instruments: (i) EUR 500 million of 3.25% Instruments, due 2027, and (ii) EUR 750 million of 3.375% Instruments, due 2031, both paying interest annually in arrears at a fixed rate. The aggregate net proceeds of these EUR Instruments, after discount and fees, amounted to EUR 1,235 million (equivalent to approximately $1,338 million on date of issuance).

As of February 23, 2023, the Company has repaid all amounts previously outstanding at December 31, 2022, under the $2 billion Euro commercial paper program.

Income taxes

In February 2023, on completion of a tax audit, the Company obtained resolution of an uncertain tax position for which an amount was recorded within Other non-current liabilities as of December 31, 2022. Due to the resolution of this matter, the Company expects to release the provision of approximately $200 million in the first quarter of 2023.

Stockholders’ equity

In February 2023, the Company announced that a proposal will be put to the 2023 AGM for approval by the shareholders to distribute 0.84 Swiss francs per share to shareholders.

In February 2023, the Company obtained an additional amount of funding raised through the private placement of new shares of ABB E-Mobility, increasing the total gross proceeds by an additional 325 million Swiss francs (approximately $351 million) and further reducing the Company’s ownership in ABB E-Mobility to 81 percent.

ABB Ltd Statutory Financial Statements

03

ABB LTD STATUTORY FINANCIAL STATEMENTS

ABB Ltd Management Report 2022

ABB Ltd is the holding company of the ABB Group, owning directly or indirectly all subsidiaries globally. The major business activities during 2022 can be summarized as follows:

Management services

- The Company provided management services to Group companies for CHF 20 million.

Share transactions

- share deliveries in relation to employee share programs of CHF 530 million
- share cancellations of CHF 2,760 million: those shares were repurchased under share buyback programs in 2021 and 2022
- further share repurchases of CHF 2,690 million for cancellation purposes
- share repurchases for employee share programs of CHF 616 million

Dividend distribution to external shareholders

- from retained earnings of CHF 1,919 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 as well as in 2022 ABB Engg. Technologies Co. (KSCC), Kuwait to Hitachi Energy Ltd. On December 28, 2022, the Company completed the sale of its remaining 19.9% equity stake in Hitachi Energy Ltd.

Other information

In 2022, 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 2023, the Company will continue to operate as the holding company of the ABB Group. No change of business is expected.

February 23, 2023

Financial Statements 2022

Income Statement

Year ended December 31 (CHF in thousands)	Note	2022	2021
Dividend income	7	4,504,256	1,768,705
Finance income		141,294	177,551
Other operating income	8	51,730	68,357
Finance expense		(282,552)	(299,024)
Personnel expenses		(50,789)	(45,441)
Other operating expenses	9	(340,983)	(22,850)
Write down of participation	2	—	(110,836)
Gain and Loss on sale of participation	2	55,199	74,336
Net income before taxes		**4,078,155**	**1,610,798**
Income taxes		(153)	—
Net income		**4,078,002**	**1,610,798**

Balance Sheet

December 31 (CHF in thousands)	Note	2022	2021
Cash		282,220	570
Cash deposit with ABB Capital Ltd		406,029	292,883
Non-trade receivables		1,220	926
Non-trade receivables – Group		11,495	17,985
Short-term loans – Group		1,423,060	22,819
Accrued income and prepaid expenses		223	699
Accrued income and prepaid expenses – Group		672	46
Other short-term assets	2	—	10,644
Total current assets		**2,124,919**	**346,572**
Long-term loans – Group		299,780	319,462
Participations	2	5,709,367	7,088,533
Other long-term assets		3,816	289,897
Total non-current assets		**6,012,963**	**7,697,892**
Total assets		**8,137,882**	**8,044,464**
Interest-bearing liabilities	4	275,000	—
Interest-bearing liabilities – Group	4	23,060	22,819
Non-trade payables		40,022	107,419
Non-trade payables – Group		6,138	5,360
Deferred income and accrued expenses		14,449	36,713
Deferred income and accrued expenses – Group		24,862	26,079
Short-term provisions		60,102	221,120
Total current liabilities		**443,633**	**419,510**
Interest-bearing liabilities	4	1,175,698	450,210
Interest-bearing liabilities – Group	4	299,780	319,462
Long-term provisions		—	18,712
Total non-current liabilities		**1,475,478**	**788,384**
Total liabilities		**1,919,111**	**1,207,894**
Share capital	6	235,769	246,378
Legal reserves from retained earnings	6	1,000,000	1,000,000
Free reserves			
Retained earnings	6	3,774,196	6,832,045
Net income		4,078,002	1,610,798
Treasury shares	6	(2,869,196)	(2,852,651)
Total stockholders' equity		**6,218,771**	**6,836,570**
Total liabilities and stockholders' equity		**8,137,882**	**8,044,464**

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

			2022		2021	
Company name	**Purpose**	**Domicile**	**Share capital**	**Ownership and voting rights**	**Share capital**	**Ownership and voting rights**
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	—	0.00%	CHF 1,250,000	19.90%

Development of participations (CHF in thousands)	2022	2021
Opening balance January 1	**7,088,533**	**7,086,247**
Additions(1)	504,256	681,827
Disposals	(1,883,422)	(568,705)
Write downs	—	(110,836)
Closing balance December 31	**5,709,367**	**7,088,533**

(1) Thereof dividend in kind from ABB Asea Brown Boveri Ltd CHF 504,256 in 2022 and CHF 568,705 in 2021

Participations are 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. In September 2022, the Company and Hitachi agreed terms to sell the Company's remaining investment in Hitachi Energy Ltd to Hitachi and simultaneously settle certain outstanding contractual obligations relating to the initial sale of the Power Grids business. The sale of the remaining investment was completed in December 2022, resulting in net cash proceeds of CHF 1,440 million and a gain of CHF 55 million which was recorded in "Gain and Loss on sale of participations, net". The book value of the 19.9 percent investment for Hitachi Energy Ltd was CHF 0 million and CHF 1,379 million, as of December 31, 2022 and 2021.

Liabilities for estimated payments (CHF in thousands)	2022	2021
Deferred income(1)	—	2,541
Short-term provisions(2)	49,328	221,120
Accrued expenses - Group(3)	16,856	8,611
Closing balance December 31	**66,184**	**232,272**

(1) Delayed closing countries

(2) Transitional Service Agreement, Retention Bonus

(3) Cost reimbursement to Group companies

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 December 31, 2021. The proceeds for these entities are included in Other short-term assets of CHF 0 million and CHF 11 million at December 31, 2022 and 2021, respectively.

In 2022, the remaining Power Grids entity ABB Engg. Technologies Co. (KSCC) in Kuwait was transferred to Hitachi Energy Ltd. 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.

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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, 2022 and 2021.

Company name/Location	Country	Company ownership and voting rights % 2022	Share capital in thousands 2022	Company ownership and voting rights % 2021	Share capital in thousands 2021	Currency
ABB S.A., Buenos Aires	Argentina	—[(3)]	—[(3)]	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	100.00	552,982	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	4,000	100.00	34,308	EUR
ABB Automacao LTDA, Sorocaba	Brazil	100.00	191,039	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	85.70	17,100	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
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	99.84	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

Company name/Location	Country	Company ownership and voting rights % 2022	Share capital in thousands 2022	Company ownership and voting rights % 2021	Share capital in thousands 2021	Currency
ABB Beteiligungs- und Verwaltungsgesellschaft 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
ABB Striebel & John GmbH, Sasbach	Germany	100.00	1,050	—(3)	—(3)	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	436,281	HUF
Industrial C&S Hungary Kft., Budapest	Hungary	—(4)	—(4)	100.00	3,000	HUF
ABB Global Business Services and Contracting India Private Limited, Bangalore	India	100.00	5,200,100	100.00	5,200,100	INR
ABB Global Industries and Services Private Limited, Bangalore	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 E-mobility S.p.A., Milan	Italy	91.56	20,000	—(3)	—(3)	EUR
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	712,463	100.00	315,134	MXN
ABB Mexico S.A. de C.V., San Luis Potosi	Mexico	100.00	1,135,752	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(5)	Netherlands	100.00	9,200	—(3)	—(3)	EUR
ABB E-mobility B.V., Delft(6)	Netherlands	91.56	1	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	363	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	99.94	24	PLN
ABB Industrial Solutions (Bielsko-Biala) Sp. z o.o., Bielsko-Biala	Poland	—(4)	—(4)	99.94	328,125	PLN
ABB Industrial Solutions (Klodzko) Sp. z o.o., Klodzko	Poland	99.94	50	99.94	50	PLN
ABB Sp. z o.o., Warsaw	Poland	99.94	245,461	99.94	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	—(3)	—(3)	100.00	23,000	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	217,758	ZAR
ABB Investments (Pty) Ltd, Modderfontein	South Africa	51.00	185,978	51.00	56,000	ZAR
ABB South Africa (Pty) Ltd., Modderfontein	South Africa	74.91	261,000	74.91	200,001	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	100.00	10,000	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 E-mobility Holding Ltd, Baden	Switzerland	91.56	1,003	—(3)	—(3)	CHF
ABB Information Systems Ltd., Zurich	Switzerland	100.00	500	100.00	500	CHF
ABB Investment Holding 2 GmbH, Zurich	Switzerland	—(4)	—(4)	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
ABB Elektrik Sanayi A.S., Istanbul	Turkiye	99.99	240,076	99.99	13,410	TRY
ABB Industries (L.L.C.), Dubai	United Arab Emirates	49.00(2)	5,000(2)	49.00(2)	5,000(2)	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

Company name/Location	Country	Company ownership and voting rights % 2022	Share capital in thousands 2022	Company ownership and voting rights % 2021	Share capital in thousands 2021	Currency
ABB E-mobility Inc., Wilmington, DE[7]	United States	91.56	—	—[3]	—[3]	USD
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 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 2022.

(5) Participation was renamed from ABB Orange B.V., Rotterdam in 2022.

(6) Participation was renamed from ABB B.V., Rotterdam in 2022.

(7) In 2022, location changed from Delaware to Wilmington, DE.

Note 4
Interest-bearing liabilities

December 31 (CHF in thousands)		2022	2021
Bonds 2019 – 2024 0.3% coupon	nominal value	280,000	280,000
	premium on issuance	34	54
Bonds 2019 – 2029 1.0% coupon	nominal value	170,000	170,000
	premium on issuance	135	156
Bonds 2022 – 2023 zero interest	nominal value	275,000	—
	premium on issuance	—	—
Bonds 2022 – 2027 0.75% coupon	nominal value	425,000	—
	premium on issuance	496	—
Bonds 2022 – 2025 2.10% coupon	nominal value	150,000	—
	premium on issuance	11	—
Bonds 2022 – 2030 2.375% coupon	nominal value	150,000	—
	premium on issuance	22	—
Loan 2016 – 2024 $350 million (in 2021 $375 million)		322,840	342,281
Total		**1,773,538**	**792,491**

In March 2022, the Company issued the following bonds: (i) CHF 275 million zero interest bonds due 2023 and (ii) CHF 425 million 0.75% bonds due 2027. The 0.75% coupon on the CHF 425 million bonds is paid annually. The Company has the option, one month before their maturity date to redeem the 2027 bonds, in whole but not in part, at par plus accrued interest. Further, the Company has the option to redeem the 2027 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 October 2022, the Company issued the following bonds: (i) CHF 150 million 2.1% bonds due 2025 and (ii) CHF 150 million 2.375% bonds due 2030. Each of the respective bonds pays interest annually. The Company has the option, three months before their maturity date to redeem these 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 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 a USD 500 million loan granted to a Group company. In each of 2022 and 2021, the Company repaid USD 25 million. The average interest in 2022 and 2021 was 2.65% and 1.08%, respectively.

Note 5 Contingent liabilities

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 5,590.0 million as of December 31, 2022, and CHF 4,371.2 million as of December 31, 2021.

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 73.3 million as per December 31, 2022, and CHF 72.8 million as per December 31, 2021.

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, 2022 and 2021.

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	from retained earnings	from retained earnings	Net income	Treasury shares	Total
Opening balance at January 1,2022	**246,378**	**1,000,000**	**6,832,045**	**1,610,798**	**(2,852,651)**	**6,836,570**
Allocation to retained earnings			1,610,798	(1,610,798)		—
Cancellation of shares	(10,609)		(2,749,338)		2,759,947	—
Dividend payment CHF 0.82 per share			(1,418,210)			**(1,418,210)**
Extraordinary dividend(1)			(501,099)			**(501,099)**
Purchases of treasury shares					(3,306,162)	**(3,306,162)**
Delivery of treasury shares					529,670	**529,670**
Net income for the year				4,078,002		**4,078,002**
Closing balance at December 31, 2022	**235,769**	**1,000,000**	**3,774,196**	**4,078,002**	**(2,869,196)**	**6,218,771**

(1) distribution of Accelleron Industries AG

Share capital as of December 31, 2022	Number of registered shares	Par value (CHF)	Total (CHF in thousands)
Issued shares	1,964,745,075	0.12	235,769
Contingent shares	304,038,800	0.12	36,485
Authorized shares	200,000,000	0.12	24,000
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

On September 7, 2022, the shareholders approved the spin-off of the Company's Turbocharging Division into an independent, publicly traded company, Accelleron Industries AG (Accelleron), which was completed through the distribution of common stock of Accelleron to the stockholders of ABB on October 3, 2022.

Treasury shares are valued at acquisition cost. During 2022 and 2021, a loss from the delivery of treasury shares of CHF 121 million and CHF 155 million, respectively, was recorded in the Income Statement under Finance expense.

During 2022, 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 2016, 2017 and 2019 by the Group company that facilitates the MIP at fair value and had strike prices of CHF 21.50, CHF 22.50 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 2,048,984 shares at CHF 21.50, 12,836,201 shares at CHF 22.50 and 1,398,083 shares at CHF 19.00, out of treasury shares. During 2021, the bank holding call options related to ABB Group's 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 treasury shares.

In connection with the spin-off of the Turbocharging Division in October 2022, the strike prices of the options outstanding under the MIP program were reduced to neutralize the effect of the spin-off on the Company's share price. At December 31, 2022, MIP options issued in 2017, 2018 and 2019 were outstanding and had the following new strike prices of CHF 21.23, CHF 22.05 and CHF 17.63, respectively.

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 2022, the Company delivered, out of treasury shares, to the Group company 105,138 shares at CHF 29.78. In 2021, the Company delivered, out of treasury shares, to the Group company 1,458,128 shares at CHF 32.24 and 270,504 shares at USD 34.88.

In 2022 and 2021, the Company transferred 1,665,025 and 949,795 treasury shares at an average acquisition price per share of CHF 29.28 and CHF 25.50, respectively, to fulfill its obligations under other share-based arrangements.

In 2022, the Company purchased 20 million shares, for CHF 616 million, to support its employee share programs globally and 91 million shares, for CHF 2,690 million, as part of its share buyback programs for capital reduction purposes announced on March 31, 2022 and April 8, 2021. 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 programs for capital reduction purposes announced on April 8, 2021, and July 22, 2020.

At the AGM in March 2022, shareholders approved the proposal of the Board of Directors to reduce the share capital of the Company by cancelling 88,403,189 treasury shares which were acquired under its share buyback programs in 2021 and 2022. This cancellation was completed in June 2022, resulting in a decrease in treasury shares of CHF 2,760 million and a corresponding combined decrease in share capital and retained earnings.

The movement in the number of treasury shares during the year was as follows:

	2022		2021	
	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	**94,803,864**	**30.09**	**137,314,095**	**23.52**
Purchases for employee share programs	20,000,000	30.80	32,668,987	28.74
Purchases for intended cancellation	91,394,500	29.44	78,418,830	30.93
Cancellation	(88,403,189)	31.22	(115,000,000)	24.16
Delivery for employee share programs	(18,053,431)	29.34	(38,598,048)	24.95
Closing balance as of December 31	**99,741,744**	**28.77**	**94,803,864**	**30.09**
Thereof pledged for MIP	3,547,102		5,604,519	

Note 7
Dividend income

The Company received, in 2022, dividend payments from ABB Asea Brown Boveri Ltd of CHF 4.0 billion in cash and CHF 504 million in kind (see note 2). 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).

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
Other operating expenses

In 2022 Other operating expenses includes CHF 301 million for regulatory penalties in connection with the Kusile project.

Note 10
Shareholders

Shareholder structure

As of December 31, 2022, the total number of shareholders directly registered with ABB Ltd was approximately 90,000 and another 549,000 shareholders held shares indirectly through nominees. In total as of that date, ABB had approximately 639,000 shareholders.

Significant shareholders

Investor AB, Sweden, disclosed to ABB and the SIX Swiss Exchange that as per November 9, 2015, it owned 232,165,142 ABB Ltd shares and controlled 10.03 percent of the voting rights in ABB Ltd (refer to https://www.ser-ag.com/en/resources/notifications-market-participants/significant-shareholders.html#/shareholder-details/TBFBH00013). In its latest quarterly financial report, Investor AB, Sweden, disclosed that as per December 31, 2022, it owned 265,385,142 ABB Ltd shares and controlled 13.51 percent of the voting rights in ABB Ltd. 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.

BlackRock, Inc., U.S.A., disclosed to ABB and the SIX Swiss Exchange that as per November 16, 2022, it owned 80,226,133 ABB Ltd shares and controlled 4.97 percent of the voting rights in ABB Ltd (refer to https://www.ser-ag.com/en/resources/notifications-market-participants/significant-shareholders.html#/shareholder-details/TAMBH00029).

Cevian Capital II GP Limited, Jersey, disclosed to ABB and the SIX Swiss Exchange that as per July 30, 2020, it owned 107,344,554 ABB Ltd shares and controlled 4.95 percent of the voting rights in ABB Ltd (refer to https://www.ser-ag.com/en/resources/notifications-market-participants/significant-shareholders.html#/shareholder-details/TBK8400016).

The Capital Group Companies, Inc., USA, disclosed to ABB and the SIX Swiss Exchange that as per July 1, 2022, it owned 69,725,960 ABB Ltd shares and controlled 4.02 percent of the voting rights in ABB Ltd (refer to https://www.ser-ag.com/en/resources/notifications-market-participants/significant-shareholders.html#/shareholder-details/TAM75000B6).

At December 31, 2022, 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 2022 can be found via the search facility on the platform of the Disclosure Office of the SIX Swiss Exchange: https://ww.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/Extraordinary 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 2022 in person, but could exercise their shareholder rights via the independent proxy only. In addition, ABB offered shareholders the opportunity to address questions on agenda items to the Board of Directors in writing ahead of the meeting. Thanks to the improved COVID-19 situation, ABB was able to hold an Extraordinary General Meeting in September 2022 with shareholders present in person.

Note 11
Shareholdings of Board and Executive Committee

At December 31, 2022 and 2021, 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 numbers of shares held	
Name	**December 31, 2022**	**December 31, 2021**
Peter Voser(1)	231,807	191,946
Jacob Wallenberg	245,898	239,878
Gunnar Brock	37,813	33,399
David Constable	42,465	38,185
Frederico Curado	49,175	40,301
Lars Förberg	70,522	59,916
Jennifer Xin-Zhe Li	41,904	37,580
Geraldine Matchett	30,964	25,196
David Meline(2)	43,131	37,780
Satish Pai	34,827	28,432
Total	**828,506**	**732,613**

(1) Includes 2,000 shares held by the spouse.
(2) Includes 3,150 shares held by the spouse.

At December 31, 2022, 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 unvested shares in respect of other compensation arrangements.

		Unvested at December 31, 2022			
Name	**Total number of shares held at December 31, 2022**	**Reference number of shares deliverable under the 2020 performance factors (EPS and TSR) of the LTIP[(1)(2)] (vesting 2023)**	**Reference number of shares deliverable under the 2021 performance factors (EPS and TSR) of the LTIP[(1)(2)] (vesting 2024)**	**Reference number of shares deliverable under the 2022 performance factors (EPS, TSR, Sustainability) of the LTIP[(1)(2)] (vesting 2025)**	**Replacement share grant for foregone benefits from former employer[(2)(3)] (vesting 2023)**
Björn Rosengren	94,597	136,589	99,450	85,487	19,604
Timo Ihamuotila	189,034	50,887	37,830	31,609	—
Carolina Granat [(4)]	5,200	—	27,301	23,148	—
Andrea Antonelli (EC member as of March 1, 2022)	—	—	7,021	33,525	—
Karin Lepasoon (EC member as of October 1, 2022)	—	—	—	19,157	—
Sami Atiya	90,473	42,852	31,201	26,501	—
Tarak Mehta	152,993	48,209	36,271	29,694	—
Peter Terwiesch	132,940	42,852	31,201	26,501	—
Morten Wierod	64,777	40,174	31,201	28,736	—
Total Executive Committee members at December 31, 2022	**730,014**	**361,563**	**301,476**	**304,358**	**19,604**

(1) The final 2020 LTIP, 2021 LTIP and 2022 LTIP awards will be settled 100 percent in shares, with an automatic sell-to-cover in place for employees who are subject to withholding taxes.

(2) Initial number of shares granted have been increased by 3.7 percent to reflect the impact of the spin-off of the Turbocharging Division (now listed under Accelleron).

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

(4) This includes 1,200 shares held by the 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 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					
Name	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 (vesting 2022)	Reference number of shares deliverable under the 2019 performance factors EPS and TSR) of the LTIP[1] (vesting 2022)	Reference number of shares deliverable under the 2020 performance factors (EPS and TSR) of the LTIP[1] (vesting 2023)	Reference number of shares deliverable under the 2021 performance factors (EPS and TSR) of the LTIP[1] (vesting 2024)	Replacement share grant for foregone benefits from former employer[2] (vesting 2022)	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)	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 (EC member as of August 1, 2020)[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[6]	21,025	—	—	36,158	38,740	30,087	—	—
Total Executive Committee members at December 31, 2021	**479,999**	**—**	**148,750**	**220,561**	**354,869**	**298,988**	**130,150**	**18,904**

(1) The final 2019 LTIP 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 2020 LTIP and 2021 LTIP awards 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 grant 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.
(6) The disclosed total number of shares held at December 31, 2021, was adjusted to reflect the correct year-end 2021 balance.

Note 12
Full time employees

During each of 2022 and 2021, 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.

Note 13
Subsequent events

Subsequent to December 31, 2022, and up to February 17, 2023, the Company purchased, under the follow-up share buyback program, an additional 4.9 million shares, for approximately CHF 154 million. Any further purchases up to February 23, 2023, are considered not significant for the Company.

Proposed appropriation of available earnings

Proposed appropriation of retained earnings (CHF in thousands)	2022	2021
Net income for the year	4,078,002	1,610,798
Carried forward from previous year	7,024,633	9,565,644
Cancellation of shares	(2,749,338)	(2,733,599)
Extraordinary dividend 2022	(501,099)	—
Retained earnings available to the Annual General Meeting	**7,852,198**	**8,442,843**
Gross dividend of CHF 0.82 per share paid directly by the Company(1)	—	(1,418,210)
Gross dividend of CHF 0.84 per share on total number of registered shares(1)	(1,650,386)	—
Balance to be carried forward	**6,201,812**	**7,024,633**

(1) No dividend will be paid on treasury 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 Norden Holding 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 2, 2023, the Company announced that the Board of Directors will recommend for approval at the March 23, 2023, Annual General Meeting that a dividend of CHF 0.84 per share be distributed out of the retained earnings available, expected to be paid in March 2023. As the legal retained earnings and legal capital reserves exceed 20% of the share capital, a further allocation has been waived.

Statutory Auditor's Report

To the General Meeting of ABB Ltd, Zurich

Report on the Audit of the Financial Statements

Opinion

We have audited the financial statements of ABB Ltd (the Company), which comprise the balance sheet as at December 31, 2022, the income statement for the year then ended, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the financial statements (pages 141 to 153) comply with Swiss law and the Company's articles of incorporation.

Basis for Opinion

We conducted our audit in accordance with Swiss law and Swiss Standards on Auditing (SA-CH). Our responsibilities under those provisions and standards are further described in the "Auditor's Responsibilities for the Audit of the Financial Statements" section of our report. We are independent of the Company in accordance with the provisions of Swiss law, together with the requirements of the Swiss audit profession and we have fulfilled our other ethical responsibilities in accordance with these requirements.

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

Key Audit Matters

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.

Other Information in the ABB Annual Reporting Suite

The Board of Directors is responsible for the other information. The other information comprises the information included in the ABB Annual Reporting Suite (consisting of the Integrated Report, the Financial Report, the Corporate Governance Report and the Compensation Report), but does not include the consolidated financial statements, the stand-alone financial statements and the compensation report of the Company and our auditor's reports thereon.

Our opinion on the financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated.

If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Board of Directors' Responsibilities for the Financial Statements

The Board of Directors is responsible for the preparation of the financial statements in accordance with the provisions of Swiss law and the Company's articles of incorporation, and for such internal control as the Board of Directors determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Board of Directors is responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Board of Directors either intends to liquidate the Company or to cease operations, or has no realistic alternative but to do so.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Swiss law and SA-CH will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Swiss law and SA-CH, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

— Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

— Obtain an understanding of internal control relevant to the audit 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 Company's internal control.

— Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made.

— Conclude on the appropriateness of the Board of Directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Company to cease to continue as a going concern.

We communicate with the Board of Directors or its relevant committee regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide the Board of Directors or its relevant committee with a statement that we have complied with relevant ethical requirements regarding independence, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, actions taken to eliminate threats or safeguards applied.

From the matters communicated with the Board of Directors or its relevant committee, we determine those matters that were of most significance in the audit of the financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report, unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

KPMG

Report on Other Legal and Regulatory Requirements

In accordance with article 728a para. 1 item 3 CO and PS-CH 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 23, 2023

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Caution concerning forward-looking statements

The ABB Financial Report 2022 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.

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