



BOSCH

Onwards

Sustainability report 2022

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Foreword

by the board of management



Dear readers,

Anyone who has taken a glance at the news headlines knows that 2022 was another immensely challenging year on many fronts. Some would argue that climate action should take a back seat to many other acute problems the world is facing, but from my perspective that would be a grave mistake. Not only because the climate crisis can't wait to be tackled, but because I believe the solutions to our most urgent problems are interlinked. Energy shortages are behind the current unsustainable rise in inflation: the best thing we can do to counter both is push forward with the transformation of our energy systems. By investing in and developing renewable energy sources, we can not only secure an affordable energy supply, we can also bring down the cost of living for people while making great strides toward putting our societies on a carbon-neutral footing.

At Bosch, we pursued sustainability long before it made it to the top of the social agenda. As a result, in 2020 we became the first global industrial enterprise to make our own operations carbon neutral. In 2022, we conducted the second installment of the Bosch Tech Compass, a global survey designed to gauge consumer attitudes to technology. The results were a clear affirmation of consumer support for sustainable business practices. For example, a full 82 percent of respondents believe that the more a company commits to sustainable technologies, the more economically successful it will be in the future. What's more, 83 percent believe that technology holds the key to combating climate change.

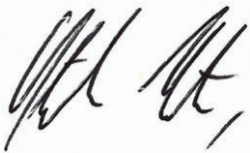
At Bosch, we are investing heavily in sustainable technologies. When it comes to sustainable mobility, we're continuing to strengthen our portfolio of solutions for electrified driving, while at the same time pushing forward with hydrogen technologies. Our mobile fuel-cell power trains, for example, started production in late 2022; we are manufacturing the stacks – the core element of the hydrogen electrolysis system – ourselves and setting up production facilities in the vicinity of our customers around the globe.

The transformation of home energy systems is also a top priority for us – after all, a full one-third of all carbon emissions come from buildings. Our primary focus here is on heat-pump technology, which is set to play a key role in this transformation in the years ahead. Hydrogen also holds great promise in home heating systems, and we already produce hydrogen-ready boilers for residential use. We firmly believe that a mix of technologies is the only way forward, since to succeed the transformation must remain affordable.

At Bosch we are convinced that sustainability must be a non-negotiable part of doing business. And it is our task to find technology-based solutions to our current ecological challenges. The result will be a win-win – for our planet and for companies like Bosch.

Thank you for your interest and take care.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Stefan Hartung', is written over a light blue rectangular background.

Dr. Stefan Hartung

Chairman of the board of management

Company



Our ambition: By acting in an economically, environmentally, and socially responsible manner, we want to improve people's quality of life and safeguard the livelihoods of present and future generations.



Once again best score

- ▶ Scored an "A" in CDP's "climate change" category – for the third consecutive time.



Group-wide commitment

- ▶ 215 teams took part in the internal Sustainability and EHS Awards – more than ever before.



Speak up!

- ▶ Global awareness campaign launched on the Bosch reporting system and the protection of whistleblowers.

1.1 Bosch Group profile

The Bosch Group is a leading global supplier of technology and services. It employs roughly 421,300 associates worldwide (as of December 31, 2022). The company generated sales revenue of 88.2 billion euros in the 2022 business year. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT provider, Bosch offers innovative solutions for smart homes, Industry 4.0, and connected mobility.

Bosch is pursuing a vision of mobility that is sustainable, safe, and exciting. It uses its expertise in sensor technology, software, and services, as well as its own IoT cloud, to offer its customers connected, cross-domain solutions from a single source. The Bosch Group's strategic objective is to facilitate connected living with products and solutions that either contain artificial intelligence (AI) or have been developed or manufactured with its help. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is "Invented for life."

The Bosch Group comprises Robert Bosch GmbH and its roughly 470 subsidiary and regional companies in more than 60 countries. Including sales and service partners, Bosch's global manufacturing, engineering, and sales network covers nearly every country in the world. With its more than 400 locations worldwide, the Bosch Group has been carbon neutral since 2020.

The company was set up in Stuttgart in 1886 by Robert Bosch (1861–1942) as "Workshop for Precision Mechanics and Electrical Engineering." The special ownership structure of Robert Bosch GmbH guarantees the entrepreneurial freedom of the Bosch Group, making it possible for the company to plan over the long term and to undertake significant up-front investments in the safeguarding of its future. Ninety-four percent of the share capital of Robert Bosch GmbH is held by Robert Bosch Stiftung GmbH, a charitable foundation. The remaining shares are held by Robert Bosch GmbH and by a corporation owned by the Bosch family. The majority of voting rights are held by Robert Bosch Industrietreuhand KG, an industrial trust. The entrepreneurial ownership functions are carried out by the trust. Further information on the organization of the Bosch Group and the company's economic situation can be found in the current annual report.

Research for greater sustainability

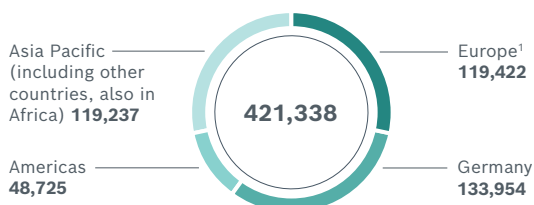
Bosch's innovative strength is the basis for the company's future growth. Bosch employs some 85,500 associates in research and development at 136 locations around the globe. Sustainability is a central theme of Bosch research, with a focus on three fields of innovation:



Annual report
2022

01 | Headcount

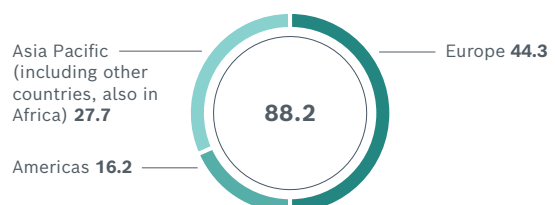
Bosch Group by region, as of December 31, 2022



¹ Without Germany

02 | Sales revenue

Bosch Group 2022 by region, in billions of euros



► **Innovations for resource and energy efficiency:**

In view of the growing scarcity of resources, any sustainable development strategy must find solutions for decoupling economic growth from resource consumption. We consider the circular economy to be a crucial element in the sustainable use of resources. When developing new products and updating existing ones, we increasingly apply design principles that allow closing the loop at parts or materials level.

► **E-mobility and electrified systems:** Electrification in the mobility sector makes a significant contribution to achieving climate targets. To this end, the company is developing concepts for electric drive vehicles and is working on integrated power trains at both system and component level.

► **Chemical energy conversion:** In the field of chemical energy conversion, Bosch is already developing systems that will lower carbon emissions in the future. To secure a sustainable energy supply in the future, Bosch is conducting research into generating electricity from renewable energy sources and storing it in a climate-friendly way. Innovative technological solutions for mobile and stationary fuel cell systems and for the production of hydrogen as an energy carrier are called for.

Mission statement and values

We are operating in an environment in which fundamental changes are taking place. Technologies are being radically transformed by digitalization and the use of artificial intelligence. At the same time, markets are being shaped by the focus on climate action, new geopolitical constellations, and fundamental societal trends such as increasing urbanization. As affirmed in our “We are Bosch” mission statement, one of our strategic focal points is shaping change, taking into account the aspects of connectivity, electrification, energy efficiency, automation, and emerging markets. It is our ambition to play a part in molding the far-reaching changes in markets and technology. Apart from shaping change, our strategic focal points are customer focus and excellence. When putting our strategy into practice, we build on the Bosch culture, on our high level of innovation, which is also measured in terms of our research and development spending, on quality, and on our broad diversification and global presence. Our actions are based on the Bosch values: future and profitability focus, responsibility and sustainability, initiative and determination, openness and trust, fairness, reliability and credibility, legality, and diversity.



Mission statement
 “We are Bosch”

Robert Bosch Stiftung

Not-for-profit, independent, and impartial, Robert Bosch Stiftung GmbH works on the major social challenges of our time in relation to health, education, and global issues. As a force for positive change in civil society, it pursues initiatives in these three support areas.

One of Europe’s major foundations associated with a private company, it has been fulfilling the mission imparted on it by its founder Robert Bosch for almost 60 years by continuing his commitment to social and societal causes in a contemporary form. To this end, the foundation maintains its own institutions, implements innovative projects, and works together with a wide range of partners, to which it provides support as needed.

The foundation runs the Bosch Health Campus in Stuttgart, which draws together all the foundation’s institutions and activities in the field of healthcare, including the Robert Bosch Hospital, Dr. Margarete Fischer-Bosch-Institute of Clinical Pharmacology, and Robert Bosch Center for Tumor Diseases. Robert Bosch Stiftung is also a shareholder of an international school in Freiburg im Breisgau, the Robert Bosch College UWC, and of the International Alumni Center (iac) in Berlin.

Robert Bosch Stiftung holds roughly 94 percent of the shares in Robert Bosch GmbH. It funds its work from the dividends it receives from this shareholding, and pursues its objectives independently from the company. Since its establishment in 1964, it has invested almost 2.2 billion euros in charitable work.

1.2 Sustainability strategy and culture

Sustainability is frequently defined as an equilibrium between economic, environmental, and social aspects. At the same time, sustainability has become an established concept on capital markets under the abbreviation ESG (environment, social, governance). Our understanding of sustainability combines both of these approaches: to us, sustainability means striking a balance between the economic, environmental, and social dimensions of our business activities as part of responsible corporate governance.

Defined as a group-wide task within the Bosch Group, sustainability is coordinated by the Sustainability and EHS (Environment, Health, Safety) corporate department. The business sectors pursue the jointly set goals on the basis of systematic sustainability management. The contents, tasks, and related controlling are anchored in the company's processes.

03 | Overview of key stakeholder groups, forms of dialogue, and topics

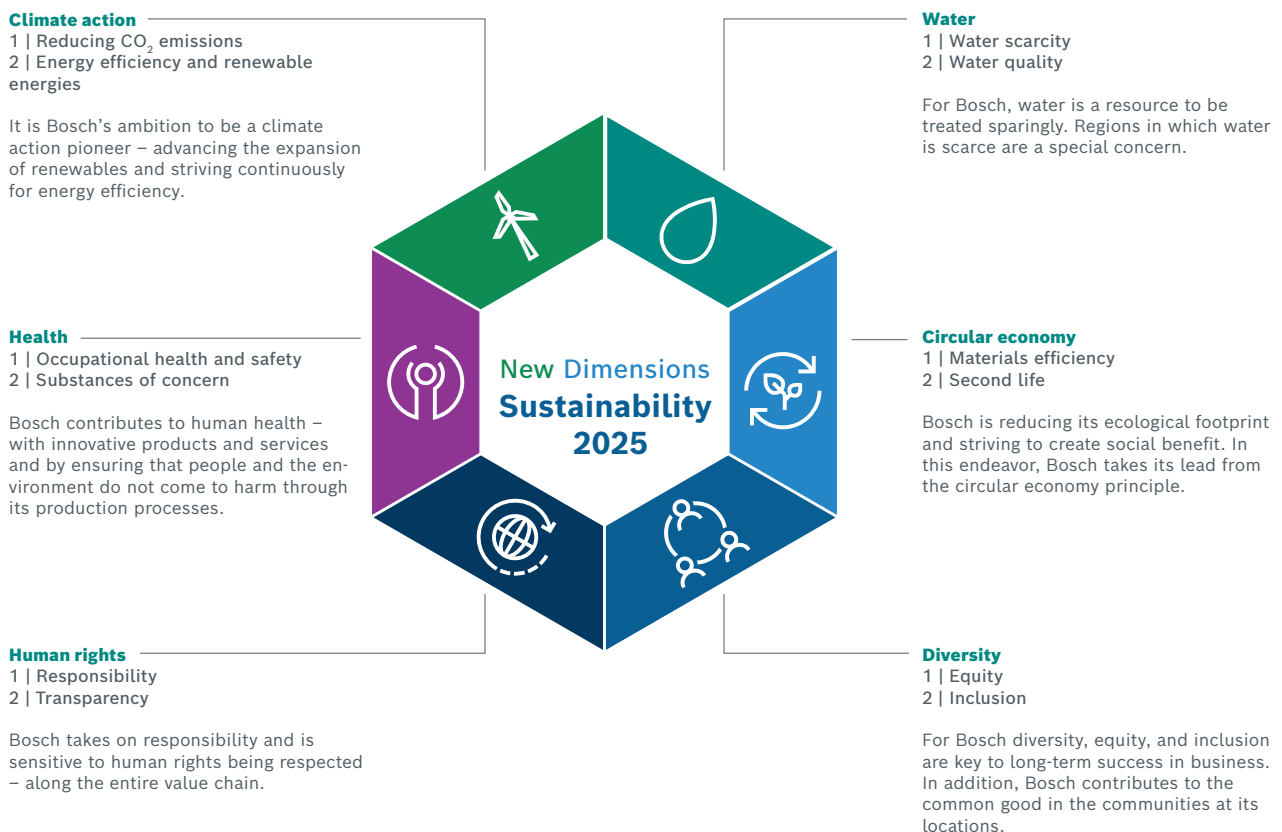
Stakeholder groups	Forms of dialogue	Material topics
Associates	Dialogue with associates and executives, surveys, internal media, Bosch Business Dialog	<ul style="list-style-type: none"> Reducing carbon emissions across the value chain, particularly with regard to the Bosch Group's carbon neutrality and its scope 3 target
Customers	Surveys, social media, trade fairs, media	<ul style="list-style-type: none"> Reducing water withdrawal in regions with water scarcity
Suppliers and partners	Supplier days, training courses, supplier awards, supplier assessments, dialogue as part of industry initiatives	<ul style="list-style-type: none"> Closing products and materials loops, using secondary materials and raw materials
Associations	Participation in committees and working groups, initiative and association memberships	<ul style="list-style-type: none"> Environmental and social standards in supply chains, particularly for high-risk raw materials
Universities and research institutes	Presentations, dialogue events, trade fairs	<ul style="list-style-type: none"> Health, including occupational health and safety and substances of concern
Policymakers	Contact for questions from policymakers; involvement in committees organized by governments or ministries; dialogue events; one-on-one talks	<ul style="list-style-type: none"> Diversity, equity, and inclusion
Media	Press releases, site visits, information events, trade fairs	<ul style="list-style-type: none"> Implications of the mobility transformation
Local stakeholders	Local community talks, plant visits	<ul style="list-style-type: none"> Responsible corporate governance
Civil society and NGOs	Dialogue events, answering questions	

As a leading global supplier of technology and services, Bosch operates in a large number of markets around the world. Directly or indirectly, our business operations affect the interests of a wide range of stakeholders. To parse out what these interests are and take account of them in our activities, we actively seek to enter into dialogue with our stakeholders. We address issues that are brought to our attention via the different communication channels as well as seeking dialogue on those issues that we ourselves want to raise in the social discourse. As a result, we hold a continuous exchange on a broad range of highly diverse topics from which all parties involved benefit (see Fig. 03).

Vision sets the direction

Back in 2018, we summarized the focus areas of our sustainability management in a vision that describes six dimensions. Each of these is specified and continuously elaborated further by reference to two focus activities with clearly defined, medium-term targets. Derived from the megatrends of relevance to our company and the material topics, the dimensions set the framework for our actions. Our sustainability activities consider the entire value chain – from materials and goods purchasing or manufacturing operations at Bosch sites to the use phase of products sold and right through to their end of life.

04 | Target vision Our ambition: by acting in an economically, environmentally, and socially responsible manner, we want to improve people's quality of life and safeguard the livelihoods of present and future generations.



05 | Goals and goal achievement

Dimension	Goals	2022 status	UN SDGs
Climate action 	<p>It is Bosch's ambition to be a climate action pioneer – advancing the expansion of renewables and striving continuously for energy efficiency.</p>		  
	<p>Reducing CO₂ emissions Operating climate neutral in scopes 1 and 2 and continuously improving the mix of measures by 2030</p>	<p>Since 2020, Bosch and its over 400 company locations worldwide have been climate neutral (scopes 1 and 2).¹ In 2022, we offset a total of 0.7 million metric tons of CO₂² using carbon credits. This represents a decrease of 21 percent on the previous year's level (see the "Environment Climate action and energy" section).</p>	
	<p>Lowering absolute scope 3 CO₂ emissions by 15 percent by 2030 (baseline year 2018)</p>	<p>Since 2018, we have reduced our scope 3 emissions by some 16 percent to 382 million metric tons of CO₂ in 2021. In this process, we are focusing on the categories that make up around 98 percent of our scope 3 emissions: upstream emissions in the Bosch value chain primarily concern purchased goods and services as well as logistics. Downstream emissions are mainly caused by the use of our products (see the "Environment Climate action and energy" section).</p>	
	<p>Energy efficiency and renewable energies Saving 1.7 TWh through increased energy efficiency by 2030</p>	<p>Since 2019, we have initiated over 4,000 energy-efficiency projects worldwide, with some 1,000 new projects added in 2022 alone. With them, we have so far captured savings potential of 805 GWh in total. This corresponds to a goal achievement level of 47 percent.</p>	
	<p>Increasing own renewable generation at our sites to 400 GWh and 100 percent green electricity by 2030</p>	<p>In 2022, we generated 121 GWh of power from renewable sources in-house at our company sites. Accordingly, we already reached 30 percent of our target value. New photovoltaic installations went online at 31 company locations. In addition, 95 percent of the Bosch Group's global electricity demand was covered by green electricity (electricity purchased from renewable sources) (see the "Environment Climate action and energy" section).</p>	
Water 	<p>For Bosch, water is a resource to be treated sparingly. Regions in which water is scarce are a special concern.</p>		
	<p>Water scarcity Reducing absolute water withdrawal at company locations in regions with water scarcity by 25 percent by 2025</p>	<p>Since 2019, we have launched more than 260 projects and reduced water withdrawal by 24.2 percent compared with 2017 at company locations in regions with water scarcity. The company locations were identified using the Water Risk Filter of the World Wildlife Fund for Nature (see the "Environment Water and wastewater" section).</p>	
	<p>Water quality Improving the quality of wastewater flows</p>	<p>In 2022, Bosch's wastewater volume increased to 16.98 million m³ (previous year: 14.75 million m³). We have defined wastewater quality standards that are binding worldwide and established processes for monitoring their compliance (see the "Environment Water and wastewater" section).</p>	
Circular economy 	<p>Bosch is reducing its ecological footprint and striving to create social benefit. In this endeavor, Bosch takes its lead from the circular economy principle.</p>		 
	<p>Materials efficiency Improving materials efficiency</p>	<p>For years, materials efficiency has been a fixed criterion in the Bosch product development process, where it is anchored in our Design for Environment (DfE) principle (see the "Products Management approach" section).</p>	
	<p>Second life Extending product life cycle and reusing materials and components</p>	<p>To identify the potential of the circular economy strategy in the various divisions, some 80 different product groups were analyzed, which together account for more than 80 percent of Bosch's sales revenue (see the "Products Management approach" section).</p>	

Dimension	Goals	2022 status	UN SDGs
Diversity 	<p>For Bosch diversity, equity, and inclusion are key to long-term success in business. In addition, Bosch contributes to the common good in the communities at its locations.</p>		  
	<p>Equity Ensuring equitable opportunities and increasing the proportion of female executives to 25 percent by 2030</p>	<p>Globally, the share of women executives across all management levels within the group rose to 19.2 percent in 2022 (previous year: 18.4 percent) across all management levels (see the “Associates Employer of choice” section).</p>	
	<p>Inclusion Promoting inclusion at Bosch and in the communities around company locations</p>	<p>In 2022, the Bosch Group donated 27.4 million euros to charitable causes worldwide (previous year: 27.6 million euros). Some regional companies have established their own charitable institutions to carry out their CSR activities (see the “Society Corporate citizenship” section).</p>	
Human rights 	<p>Bosch takes on responsibility and is sensitive to human rights being respected – along the entire value chain.</p>		
	<p>Responsibility Ensuring human rights are respected along the value chain</p>	<p>To further specify the requirements relating to environmental and social standards, we published an update of the Bosch Group’s Code of Conduct for Business Partners in 2022. In addition, we have established a new management system to implement human rights and environmental due diligence obligations (see the “Supply chain Social and environmental requirements for suppliers” section).</p>	
	<p>Transparency Increasing transparency about compliance with environmental and social standards</p>	<p>To satisfy its due diligence requirements relating to human rights and environmental matters, a comprehensive risk analysis concept was developed in 2022. The analysis focuses on suppliers in countries with a heightened risk. As of 2023, the risk analysis will be performed annually (see the “Supply chain Social and environmental requirements for suppliers” section).</p>	
Health 	<p>Bosch contributes to people’s health – with innovative products and services and by ensuring that people and the environment do not come to harm through its production processes.</p>		
	<p>Occupational health and safety Reducing the accident rate to 1.45 accidents per 1 million hours worked or less by 2025</p>	<p>At 1.62 accidents per 1 million hours worked, the accident rate is at the level of the previous year (see the “Associates Occupational health and safety”).</p>	
	<p>Substances of concern Continuously upgrading materials data management</p>	<p>Bosch handles substances of concern responsibly. To efficiently manage prohibitions and restrictions on materials, we are continuously upgrading our IT-based Material Data Management for Compliance and Sustainability (MaCS) system (see the “Products Product responsibility” section).</p>	

¹ This report uses scopes 1, 2, and 3 in accordance with the [Greenhouse Gas Protocol Corporate Accounting and Reporting Standard](#).

² To enable comparability between the climate impact of the various greenhouse gases and substances of relevance for the climate, emissions are presented in CO₂ equivalents. In this report, we have taken into account the effects of CO₂ and of other greenhouse gases, as well as climate-relevant substances, to the extent that these are of relevance for the analysis. For ease of reading, we use the terms CO₂ and CO₂ equivalents synonymously.

Clear responsibility for sustainability

At Bosch, the highest technical committee for sustainability is the Corporate Sustainability Board (CSB) under the aegis of Robert Bosch GmbH's CEO and the board of management member responsible for sustainability. The Sustainability and EHS corporate department is responsible for the CSB's organizational and content management.

The CSB members are the heads of the corporate departments responsible for the relevant matters: Research and Advance Engineering, Purchasing and Logistics, Real Estate and Facilities, HR, Legal, Compliance, Finance, as well as Corporate Communications and Governmental Affairs. The CSB also includes the executive management of various divisions and further members when required.

papers on sustainability topics. Goal agreements and management reviews for all sustainability-related issues are the responsibility of the CEO and the board of management member responsible for sustainability.

The Sustainability and EHS corporate department is responsible for sustainability management, which mainly entails setting and tracking goals, designing and accompanying programs, preparing concepts for further development, and sustainability reporting. It is accountable for governance in all matters concerning sustainability and EHS and coordinates implementation of regulatory requirements throughout the group. The Corporate Communications and Governmental Affairs corporate department is responsible for sustainability communications and interaction with stakeholders around the world.

Our global sustainability management is summarized in a central process that is based on the ISO standard process definitions, especially ISO 31000. Responsibility for worldwide implementation of the sustainability strategy and monitoring the achievement of goals rests with the competent officers at headquarters and in the divisions. The structure we apply in sustainability management is one that has already served us well in other areas: strategy and framework conditions are defined centrally, and the divisions focus on the specific implementation and certification. The associates responsible in the regions and at the more than 400 Bosch sites worldwide have the task of putting the respective requirements into practice locally and ensuring compliance with the defined framework conditions through established processes. In parallel, corporate headquarters regularly performs internal sustainability and EHS audits.

The divisions have appointed coordinators for occupational safety, energy efficiency, water and waste, as well as for Design for Environment. They offer professional support to the divisions on implementing strategies or establishing processes and rules. In addition, they review the effectiveness of the respective measures. In 2022, coordinators were also established for matters concerning sustainability, in order to cover the increasingly wide range of requirements and develop and implement division-specific sustainability strategies. They also manage general sustainability topics across the entire value chain.

06 | How sustainability is organized at Bosch



The CSB meets twice a year. Its main tasks are to define the sustainability strategy and targets for the Bosch Group, to adopt sustainability activities, to provide transparency and decide in the event of conflicting objectives, to monitor implementation of the sustainability strategy and activities, and to coordinate group-wide position

Competence development and training

At Bosch, executives are role models and, as such, multipliers for sustainability worldwide. They are required to attend Web-based training to familiarize themselves with the sustainability strategy and the targets set. Since the training program's launch in 2014, a total of 32,000 executives with and without team management responsibilities have already completed the course, with over 1,800 executives taking part in 2022 alone. Their feedback serves as a basis for continuously refining the course.

Additionally, an awareness training was introduced for members of management at subsidiaries in 2022. The training focuses on legal and organizational duties relating to compliance, sustainability and EHS, as well as information security and data protection. Around 60 executives have attended the eight-hour training course so far.

Sustainability culture

For Bosch, it is key to involve as many associates as possible in sustainability management. Each and every one at Bosch is called on to contribute and advance sustainability in their individual sphere of influence. The aim is for sustainability to become a shared mindset within

the company – shouldered by each associate through their conduct – and for a sustainability culture to emerge in which entrepreneurial value creation also produces added value for the environment and society.

New, hybrid forms of working – encapsulated at Bosch under the term “smart work” – are empowering our associates to achieve more sustainability. Indeed, the new forms of organization and work are leading to ever more closely networked collaboration that transcends organizational boundaries and national borders and takes place less and less in a traditional office setting. At the same time, associates increasingly take ownership and enjoy greater individual latitude – and consequently have greater potential to make a real difference in the transition to a sustainability culture (see the “[Associates | Employer of choice](#)” section).

Based on this understanding – and after having successfully implemented a group-wide sustainability management – we began to initiate the corresponding cultural change and to promote it with specific impulses in 2021. The related activities are divided into seven areas (see Fig. 07).

07 | Seven action areas for embedding sustainability culture

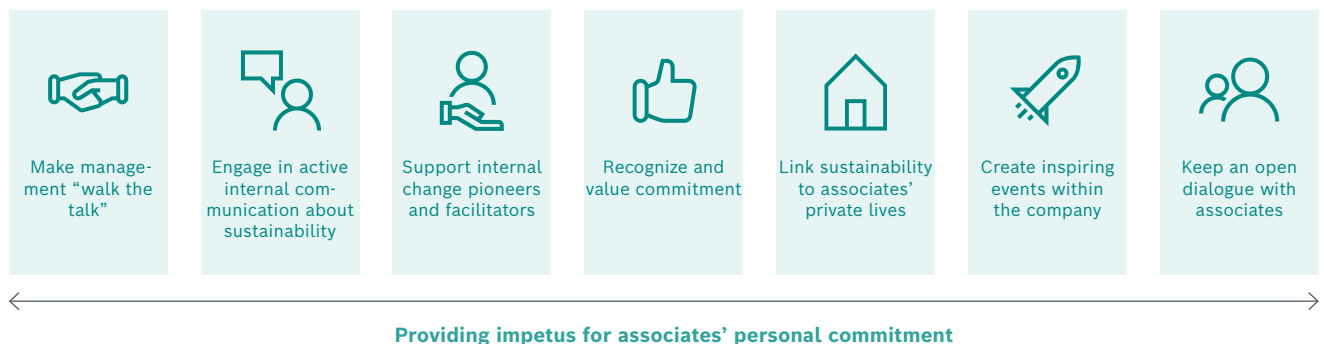


Figure based on: [Network for Business Sustainability \(2010\)](#) and [Majka Baur \(2016\)](#)

The following measures are examples of our activities in 2022:

► **Award-winning commitment – the Sustainability and EHS Award 2022**

Each year, outstanding projects within the Bosch Group are recognized with the Sustainability and EHS Award. A jury of experts chooses the three best projects in each category, and the board of management member responsible for sustainability presents the awards at an internal award ceremony. In 2022, the number of entrants reached a new record level. As many as 215 teams from Bosch locations around the world competed for the prize, which is awarded in the categories “CO₂ and energy efficiency,” “resource efficiency,” “occupational safety,” “sustainable products,” and “sustainability culture.”

First place in the “CO₂ and energy efficiency” category went to a team from Slovenia in 2022 that realized substantial savings at the Bosch site in Nazarje. By installing 14 groundwater heat pumps and using the waste heat from the injection molding production process, they were able to cut the amount of energy used for heating, building cooling, and cooling water in the injection molding process by around 75 percent.

In the “resource efficiency” category, the jury was impressed with a project at the site in Bursa, Turkey. Under the motto “stop scrapping, start repairing,” damaged transport packaging is repaired at the site instead of being disposed of. In preparation for the project, the different kinds of damage to reusable packaging were classified and new methods for repairing it developed on this basis. This made it possible to repair some 20,000 items of transport packaging – predominantly pallets and pallet covers – in 2022, reducing the volume of plastic waste by around 100 metric tons. The winning team from Bursa is sharing its experience with colleagues worldwide and also outside the company as good practice.

The winning team in the “occupational safety” category comes from Australia, where it set up a program to support mental health, reaching more than 1,000 associates and covering the three pillars “leadership,” “training and awareness,” and “support and services.” The target group-specific training sessions are offered to executives and associates alike. The objective of the program is to raise awareness among associates for mental health and well-being and empower them to support their colleagues in this respect.

First place in the “sustainable products” category went to the Thermotechnology division in 2022, which impressed the jury with its innovative boiler systems for industrial steam and heat supply. Apart from the new electric steam boiler ELSB which generates steam for use in industry and commerce, the division also offers boiler systems that use hydrogen and biofuels, as well as hybrid solutions. This allows companies to source carbon-neutral steam and heat with the infrastructure available and according to their individual requirements. Moreover, it is possible to retool existing facilities accordingly.

Since 2021, projects relating to “sustainability culture” are also eligible for the Sustainability and EHS Award. In 2022, the Green Heroes campaign took first prize. Using an innovative concept, Bosch has bridged the gap between workplace and private life. The idea was for associates to show their colleagues how they conserve energy and live more sustainably outside work. They were invited via the intranet to send in short videos for this purpose. In a short period of time, we received more than 140 entries from around the world – from creative tips on putting waste to good use to shopping tips and household tricks. Five associates were nominated as Green Heroes for their projects. The winning videos were published on the intranet and met with great resonance worldwide.

► Sustainability Community Meeting

Global and cross-divisional networking of EHS and sustainability experts is key to reaching the sustainability targets – and this is supported by annual Sustainability Community Meetings (SCM). How can we take sustainability further at Bosch from a strategic perspective? And how can we intensify international collaboration in the process? These were the questions explored at the two-day event hosted by the Sustainability and EHS corporate department in Stuttgart in July 2022. Besides the divisions' coordinators and regional coordinators, additional internal stakeholders were invited to come and share their knowledge and experience.

The in-person event was opened by the board of management member responsible for sustainability, who honored the five winners of the 2021 Sustainability and EHS Awards. Five external speakers held keynote speeches on topics including human rights and the future of sustainability reporting.

► Sustainability days at Bosch locations worldwide

In 2022, action days for sustainability and EHS were again held at Bosch locations around the globe. In Wernau, Germany, for instance, the Thermotechnology division in September invited to its Sustainability Day 2022. Around 350 associates came to find out more about on-site environmental protection measures and activities related to physical and mental health as well as other topics at various stations. A safety check for bicycles was offered as well as the opportunity to make an insect hotel. Similar activities also took place at other locations, such as Manisa, Turkey, and Sorocaba in Brazil. The Mellansel site in Sweden also had a special anniversary to celebrate: it was its tenth annual EHS Day. All roughly 360 associates were invited to take part in workshops and practical exercises and attend presentations. In 2022, the focus was placed on first aid and how to effectively carry out cardiopulmonary resuscitation (CPR) and on ways to relax and recharge during the day.

► Climate Fresk workshops – teaming up against climate change

Around 500 associates from Bosch in Germany and France attended over 40 Climate Fresk workshops in 2022 to learn about the reasons underlying climate change and its effects. In preparation, 63 facilitators received training before setting out on a collaborative journey together with the participating teams. The goal is to empower participants to work together to identify what effects climate change is having on their business environment and to enable them to make informed decisions that take account of the associated opportunities and risks.

Climate Fresk workshops involve interaction, collaboration, and mutual networking. Developed by a French non-governmental organization, the underlying concept is made available to citizens, public institutions, and businesses through a Creative Commons license.

Commitment and cooperation

We want to make a relevant contribution to overcoming global social challenges, which is why we are involved in numerous initiatives. For instance, Robert Bosch GmbH has been a member of the United Nations Global Compact since 2004. We are committed to the ten Global Compact principles relating to human rights, labor standards, environmental protection, and anti-corruption measures. With this publication, we satisfy the related requirement to report on relevant progress we made in 2022 in this respect. We also support the United Nations Sustainable Development Goals (SDGs) adopted in 2015. Accordingly, we regularly benchmark our sustainability activities against the 17 SDGs (see Table 05). Bosch's diverse activities also support other UN goals.

Transparent reporting in accordance with international standards

Our reporting makes Bosch's commitment transparent. We support various reporting formats, such as CDP (formerly "the Carbon Disclosure Project," also see Fig. 08) or the Standards of the Global Reporting Initiative (GRI). We are active in a large number of further sustainability-related initiatives through memberships – including the Transparency International Deutschland e.V. which we have been supporting as a corporate member since 1995. We are also engaged in the executive board of the econsense association (Forum Nachhaltige Entwicklung der Deutschen Wirtschaft e. V., also see the "[Society | Dialogue with stakeholders and political lobbying](#)" section).

Commitment to the Value Balancing Alliance

As one of the seven founding members of the Value Balancing Alliance e. V. (VBA), Bosch has been working together with other internationally operating companies on developing and testing a global standard for the holistic evaluation of entrepreneurial activities since 2019. The Alliance aims to shed transparency and put a monetary value on the social, environmental, and economic impact of entrepreneurial activities as well as on the interdependencies along the value chain and how they affect corporate value. Several universities, non-governmental organizations, and audit firms are also involved in the project.

08 | Bosch's positioning in selected sustainability ratings

Rating	Rating 2022	Rating 2021	Rating 2020
CDP	Climate: Score "A" Water: Score "B"	Climate: Score "A" Water: Score "B"	Climate: Score "A" Water: Score "B"
Ecovadis	67/100 points Gold medal	63/100 points	59/100 points
ISS ESG	Prime status B-	Prime status B-	Prime status B-
Sustainalytics	14.0 points (low-risk category)	14.8 points (low-risk category)	18.7 points (low-risk category)

1.3 Corporate governance and compliance

Bosch is expressly committed to taking responsibility, obeying the law, and behaving ethically. As our mission statement says: “We promise only what we can deliver, accept agreements as binding, and respect and observe the law in all our business transactions.”

Responsible corporate governance

The board of management of Robert Bosch GmbH defines the strategy for the entire company and leads the company as a whole. With the start of the 2022 business year, there was a generational change on the board of management, which was reduced to six members.

The supervisory board of Robert Bosch GmbH appoints, monitors, and advises the board of management. In making appointments to the supervisory board, Robert Bosch GmbH is subject to the German Codetermination Act (*Mitbestimmungsgesetz*). Owing to the company's size, the supervisory board has 20 members. Ten members are appointed by the shareholders with voting rights, the other ten members are elected by the employee representatives.

The industrial trust Robert Bosch Industrietreuhand KG acts as a shareholder. In line with the mission handed down in the will of the company's founder, Robert Bosch, the trust is responsible for safeguarding the company's long-term existence and, above all, its financial independence. The aim is to guarantee that the company remains independent and able to act at all times. For further information on Robert Bosch GmbH's board of management and supervisory board, see pages 12 and 17 of the 2022 annual report.

Risk management

In the Bosch Group, risk management encompasses the entire company, including all essential operations, functions, divisions, and business sectors. It is thus a core responsibility for all managers on every level of the Bosch Group. To the extent possible, risks are identified and managed where they arise: in other words, mainly in the divisions and their regional subsidiaries. The latter are also primarily responsible for introducing measures to reduce or control risks.

The corporate departments for compliance, risk management, and internal controls are responsible to govern the related systems, while specialist departments such as legal services and tax support, direct, and monitor the rules and priorities set. Internal auditing provides support in areas including assessing the appropriateness and effectiveness of the tasks described and, if necessary, proposes that Robert Bosch GmbH's board of management or the respective officers initiate improvement measures.

The Bosch Group's risk management system is based on the standards ISO 31000 and COSO III (ERM), as well as IDW AuS 340. It comprises the systematic detection and tracking of relevant risks and, where necessary, identification and monitoring of measures to manage these risks. In this context, the corporate coordinating office for the risk management system is responsible for continuously refining the system. Current priorities include further refining analyses of risk capacity and measures to strengthen the risk culture.

A group risk management guideline sets out the principles and responsibilities. In addition, a cross-functional risk committee is tasked with identifying significant risk areas across the divisions and pinpointing potentially disruptive technological and strategic risks.

For a description of significant risks, see the annual report 2022 (page 95 et seq.). The main antitrust and legal risks are also described there.

Compliance at Bosch

Compliance refers to the observance of legal requirements and internal corporate policies and rules. At Bosch, this is an integral part of our corporate values. To this end, we have unequivocally defined our position on legal requirements and ethical issues in a globally applicable Code of Business Conduct. Combined with the Bosch values, it provides the foundation for Bosch's success in business. We feel that responsible and lawful conduct is important beyond company boundaries and have formulated our expectations of our business partners in codes of conduct (see the "[Supply chain | Social and environmental requirements for suppliers](#)" section). Accordingly, we continuously monitor current developments and adjust our codes where necessary.

Group-wide compliance management system

The global compliance management system (CMS) constitutes an integral element of the operationalization of corporate governance in the Bosch Group and comprises structures and processes for ensuring compliance at an organizational level. Based on auditing standard IDW AuS 980, it aims to ensure compliance and thus contribute to our company's long-term success on the basis of integrity and value-based conduct. We are continuing to move away from rule-based compliance to a primarily values-based approach. It is our ambition to be a pioneer for values-based conduct that extends beyond mere compliance with the law and internal regulations. The CMS is preventive in nature and is designed to encourage all associates in the Bosch Group to identify compliance risks and violations at an early stage and to respond

appropriately. The aim is thus also to reduce risks for the Bosch Group, its associates, and its corporate bodies. At the same time, we want to protect and cultivate the reputation of the Bosch Group, which is the basis of our business partners' trust.

The central guidelines governing the CMS set out the responsibilities for each area of compliance. Specialists in the corporate departments are responsible for implementing corporate governance in their respective areas of responsibility, such as anticorruption, antitrust law, money laundering, labor and social legislation, product compliance, fire prevention, and environmental protection.

The compliance committee supports the implementation of the Bosch Group's CMS and coordinates compliance issues. In addition, it contributes to the risk-based further development of the CMS, for example by assessing the regulatory environment and other developments to identify new compliance risks. Chaired by the chief compliance officer, the compliance committee comprises the heads of the Compliance Management corporate department, Legal Services, the Internal Auditing department, and other members appointed by Robert Bosch GmbH's board of management. In 2022, the compliance committee set up a sanctions committee that decides on appropriate disciplinary measures in the event of material compliance incidents. The compliance committee office provides personnel and technical support to the compliance committee.

The chief compliance officer also heads the Compliance Management corporate department, which is responsible for the specialist area of anti-corruption as well as information security and data protection and for overarching key elements of the Bosch Group's CMS (e.g. compliance training, operating and further developing the reporting system for compliance-related matters, serving as point of contact for reports of misconduct, and conducting internal investigations). The chief compliance officer sets the goals for the Compliance Management corporate department and reports on a regular and ad hoc basis directly to the member of the board of management responsible for compliance. If necessary, the chief compliance officer is also entitled to contact the chair of the supervisory board directly.

In the Bosch Group's regions and divisions, compliance offices have been set up as part of the Compliance Management corporate department. The core task of the compliance offices is to support the regions and divisions to which they are assigned in fulfilling their obligations under the CMS and in conducting internal investigations. For this purpose, they have unrestricted authority to demand information and perform audits, are independent in exercising their duties, and bound only by the instructions of the Compliance corporate department. Notwithstanding the constantly evolving environment, we are intent on keeping our policies and procedures up to date. That is why we continuously review and refine our compliance program, which falls within the area of responsibility of the Compliance Management corporate department.

According to our regular cycle, we repeated our global analysis of corruption risks in 2021, combining it with the analysis of risks relating to antitrust law. The analysis covered 253 legal entities that were selected based on certain criteria such as headcount, sales revenue, and specific risk indicators (e.g. the current Corruption Perception Index published by Transparency International). In addition, we performed further in-depth analyses in selected divisions, corporate sectors, and service units.

The findings were evaluated and appropriate measures initiated in 2022. These include, for example, activities to raise awareness among associates regarding individual risks, supplementary training sessions for specific target groups, or even sample-based checks of compliance with rules and processes. To document and track the measures, we use a central database that maps the corresponding workflows. In 2023, we plan to continue with the risk analyses.

In a bid to digitalize our compliance processes further, we set up a new project organization in 2022. Our aim is to update and standardize core compliance processes and make them even more efficient. The focus will be placed on data protection and information security, compliance audits and internal controls, business partner compliance, risk management, and reporting, among other areas.

Implementation of corporate governance within the framework of the CMS is reviewed in the course of internal audits performed by the Internal Auditing corporate department. In addition, we test our CMS in external audits and consulting engagements and always take the results as an opportunity to further develop and optimize our CMS.

Code of Business Conduct

The Code of Business Conduct provides guidance for all Bosch associates on values-based, ethical, and legally irreproachable conduct. It outlines the basic rules of conduct in the company and provides guidance on issues such as how to deal with insider information, whether to accept gratuities, and how to avoid conflicts of interest. Our aim is to set clear guidelines and, at the same time, to protect our associates, our company, and our business partners. We are in the process of revising our Code of Business Conduct to reflect new priorities and increase user friendliness, for example by giving it a new structure, making it more practical, and presenting it in a more interactive form.

The Code of Business Conduct is specified in corresponding central policies and additional local regulations. These also set out specific requirements with respect to gratuities. In Germany, for example, the acceptance and issue of gratuities exclusively constituting a personal benefit is permissible up to a limit of 35 euros, net, per year and recipient. So-called facilitation payments – payments made to officials to expedite an administrative service to which the payer is generally legally entitled – are explicitly not permitted. If associates are pressured or forced to make such payments, for instance to avoid bodily harm to themselves or others and protect their health and safety, they are required to inform their superior and the respective compliance office at the earliest opportunity.



[Code of Business Conduct of the Bosch Group](#)

[Business Conduct Guidelines of the BSH Group](#)

The Code of Business Conduct also describes our social responsibility, including respecting human rights and the prohibition of forced or child labor. The document is available to all associates in 33 languages and has additionally been communicated in a letter from Robert Bosch GmbH's CEO to all associates exempt from collectively bargained agreements worldwide. They have confirmed their acknowledgment of the code. An abbreviated version containing the key messages has also been provided to all associates. BSH Hausgeräte GmbH has developed its own code of conduct. Both codes are publicly available on the Internet.

We are additionally in the process of preparing a new, supplementary Anti-Bribery and Anti-Corruption (ABC) Policy as an umbrella regulation to harmonize and standardize compliance rules on anti-corruption, focusing especially on gratuities (in kind) and invitations, sponsoring, donations, staff rotation, and conflicts of interest.

Product Compliance Code

We also follow clear guidelines in product development, which are summarized in our Product Compliance Code. Our actions are guided by the principle of legality and our "Invented for life" ethos. This guidance applies to all Bosch products and services, covering all stages of a product's life cycle and taking precedence over customers' wishes. It is not permitted to develop functions for test recognition, nor is optimization solely for the purpose of official test cycles permitted.

If a customer does not observe these guiding principles, we do not take part in their invitations to tender. In the event of any non-compliance with the Product Compliance Code in the course of existing business relations, measures can extend to a delivery stop.

Export control

Some of our products can also be used for military purposes. Extensive internal policies and procedures are in place within the group to ensure regulatory compliance including export controls.

Compliance of business partners and company acquisitions

Bosch takes a holistic approach to corporate social responsibility. Therefore, clear policies and procedures also apply with respect to our business partners. Our business partners are regularly subject to a standardized and risk-based compliance check. This encompasses both customers as well as suppliers, possible partners in the establishment of joint ventures, and potential acquisition and takeover targets.

The depth and scope of the checks depends on various factors, such as the nature of the business relationship. Corporate and personnel structures can also play a role. Compliance checks focus on possible misconduct, for example non-compliance with the law or official regulations such as applicable penal laws, environmental regulations, or human rights. We refer to information in the public domain for this purpose. The findings are assessed using a standard process and appropriate measures are defined and introduced to the extent necessary. These can range from a more in-depth assessment right through to withdrawal from the business relationship or project.

To further strengthen our risk-based approach, in 2022 we implemented an accompanying IT-based testing and monitoring process for selected business partners whose risk profile is potentially heightened, and adjusted our internal regulations accordingly. Users received training for the IT tool and the regulation and can continuously draw on advice and support from the compliance organization.

In our Codes of Conduct for Business Partners, we have formulated what we expect from business partners in terms of compliance. The "[Supply chain](#)" section of this report describes in detail how we discharge our responsibility in the supply chain.

Training

We use extensive training and communication measures to sensitize our associates to compliance issues, including our social responsibility and the importance of human rights, among other matters. The compliance training program is available to our associates as Web-based training (WBT) or offered as classroom training or in webinars. Participation is mandatory for certain groups of associates, selected via a risk-based approach, including for example associates without collectively bargained contracts due to their special responsibility as specialists or managers, but also numerous other associates in selected areas or in special functions. In 2022, four existing WBT courses were revised and a new training program on software license management was issued. The latter is generally designed for all associates exempt from collectively bargained agreements and all associates involved in software development processes.

Our minimum compliance training program covers five areas: business ethics, product compliance, anti-corruption, antitrust law, and export control. The training content must be repeated regularly, usually at two- to three-year intervals. Our training courses are regularly

refined and updated to accommodate new content and developments. Feedback from training participants is always taken into account in the process.

The minimum compliance training currently held worldwide has been completed over one million times to date. Over 80 percent of associates in indirect functions have one or more minimum compliance training courses assigned to their learning curriculum. Compliance at Bosch is also an integral part of the annual goal and performance dialogue. Associates actively confirm in the related documentation that they spoke about compliance and will act accordingly to the best of their knowledge.

The status of the minimum compliance training courses is tracked using a dashboard, which also reflects participants' feedback as a basis for improving the quality of the training courses. In the event that training courses are overdue, reminders to complete the training are automatically sent to associates, executives, and HR business partners. Starting in 2021, this process is being introduced in stages in other countries.

09 | Areas covered by the global minimum compliance training program

Area	Topic	Format
Business ethics	Code of Business Conduct	WBT, document
	Dealing with classified information	WBT
	Software license management	WBT
Anti-corruption	Gratuities in dealings with third parties	WBT, classroom training/live online training
Product compliance	Product compliance	WBT, classroom training/live online training
	Product safety and product liability	WBT
Antitrust law	Antitrust law	WBT, classroom training/live online training
Export control	Export control	WBT

Internal communication raises awareness for compliance

We use all media formats available for internal communication to draw attention to compliance issues – from the intranet to internal social media or notices put up on-site. The compliance channel on the internal Bosch Tube video platform offers more than 100 audio and video files on the subject. The Bosch Compliance app has been pre-installed on the cell phones of some 90,000 associates worldwide and offers quick access straight to the various compliance topics. It is also possible to directly contact the competent compliance officers in each country and division using the app.

With the compliance dialogue, we enable intensive and open exchange between managers and associates on everyday issues relating to compliance topics. Supplementing the mandatory training, the dialogue is a voluntary offer that encourages teams to discuss and resolve specific dilemmas. The compliance dialogue is updated continuously to include new practical cases. In 2022, the focus was placed on how to report incidents and on whistleblower protection.

By running a diverse range of campaigns every year, we increase the visibility of the topic of compliance and the pertinent contact persons within the company. In this connection, a global awareness campaign on the Bosch reporting system and the protection of whistleblowers was launched in 2022. It is aimed at all Bosch associ-

ates worldwide and is intended to raise awareness of the issues of submitting reports and whistleblower protection. The campaign makes the work of the compliance organization transparent, thus helping to further strengthen the trust of associates in internal reporting and whistleblowing channels at Bosch. Under the motto “Speak up!” it also aims to encourage associates to report any suspicions of misconduct.

The campaign is accompanied by additional measures – from brochures and posters carrying the motto “Speak up!” to anonymized examples on the intranet right through to an interview with the chief compliance officer on the topic of whistleblowing. A flyer on how to report incidents and on whistleblower protection was also sent to some 100,000 associates in Germany together with their payslip. The campaign’s effectiveness is measured continuously. Evaluations for 2022 show that the number of reports has increased significantly since the campaign was launched. We will continue the campaign in 2023.

In 2022, we developed a survey for measuring our compliance culture – the Integrity Thermometer – and piloted it in Germany and France. One aim of the survey is to obtain a key indicator of how effective our compliance management system is.

Grievance mechanisms and reporting system

If there is any suspicion of possible misconduct, such as a violation of applicable law or the Code of Business Conduct, associates as well as business partners and other third parties can use the whistleblower system to submit a report to the compliance organization – also anonymously in accordance with legal requirements. For this purpose, we have set up the [Bosch reporting system](#) that is available in 19 languages on the Internet and our intranet. To help users, the reporting system offers thematically predefined reporting categories. The objective is to make it as easy as possible for whistleblowers to submit reports. At the same time, it is made clear that the system is available without restriction for reports on the full spectrum of conceivable misconduct. In addition, BSH Hausgeräte GmbH operates a reporting system of its own.

Naturally, Bosch associates can also directly contact their superior or the individuals responsible in their division's or region's compliance office. The compliance organization follows up all reports without delay and involves additional experts in individual cases. Progress and the corresponding assessment of the matter are recorded in a central database and monitored.

Not all reports are necessarily handled by the compliance organization. Further processing can be handled by the respective compliance officers or specialist departments. For instance, HR is responsible for handling cases of discrimination without implications under criminal law.

Great importance is attached to the protection of whistleblowers throughout the process of handling cases. This concerns both identity protection and protection against possible discrimination. Protecting whistleblowers is already explicitly anchored in the Code of Business Conduct, for example. Any indications of disadvantage due to whistleblowing or of obstruction of whistleblowing are pursued as separate compliance cases. We have published the ["Principles for reporting possible violations and processing reports at Bosch"](#) on our company's website.

In 2022, 1,283 reports (previous year: 1,044) were recorded via the Bosch reporting systems. We have seen a steady increase in the number of reports over the last few years, a development we primarily attribute to the comprehensive measures in the field of compliance and the resulting increased awareness of compliance issues. Reports have increased especially since the summer of 2022, in tandem with the launch of our global awareness campaign.

Products



Our ambition: “Invented for life” – products that fascinate, that improve quality of life, and that help conserve natural resources.



Potential of the circular economy

- ▶ Analysis of around 80 product groups that account for more than 80 percent of sales revenue.



Hydrogen economy

- ▶ Bosch offers technology to enable the use of hydrogen in different sectors, thereby blazing the trail for a hydrogen economy.



Carbon footprint reduced by more than 33 percent

- ▶ Bosch Green Collection fridge-freezer combination features climate-friendly materials.

2.1 Management approach

Bosch has a broad and highly diverse product portfolio. Our products ensure safe and sustainable mobility, are durable companions in the home, or control industrial machinery efficiently and reliably. As varied as our products are in detail, they share a common ethos: “Invented for life.” We want to spark people’s enthusiasm, to improve their quality of life, and to help protect the environment.

Circular economy strategy

With our circular economy strategy, we want to enhance the sustainability of our products throughout their entire life cycle – from procurement and production to use, return, and remanufacturing, and right through to recycling and reuse of materials. To this end, we endeavor to either create loops directly within Bosch or close them outside the company using established recycling processes. This way, we reduce the amount of materials used and our products’ carbon footprint³ and contribute toward achieving our scope 3 target.⁴ At the same time, we also avoid potential risks relating to compliance with environmental and social standards. Building a closed-loop system for materials has the particular advantage of eliminating parts of the value chain that are subject to risks (see Fig. 10).

³ To enable comparability between the climate impact of the various greenhouse gases and substances of relevance for the climate, emissions are presented in CO₂ equivalents. In this report, we have taken into account the effects of CO₂ and of other greenhouse gases, as well as climate-relevant substances, to the extent that these are of relevance for the analysis. For ease of reading, we use the terms CO₂ and CO₂ equivalents synonymously.

⁴ This report uses scopes 1, 2, and 3 in accordance with the [Greenhouse Gas Protocol Corporate Accounting and Reporting Standard](#).

As with climate neutrality, in our circular economy strategy we use a model comprising levers that can be applied across the entire value chain. Here, too, we have classified the measures according to their quality. On the one hand, quality is determined by each lever’s contribution toward goal achievement. On the other, we rate a lever’s quality higher the greater Bosch’s ability is to influence the magnitude of its impact compared with other levers.

► **Lever 1: Materials efficiency**

Measures to increase materials efficiency are first priority – after all, it is best for the environment to use less materials. Improvements in materials utilization reduce the carbon footprint and also cut the manufacturing cost of a product. Bosch can also directly influence the corresponding measures. For years, materials efficiency has therefore been a fixed criterion in our product development process, where it is anchored in the Design for Environment (DfE) principle (for more on DfE, see the [“Design for Environment”](#) section). The materials’ eco-efficiency and the environmental and social effects of using certain raw materials are also considered. The objective is to keep the environmental impact of materials utilized to a minimum, while at the same time taking into account social aspects.

► **Lever 2: Second life**

In the second lever, we have grouped together those measures that Bosch can use to improve materials flows or to close loops within the company. This is the most complex lever in our circular economy strategy as it includes measures with a whole range of different objectives and effects, while offering a maximum of autonomy and latitude in implementation. The concepts and activities range from reusing products and their components to repairs and right through to remanufacturing – in each case with the objective of extending product and component life cycles. While Bosch can reduce negative effects by closing the materials and products loop, the measures’ effectiveness also depends on there being sufficient demand – and this places demanding requirements on product development.

► **Lever 3: Recycled materials**

The third lever of our circular economy strategy – recycled materials – covers all measures to close the loop in the economy for materials such as steel, aluminum, and plastics. This way, we can reduce the use of primary materials, and lessen our environmental impact – as well as human rights risks from the extraction of raw materials. Key factors determining how effective the measures are include whether high-quality materials are available, as well as whether the percentage of recycled materials used can be verified, and whether they can be purchased cost-effectively.

The use of recycled materials in production processes is long established practice at Bosch. Across all our products, the average percentage of recycled steel used is already around 56 percent. At 35 percent, the share of recycled aluminum matches the average level in the industry. For plastics, the percentage of recycled material that we purchase as raw material is around 5 percent. We intend to increase this share substantially in the coming years. The purchase agreements for focus materials that we intend to conclude with key suppliers as part of our scope 3 climate action activities should also play a role in this respect. The upcoming specifications for purchased goods and materials will include a material-specific CO₂ cap which will be reduced over time – and increasing the portion of recycling material will be an essential part to reaching these goals.

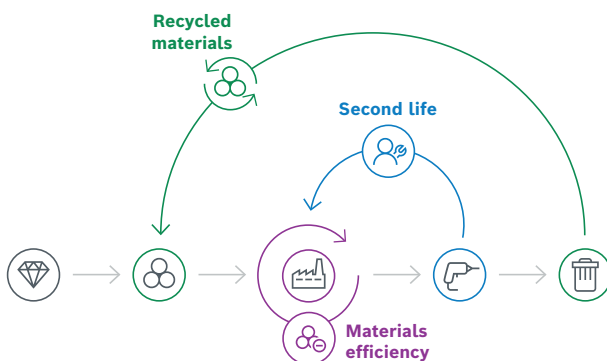
Specific strategies combine impact and cost-effectiveness

Depending on the markets in which our divisions operate, the levers differ in their degree of effectiveness, are not equally applicable across the board, and therefore offer different development potential. Accordingly, it is vital for Bosch to develop a market-specific circular economy strategy for each division and find the optimum mix of the three levers in each case. Having determined how the levers work in general in a top-down analysis in 2021, in 2022 we analyzed the potential that the levers offer in the various divisions as well as key aspects relating to their use. This involved analyzing some 80 different product groups – across all divisions – that together account for more than 80 percent of Bosch’s sales revenue.

In 2023, we are drawing on the results of the analysis to derive specific road maps for the individual divisions – depending on use case and technical feasibility. In a first step, we are setting out detailed action plans for selected levers in the circular economy strategy. On this basis, we will conclude corresponding target agreements. This approach will allow us to make tangible progress in our circular economy strategy, and at the same time give the divisions the freedom they need to take into consideration the diverse product portfolio and conditions prevailing on the different markets.

Two Bosch divisions already have specific strategies and corresponding road maps. Bosch Power Tools (PT) has decided in a first step to focus on recycled materials as the primary lever. This decision was based on the realization that in PT – unlike for Bosch as a whole – a large part of its carbon footprint comes from procurement. For this reason, PT has set quantitative targets that extend through 2025 for the use of recycled materials in packaging and recycled plastic in product housings. By then, the division also wants to have life cycle assessments available for each product family. Even before the overall portfolio analysis, the Automotive Aftermarket division had analyzed its product portfolio in detail with respect to the potential it offers for the “second life” lever – and decided to focus above all on remanufacturing, in other words reprocessing used products.

10 | Circular economy strategy



Circular economy activities in almost all divisions

Although the individual road maps have not yet been finalized, many activities in Bosch's divisions already follow the principle of a circular economy, illustrating the different ways in which the levers in our circular economy strategy work. The following examples show how different the corresponding measures can be implemented in each division.

Lever 1: Materials efficiency

► Micro-electromechanical systems (MEMS)

New generations of sensors from Bosch for fitness trackers or for measuring particulate matter and altitudes are considerably smaller and more efficient than previous generations. Take, for example, the programmable and AI-enabled sensor with accelerometer BHI360/BHI380 in fitness trackers that adapts to the individual user's movements, and at 7 mm³ is only half the size of its predecessor and needs only half the amount of power.

► Reusing plastic sprue

The Bosch plant in Waiblingen has taken a big step toward improving materials efficiency. By reusing plastic sprue, the plant is able to save around 125 metric tons of polyamides each year. This was achieved by installing a new dosing system. In direct sprue recirculation, it permits more precisely dosing the proportion of recycled granulate. With this technique, it is possible to improve the consistency of the material added, and the recycled granulate mixes more easily with the new material. The recirculated material is mainly used to produce piping and plumbing fittings. A review is currently underway for applying the technique in other product groups that offer a similar amount of potential for saving materials. The lessons learned in Waiblingen are shared within the group as an example of good practice, thereby allowing other Bosch sites as well to benefit from the advantages the new process offers.

► Bosch Green Collection fridge-freezer combination

Using less resources, reducing emissions, improving climate action: that's the principle BSH Hausgeräte GmbH (BSH) has put into practice with the Bosch Green Collection's new fridge-freezer combination. Nicknamed "Little Foot" in-house due to its small carbon footprint, the new refrigerator was designed from the outset with special attention to using low-carbon materials. For the side panels and other metallic paneling, low-CO₂ steel is used that has a 70 percent lower carbon footprint than the steel previously used.⁵ In addition, both the main component of the insulating foam and the entire interior are produced using bio-based, carbon-neutral materials.⁶ These measures have made it possible to reduce the fridge's carbon footprint by more than 33 percent to approximately 200 kilograms of CO₂.⁵

To source larger quantities of "green steel" going forward, BSH has entered into a cooperation agreement with Salzgitter Flachstahl GmbH. The steelmaker is working on new technologies for a hydrogen-based steel production that is virtually CO₂-free, depending on how the hydrogen is produced, by 2033.

Lever 2: Second life

► Customer support services extend product life cycle

With its customer support services, Bosch seeks to extend its products' service life. The diverse services offered by the divisions range from service hotlines to online guides, online replacement part finders and replacement part service, and right through to repairs and maintenance, or even the modernization of entire systems.

BSH's customer support is one of the largest in the industry, comprising some 12,400 service technicians and partners. More than 350,000 replacement parts are stocked at seven logistics centers in proximity to the production locations. Replacement parts are usually kept in stock over a period of more than ten years after the end of production for large appliances and over more

⁵ Comparison between Bosch Green Collection fridge-freezer combination (KGN39OXBT) and a current reference appliance (KGN39VXBT); calculated based on life cycle assessments (LCA) pursuant to ISO 14040, cradle to gate (material, transport, production)

⁶ Carbon-neutral materials without use of carbon offsets

than seven years for small appliances. Technicians can complete 82 percent of repairs in the first visit, reflecting the high quality of service. The range of services offered by Bosch Thermotechnology is similarly comprehensive. It spans from commissioning to maintenance and repairs for more than 7,500 products. Replacement parts are typically available over a period of 15 years.

Bosch Rexroth as supplier of components and systems in the areas of hydraulics and factory automation likewise offers a broad spectrum of support services ranging from repairs and maintenance to the modernization of complex machinery. In the course of modernization work, it is possible to combine the core technology of machines with state-of-the-art automation and new technologies. Such solutions not only prolong the machinery's service life, they also enhance its safety, reliability, and energy efficiency.

► **Austria: Second-hand washing machines**

As part of a pilot project launched in Austria in 2022 and running until March 2023, Bosch offers refurbished washing machines for sale with manufacturer's warranty – at prices that can be as much as 50 percent lower than for a comparable new model.⁷ Extending the appliances' service life helps to conserve resources and cut CO₂ emissions. Experts decide which appliances are eligible for a "second life" on the basis of an extensive catalog of

criteria. Then the appliances are subjected to a thorough inspection, cleaned, and overhauled with new components. After passing all quality controls, the washing machines are sold as "refurbished" in the online shop with a two-year manufacturer warranty.

The pilot project in Austria rounds out already established activities of BSH to extend the product life cycle. With Blue Movement, BSH Huishoudapparaten B.V. in the Netherlands and BSH Hausgeräte GmbH in Germany offer a lease-based model for household appliances. A similar BSH pilot project in Belgium, Papillon, adds to this offer a social component, helping underprivileged households to use energy-efficient and cost-saving household appliances in cooperation with a partner (Samenlevingsopbouw West-Vlaanderen).

► **Bosch eXchange**

For over 50 years, the Bosch eXchange program has been offering customers the option to have defective vehicle components replaced with remanufactured products at specialist workshops. Many customers take advantage of it, making the program a significant factor in Bosch's automotive aftermarket product portfolio today: around two million components are remanufactured here every year, thereby reducing the number of new products needed accordingly. This saves some 3,100 metric tons of material.

⁷ The baseline value is a new appliance in the same series at the current price in the [Bosch online shop](#).

Reusing factory equipment – acting sustainably means acting cost-effectively

For the idea of a closed-loop or circular economy to reach its full potential, we need to consider the big picture. One good example is the reuse of factory equipment. This involves using, sharing, repairing, modifying, and reusing plant and machinery for as long as possible. This way, it takes only a few new parts to retool entire production lines for new product generations. After all, components such as machine housings, robots, switching cabinets, or transfer systems can be used universally and efficiently adapted to handle new requirements and

jobs. This also has economic advantages – as demonstrated by Bosch Manufacturing Solutions with a recently retooled production line at the Suzhou site in China. By largely reusing old parts, it was possible not only to significantly reduce the environmental impact, but also to save 35 percent of costs compared with installing a new assembly line. At the same time, the production specialists were able to raise productivity by 5 percent relative to comparable production lines on the market.

Lever 3: Recycled materials

▶ Reducing the carbon footprint – from product design through to packaging

As one priority area of its circularity activities, Bosch Power Tools is focusing on the use of recycled materials in packaging and product housings. Just by introducing cases made of recycled plastics for DIY tools, Bosch Power Tools has been able to save more than 5,300 metric tons of plastic raw materials since 2019. The new IXO 7 cordless screwdriver also shows just how much can be achieved in terms of saving resources by consistently using recycled materials. The cordless screwdriver's product housing now contains 40 percent recycled materials, for its storage box (including packaging material inside) the proportion of recycled materials is over 90 percent. Thanks to these and other measures to save materials, the carbon footprint of the IXO 7 throughout its product life cycle is 20 percent lower than for the predecessor model.⁸

▶ Recycling electric car batteries

In order to recycle the batteries used in electric vehicles and to enable further use of the raw materials beyond the battery's end of life, the batteries need to be disassembled and fully discharged. Bosch Rexroth has set itself the task of largely automating these – to date

mostly manual – processes to enable efficient handling of the high volumes expected in the future. As a result, an automated process has been designed that permits discharging battery modules as quickly as possible without overheating them. Its development has given rise to several patent applications.

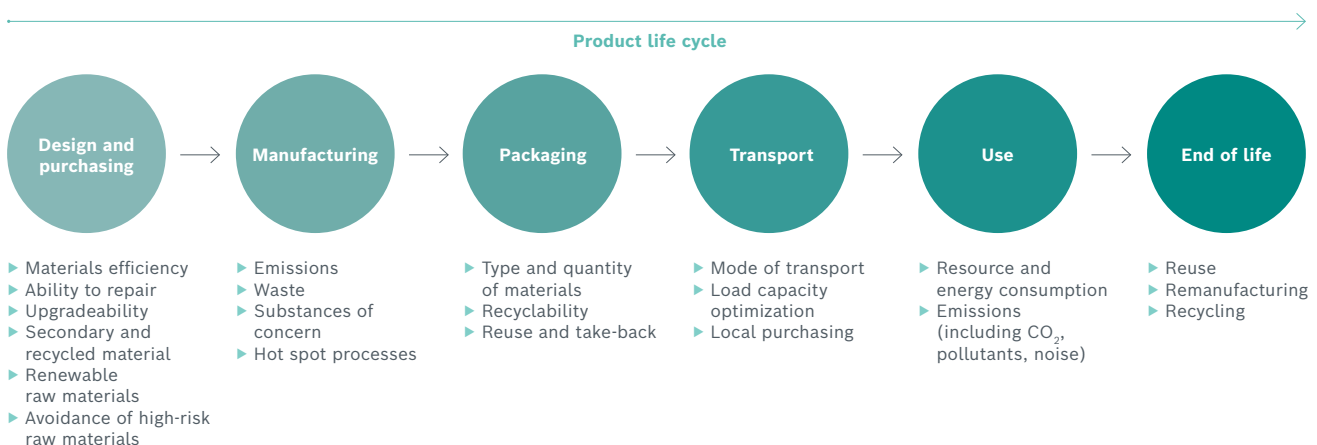
The result is an innovative approach to handling as well as disassembly and discharging, based on Rexroth components and systems such as the ctrlX DRIVE system, the ctrlX CORE control platform, and the related transfer technology. Bosch Rexroth is thus opening up new opportunities for industrial, automated battery disassembly and discharging.

Design for Environment

In connection with the implementation of our circular economy strategy, we started revising the company-wide Bosch Design for Environment standard N 33-6 in 2022. Anchoring the DfE principle in the product development process, the standard includes specific design and manufacturing rules for developers and product owners that cover the entire life cycle of products – from materials used and efficiency in the product development process to recycling or environmentally compatible disposal at the end of the product life cycle (see Fig. 11). Compliance with the standard is reviewed as part of the quality process (see the "[Product responsibility | Our quality policy](#)" section).

⁸ Comparison of IXO 7 (article number: 0 603 9E0 000) and predecessor model IXO 6 (article number: 0 603 9C7 100); CFP (carbon footprint of a product) calculated based on ISO 14067, cradle to grave (material, production, transport, use, and recycling)

11 | Environmental aspects of Design for Environment



Specially trained DfE owners support the divisions involved, helping them with requirements and questions relating to green product design. In addition, all divisions are in contact with each other via the DfE network. A differentiated approach is taken in implementing the DfE principle in product development: besides a checklist in the product development process, life cycle assessments are also prepared.

Life cycle assessments

Based on the idea of a closed-loop or circular economy, we have been systematically conducting life cycle assessments (LCAs) for major product groups since 2017. This entails an evaluation of product-specific environmental aspects in each phase of the life cycle – from purchasing to production and use right through to disposal. Among the evaluated aspects are, for example, the use of materials, the consumption of energy and resources in the manufacturing and use phase, recycling and the use of recycled materials, and remanufacturing at the end of the product's life cycle.

In principle, an LCA is performed only if it serves a particular purpose. Bosch has defined clearly delimited use cases in this respect. For example, we differentiate between LCAs that are to deliver key insights for product development and those intended to reveal optimization potential for series products. Depending on the use case, we distinguish between two assessment methods: the full-scale LCA, performed in compliance with ISO 14040 and 14044, and the streamlined LCA, allowing faster assessment of specific issues and drawing on standard database values.

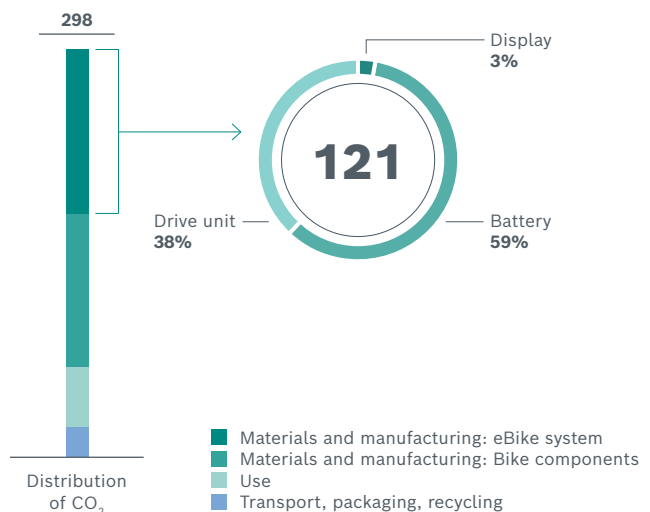
In industry networks such as Catena-X, we are currently working on a common industry standard to enable effectively and securely communicating sustainability-related properties of materials and products along the value chain (also see the “[Society | Dialogue with stakeholders and political lobbying](#)” section). In using the LCAs, our attention still focuses on the product's carbon footprint. We want to find out which phase of the product life cycle and which materials create the biggest carbon footprint so that we can take dedicated action to reduce it in the product development process or in further development of series products. For illustration purposes, Fig. 12

shows the carbon footprint of an eBike as certified by TÜV Rheinland in accordance with ISO 14067:2019 (cradle to grave).

A look at the carbon footprint of each phase of the product life cycle reveals where the biggest savings potential lies. Around 75 percent of CO₂ emissions are attributable to materials and production, about 15 percent to the product's use phase, and the remaining roughly 10 percent arise from transport, packaging, and recycling. Overall, a pedelec has a carbon footprint of 300 kg CO₂ on average, of which the eBike system, consisting of motor, battery, and display, accounts for around 120 kg CO₂. Considering the eBike components separately from the rest of the bike, some 60 percent of emissions are attributable to the battery. Building on this LCA, Bosch eBike Systems identified various possibilities for reducing CO₂ emissions within the product life cycle of the motor and the battery.

In an effort to continuously identify further potential to save carbon emissions when developing new products, Bosch eBike Systems this year started using a proprietary LCA processing tool. This permits an even faster, more detailed, and flexible comparison of the carbon emissions of various product components, thereby supporting efficient decision-making in the product development process.

12 | Carbon footprint of an eBike in kilograms of CO₂



2.2 Sustainable products and services

True to our “Invented for life” mission statement, we want our products to contribute toward sustainable development and we therefore support various Sustainable Development Goals (SDGs) of the United Nations (see Fig. 13). In this section, we take a closer look at our contribution with selected examples.

Reducing scope 3 emissions

Against the backdrop of our climate action strategy, we identified additional potential for reducing CO₂ emissions in the use phase of our products in 2020. Our goal is to save 15 percent of absolute CO₂ emissions generated in the upstream and downstream stages of the value chain (scope 3) by 2030 (relative to the baseline year 2018).

Roughly 90 percent of scope 3 emissions are produced in the product use phase, partly due to our products’ long service life. To lower the scope 3 emissions further, our strategy is to concentrate our efforts wherever we can make the greatest contribution to protecting human life and the environment. We currently see the greatest potential for lowering CO₂ emissions in those fields in which products require a significant amount of energy, that is particularly in mobility, thermotechnology, industrial drive and control technology, and household appliances. The focus is on three leverage points in each case: boosting energy efficiency, shaping the product portfolio, and transforming the energy sector through the use of green electricity, hydrogen, and biogas (see the [“Environment | Climate action and energy efficiency”](#) section).

Contribution to the mobility transformation

We firmly believe that the mobility of the future should have no negative repercussions in terms of global warming and air quality, and should remain affordable for

most people. With our product range, we are making an important contribution, while pursuing a holistic approach at the same time.

First and foremost, it is the Mobility Solutions business sector that is driving this development. As systems supplier for highly efficient drive systems, it plays a key role in advancing the development of electric drives with products such as the eAxle or improved thermal management for hybrid systems and electric power trains. Bosch has already invested more than five billion euros in electromobility, and has successfully acquired some 170 production projects since 2018. The aim is to generate sales revenue of six billion euros or more from the associated products and services by 2026.

At the same time, Bosch is investing in fuel cell technology and continuously developing digitalization solutions to enable further efficiency gains. Our business success in these fields will also increase the contribution we make to conserving resources and climate action – while we move a step closer to our ambitious CO₂ targets.

Last but not least, through innovative vehicle technology Bosch can help vehicle manufacturers to contribute to improving air quality. Bosch’s latest diesel and gasoline technology makes it possible to significantly lower nitrogen oxide emissions and particulate emissions. The aim is to design internal combustion engines with emissions that no longer impact our cities’ air quality in any notable way.

With the aim of making freight transport by road climate neutral, Bosch is working not only on continuously improving the diesel engine, but also on three climate-neutral drive options: batteries, fuel cells, and hydrogen engines.







► For battery-powered vans, the Advanced Driving Module, which combines eAxle, brakes, and steering system, is the most suitable solution. For trucks, we offer scalable electric motors that are designed for use with

13 | Contribution of Bosch products to selected SDGs






Product sectors and topics

UN SDGs





Mobility

Contribution to the mobility transformation	Innovative power train systems and electrified mobility: electric drives, fuel cells, hydrogen engine, eBike systems	
	Mobility services: optimized battery management, connected charging solutions, connected parking, fleet management	
Invented for better air quality	Air quality solutions: immission measurement systems, scalable dispersion simulation of emission sources, real-time traffic emission data, traffic management, BMV080 MEMS sensor for accurate, localized air quality measurement	 
	Innovative vehicle technologies: power train technology for low-emission vehicles, long-life iDisc brake disc rotors, regenerative braking	
Road safety	Driver safety systems: anti-lock braking system (ABS), electronic stability program (ESP®), pedestrian protection system, occupant protection system	
	Driver assistance systems: automatic emergency braking, adaptive cruise control (ACC), tram forward collision warning (TFCW), cloud-based wrong-way driver alert	



Energy systems, industrial and building technology

Implementing distributed energy grids	IoT solutions for energy systems: balancing energy network, grid optimization management, gateway manager	
	Technology for the use of hydrogen: stationary fuel cell for decentralized power generation	
Efficient industry – efficient use of resources	Industry 4.0 software platforms and sensors for analyzing data and controlling processes: Nexeed, Energy Platform, Transport Data Logger, Connected Industrial Sensor Solution	 
	Energy-efficient machines and resource-conserving systems: cross-technology expertise by Rexroth 4EE, electric steam boilers	
Energy-efficient buildings	Renewable energy: heat pumps, hydrogen boilers for industrial applications and residential buildings	
	Intelligent energy management: Energy Manager in the smart home	

Sustainable home

Conserving resources at home to live more sustainably	Energy efficiency: Bosch tumble dryer with heat pump technology, PerfectDry dishwasher	
	Water efficiency: i-DOS washing machines and dishwashers with ActiveWater technology	
	Fresh for longer and conscientious shopping: fridge-freezer combinations with VitaFresh freshness system, Home Connect function, and integrated camera in the refrigerator compartment	 
	Durability: Bosch Power Tools AdvancedDrill 18 screwdriver	

Health

Smart farming	Sustainable agriculture: Intelligent Planting Solution, Smart Spraying Solution	
Contribution to global healthcare	Healthcare and medical technology: Vivalytic for molecular laboratory diagnostics, Vivatmo respiratory gas analysis equipment, high-performance ceramics for medical technology	

silicon carbide inverters. This combination can produce an efficiency level of up to 97 percent – an exceptional level for electric drives in commercial vehicles.

- ▶ Together with our partner, we are getting ready for series production of the fuel cell-electric drive. The aim is to have more than 40,000 vehicles equipped with our fuel cell systems on the road worldwide by 2025. Bosch also produces the corresponding stacks in-house – the core of the hydrogen electrolysis system – and is setting up production facilities around the world in close proximity to customers – at the plants in Anderson (United States), Wuxi (China), and Bamberg (Germany).
- ▶ With the hydrogen engine, we offer a climate-neutral alternative for long-haul heavy trucking as well as agricultural and construction machinery. Although it has a lower efficiency level than the fuel cell for lower and medium loads, the hydrogen drive offers considerably more power at full load. Through our components, we are involved in over 100 technical hydrogen engine tests worldwide – in India, we have already acquired a first series production project.

Invented for better air quality

To support efforts to improve air quality, Bosch has developed an emissions measurement system. The compact monitoring boxes reliably deliver the required data. This enables the creation of real-time air quality maps that can be used for adopting appropriate measures. Monitoring boxes are in operation in the German towns of Erfurt and Ludwigsburg. Working together with the relevant authorities, Bosch also collects anonymous data for traffic optimization to advise cities on traffic planning and traffic management. Appropriate measures can lower traffic-related emissions by as much as 20 percent on average.

In many parts of the world, indoor air pollution is three to five times higher than outdoors. At the same time, we spend around 90 percent of our everyday life indoors. This is why it is important to monitor indoor air quality. The particulate matter sensor BMV080 quite literally sets new standards in this respect, as it provides localized, real-time measurements of particulate matter concentration and air pollution. The BMV080 sensing element is more than 450 times smaller than any comparable device on the market. Despite its minuscule size, it delivers real-time, accurate, and practical readings about particulate matter concentration in the air. This makes it possible to

detect and reduce indoor air pollution, thereby improving people's health and well-being. At the same time, the fanless, non-intrusive design permits noiseless operation so as not to disturb users in their sleep or while they are working.

Road safety

With its products in the vehicle safety segment, Bosch supports Vision Zero, which seeks to reduce the number of fatalities on roads to as close to zero as possible by 2050. New, innovative systems are continuously being added to the product portfolio. The Off-zone Crash Detection system, for example, uses a wide range of sensor data and new software algorithms to detect previously neglected crash scenarios that commonly occur when changing lane, merging, and crossing intersections. Thanks to additional zones of detection, airbags and safety restraints can be deployed in a timely manner if necessary.

Besides personal transport, we also want to make public transport safer: with this in mind, Bosch has developed a driver assistance system for trams, the tram forward collision warning (TFCW) system. In the event of an impending collision, it warns the tram driver with a signal first. If the driver reacts too late or not at all in the situation, the system engages the brakes independently to stop the tram and avoid accidents or at least reduce the impact as much as possible. Today, some 1,200 TFCW systems are successfully operating in trams in Europe, Australia, and North America. In one German city, for example, the number of accidents involving trams fell by more than 40 percent after the system was installed, despite an increase over the same period in the number of trams in operation.

Implementing distributed energy grids

Bosch products also play a pivotal role in the energy transition, helping to achieve energy supply without fossil fuels in the long term. IoT solutions from Bosch Digital help utilities companies administer smart meter gateways, manage metering points and metering data, and steer grid roll-outs. These are an integral part of solutions being created for an energy market that has to manage the fluctuating output of renewable energy sources. Smart systems for managing demand and supply permit smoothing of peaks in output or demand,

On the path to a hydrogen economy

Bosch is joining in the push to establish a hydrogen economy, offering technology for the use of hydrogen in different sectors: the company is developing fuel cells for mobile and stationary applications, equipping hydrogen filling stations with compressors, and producing hydrogen at its own plants. In addition, Bosch plans to enter the electrolyzer components business.

Our lead plant for Industry 4.0 in Homburg plays a key role in this respect. Here, Bosch is already demonstrating today what the hydrogen cycle could look like in the factory of the future: using renewable energy, an electrolyzer produces green hydrogen. In future, hydrogen will be used for manufacturing operations and mobility, with fuel cell vehicles refueling with the hydrogen that Bosch technology has compressed. For industrial processes, a stationary fuel cell developed by Bosch converts hydrogen to heat and electricity. Energy flows at the Homburg plant are controlled in line with demand, using the Bosch Energy Platform.

In addition, the Homburg plant is testing a solution developed by Bosch Rexroth together with a partner company that compresses hydrogen for filling stations, storage tanks, and pipelines. By 2030, the technology is planned to be made available to 4,000 hydrogen filling stations. One in three hydrogen filling stations worldwide would then be equipped with Bosch components.

With regard to power supply, stationary solid oxide fuel cells can help balance intermittent renewable energies. Distributed micro power plants are used flexibly where the energy is actually consumed and are therefore well-suited for efficiently generating power for industry and commerce. All told, more than 50 stationary Bosch fuel cells are now in operation at the company's own sites and its customers' locations – connected with the cloud

and monitored in real time using digital twins. Bosch wants to start production of stationary fuel cells in 2024. Manufacturing operations will be located primarily at Bosch's German locations in Bamberg, Wernau, and Homburg.

In the future, Bosch also wants to be involved in the production of hydrogen and is planning to start developing components for electrolyzers. These units use electricity to split water into hydrogen and oxygen in a chemical reaction. Provided the electricity comes from renewables, the end product is "green hydrogen." By the end of the decade, Bosch aims to invest up to 500 million euros into the industrial-scale production and marketing of the stack as the core component of hydrogen electrolysis. These stacks are combined with power electronics, sensors, and control units to form smart modules that are designed for various outputs, sizes, and applications, and that can be connected and serviced via a cloud. Bosch hopes to launch its smart modules in 2025, with initial pilot plants to be equipped with modules in 2023.

As an active partner in the establishment of a hydrogen economy, Bosch is sharing its experience and expertise with partners and customers. To this end, Bosch has set up a project team that initiates and develops green hydrogen projects and brings together various stakeholders. One of the team's first hydrogen projects is [H2Giga](#). Funded by the German Federal Ministry of Education and Research, the project aims to design powerful, durable, and scalable electrolyzers – including digital twins that simulate process steps in production, setup, and maintenance.

improving the energy system's efficiency. The environmental benefit is evident: the system can accommodate a larger volume of renewable energy, CO₂ emissions are reduced, and fewer power lines are needed.

Efficient industry – efficient use of resources

Industry 4.0 stands for optimal interaction between people, machines, and data. It's all about the right connectivity. An accelerated digitalization scenario for industrial manufacturing in Germany could save up to 64 megatons of CO₂ by 2030 – this is the conclusion Germany's digital association Bitkom reaches in its study on the climate impact of digitalization.

Bosch solutions support this development. The combination of artificial intelligence (AI) and the Internet of Things (IoT), or AIoT for short, optimizes manufacturing processes, while ensuring their adaptability. As a result, the efficiency of industrial operations increases, while helping to conserve valuable resources. By connecting manufacturing plants and machines using IoT systems and enabling real-time transmission of their data, it is possible to obtain permanent transparency of a factory's entire value chain.

Bosch offers specific solutions to identify quickly and precisely where resources can be saved and processes streamlined. These include software platforms for analyzing data and controlling processes such as the Bosch Energy Platform, which is already in use at over 140 locations and in more than 90 customer projects. It makes it possible to optimize production processes by controlling heat, electricity, and compressed air using smart algorithms. Other examples include Nexeed, a software for predictive maintenance, retrofitting, and optimization of plant and equipment, as well as relevant sensors such as Transport Data Logger or Connected Industrial Sensor Solution. The corresponding solutions are used in our own manufacturing operation as well as offered to customers.

In the industrial drive and control technology segment, Bosch Rexroth is working resolutely to continuously enhance the efficiency of its products – particularly its industrial machines – including through energy recuperation, by reducing flow losses, or through needs-adjusted pressure oil generation. Such measures lower the energy consumption of machinery – and the climate is better off for it. One example is our Sytronix portfolio. The variable-speed drive solutions provide the required power with pinpoint accuracy and switch to standby in idle phases. Depending on the work cycle, they can reduce energy consumption by up to 80 percent and avoid CO₂ emissions accordingly. But we don't always need new machinery to find ways of reducing climate impact: Bosch also retrofits existing systems, offering technical solutions to upgrade machinery with state-of-the-art communication interfaces and sensor technology (also see the "[Management approach | Circular economy strategy](#)" section).

Bosch offers a broad range of products for steam and heat generation that is as low-carbon as possible. One area of focus is electric steam boilers such as the ELSB presented in 2022, which can be operated completely CO₂-neutral if renewable power is used. The new boiler is already in operation at a customer in Iceland. As a pilot project, the manufacturer of sustainable packaging has installed an ELSB from Bosch that can produce 4,000 kilograms of steam per hour. The electricity used – hydroelectric and wind power – is from renewable sources, thereby making steam generation particularly sustainable and conserving resources.

Achieving carbon neutrality with the support of software

Decarbonize Industries demonstrates how digitalization can help in fighting climate change. The start-up is developing a software solution to support industrial enterprises on their path to achieving carbon neutrality. Developed in a joint effort by Bosch and energy supplier EWE AG, the platform aims to leverage current data from energy markets, legislation, and other sources to show companies one way to achieve more sustainability. If framework conditions change, the measures proposed are automatically adjusted.

Bosch is also preparing for increased use of hydrogen in heat generation. In fact, Bosch already has an industrial boiler in its product range that is hydrogen-ready. The adjustments to our thermotechnology product portfolio directly support our climate action goals.

Energy-efficient buildings

Buildings account for one-third of energy consumption worldwide. Bosch products help to reduce their consumption. Bosch Thermotechnology makes it possible to use renewable energies efficiently in the home. Take, for instance, the heat pump: the focus is on digitally assisted system solutions that are easy to install. Since 2018, Bosch has invested 400 million euros in the heat pumps business. Another 300 million euros are to be added by the middle of the decade. On top of that, Bosch Energy and Building Solutions offers individual system solutions, technologies, and services to optimize the energy consumption of buildings. In a first step, our experts get an overview of the total energy consumption of the building concerned. They then develop a tailor-made and future-oriented energy concept.

In residential buildings, smart thermostats help to save energy by heating rooms only as much as necessary. At IFA 2022, Bosch Smart Home presented three new heating solutions in this respect. Bosch Smart Home radiator thermostat II, the controller II, and the controller II 230 V support efficient heating in smart homes, thereby helping to save energy.

In addition, Bosch Thermotechnology's Energy Manager software intelligently connects a variety of components, among them heat pumps, photovoltaic systems, and household appliances. As a result, it is possible to efficiently manage energy consumption, generation, and storage, while enabling both the use of self-generated electricity and efficient heating. Operators and the environment benefit equally: by combining heat pumps and photovoltaic systems alone, the Energy Manager can lower electricity costs by as much as 60 percent.⁹

⁹ Assumption: 50 kWh/m²*a heating consumption, photovoltaic system with 6.2 kWp, 5.7 kWh battery storage unit (90 percent DoD), electricity price of 0.28 euros/kWh, feed-in tariff: 0.10 euros/kWh, without considering investment costs or depreciation for tax purposes.

Conserving resources at home to live sustainably

Every day, products from BSH and Bosch Power Tools help households save energy, water, and resources. The BSH division is taking the approach to increase the average energy efficiency of large appliances by around 20 percent by 2030, thereby supporting our CO₂ targets. For example, a Bosch dishwasher with natural zeolite mineral consumes up to 20 percent less energy than conventional appliances.¹⁰ A Bosch tumble dryer equipped with heat pump technology can even lower energy consumption by as much as 68 percent compared with conventional condenser dryers.¹¹

Solutions such as automatic detergent dosing in washing machines or efficient dishwashers reduce water consumption. In the automatic program, washing machines with intelligent dosing detect load volume, fabric types, and degree of soiling of the laundry – and dose exactly the right amount of detergent needed. Once set the first time by the user, the system also considers the water hardness. This can save unnecessary wash cycles caused by manually over-dosing.

A Bosch dishwasher saves a household up to 8,500 liters of water a year compared with washing dishes by hand.¹² With the VitaFresh freshness system, Bosch is also making its contribution to reducing food waste.

As a sustainable solution for indoor gardening, Smart-Grow Life is designed so that consumers can grow over 50 different kinds of herbs, lettuces, and fruit in their own home. In its development, special attention was paid to designing the product end-to-end for the circular economy. All white plastic parts are made exclusively of recycled material. Its design is repair-friendly, helping to reduce the amount of waste electronic equipment

¹⁰ Bosch PerfectDry dishwasher based on Zeolith technology using 0.73 kWh/h of electricity in relation to a comparable Bosch dishwasher without Zeolith using 0.92 kWh/h of electricity, per-cycle amounts in accordance with EU Regulation No. 2019/2017.

¹¹ Typical Bosch heat pump dryer with energy efficiency label A+++; 8 kg, 176 kWh/year, compared with a typical conventional Bosch condensation dryer with energy efficiency label B, 8 kg, 561 kWh/year; calculated based on EU Regulation No. 392/212.

¹² Internal research based on comparison of washing dishes using a dishwasher and by hand. 40 liters for manual washing – 9.5 liters using a dishwasher, the amount of 8,500 liters saved is calculated based on 280 cycles per year.

produced and making the system easier to recycle. In addition, a take-back system was created for used products to enable closing the materials loop completely. The products are disassembled in workshops run by social organizations and the materials are made available to industry as secondary raw materials. Over 90 percent of the packaging is also made of recycled material and is in turn fully recyclable. Last, but not least, the seedlings are produced by a non-profit organization in the Finnish town of Salo that supports employment of people with special needs.

Bosch products also contribute to the conservation of resources through their durability. Take, for instance, the AdvancedDrill 18 screwdriver from Bosch Power Tools, which is equipped with a brushless motor for a significantly longer service life and greater power. More than that, the motor features electronic control, lower heat dissipation, contactless and non-wear operation, and optimal operating efficiency. The cordless screwdriver is operated with an 18 V POWER FOR ALL battery that can also be used in the tools of our alliance partners. Founded in 2020, the “Power for All Alliance” was one of the first cross-brand rechargeable battery alliances for home products.

Conserving resources in agriculture through smart farming

With its digital solutions, Bosch is also helping to conserve resources in farming. A joint venture between Bosch and BASF Digital Farming, Bosch BASF Smart Farming GmbH is working on a system for target-based application of fertilizers and intelligent seed placement. The joint efforts have produced innovative systems such as the Smart Spraying Solution, which can reduce the amount of herbicides applied in the field by up to 70 percent.¹³ Using digital intelligence to optimize planting and fertilizer use can increase crop yields by up to 13 percent – depending on the field and environmental conditions.¹⁴ This reduces the amount of resources used and it also helps to protect the soil from over-fertilization and other effects that can harm the ecological balance.

¹³ Field trials in 2020 showed that, when used correctly, the Smart Spraying Solution can help reduce herbicide use by up to 70 percent. Savings vary widely and depend on the weed pressure of each field. The results are based on real field trials.

¹⁴ Based on field trials in Brazil, 2020. The results vary depending on the field and conditions for growth.

With the goal of utilizing the limited amount of land available for farming as sustainably as possible, while also minimizing the use of resources to thereby ensure long-term food security for a growing global population, Bosch is also active in the field of research. Take, for example, the HoPla project for research into high-performance sensors for smart herbicide treatment, in which Bosch is participating alongside various other companies and the University of Hohenheim. The objective of the project is to research and enhance holistic system solutions for needs-based crop protection. Efforts are based on new AI algorithms as well as improved optical sensor systems and powerful processors. This will permit an even faster detection of weeds as the field sprayer passes over them than with current solutions. By the same token, it will be possible to identify fine grains such as wheat and barley both efficiently and cost-effectively. In addition, it will massively lower the costs involved in identifying weeds and enable more targeted treatment with herbicides, thereby further optimizing their use. The project started in September 2022 and is scheduled to run until August 2025. It is supported by the German Federal Ministry of Education and Research (BMBF) as part of its program “Photonics for a digitally connected world – rapid optical control of dynamic processes.”

Contribution to global health and pandemic response

Bosch Healthcare Solutions develops products and services that improve people’s health and quality of life. Quick and simple diagnostics combined with convenient regular checks of the values measured afford patients greater peace of mind, flexibility, and autonomy in their daily lives. With this in mind, Bosch Healthcare Solutions is focusing on the areas of laboratory diagnostics and therapy management.

The universal platform Vivalytic for molecular diagnostics enables fully automated analysis of a variety of samples. This way, infectious diseases can be diagnosed more easily and above all quicker. Vivalytic is thus also making an important contribution in the fight against the Covid-19 pandemic. It takes just 39 minutes for Vivalytic to analyze nose or throat swabs in a fully automated test and directly deliver unambiguous results. The PCR rapid test detects the virus SARS-CoV-2 with an accuracy of over 95 percent. This means the samples do not need to be taken to laboratories, minimizing the time it takes to get the test results.

In the field of therapy management, Bosch Healthcare Solutions develops fast and easy-to-use measuring devices for doctors' surgeries and for home use – thus establishing an important prerequisite for optimally treating and monitoring the progress of asthmatic conditions. The Vivatmo me FeNO measuring device, for example, enables patients straightforward daily home monitoring of such chronic respiratory diseases. In doctors' practices and clinics, the new generation of the Vivatmo pro exhaled breath measuring device makes its application easier for physicians and patients – with new functionalities, considerably shortened waiting times between measurements, and improved user-friendliness.

Tech Compass 2023: Majority considers technology decisive in combating climate change

How can humanity cover its energy needs in a way that is sustainable and affordable? This is a question that people are concerned about – and many see technology as key to overcoming the challenges that climate change poses. These are insights gained from the [Bosch Tech Compass 2023](#), a representative survey carried out in seven countries in 2022 on behalf of Bosch.

With respect to the economic potential that sustainable solutions and products offer, respondents were in agreement: a total of 82 percent share the opinion that the more companies invest in sustainable technologies, the more success in business they will have in future. This conviction is most widespread in Brazil and India (87 percent in each case) and is comparatively least pronounced in the United States (73 percent).

Even if a turnaround toward renewable energies has been initiated in many parts of the world, people are not yet ready to completely write off nuclear power and fossil fuels for energy generation. On aggregate, 62 percent of respondents would like to see support for solar power and 44 percent are in favor of promoting wind energy technologies.

That said, the Tech Compass also revealed that in a world struggling with uncertainties, the level of trust placed in technology has increased compared with the previous year. Worldwide, 75 percent of respondents meanwhile agree that technological progress can make the world a better place (2022: 72 percent).¹⁵ A total of 83 percent of respondents also consider technology to be key to combating climate change (2022: 76 percent).¹⁵



of respondents think that focusing on sustainability leads to economic success.

¹⁵ To facilitate readability and interpretation, the global average values for 2023 based on seven countries are compared with the global average values for 2022 based on five countries. A calculation of the global average value for 2023 based on the same five countries as in the Bosch Tech Compass 2022 produced equivalent results.

2.3 Product responsibility

Our products stand for safety, quality, and reliability. In developing and manufacturing these products and in rendering services, we stay true to our “Invented for life” mission statement beyond compliance with the law.

Our quality policy

Quality guides our actions at Bosch and is at the core of our brand promise. Our products offer the utmost quality and reliability – regardless of where they are produced or used. Binding quality principles apply throughout the Bosch Group. Quality management is coordinated and steered by the corporate department for quality. Officers at the company locations are responsible for operational implementation. The majority of our development and manufacturing sites have a quality management system certified according to ISO 9001. All sites that manufacture vehicle components are certified according to IATF 16949 standard, which is based on ISO 9001 and was developed by the International Automotive Task Force (IATF).

Due to our wide-ranging product portfolio, we apply a large number of different laws and regulations governing quality assurance. We take these requirements on board already in the product development process, and we have defined various policies for that purpose. Applicable throughout the company, the Quality Policy and Quality Management guideline plays a central role to this end. It creates a binding framework for setting quality objectives and commits the organization to continuously work to improve the quality management system. Environmental aspects are taken into account in the product development process as part of a checklist that takes account of the Design for Environment principle.

Product safety

The safety of our products has utmost priority and is a key element of our quality policy. A central directive applicable worldwide regulates the corresponding responsibilities. In addition, it sets out rules for the delivery of safe products. At every stage of the product development process, attention is paid to product safety. Starting with product development, we attach great importance to product safety and satisfy relevant standards, such as ISO 12100 for safety of machinery, ISO 26262 for the functional safety of systems in passenger vehicles, or IEC 61508 for the functional safety of electrical and electronic systems. Products are not released for series production until all safety aspects have been fully clarified. In addition, compliance with pertinent specifications must be established and demonstrated with appropriate tests.

For safety-relevant products, all operating units are required to assign adequate resources to conducting analytics covering the end-to-end product life cycle. Each operating unit and all associates are responsible within the scope of their work for ensuring that only safe products leave the factory. Comprehensive training establishes the preconditions for ensuring that everyone in the company is committed to, and puts into practice, Bosch's quality standards. For associates whose activities directly influence product quality, our compliance training also includes Web-based modules on product safety and product liability, which are part of the basic compliance training that must be renewed every two to three years. Since its release in 2021, some 164,000 associates have taken part in the current training program. To deepen their knowledge, the product safety and product liability officers of the various divisions have access to more in-depth classroom and online training courses.

Information and documentation requirements

We consider it a matter of course to provide specific and up-to-date information on our wide range of products. We also satisfy the corresponding information and documentation obligations. User manuals are designed to ensure adequate safety when the product is used as intended and in a foreseeable manner. At a minimum, manuals contain a description of the product's intended and foreseeable use, its operating environment, as well as the limits and restrictions on use. In addition, they contain warnings of possible hazards and safety risks, especially if these are not directly and unambiguously recognizable by the user. Where necessary, we help users so they are able to use the product correctly and operate it safely. For example, Bosch Automotive Aftermarket offers learning courses for workshop staff, while BSH and Power Tools concentrate on consumers. Other divisions – Bosch Rexroth or Thermotechnology, for instance – also offer similar services. Safety data sheets are available for handling substances and mixtures; in the Automotive and Power Tools divisions, these are also available online.

Use of substances of concern

At Bosch, substances of concern (SoC) are all substances in production aids or products that are prohibited by law, classified as prohibited under customer agreements or pursuant to in-house requirements, or are subject to declaration duties. We are continuously working to identify SoCs in our products and processes, adopt substitutes, and reduce or altogether avoid hazardous substances in the long term wherever possible.

For example, where technically feasible, we endeavor to dispense with substances on the EU's REACH candidate list in new developments. Our mandatory internal Design for Environment standard defines the requirements for handling SoC in the product development process. If SoC are unavoidable in the production process for technical reasons, hazard assessments are carried out to ensure suitable protective measures are taken for safe handling of such substances.

Systematic management of data on materials

At present, there are more than 15,000 statutory, industry-specific, and customer-specific regulations worldwide governing materials restrictions and declaration duties, which are continually changing and becoming more extensive. Around 1,800 of these regulations are currently relevant for Bosch worldwide, including the European Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) or the Toxic Substances Control Act (TSCA) in the United States. The resulting requirements are monitored centrally as well as at division level so that any adjustment measures needed in response to any changes can be initiated in a timely manner.

We have built a central IT system – MaCS (Material Data Management for Compliance and Sustainability) – to efficiently manage materials prohibitions and restrictions, in particular for products. The Sustainability and EHS corporate department is responsible for the technical coordination and continuous development of the IT system and processes. An external specialist service provider also supports the permanent process of updating and managing the data in MaCS. All substances of concern are rendered in the MaCS system using distinct identifiers such as Chemical Abstracts Service (CAS)

numbers. This approach takes into account the intended use and the respective sales market as well as information on materials restrictions or defined limits. MaCS currently covers more than 22,500 identification attributes. Algorithms that map the relevant materials restrictions and declaration regulations automate the process of matching bills of materials and associated supplier declarations against the pertinent requirements. To enable checks, MaCS maps the individual components of a product in the form of a bill of materials.

It also includes the supplier declarations that are made available to us via systems such as the International Material Data System (IMDS), Compliance Data Exchange (CDX), and Bosch’s declaration format. These indicate for individual components the substances contained and their concentration levels. By linking bills of materials and supplier declarations, it is possible to make accurate statements about the substances contained in each component.

Publicly available, Bosch’s standard N 2580-1 regulates the nature and scope of suppliers’ declaration duties vis-à-vis Bosch with regard to substances of concern in materials. It is an integral part of the materials specifications Bosch contractually agrees with its suppliers. Applicable throughout the company, the requirements are based on the relevant legal regulations, although

they are significantly stricter in some cases. Industry standards such as the Global Automotive Declarable Substance List (GADSL) are also taken into account.

We require our suppliers worldwide to apply the N 2580-1 standard and confirm this via a defined process. An expert group with representatives from all operating units reviews and updates the standard’s content every six months. In addition, our Group Policy for Conflict Raw Materials regulates the handling of conflict minerals (also see the [“Supply chain | Social and environmental requirements for suppliers”](#) section).

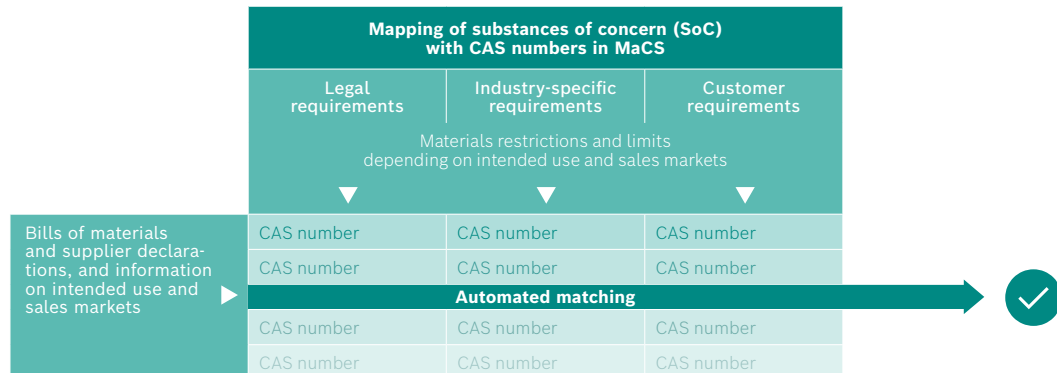
Nanotechnology

Bosch is either not active in the areas of application in which nanotechnology is used in quantities of relevance or it uses alternative substances and technologies. The only exceptions are a small number of applications in our household appliances – however, with nanoparticles firmly bound in the product in those cases. Even though we do not need to take action in this respect at present, we permanently monitor the related discussions and analyses, for example of the European Chemicals Agency (ECHA).

14 | MaCS – Material Data Management for Compliance and Sustainability

Over 15,000 legal as well as industry- and customer-specific regulations on materials restrictions and declaration duties worldwide

Some 1,800 regulations are currently of relevance for Bosch worldwide



Cybersecurity, information security, and data protection

Cybersecurity, information security, and data protection are elementary components of our quality standards at Bosch. We see trust in the security of systems and data as well as their resilience to attacks involving manipulation as a crucial determinant of success in realizing our digitalization strategy. This also means managing user data in a responsible manner – in accordance with the values that our company has always upheld.

A cross-functional steering committee, which includes the Data Protection Officer, the Chief Information Security Officer, the Chief Cyber Security Officer, and the Chief Digital Officer, reports to the board of management twice a year at a meeting specifically convened for that purpose. Furthermore, we have set up a separate corporate office that is responsible for the cybersecurity of our products. A clearly documented process as well as a growing network of experts ensure that cybersecurity and data protection are widely integrated in the development of our products.

Bosch uses a combined information and data protection management system that is continuously maintained and updated. The system is aligned with international standards, such as ISO 20000, and also takes account of legal requirements such as those pursuant to the General Data Protection Regulation (GDPR).

Related guidelines and central directives cover all relevant areas of cybersecurity, information security, and data protection at Bosch. Binding instructions relating to cybersecurity are contained in the two central directives “Cyber Security Management System” and “IT security,” which govern the development of products and services as well as the operation of servers and other IT systems throughout the group. In addition, the “Information security and data protection” group guideline, which is binding for all associates, defines principles, responsibilities, and tasks relating to company information security and data protection.

Digital trust – we can't do without it

In striving for technological progress, Bosch has in all of its activities always focused its attention on trust and responsibility. This is true in the physical world and to an even greater extent in the digital sphere, where mutual trust is the basic prerequisite for successfully advancing digitalization and connectivity. With this in mind, Bosch established the Digital Trust Forum in 2019. In 2022, it merged with the Charter of Trust founded by Siemens. The international initiative has set itself the objective of fundamentally increasing the trust placed in digital solutions. Above all, we are working with our partners to define trust-building guidelines and possible certification and conformity labels. These will be used as a basis for AI products that satisfy specific criteria to receive a corresponding seal.

At Bosch, digital trust involves transferring the “traditional” quality and value proposition to the digital world. In this – highly dynamic and permanently evolving – sphere, too, we want to ensure that our products are trustworthy and reliable for our customers. This includes handling data in a responsible and transparent way. In an effort to ensure that AI is used responsibly, we developed a code of our own back in 2019. This groundwork is now being drawn on in developing a European trust seal for AI products that also satisfies the requirements of the planned European AI Act.

Data protection experts are involved in product development at an early stage so they can support project management and the development function in assessing and implementing data protection requirements. They make their expertise available to all units and receive continuous training. Corporate policies govern processes, roles, and qualifications. They are checked regularly to identify and address any deviations. All regulations are revised and updated regularly.

Despite all precautionary measures, however, there is no such thing as a foolproof security system in information technology. That is why we have established the Bosch Product Security Incident Response Team (PSIRT). The team serves as a central point of contact for security researchers, partners, or customers should they detect any vulnerabilities in our products. Security gaps can also be notified through our reporting system (see the [“Company | Corporate governance and compliance”](#) section). When a solution has been found, we make it transparent online for all our customers.

Customer satisfaction

The trust of our customers in our services and in the quality of our products is our highest priority. The diverse customer services offered by our divisions range from knowledge databases with interactive learning programs as well as repair and maintenance services through to a service portal for energy-related refurbishment and advice on subsidy rates and climate action programs relating to heating systems (also see the [“Management approach | Circular economy strategy”](#) section). At the same time, we make use of all opportunities to engage in direct and indirect dialogue with customers,

for example through our service hotlines, by e-mail, or in direct talks. In fact, we view our customers’ feedback as a reliable yardstick against which we can measure our actions.

In the markets where we generate the greatest sales revenue, we ascertain Bosch’s corporate reputation every two years. In 2021, the survey covered 19 countries and included approximately 11,400 interviews in total. On a scale from 0 to 100, Bosch’s reputation value is around 80 points, a good level across all markets. The results of this study form the basis for deriving appropriate measures for the company as a whole as well as at national level. The centrally managed communication campaign #LikeABosch, for example, has received acclaim worldwide and won many international awards. It positions the company as a leading provider of connected solutions and humorously highlights the company’s services and achievements – also relating to sustainability.

Marketing and sponsorship

When we market our products, we refer to our Bosch values for guidance as well as four central principles: value cultural diversity, make reliable and credible statements, be fair, and respect national rules. In addition, we are committed to maintaining a quality level in all our marketing activities that matches our products’ performance standards. In this respect, advertising can be humorous, creative, and competitive, but not unprofessional or untrue. To ensure that these principles are applied and messages are consistent across the complete media mix worldwide, overarching marketing communication is organized centrally and closely coordinated with the regional organizations and divisions. Sales-oriented product communication is mostly organized locally by the respective divisions, but it also follows the same principles.

Our sponsorship activities mainly serve promotional purposes, including strengthening our brand. They are governed by a central directive, which was revised in 2020 and combined with other brand-related regulations. These regulations stipulate, among other things, that sponsorship measures must be integrated into an overall communications strategy or concept. The objective of measures also has to be clearly defined and focused on increasing brand recognition and reputation, promoting sales, or attracting qualified talent. Corporate headquarters must be consulted for sponsorship measures in excess of 30,000 euros.

Motor sports is one of the focal points of our sponsorship activities: since the end of 2018, Bosch has been the official partner of the ABB FIA Formula E Championship, the world's first racing series for fully electric formula racing cars. Since 2020, Bosch has also been technology partner and sponsor of the Japanese Super GT500 series.

Award-winning customer service

Our commitment is regularly recognized by external, independent institutions. In the reporting period, BSH's customer support for the Bosch and Siemens brands was acclaimed as "service champion in the household appliances industry" for the tenth consecutive time in Germany's largest service ranking. The ranking is compiled annually by Service Value GmbH in cooperation with Goethe University Frankfurt am Main and daily newspaper Die Welt. Bosch Power Tools also boasts an excellent ranking time and again, and can claim to be the "service champion" of tools manufacturers for the past nine years.

Supply chain



Our ambition: With a shared understanding of ethical and sustainable action, we want to find solutions to the global social and ecological challenges of our time together with our business partners.



Compliance with social and environmental standards

- ▶ Introduction of a new management system and founding of a human rights committee.



Sustainability as a collective task

- ▶ Four methods established for assessing suppliers' sustainability performance.



Asia Pacific Supplier Awards

- ▶ Three suppliers recognized for their climate action activities and measures to strengthen a closed-loop economy.

3.1 Management approach

We firmly believe that robust and at the same time sustainable supply chains are the only basis for companies to survive in global competition – and thus contribute to society’s prosperity. Sustainability is a key factor for companies’ future viability. Bosch is continuously working to respond with even greater agility, speed, and transparency to ever more specific customer wishes – while satisfying the most exacting quality standards. It is critical in this respect to enable innovation, quality, and excellence throughout the supply chain end to end while achieving globally competitive pricing for our customers. To attain supply chain excellence, Bosch believes in close and trust-based cooperation between everybody involved, across company and national borders.

For Bosch, the priority is to increase the company’s resilience while driving forward its transformation – through supply chains in which supplier networks foster competition and innovation. In creating these, sustainability and compliance are critical to success. Together with our suppliers, we want to mitigate risks, avoid bottlenecks, and thereby increase the economic capacity of all parties involved. To this end, we maintain supplier relationships at global, regional, and local level.

The strategic importance for our company of sustainable supply chains is also evident in our vision for sustainability. Respect for human rights is central here, along with occupational health and safety, environmental protection, and climate action. Based on this, we also support the UN Guiding Principles on Business and Human Rights, as well as the German Federal Government’s National Action Plan (NAP) for Human Rights.

Bosch has supply relationships in around 60 countries. From its roughly 35,400 suppliers worldwide in total, the Bosch Group procured materials and services worth 50.4 billion euros in 2022 (previous year: 43.4 billion

euros). A large share of the resources used in our supply chain are purchased components – mostly semi-finished products or finished components. We purchase only a small proportion directly as raw material.

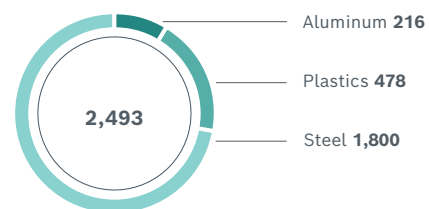
Purchasing and logistics organization

Worldwide, Bosch employs some 10,400 associates in purchasing and around 22,800 associates in logistics. They are involved in the entire product development process – from the innovation phase to the start of production right through to aftermarket supplies – and they work worldwide to secure Bosch’s supply chain excellence. The Supply Chain Management corporate department coordinates internal and external requirements, establishes group-wide standards, and monitors their compliance. Overall responsibility rests with the member responsible for purchasing and logistics on Robert Bosch GmbH’s board of management.

Manufacturing materials are purchased based on a decentralized organization with responsibility awarded to the divisions. Most materials and goods that are not directly related to products are procured centrally by indirect purchasing.

15 | Key materials used

Bosch Group 2022, in 1,000 metric tons



Purchasing managers are responsible for ensuring compliance with sustainability requirements, which are communicated already at the supplier selection stage. Purchasing departments commission an internal service organization, among others, to conduct a compliance review. The latter carries out sustainability-related assessments and also supports, if necessary, any escalation processes that might be required (also see the "[Supplier assessments](#)" section).

Clear rules for responsible supply chain management

Based on group-wide guidelines, we ensure risk management and structured sustainability activities in relation to our supply chain. In 2021, we issued a new central directive that describes procedures already in place and supplements them with new content, thus laying down an even more comprehensive basis for implementing corporate social responsibility and sustainability in Bosch's supply chains. As soon as the rules became effective in 2022, the divisions implemented the corresponding requirements in their processes. Based on selected key performance indicators, internal targets will be agreed with the divisions for continuous improvement in 2023.

In this way, we take into account the increasing importance of robust and sustainably designed supply chains for Bosch. The directive regulates in particular committing suppliers to sustainability requirements, introduces a mandatory risk analysis of possible non-compliance with social or environmental standards in supply chains, and requires divisions to define appropriate preventive and remedial measures on this basis. In addition, it defines the standard for internal reporting.

Purchasing departments verify supplier compliance with the requirements taking a risk-based approach. In addition, they ensure the handling of complaints and any indications of potential non-compliance. If we find that our sustainability requirements are not being complied with, the purchasing departments investigate the matter and seek to remedy it without delay together with the supplier and take appropriate precautions for the future.

16 | Responsible supply chain management at Bosch



3.2 Social and environmental requirements for suppliers



[Code of Conduct for Business Partners of the Bosch Group](#)

[Code of Conduct for Suppliers of the BSH Group](#)

The Basic Principles of Social Responsibility at Bosch and the ten basic principles of the United Nations' Global Compact are the foundation for our understanding of sustainability. On this basis, in our Code of Conduct for Business Partners we require that our suppliers comply with the generally applicable labor standards as laid down in the Fundamental Principles of the International Labour Organization (ILO). This includes, among other things, renouncing forced labor and child labor, not permitting any form of discrimination, as well as guaranteeing occupational health and safety, creating fair working conditions, and ensuring freedom of association. With respect to the treatment of workers, we refer to local law. For instance, minimum wages must be paid in accordance with applicable statutory requirements.

In addition, suppliers are required to take appropriate measures to ensure health and safety in the workplace. While working on Bosch premises, they are additionally bound to Bosch's safety and accident prevention regulations. We also require our suppliers to protect the environment and conserve resources – and expect them to pass our requirements on to their own suppliers. If there is any suspicion of non-compliance, the supplier is required to resolve the matter.

To further specify the requirements relating to environmental and social standards, we published an update of the Code of Conduct for Business Partners in 2022 (see Fig. 17). Referenced in the Terms and Conditions of Purchase, the Code is generally made an integral contractual element and is sent to all suppliers at the beginning of the business relationship. BSH Hausgeräte GmbH has developed its own Code of Conduct for Suppliers. Both codes are publicly available on the Internet.

Starting in mid-2022, we have been asking our current direct materials suppliers for active confirmation of the Bosch Group's new Code of Conduct. By year-end, 47 percent of suppliers contacted had already acknowledged the new Code of Conduct. Regarding indirect materials, the Code of Conduct is acknowledged each time a contract is awarded. The confirmation rate is currently 97 percent.

Our business partners are required to conserve resources and reduce the impact of their activities on the environment to a minimum. We expect our suppliers to set up and continuously refine, within reason, an environmental management system certified to ISO 14001. The standard requires systematic environmental protection and continuous improvement and is a module in Bosch's efforts to ensure the sustainability performance of suppliers.

17 | Environmental and social standards in the Code of Conduct for Business Partners

Environmental standards:

- ▶ Environmental protection
- ▶ Climate action
- ▶ Water consumption and quality
- ▶ Air and soil quality
- ▶ Materials and waste management
- ▶ Substances of concern

Social standards:

- ▶ Human rights
- ▶ Prohibition of child and forced labor
- ▶ Freedom of association
- ▶ Equal opportunities and fair conduct
- ▶ Fair working conditions including minimum wages and working hours
- ▶ Occupational health and safety
- ▶ Protection against eviction and deprivation of land
- ▶ Use of private or public security forces

In 2022, around 62 percent of our relevant direct materials suppliers (without BSH Hausgeräte GmbH) had such a certificate. Suppliers without manufacturing operations are not required to adopt an environmental management system of their own, but they do have to implement corresponding measures. With regard to wastewater treatment and hazardous waste, our business partners must also comply with legal requirements.

Reducing upstream and downstream CO₂ emissions

As part of our climate action activities, we also keep an eye on emissions in the upstream and downstream stages of our value chain (scope 3¹⁶). Our goal is to cut such CO₂ emissions¹⁷ by 15 percent in absolute terms by 2030 compared with the baseline year 2018. Although a large part of these emissions are produced during the use of products sold, our suppliers and business partners play a decisive role. That is why we encourage them to take climate action and together draw up specific agreements to reach the targets set. We also take greater account of carbon emissions and our suppliers' climate action activities when awarding tenders.

At the same time, in logistics, we aim to reduce CO₂ emitted during the transport of goods. We mainly seek to reduce air cargo, optimize freight, and consistently apply the total cost of ownership (TCO) approach, which factors in key cost components such as freight costs. The proximity of potential suppliers to our sites is therefore an important selection criterion to keep CO₂ emissions as low as possible (see the "[Environment | Climate action and energy](#)" section).

¹⁶ This report uses scopes 1, 2, and 3 in accordance with the [Greenhouse Gas Protocol Corporate Accounting and Reporting Standard](#).

¹⁷ To enable comparability between the climate impact of the various greenhouse gases and substances of relevance for the climate, emissions are presented in CO₂ equivalents. In this report, we have taken into account the effects of CO₂ and of other greenhouse gases, as well as climate-relevant substances, to the extent that these are of relevance for the analysis. For ease of reading, we use the terms CO₂ and CO₂ equivalents synonymously.

Compliance with social and environmental standards

The German Act on Corporate Due Diligence Obligations in Supply Chains (*Lieferkettensorgfaltspflichtengesetz*) entered into force on January 1, 2023. It is intended to improve the respect of human rights internationally by defining requirements for a company's responsible management of supply chains and its own business operations.

New management system established

Bosch has considered in-depth how to implement the new requirements, has adapted existing processes and responsibilities, and established a new management system to meet its human rights and environmental due diligence obligations. The system is based on a group guideline that also defines the related responsibilities. Overall responsibility for human rights rests with the Sustainability and EHS corporate department. Each corporate and specialist department is responsible for the specific due diligence requirements relating to its own operations, and the purchasing function is responsible for the supply chain. The Corporate Sustainability Board, the highest expert committee for sustainability at Bosch, also regularly focuses on human rights.

The newly founded human rights committee, whose members include the heads of the relevant corporate departments, monitors and assesses the effectiveness of the management system and reports to the group's board of management. The committee also evaluates and prioritizes decisions and measures relating to human rights and environmental risks in the supply chain. Having emerged from the previous steering committee for implementing the German Act on Corporate Due Diligence Obligations in Supply Chains, the committee will meet for the first time in 2023.

Extensive risk analysis prepared

In preparation for the German Act on Corporate Due Diligence Obligations in Supply Chains entering into effect, Bosch developed a comprehensive risk analysis concept in order to satisfy its due diligence requirements relating to human rights and environmental matters in 2022.

Based on the risk categories set out in the Act, standard assessment criteria and measures were defined in order to identify and consistently assess potential risks in the supply chain as well as in the company's own business operations. In the assessment, suppliers are analyzed at location level.

The risk analysis focuses on suppliers in countries with a heightened risk. The country risks are determined using public, internationally recognized indices. Where information is available on the supplier's sustainability performance – in the form of good audit results, for example, acceptance of the Code of Conduct for Business Partners, or external certification – this has a positive effect on the supplier's risk assessment.

As of 2023, the risk analysis will be performed annually and the results reported regularly. The aim is to take, or further expand, targeted measures in a structured manner based on standardized findings. This will also be the focal point of our activities in 2023.

Grievance mechanism refined

In 2022, we also updated our grievance mechanism, added further language versions to the reporting system, and further simplified the procedure for submitting reports concerning our suppliers. If possible misconduct is suspected – such as a violation of our sustainability standards – associates as well as business partners and other third parties can submit a report through our reporting system. The compliance organization investigates all reports without delay and involves other experts in individual cases (also see the [“Company | Corporate governance and compliance”](#) section). Our suppliers are made aware of this reporting system in the Code of Conduct for Business Partners, among other means. By acknowledging the Code of Conduct, they also agree to inform their employees accordingly.

We systematically follow up any tip-offs concerning our suppliers. In the event of deviations, the same procedures apply as for irregularities identified in the course of inspections. If a supplier is in breach of our sustainability requirements, we investigate the matter and seek to remedy it without delay together with the supplier and take appropriate precautions for the future. The supplier defines measures with the involvement of the purchasing function responsible, and we track and monitor their implementation – also by rigorously requesting documentation or performing reassessments on-site. If the measures are unsuccessful or the supplier repeatedly breaches our requirements or legal provisions, Bosch reserves the right to terminate the business relationship.

Reducing risks inherent in raw materials extraction

Given the particularly high risk associated with the field of raw materials extraction from an environmental and social perspective, we set this as one of the initial priorities of our activities in 2020. A detailed analysis of raw materials identified 15 high-risk raw materials that Bosch uses. To mitigate risks arising from the procurement of products and semi-finished products which, according to our analyses, contain particularly high-risk raw materials, a group-wide concept was developed. This serves as a basis for successively implementing appropriate risk mitigation programs managed by the Supply Chain Management and Sustainability and EHS corporate departments, and the divisions. The programs are implemented following a defined procedure that each raw material runs through step by step (see Fig. 18).

In 2022 group-wide activities were already initiated to identify, assess, and mitigate risks relating to cobalt and rare earth elements. In parallel, the activities already underway on what are known as conflict minerals – cassiterite (tin), coltan (tantalum), tungsten, and gold (3TG) – are being intensified.

Conflict minerals policy

Bosch only purchases few raw materials from mineral-processing companies. However, Bosch products such as electronic components may contain conflict minerals. That is why we issued the Bosch Group Policy for Conflict Raw Materials back in 2019 that describes our approach to the conflict minerals cassiterite (tin), coltan (tantalum), tungsten, and gold. It is anchored in the Bosch Terms and Conditions of Purchase, in the agreement on quality and corporate social responsibility, and in our Code of Conduct for Business Partners, making it contractually binding for our suppliers. For other raw materials that could have adverse effects on people and the environment, we regularly review the risk exposure and counteract risks, taking into account OECD guidelines and the legal parameters.

Bosch participates in conflict minerals reporting and in cobalt reporting in accordance with the Responsible Minerals Initiative (RMI). In addition, we are working to ensure that suppliers of materials containing conflict minerals or cobalt have the smelters in their supply chains certified by RMI.

Certification rates for tantalum, tungsten, and tin decreased in line with the current RMI trend in 2022. Currently, 97 percent of smelters are certified to the RMI standard in the case of tantalum, more than 87 percent for tungsten, and more than 80 percent for tin. At 60 percent, the share for gold was also lower than in the previous year. Following the pilot phase for cobalt reporting in 2021, we surveyed additional suppliers about the origin of cobalt in 2022. Based on the responses, the certification rate is 69 percent.

With respect to BSH Hausgeräte GmbH's suppliers, the certification rate among smelters is 80 percent for tantalum, 79 percent for tungsten, and just under 69 percent for tin. A proportion of 64 percent of gold smelters are certified, for cobalt the rate is 74 percent.

On request, Bosch makes available the RMI's Conflict Minerals Reporting Template, which is recognized by authorities such as the U.S. Securities and Exchange Commission. It can be obtained via established platforms such as iPoint and HP CDX, or it can be sent to individual requesting parties.

In 2022, our activities relating to rare earth elements were aimed above all at creating transparency because, unlike for 3TG and cobalt, there are no international standards and certifications for this group of raw materials that we could use. This fact will also determine our activities to mitigate related risks in 2023.

18 | Procedure to reduce risks

15 high-risk raw materials		
3TG	Natural rubber	Manganese
Aluminum	Cobalt	Nickel
Lead	Copper	Platinum
Graphite	Lithium	Rare earth elements

1. Identify affected suppliers
↓
2. Obtain supplier acceptance of Code of Conduct for Business Partners
↓
3. Create transparency on risks in the supply chain
↓
4. Identify main risks
↓
5. Introduce measures

In addition to the raw materials listed, BSH Hausgeräte GmbH has identified mica as a high-risk raw material. The group of silicate minerals are used, for example, as electrical or thermal insulators.

Involvement in associations

Bosch is active in the Sector Dialogue Automotive Industry "Respecting human rights along global supply and value chains of Germany's automotive industry" of the German Federal Ministry of Labor and Social Affairs, focusing on the responsible sourcing of lithium and on the establishment of a cross-company grievance mechanism in the automotive industry.

At a cross-company level, we are also involved in the econsense association (Forum Nachhaltige Entwicklung der Deutschen Wirtschaft e. V. – Forum for Sustainable Development of German Business). Within the forum's "Human rights and supply chain" cluster, we work together with other partners on how to responsibly design global supply chains.

3.3 Supplier assessments

Responsible supplier management hinges on the establishment of transparency about compliance with social and environmental standards. This enables us to provide our suppliers around the world with targeted support in continuously raising their sustainability performance. Bosch aims to achieve a high level of sustainability and compliance in its supplier network using contract clauses, sustainability-related reviews, and resulting specific packages of measures. On-site inspections are an essential component in the assessment of our suppliers.

Minimum standards in supplier selection

We take into account sustainability aspects at an early stage when selecting potential suppliers in accordance with our group-wide guidelines. These stipulate that all new suppliers must be screened before entering into a business relationship. The corresponding timing and the methodology used are determined by the respective divisions. As part of the sanctioned party list screening, a check is additionally carried out prior to the conclusion of a contract to determine whether potential business partners are included in sanction lists or affected by embargo regulations.

Current supplier relationships are likewise audited. The selection of suppliers for review is both risk-based and event-driven. Since 2017, moreover, an automated IT-based compliance check is run to verify whether business partners are on external compliance lists and identify any potential violation of national or international legislation or stricter standards. If any doubt remains after the check is completed, the compliance officer initiates suitable measures together with the purchasing function. These can range from talks with the business partners through to withdrawal from the business relationship (also see the "[Company | Corporate governance and compliance](#)" section).

New contracts are awarded on the basis of criteria such as quality, costs, and past reliability of supply. Current suppliers only receive new orders if they are appropriately ranked. Furthermore, they must not be in violation of sustainability requirements. Active suppliers found to be engaged in unlawful conduct or whose sustainability performance is deemed inadequate are not awarded any further contracts. The escalation process is identical for all criteria.

Assessment and monitoring

We apply a risk-based approach in our regular assessment of our suppliers' sustainability performance. There are four methods that we use depending on the prevailing conditions and the specific risk situation. Self-declarations by suppliers and third-party audits are used to complement the quick scans and drill-deep assessments that Bosch performs itself.

On aggregate, we assessed around 66 percent of our relevant direct materials suppliers (without BSH Hausgeräte GmbH) using the various methods in 2022. We also assessed 89 percent of our focus suppliers for indirect materials who are particularly relevant in terms of country risk and field of materials risk. Most of these were on-site assessments.

Self-declarations

Self-declarations are eligible as a means of checking suppliers where the risk is assumed to be low and there have been no issues in the past. This method is accepted at Bosch, if the assessed risk of the group of suppliers or of the material group is queried and trustworthy documentation is provided to substantiate that the questions have been truthfully answered. To ensure uniform and high standards, new questionnaires must be approved by a group of experts before they are introduced.

Third-party audits

If there is a heightened risk for a supplier, third-party audits can be initiated for checking the supplier. Performed by external third parties, such audits must at a minimum satisfy the requirements of a drill-deep assessment in terms of content and process. Bosch therefore also advocates the development of relevant standards. For example, as a member of the German Association of the Automotive Industry (VDA), Bosch is also a founding member of the Responsible Supply Chain Initiative (RSCI), an association that emerged from VDA's "Sustainability in the supply chain" working group in 2021. Its goal is to help all players in the automotive sector establish a high level of sustainability in supply chains. Bosch is working together with manufacturers, suppliers, and other associations to develop and implement the RSCI standard, which is to be used in future as a global assessment standard at plant level in the automotive industry. Certified auditors will perform the corresponding audits. With the approval of the audited organizations, the results will be shared with customers so that improvements can be quickly integrated across the industry. Sharing and mutual recognition of findings effectively avoids costly duplicate audits. The operational phase started in 2022, with pilot audits and corresponding communication with direct suppliers.

Quick scans

Quick scans are based on a checklist of specific criteria relating to the environment, occupational health and safety, and human rights. Supplementary questionnaires are used for selected groups of materials, for example for visits to suppliers and sub-suppliers of lead-acid starter batteries or to logistics service providers. Quick scans are carried out by qualified Bosch associates from purchasing or quality functions, frequently as part of regular on-site visits to suppliers. If a supplier does not satisfy the minimum requirements of the quick scan, it is required to make improvements by implementing appropriate measures. Under the requirements, the supplier does not receive any new business until the review of the measures is successfully completed. The further development of suppliers who do not meet the requirements is followed up by means of regular discussions between the experts from the service unit and the purchasing units.

In 2022, we conducted some 3,300 quick scans, more than twice as many as the year before. By the end of 2022, around 20 suppliers still had to implement measures and, for example, install occupational safety equipment or improve environmental protection measures.

We have developed a dedicated app for the performance and documentation of the quick scans, which contains the checklist and background information. It facilitates the procedure and makes it possible to add images and comments directly. Available through the econsense association, other companies can also use the app: "econsense Supplier Sensor." It can be downloaded free of charge from the corresponding platforms for iOS and Android devices.

Drill-deep assessments

Drill-deep assessments are used mainly in potentially high-risk regions or industries, or when there are any specific indications of non-compliance. Assessments are not limited to suppliers who have had irregularities in the past or who have had a change of ownership. Any suppliers of strategic importance are also assessed. It is at the discretion of the purchasing management responsible for supporting the given suppliers to decide which supplier is assessed and when.

Irrespective of any other visits to suppliers, drill-deep assessments are carried out by internally licensed assessors and take between one and two days. They are announced so as to ensure that the required experts – such as environmental or safety officers – are on-site. Besides an in-depth assessment of the three areas covered by the quick scan – the environment, occupational health and safety, and human rights – they also comprise an analysis of working conditions and compliance management (see Fig. 19). The assessment covers the practical implementation as well as system-based requirements, such as in the form of guidelines. As a result, it is possible to assess an organization’s maturity level.

The findings of drill-deep assessments are documented in our supplier database. Improvement potential is recorded in a specific action plan. The plan supports the supplier as well as the auditor, who subsequently also accompanies and follows up the implementation of measures. Suppliers are expected to start implementing the measures immediately after the results are made available – and in some cases while the audit is still being performed. Suppliers who satisfy the requirements in general are still informed of any non-critical gaps and asked to take action.

Drill-deep assessments continue to be affected by repercussions of the global pandemic. Nevertheless, Bosch conducted around 100 drill-deep assessments at suppliers in the 2022 reporting year, 40 more than in the previous year. For the 2023 business year, we expect globally easing travel restrictions to allow us to carry out approximately as many drill-deep assessments as in pre-pandemic years (2019: 120 assessments).

19 | Selected in-scope content of drill-deep assessments



- ▶ Environmental management system
- ▶ Water treatment
- ▶ Waste management



- ▶ Handling of hazardous substances
- ▶ Hygiene
- ▶ Fire safety



- ▶ Employee representation
- ▶ Grievance mechanisms



- ▶ Observance of work hours
- ▶ Equal pay



- ▶ Violations of antitrust law
- ▶ Current legal disputes

3.4 Further developing and strengthening cooperation

Bosch pursues the goal of supporting its suppliers' systematic development in order to ensure that sustainability and quality requirements are met. The insights we have obtained from the various assessments show that suppliers meet our requirements for the most part. Improvements were required in individual cases, and Bosch expects these to be implemented. Priority areas in 2022 concerned aspects of environmental protection as well as occupational health and safety, such as preventing hazards in transport and high-bay warehousing processes.

Bosch is committed to partnerships that are conducive to long-term competitiveness for both sides. The suppliers that perform best are classified as preferred suppliers, a status that can be obtained by suppliers of both direct and indirect materials. Preferred suppliers are involved at an early stage in strategic initiatives and development projects and can adapt to the given requirements and grow in tandem with Bosch.

We also addressed sustainability at central purchasing events in 2022. The focus was once again on the activities of suppliers in the sphere of climate action and the German Act on Corporate Due Diligence Obligations in Supply Chains. At the Mobility Solutions business sector's supplier day, around 150 participants attended presentations and one-on-one talks to learn more about the topics of climate action and sustainability at Bosch as well as about the new RSCI assessment standard.

For the first time, BSH Hausgeräte GmbH in 2022 held the Supplier Green Day, to which it invited suppliers from the groups of materials that could make the largest contribution to cutting carbon emissions. The objective of the event was to develop a shared understanding of sustainability aspects and of the opportunities and challenges that a circular economy poses and to draw up suitable measures.

Bosch regularly presents awards to its best suppliers around the world in recognition of their performance. Held every two years, the next edition of the Bosch Global Supplier Award will be celebrated in 2023. Additionally, there are a large number of regional awards in recognition of the suppliers' performance. In 2022, for instance, three suppliers were chosen for the Asia Pacific Supplier Award on account of their climate action activities and measures to strengthen a closed-loop economy.

Training for further development

Our associates in the purchasing function receive Web-based as well as classroom training. In 2022, a new training video was published that will become a mandatory part of the learning curriculum for all purchasing associates in 2023. It provides an overview of the current strategy in purchasing and the requirements for suppliers in terms of climate action and human rights. Some 550 associates already took part in this training in 2022. Another training module that has been in place for several years already provides associates who manage suppliers not only with a general overview of topics, but also with information on the requirements expected from suppliers and the procedure for the quick scans in particular.

We also help our suppliers to meet our sustainability requirements. On the supplier platform, for example, they can access a webinar on sustainability, of which a revised version was published in 2022. This is supplemented as needed by specific offers for individual regions and suppliers. In this way, we want to encourage our suppliers even more to consider sustainability aspects and instruct them with respect to Bosch's requirements, including how to prepare for the corresponding assessments. To support this aim, the revised webinar includes, for example, a section on the typical stages of a drill-deep assessment. Since its publication mid-2022, the training course has been accessed more than 1,400 times.

Environment



Our ambition: We want to keep the environmental impact of our operations to a minimum. Our efforts are consistently geared to fostering climate action, using water sparingly, and establishing a reliable circular economy.



Energy efficiency

► By 2030, we want to substantially increase our energy efficiency and tap into a savings potential of 1.7 terawatt-hours (TWh) at our sites. **Status 2022:** 47 percent achieved.



Green electricity

► By 2030, we want green electricity to cover 100 percent of our global electricity demand. **Status 2022:** 95 percent achieved.



Reducing water withdrawal

► By 2025, we want to reduce water withdrawal at our sites affected by water scarcity by 25 percent. **Status 2022:** 24 percent achieved.

4.1 Management approach

Bosch wants to keep the environmental impact of its operations to a minimum. With a global environmental management system and specific targets, we are working to live up to this claim. With clear strategies, we want above all to advance climate action, save water particularly where it is scarce, and establish a reliable circular economy.

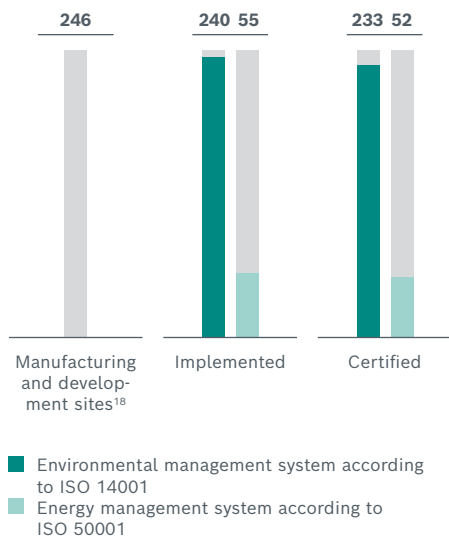
The Sustainability and EHS (environment, health, safety) corporate department develops the strategic framework for us to do this, coordinates measures, and accompanies their implementation. These efforts are grounded in an extensive database: in total, 98 percent of our relevant manufacturing and development sites¹⁸ operate an environmental management system. At most sites (97 percent), the system is certified according to the ISO 14001 standard. Similarly, 95 percent of the energy management systems used are certified according to ISO 50001 (also see Fig. 20). We intend to have all relevant sites operating with certified environmental management systems, a goal we had planned to achieve

in 2020. However, the Covid-19 pandemic meant that in the last two years it was not possible to perform the required audits as planned.

Bosch has clearly defined environmental criteria for the design, planning, and acquisition of buildings, machinery, and manufacturing equipment, for example with regard to energy efficiency, the use of renewable energy sources, and water consumption in regions with water scarcity. These criteria also serve as a decision-making basis when choosing new company locations.

As a globally operating supplier of technology, Bosch has to comply with a large number of laws and requirements relating to environmental protection. With the support of high-performance systems and processes, we ensure that specifications and standards are observed and that our activities comply with applicable law. Furthermore, regular briefings, workshops, and internal audits are held at the company locations on topics of relevance for the environment. Sites are selected based on risks or specific events or by reference to their size measured by headcount or their share in the group's consumption of resources. Audit findings are documented in Bosch's company-wide database. As a result, it is also possible to track corrective actions in the event of deviations. Any deviations detected, their causes, and improvement opportunities identified are taken into account in the following year's audit program. The results of the analyses are also considered in determining the content of our environmental protection campaigns. Corporate headquarters performs risk-based corporate audits at manufacturing sites on topics of relevance for the environment. The auditors have in-depth knowledge of ISO 19011 audit methodologies as well as external and internal EHS requirements. In 2022, the EHS audit team performed a total of 98 corporate audits.

20 | Management systems
Bosch Group 2022



¹⁸ Manufacturing and development sites with more than 50 associates that have been included in the scope of consolidation for more than three years.

Competence development and training

In Web-based trainings and classroom courses, we provide our associates with training to qualify them as experts in their field of technical competence. As part of internal competence management, we promote their methodological and technical competence, thereby creating the conditions for safe and environmentally compatible work processes. Accordingly, those responsible for environmental protection, for instance, are specifically familiarized with the relevant regulations and standards in training courses that have been standardized worldwide. Supplementary training modules deal with the specific requirements of individual operating units, sites, and regions. With this approach, we can take into account the cultural context or special quality requirements as well as local laws. In addition, workers of external companies and visitors to our locations also receive training and are briefed on health, safety, and environmental protection at Bosch. At the sites in Blai-chach, Germany, and Bidadi, India, we have for example interactive training stations that we use for this purpose.

Awards for environmental protection and climate action

Bosch's commitment is also recognized outside the company. For instance, in 2022, the non-governmental organization CDP (formerly: Carbon Disclosure Project) once again awarded our company the top A rating for its climate action activities.

The World Economic Forum selected the Bosch site in Changsha, China, as a lighthouse plant. In their jury statement, the experts made particular mention of how innovations are used in Changsha to get production in shape for the future, promote competitiveness and sustainability, and thus redefine industry benchmarks. Digital solutions and artificial intelligence have an essential role to play in this regard. They enable a smart logistics platform, intelligent maintenance management, and fully visualized digital shop floor management. At the same time, this creates the basis for substantial energy savings.

No fewer than three additional sites in China received the Green Manufacturing Award in 2022. In this way, the Ministry of Industry and Information Technology recognized their outstanding achievements in promoting sustainability.

In India, the Bosch sites in Bidadi and Nashik received awards from the Confederation of Indian Industry (CII). The Bidadi site impressed the jury in two categories and received national awards for energy efficiency and water management. Various measures to reduce energy consumption were implemented in Bidadi based on a smart energy management system. Moreover, artificial intelligence is used to help identify additional savings potential in an effort to reduce energy consumption even further and lower CO₂ emissions¹⁹ another notch. The site was also distinguished with an award for its smart water management, which encompasses the use of rain-water, among other measures.

At the Nashik site, too, the focus for many years has been on modernizing the water infrastructure in the plant's immediate neighborhood. Over the past three years alone, maintenance and renovation work on weirs and water storage facilities has secured water supplies for more than 200 families. In addition, more than 100 farmers now benefit from reliable crop irrigation and higher yields as a result. In the jury's estimation, that, too, was worthy of a national award in the water management category.

In Germany, the Dillingen site received the Bavarian Energy Award in the category "Energy efficiency in industrial processes and production as well as energy efficiency networks." Innovations in the core metalworking processes have enabled the plant to massively reduce its natural gas and electricity consumption.

¹⁹ To enable comparability between the climate impact of the various greenhouse gases and substances of relevance for the climate, emissions are presented in CO₂ equivalents. In this report, we have taken into account the effects of CO₂ and of other greenhouse gases, as well as climate-relevant substances, to the extent that these are of relevance for the analysis. For ease of reading, we use the terms CO₂ and CO₂ equivalents synonymously.

4.2 Climate action and energy

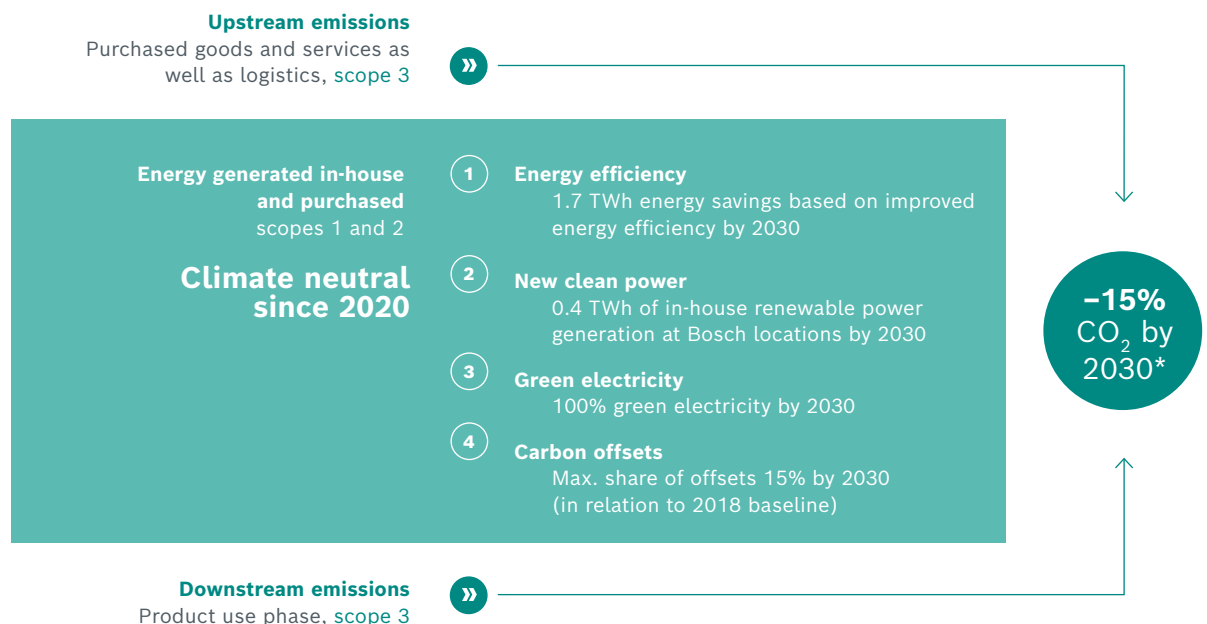
Bosch wants to be a pioneer in climate action, an aspiration it has anchored in its sustainability vision. We support the United Nations 2015 Paris Agreement on climate action and the goal formulated therein of limiting global warming to as close to 1.5 degrees Celsius as possible. By going carbon neutral, we are making a measurable contribution to this goal. In order to have an immediate impact on the reduction of greenhouse gases and to be able to make a big difference in a short time, we initially focused on our own sites. Accordingly, we are carbon neutral in terms of the energy we generate ourselves and the volume we source for manufacturing, development, and administration (scopes 1 and 2 of the Greenhouse Gas Protocol²⁰).

At the same time, we have expanded our activities in recent years to also reduce emissions produced outside Bosch's direct sphere of influence, for example at suppliers, in logistics, or when our products are used – known as scope 3. Our aim is to reduce these upstream and downstream emissions by 15 percent in absolute terms by 2030, compared with the baseline year 2018 – that is, irrespective of our company's growth. As a result, our focus is increasingly shifting to our activities in purchasing, logistics, and product development.

²⁰ This report uses scopes 1, 2, and 3 in accordance with the [Greenhouse Gas Protocol Corporate Accounting and Reporting Standard](#).

21 | Bosch climate goals

2020–2030, audited and recognized by the Science Based Targets initiative (SBTi)



* Compared with the baseline year 2018

As early as 2020, the Science Based Targets initiative (SBTi) endorsed our climate targets for the 1.5 degree pathway²¹. As a result, Bosch became the world's first automotive supplier to achieve "targets set" status. Bosch now has science-based climate targets for the entire value chain – from purchasing to the product use phase (see Fig. 21).

We want to actively shape climate action – consistent with an aspiration that has been ingrained in the company for over 50 years. We have always believed that energy efficiency and emissions mitigation also offer opportunities to innovate and differentiate ourselves from competitors. That's why we continue to drive these issues forward. The central body in this regard is the CO₂ steering committee, which meets every six months and takes decisions with respect to the implementation of the CO₂ strategy. In addition to one member of the group's board of management, the committee includes the divisions' executive management as well as representatives of the pertinent corporate departments. The group's board of management is additionally kept continuously informed through reports and within the framework of the Corporate Sustainability Board (CSB).

Our climate action activities meet with wide approval among our associates and have the unreserved backing from Bosch management – independently of the macroeconomic situation. According to an internal survey conducted in the reporting year, the vast majority of executives (over 90 percent) see in carbon neutrality and the pursuit of sustainability a competitive advantage for the company. Over 70 percent of respondents stated that specific energy-saving measures had already been defined in their departments.

Opportunities and challenges of climate change

Climate change is one of the biggest challenges facing humanity – stopping it is a task for society as a whole. We see this not only as an obligation, but also as a source of opportunities for our company to contribute to climate action with successful solutions and novel

technologies. Take, for example, the fields of electromobility or building technology, where electricity-based heating systems and solutions for energy management are making a decisive contribution. We are confident that we can make a major contribution toward a successful cross-sectoral approach spanning mobility, buildings, and industry. We offer attractive products and services in these fields, whose effectiveness and customer benefits can be further enhanced by connectivity. At the same time, we are spreading climate action beyond our own company by advising other businesses and organizations on how to go carbon neutral through our recently founded subsidiary Bosch Climate Solutions GmbH. Last but not least, Bosch's growing self-sufficiency and energy efficiency mean that we are reducing our dependence on energy markets and, in turn, our exposure to price fluctuation risks.

In contrast, the challenges posed by climate change include water scarcity and extreme weather events, which are occurring with increasing frequency and causing greater damage. They can endanger production at our locations and the stability of the supply chain. Other risks include the shortage of raw materials and changes in the regulatory framework, such as a ban of certain technologies or the tightening of CO₂ emissions standards for vehicles. Also important in this context are the increasing variety of customer preferences, which can change rapidly – often in response to political decisions. Increasingly, the focus is also on the processes upstream of our production and the use of materials. For example, we are increasingly receiving inquiries about the proportion of green electricity or recyclates in materials that have a significant carbon footprint, such as steel, aluminum, copper, and plastics (see the "[Products | Management approach](#)" section).

We address these challenges with systematic research and development. We are convinced that we must work together if we are to successfully counter the threats of climate change. That is why we take an active role in the relevant associations and committees (see the "[Society | Dialogue with stakeholders and political lobbying](#)" section).

²¹ Robert Bosch GmbH's entry in the SBTi's [target dashboard](#).

Regular assessment of climate risks

We analyze climate risks annually as part of our internal risk assessment process, which covers a forecast horizon of six years or more. The assessment is based on the scenarios of the International Energy Agency and the energy scenarios of the Bosch corporate sector for Research and Advance Engineering. A central role in this context is played by the internal climate change report: prepared by our experts every two years, it highlights fundamental climate change developments and their significance for our company and for society. The report is initially presented to the board of management and can subsequently be accessed by all associates on the intranet.

Since 2022, we have been analyzing climate risks pursuant to the requirements of the [Task Force on Climate-related Financial Disclosures \(TCFD\)](#), based on an analysis of our sites for a time horizon up to 2050. The focus

is on both acute risks (such as those related to flooding) and permanent climate risks (such as those that arise on account of global warming).

When assessing climate-related issues and suitable measures, we distinguish between measures to mitigate impacts (mitigation) and activities that serve to adapt the company to the changed framework conditions (adaptation). We also include our products in these considerations. While Bosch heat pumps, for example, can contribute directly to mitigating the extent of climate change, solutions for agriculture help adapt to its consequences (also see the [“Products | Sustainable products and services”](#) section). Climate aspects also play a role in the choice of company locations, another aspect that demands Bosch’s adaptability, for example, with respect to water and power supply. To manage the respective risks and opportunities, the individual divisions use the results of the risk assessment for market forecasts

CO₂ emissions: Energy consumption is a decisive factor

Most of our company’s CO₂ emissions stem from the consumption of energy (scopes 1 and 2). Bosch requires energy primarily in the form of electrical power for manufacturing plant and machinery, and in the form of thermal energy to heat and air-condition buildings and to operate foundry furnaces.

In 2022, the Bosch Group companies consumed a total of approximately 7,696 GWh of energy (previous year: 8,042 GWh). Electricity accounts for 69 percent of total energy consumption at 5,334 GWh (previous year: 67 percent; 5,437 GWh), natural gas for 17 percent (previous year: 20 percent), and other energy sources such as heating oil, district heat, or coal/coke for 14 percent (previous year: 13 percent). Around 67 percent of total energy consumption stems from renewable energy sources including purchased green electricity (previous year: 61 percent).

22 | Energy consumption

Bosch Group 2020–2022, in GWh

	2020	2021	📈 2022
Bosch Group	7,497	8,042	7,696
Natural gas	1,445	1,587	1,325
Heating oil	53	55	49
LPG	39	39	34
Coke/coal	85	98	100
Renewable energy	76	102	128
Other*	452	451	482
Direct energy (own combustion)	2,150	2,332	2,118
Electricity	5,103	5,437	5,334
thereof green electricity	4,253	4,817	5,049
District heat, steam, cooling energy	245	273	244
Indirect energy (purchased)	5,348	5,710	5,578

* Gasoline, diesel

23 | Energy intensity

in MWh/million euros of sales revenue

	2020	2021	📈 2022
Bosch Group	104.9	102.2	87.3

and incorporate them in specific plans. Together with our suppliers, we work on the respective supply chain's content-related orientation, and aim for our suppliers to evolve. With the expansion of our climate action activities beyond our own sphere of influence (scope 3), these activities are gaining additional importance.

Four levers for climate-neutrality – 2022 milestones

Our climate action strategy comprises four levers: increasing energy efficiency, generating energy ourselves from renewable sources (new clean power), purchasing electricity from renewable sources (green electricity), and – as the last resort – using carbon credits to offset unavoidable CO₂ emissions. In 2022, we improved the mix of levers further, thereby once more raising the quality of our carbon neutrality. This is reflected in the further reduction of CO₂ emissions to be offset. The progress made with each lever in 2022 is described below.

Lever 1: Energy efficiency

By 2030, we want to substantially increase our energy efficiency and operationalize measures at our company locations with savings potential totaling 1.7 terawatt-hours (TWh). An annual budget of 100 million euros is available for this purpose until 2030. Around 47 percent of this target has already been achieved: since 2019, we have initiated more than 4,000 projects worldwide, capturing savings potential of 805 GWh. In 2022 alone, some 1,000 new projects with savings potential of 246 GWh were introduced. The following are some examples:

► **Austria:** Groundwater pumps and heat exchangers are being installed at the Hallein site to generate energy for processes and production facilities in a way that conserves resources. Based on the current status of implementation, the site can save around 2 GWh annually, reducing its electricity consumption by 10 percent.

► **Turkey:** Management at the site in Bursa is consistently focusing on connected manufacturing and the Bosch Energy Platform. With the help of smart metering, they have optimized capacity utilization and downtimes of the production lines. This has allowed us to permanently reduce basic utilization by 2.7 GWh compared with previous years without making any further capital expenditure.

► **China:** The Shanghai location has significantly reduced energy consumption in pre-aging tests of an on-board charger. By recovering heat produced during stress and durability testing, electricity consumption for the test series can be cut by 95 percent. This has reduced annual energy consumption by 1.4 GWh and gas consumption by 5.3 GWh a year.

To further enhance the quality of our carbon neutrality, we started in 2022 additionally using the energy efficiency budget to fund CO₂ reduction measures, such as the electrification of the heat supply or the use of district heating, although the primary focus here is not on energy savings. Such measures are evaluated for eligibility and prioritized based on an internal CO₂ pricing mechanism to ensure the greatest possible leverage with the resources available.

We also want to introduce a connected energy management system – the Bosch Energy Platform – at all relevant Bosch locations by 2024. The system is currently in operation at over 140 locations and in more than 90 customer projects, where it is generating significant savings.

24 | Goal achievement for energy efficiency

Savings potential captured with measures to increase energy efficiency



Lever 2: New clean power

By 2030, we want to generate 400 GWh of the annual energy demand in-house at our company locations from renewable sources. We are placing particular emphasis on photovoltaics: a total of 98 Bosch locations already rely on solar power for their energy supply. We also operate a hydroelectric power plant at our site in Blaichach, Germany.

In total, we generated around 121 GWh of renewable energy at Bosch in 2022, which means that as of year-end we have already achieved 30 percent of the target. New photovoltaic systems were installed at 31 sites, covering an area equivalent to about 18 soccer fields. We are primarily concentrating our activities on those regions where local conditions are particularly favorable or where we have a relatively large number of company locations. The sites where we installed new systems therefore included Aguascalientes (Mexico), Campinas (Brazil), and Montañana (Spain). On aggregate, locations in India accounted for around 33 percent of the volume of renewable energy generated at Bosch in 2022, followed by China (25 percent), and Germany (20 percent).

Before 2022, we also included long-term power purchasing agreements (PPAs) for electricity from new facilities under the heading of new clean power. As of 2022, these agreements are now allocated to the "green electricity" lever, as we want to make the distinction between purchased green electricity and energy that we generate ourselves even clearer in future.

25 | Goal achievement for new clean power

In-house energy generation from photovoltaics and hydroelectric power



Lever 3: Green electricity

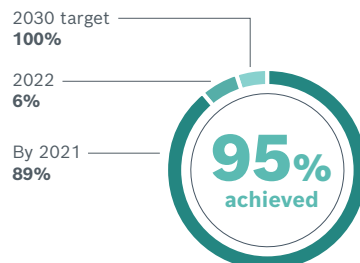
To further increase the quality of our carbon neutrality, Bosch has concentrated on purchasing green electricity from existing plants and has been greatly expanding its purchase volume from renewable sources with corresponding guarantees of origin since 2019. In total, 95 percent of the Bosch Group's global electricity demand was already covered using green electricity in the reporting year – the aim is to reach 98 percent by 2025 before exclusively sourcing green electricity by 2030. The new interim target for 2025 is a step with which we want to specify our objective further and reflect the progress made to date. Moreover, we want to actively drive forward the transformation of the electricity market toward more green power.

Our policy for purchasing green electricity also observes the principle of initially concentrating our attention where we can make the fastest and most significant contribution to climate action. Accordingly, our efforts initially centered on countries where Bosch consumes a particularly large amount of energy. Going forward, we will now gradually expand the scope of countries. To this end, we switched all power purchasing agreements in Turkey and Brazil to green electricity in 2022, and also in Thailand and Vietnam where we have so far only been using gray electricity (purchasing electricity generated from fossil fuels).

At the same time, since 2020 we have sought to conclude long-term agreements with our energy suppliers, not least of all to support the energy sector's transformation toward renewable sources of energy. By the end of 2021, we had sourced around 280 GWh from solar and wind power based on long-term power purchasing agreements concluded. In 2022, new agreements were concluded in

26 | Goal achievement for green electricity sourcing

Global electricity demand covered by green electricity



India and Germany: in India, Bosch now sources around 39 GWh from photovoltaic facilities, and in Germany the company increased the volume by another 150 GWh from wind power and further photovoltaic systems. In Germany, Bosch will from 2025 additionally purchase 180 GWh of electricity from an offshore wind farm. Further agreements are being prepared in the United States and in Germany. We are also considering similar projects in other regions.

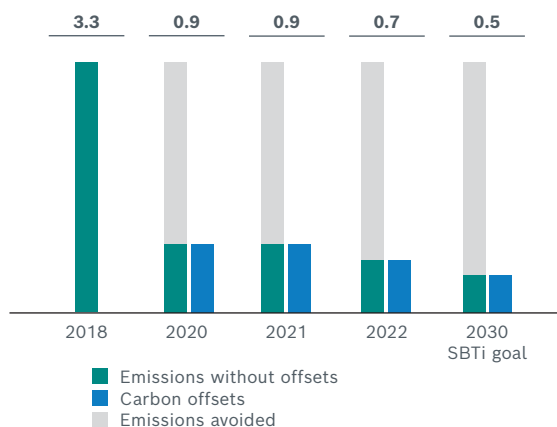
Lever 4: Carbon offsets

At present, we use carbon credits to offset unavoidable CO₂ emissions, such as from combustion processes (heating, process heat). In addition, we refer to carbon credits to offset electricity sourced in countries with only limited availability of green electricity. As we make progress with levers 1 to 3, we want to gradually reduce the share that we offset to achieve carbon neutrality to no more than 15 percent by 2030. In 2022, we came another step closer to achieving this target. By improving the quality of our carbon neutrality measures – especially as a result of switching from gray to green electricity – we cut the volume of emissions to be offset to 0.7 million metric tons of CO₂. This is around 0.2 million metric tons of CO₂ or 21 percent less than in the previous year (see table 28).

When selecting carbon offset projects, we use as guidance internationally recognized and independent certifications such as the [Gold Standard](#), as we want to take advantage of the projects to promote social development in addition to environmental action. At the same time, we are working to reduce emissions that are currently still unavoidable and have developed an action plan accordingly. The most important measure here is to

27 | Climate action at Bosch – the path to 2030

CO₂ emissions (scopes 1 and 2) in millions of metric tons




Greenhouse gas calculation based on international standards

Bosch calculates the emissions it needs to offset using the standards of the [International Energy Agency \(IEA\)](#) and the [Intergovernmental Panel on Climate Change \(IPCC\)](#). In 2020, we switched to a market-based presentation. Previously, we had used the location-based approach (up to and including 2019). In the calculation, we focus on the greenhouse gas CO₂ as well as on emitted process gases and hydrofluorocarbons (HFCs). An internal analysis has shown that Bosch does not produce or emit other greenhouse gases to any relevant extent.


28 | Greenhouse gas emissions

Bosch Group 2020–2022, in 1,000 metric tons of CO₂e

	2020	2021	 2022
Bosch Group with carbon offsets	0	0	0
Carbon offsets	938	907	717
Bosch Group	938	907	717
Manufacturing	350	383	328
Vehicle fleet	117	109	117
Volatile GHG	18	76	78
Scope 1	485	569	523
Electricity	367	248	119
District heat, steam, cooling energy	86	90	75
Scope 2	453	338	194

29 | Emissions intensity

in metric tons/million euros of sales revenue, without carbon offsets

	2020	2021	 2022
Bosch Group	13.13	11.53	8.13

increase the share of green power in the electricity mix to 100 percent by 2030. Other measures include strengthening e-mobility in the company fleet, a lower-emissions heat supply through district heating, electrification, and the use of hydrogen and biogas.

Goal management and implementation

To achieve the group-wide targets set for 2030, all Bosch divisions are pursuing measurable targets. These are staggered year-by-year and are higher in the first few years than thereafter. Our intention is to capture as early as possible the potential that can be realized quickest and thus rapidly reduce our climate impact. Annual targets are set by reference to energy demand and the savings achieved so far. Targets are cascaded down to individual company locations at the discretion of the respective divisions.

The degree to which divisions meet their targets is tracked centrally. On this basis, those responsible at the divisions and company locations make decisions to implement measures to improve energy efficiency or to initiate projects to generate their own energy. An

internal energy map pinpoints the corresponding potential for photovoltaics worldwide. Submitted projects are reviewed for plausibility by the divisions' energy coordinators together with a committee consisting of representatives from the relevant corporate departments. After implementation, further randomly assigned checks are carried out at the sites on the basis of audits performed by the regional Sustainability and EHS coordinators. As the availability and quality of green power and the legal conditions for the expansion of renewable energy differ between countries, the regional organizations are responsible for green electricity and new clean power projects. Carbon offsets are regulated centrally to ensure the quality of projects. The sites themselves order and transact the measures.

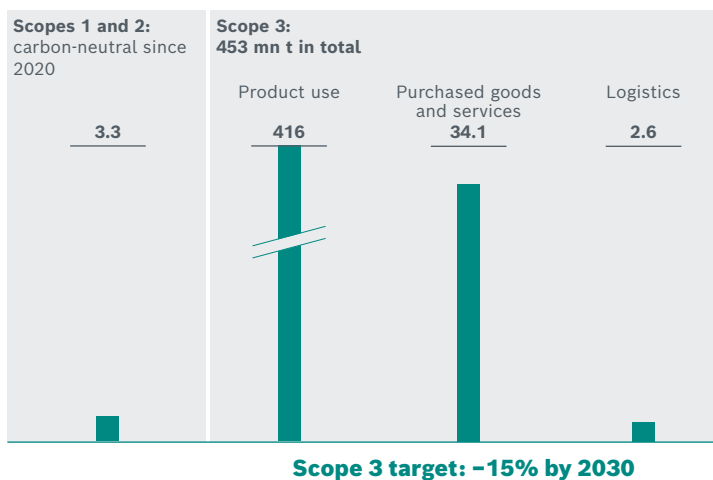
Upstream and downstream emissions

We want to shape climate action beyond our immediate sphere of influence (scopes 1 and 2) and also systematically reduce upstream and downstream emissions (scope 3). We aim to cut these by 15 percent in absolute terms by 2030 compared with the baseline year 2018. In this process, we are focusing on the categories that make up around 98 percent of our scope 3 emissions: upstream emissions in the Bosch value chain primarily concern purchased goods and services as well as logistics. Downstream emissions are mainly caused by the use of our products.

With its scope 3 target, Bosch has deliberately set itself an ambitious goal because this climate action lever is particularly significant. At 453 million metric tons of CO₂ in the baseline year 2018, upstream and downstream emissions exceeded those in scopes 1 and 2 several times over (see Fig. 30). Since 2018 we have cut our scope 3 emissions by around 16 percent, down to 382 million metric tons of CO₂ in 2021 – and are therefore well on the way to reaching our target (see Fig. 31). The main challenge now is to mitigate future emissions relating to the anticipated sales growth by 2030. This is because the target value was set as a percentage independently of sales growth, which means the mitigation target will increase steadily as the company grows in future. There are also a large number of external factors Bosch can only influence indirectly, such as suppliers' success in reducing CO₂ emissions.

30 | Main scope 3 categories in baseline year

Bosch Group 2018, in millions of metric tons of CO₂



To improve data quality further, the calculation of scope 3 emissions was revised in 2022. In the process, we have included additional business activities in the calculation in the "product use" category, increased the proportion of primary data in the "purchased goods and services" category, and changed the calculation from tank-to-wheel to well-to-wheel in the "logistics" category.

In order to achieve these targets, we are taking a step-by-step approach. Having identified the main scope 3 categories, we increased the calculation's granularity, while also integrating specific parameters into the models. This allows us now to identify significant drivers for emissions within purchasing and logistics as well as in the use of our products, based on which we can derive measures that make an active and measurable contribution to climate action. In this process, we focus primarily on options that lie within our immediate sphere of influence (see Fig. 33 on page 75).

Scope 3, upstream: Purchased goods and services

To reduce upstream CO₂ emissions in purchasing, we drew up a steering concept in 2022 that is now mandatory for all divisions. We have three instruments that we can use for steering purposes:

- ▶ **General target agreements** with suppliers to improve CO₂ performance, preferably in combination with a specific SBTi commitment.
- ▶ **Specific agreements for focus materials** such as steel, aluminum, copper, and plastics that are responsible for a significant portion of the supply chain's carbon footprint. To purchase in future materials that are as low-carbon as possible, maximum CO₂ levels are defined for each material, which decrease over the next few years.
- ▶ **Measures relating to product design** are aimed at improving materials efficiency – i.e. reducing the amount of materials utilized per product – and increasing the share of recycled materials used, particularly with respect to plastics, aluminum, and steel. To ensure the most effective approach possible, we analyzed the potential in 2022 (see the “[Products | Management approach](#)” section).

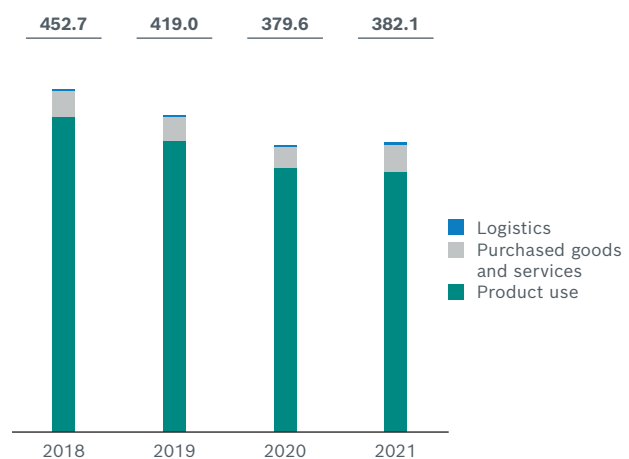
Depending on our suppliers' structure and the volume of business transacted with them, we plan to apply a two-step procedure. With the majority of our suppliers, we aim to conclude general agreements to reduce CO₂ emissions and preferably use the CDP platform to record the data. With key suppliers and for purchasing materials that play an important role for us, we want to sign specific agreements. The quality of the respective industry standards for calculating CO₂ emissions for the materials in question is an important basis for the success of our activities.

The divisions decide on the specific combination of instruments they want to use in consultation with the experts from the Sustainability and EHS corporate department. This is to allow for differences in markets and framework conditions when we start implementing the respective measures with division-specific performance indicators in 2023.

To track the agreed targets, we will use the methodology we developed in 2021 for determining our suppliers' corporate carbon footprint (CCF) or product carbon footprint (PCF) (see information box on next page).

31 | Development of scope 3 emissions

Bosch Group 2018–2021, in millions of metric tons of CO₂



The corresponding scope 3 figures for 2022 were not available before this report went to print, but will be published without delay in the key figures tool at sustainability.bosch.com.

- ▶ General target agreements with suppliers to improve CO₂ performance will be consolidated and tracked centrally. The CCF provides an indication of a supplier's development and target achievement. It is mapped via CDP or platforms in which Bosch is involved.
- ▶ Specific target agreements for focus materials will be introduced and, where possible, tracked using the PCF at division level.
- ▶ If successful, our measures relating to product design will lead to changes in the purchasing volume for the different kinds of materials and to the sourcing of raw materials containing a higher proportion of recycled materials. Improvements in product design will translate into lower PCFs.

Consistently increasing data quality

Clear rules and targets require uniform definitions and calculation standards because this is the only way to make performance transparent and comparable. This is particularly true when it comes to advancing sustainability issues overall across supply chains. As there is still no international standardization and the information currently available is sometimes of poor quality, we rely on a combination of approaches to obtain supply chain data, thus improving the quality and comparability of the data collected.

We prefer to use primary data that we request our suppliers to provide, for example via the CDP platform. Through these direct requests we obtain specific data on our suppliers' individual emissions profile and make their specific development more transparent. If no primary data is available, we use secondary data from established databases such as estell. In that case, for example emissions for a specific product are recorded using industry averages that also take account of the technology used in the manufacturing process and geographical factors.

The corporate carbon footprint (CCF) is calculated on this basis. The CCF is the share of the supplier's emissions that is attributed to the buyer on the basis of sales. At present, we mainly use secondary data that we obtain using input/output models at company level. This enables us to benchmark all suppliers based on comparable standards and to manage them strategically. For the future, we aim to use primary data to make the calculation as precise as possible.

The product carbon footprint (PCF) is a means for us to record the emissions caused during a product's manufacturing and production process. Here, too, primary data is preferable to secondary data because they are of greater informative value, as directly requested product-related information provides the greatest possible transparency and accuracy. A lack of international standards currently still makes data comparisons difficult. Bosch therefore supports cross-company standardization along the complex value chains in the automotive sector and is involved in initiatives such as Catena-X.

32 | Determining the corporate carbon footprint or product carbon footprint

Improving data quality in two stages, scope 3, upstream

		Stage 1 →	
		Secondary data (sources)	Primary data (sources)
Stage 2 ↓	Corporate carbon footprint (CCF)	Databases, e.g. estell	Supplier survey, e.g. via the CDP platform
	Product carbon footprint (PCF)	Databases, e.g. GaBi	Development of standards, e.g. in initiatives such as Catena-X

Extensive CDP survey conducted

To obtain transparency over the current status of CO₂ emissions and data quality in our value chain, we requested data from our key suppliers in 2022. For this purpose, 2,000 suppliers were contacted directly via the CDP Supplier Platform. The survey covered around 70 percent of Bosch's global purchasing volume and was the most extensive one conducted to date using the CDP platform. Around 63 percent of all suppliers surveyed responded. This has provided us with much greater transparency than in the previous year about the current status of their carbon accounting and the quality of the primary data, as well as relevant emissions-related targets and our suppliers' associated activities. In addition, the survey revealed that 232 suppliers have already today joined the Science Based Targets initiative (SBTi), and of those, 102 have already had their climate action targets verified through the SBTi. A further 116 suppliers intend to join the SBTi over the next two years.

We want to enhance data quality further in the next few years, increase the response rate, and include an even larger number of suppliers in the survey. Our aim is to gradually increase the share of primary data and at the same time identify key areas for action in our supply chains in order to stimulate the implementation of specific measures as quickly as possible. This process will be supported by updated databases and an update of our IT infrastructure. We aim to increase the availability of specific primary data for our calculations and, where possible, to switch from corporate carbon footprints to product carbon footprints.

In addition, we take greater account of carbon emissions and associated climate action activities when awarding tenders. With this in mind, we developed qualitative and quantitative award concepts in 2021 and extensively piloted them in all relevant divisions over a two-year period.

Scope 3, upstream: Logistics

In logistics, we aim above all to reduce CO₂ emitted during the transport of goods. We currently have three main levers at our disposal for this purpose: reducing air cargo, optimizing freight, and consistently applying the total cost of ownership (TCO) approach, which factors in key cost components such as freight costs. The proximity of potential suppliers to our sites is therefore an important selection criterion for keeping CO₂ emissions as low as possible. Whenever possible, the aim is to switch shipments destined for Bosch from air to sea or rail freight; the related possibilities are reviewed continuously.

Transport management centers (TMC) have been established worldwide to manage shipments between suppliers, Bosch plants, and customers. We have already achieved a high degree of standardization in this area and can guarantee efficient transport – also with respect to environmental criteria – by pooling freight. To secure even higher capacity utilization, especially for road shipments, a new transport management system will be introduced at Bosch in 2023. Our aim here is to reach a capacity utilization rate of 80 percent by 2025. To this end, we are focusing on improving the data quality on packaging sizes and weights as well as on rolling out a software platform, which will enable us to pool more shipments. The European roll-out of the platform was completed in early 2023. Roll-out in the NAFTA region is to follow in the course of 2023.

In a joint initiative with the divisions, work is also underway to increase packing density in a bid to use less packaging material, storage space, and transport capacity – in turn, avoiding CO₂ emissions. Packaging design centers have been set up in Europe and North America to optimize and standardize packaging. Cost savings, CO₂ optimization, and avoiding waste go hand in hand here, as an increase in packing density and a reduction of resources used are the means to achieving all of these aims. The expertise available in the packaging design centers also forms the basis for rapidly spreading the use of alternative, less resource-intensive packaging and establishing it as the new standard in future.

Under the banner of “Green Packaging,” Bosch is also advancing waste avoidance activities and the use of new materials at its locations. This includes sharing positive examples as good practice within the company. At the Turkish site in Bursa, for example, reusable packaging is repaired to help extend its life cycle. In a study conducted together with other companies and the University of St. Gallen, Bosch is currently investigating alternative packaging materials and closed-loop recycling.

In the future, alternative drives and fuels will play an ever-greater role in reducing carbon emissions. In ongoing projects, Bosch is already today evaluating further potential to curb CO₂ in delivery traffic. A focus is being placed on strategic cooperation with logistics service providers in a bid to achieve short- and medium-term emissions reductions by using biofuels or alternative drive technologies. In Germany, Bosch implemented a pilot project for using hydrotreated vegetable oils (HVO) with two freight forwarders in 2022. The CO₂ savings achieved compared with the use of diesel for trucks are around 90 percent. Similar projects are planned for Scandinavia, the Benelux countries, and in eastern Europe.

In spite of the large number of measures, Bosch was only able to reduce its logistics-related CO₂ emissions slightly in 2022. On account of the persisting disruption of global supply chains, transport capacities were still not utilized optimally in 2022. In addition, a larger number of unplanned shipments were required to ensure supplies reached company locations and customers.

Scope 3, downstream: Product use

Although Bosch products are designed for energy efficiency, around 90 percent of scope 3 emissions arise from the use of products sold. We currently see the greatest potential for lowering CO₂ emissions in those divisions in which products require a relevant amount of energy, that is above all mobility, thermotechnology, industrial drive and control technology, and household appliances. The focus is on three leverage points in each case: boosting energy efficiency, shaping the product portfolio, and the transformation of the energy sector through the use of green electricity, hydrogen, and biogas. It should be noted that Bosch’s ability to influence the different areas varies widely. While measures to increase the energy efficiency of products or the corresponding transformation of the product portfolio have a direct impact, the company’s influence on the supply of renewable electricity and green hydrogen is rather low (see Fig. 33).

To achieve the overarching SBTi target, the relevant divisions are pursuing specific CO₂ targets and specific action plans. These range from phasing out less efficient products to using artificial intelligence for the optimized operation of customer systems in line with requirements, and right through to changing the product portfolio. The plans are based on currently available knowledge and market development scenarios in the coming years. The progress toward target achievement is reviewed annually, as are the underlying scenarios and framework conditions. If any changes occur here, for instance in terms of changes in demand or new statutory requirements, we make adjustments accordingly so the target can be reached by 2030.

Up until 2021, we were able to significantly reduce scope 3 emissions resulting from the use of our products – from 416 million metric tons of CO₂ in the baseline year 2018 to 344 million metric tons of CO₂. The main drivers underlying this reduction include the shift initiated within the product portfolio toward higher energy efficiency classes, more energy-efficient motors and pumps, the supply of heat pumps and solar collectors, as well as the transformation toward e-mobility. The change in the grid mix to include more green electricity also had a positive effect.

Despite the emissions reductions already achieved so far, we have not yet reached the target level for 2030. Since the target set is an absolute value, the main challenge in the years ahead will lie in taking suitable action to compensate for effects arising from the company's future growth such that the targeted reduction of CO₂ emissions by 15 percent is realized by 2030. The implementation plans agreed upon with the divisions will be driven forward against this background. In addition, we want to capture new potential to mitigate carbon emissions, for example by evaluating and adopting circular economy approaches (see the "[Products | Management approach](#)" section).

Finding climate-friendly solutions for mobility of associates

With our company mobility management, we endeavor in particular to make our associates' commute to work more sustainable. For instance, in the greater Stuttgart area Bosch has more than 50,000 associates, many of whom drive to work every day. Our "Go for mobility" campaign aims to motivate associates to switch to alternative modes of transport such as cycling, public transport, or Bosch shuttle buses. Our workforce had much less need for mobility solutions during the pandemic. Nevertheless, measures such as the leasing offer for bicycles were actively used, with more than 23,000 bikes on the road in the interim. Furthermore, the co-working spaces Bosch provides at the sites also continue to be used intensively. This allows associates to use an office near where they live even if they usually work from a different Bosch location.

33 | Key levers for achieving the scope 3 target

Calculation base and main direct and indirect levers

Scope 3 categories	Calculation base	Key Levers for reducing CO ₂		
		Direct	→	Indirect
Upstream emissions	<ul style="list-style-type: none"> Purchasing volume Goods categories Source region Mode of transport 	Realign top-down	Refine status quo	Transform energy sector
Purchased goods and services (including machinery and equipment) Transport and logistics (also downstream)		<ul style="list-style-type: none"> Supplier selection Sourcing of secondary raw materials Mode of transport (sea, land, air) 	<ul style="list-style-type: none"> Supplier development Route optimization 	
Downstream emissions	<ul style="list-style-type: none"> Volume Sales revenue Efficiency Energy source Emissions factors Product life 	Improve energy efficiency	Shift product portfolio	
Product use		<ul style="list-style-type: none"> Increased efficiency Digitalization Optimized use 	<ul style="list-style-type: none"> Investment in growth areas (e-mobility, heat pumps) Phaseout of products with lowest energy efficiency 	

As one of the largest employers in the Stuttgart region, Bosch is thereby helping to reduce traffic congestion and improve air quality. In addition, we are working on the development of a standardized procedure for systematically managing company mobility, while enabling professional cooperation with other partners (e.g. municipalities, companies). We are also trying to do more for the climate when it comes to business travel. For example, since 2020 we have made the business air travel of all associates carbon neutral through measures to offset carbon emissions. In addition, we are sensitizing our associates to make greater use of digital communication formats or – whenever possible – to opt for alternative mobility offers.

Company cars: Globally valid principles for more climate action

We signaled another drive for climate action in 2021 with the revised principles for the use of company cars. These are now valid worldwide and set out goals that are to be considered in the specific regulations, ranging from the reduction of carbon emissions and the optimization of cost and process efficiency to the offer of other forms of mobility as an alternative to the standard company car.

Accordingly, the mobility solution offered must support the best possible carbon reduction, for example by means of a defined CO₂ cap in the company car policy or a bonus/penalty scheme linked to a vehicle's CO₂ emissions. In addition to the company car, associates must have access to at least one alternative mobility solution.

In Germany, the principles were already implemented in July 2021: here, members of the executive leadership team receive a monthly mobility budget that they can either use to lease a company car or, for example, to purchase a BahnCard 100 annual railway ticket. Alternatively, the budget can also be paid out. In this context, a system for reducing CO₂ emissions has been adopted for company cars.

Air pollution

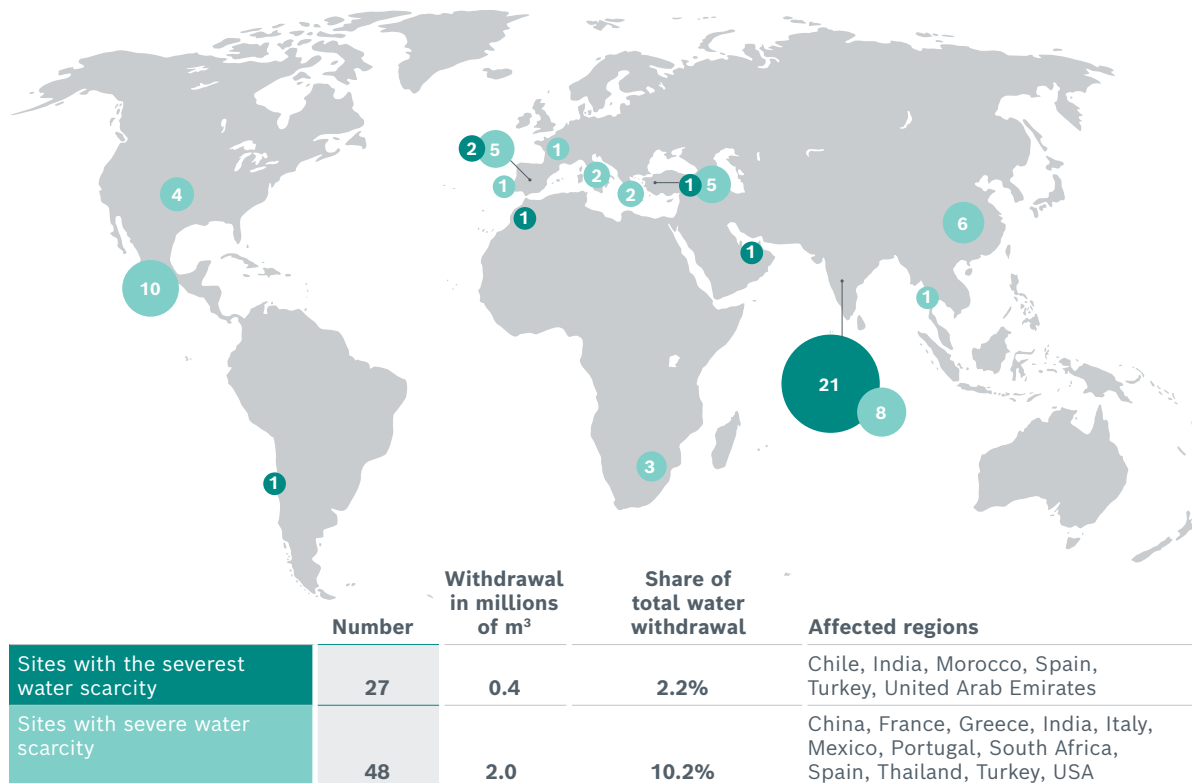
Air pollutants can affect people's health and should therefore be effectively reduced. In 2019, Bosch launched a project to analyze which air pollutants are produced and at what levels in the relevant business processes in manufacturing, such as surface treatment, foundry processes, and building heating. The results show that there are no significant effects on people and the environment from air pollutant emissions. In 2022, there were no grounds for reassessment.

4.3 Water and wastewater

Conscientious use of water is a major priority for Bosch. We especially focus on counteracting the increasing scarcity of water. In 2018, we analyzed our company locations using the Water Risk Filter provided by the World Wide Fund for Nature (WWF). The findings were compiled in a water map from which we have derived priority areas for our activities. In that way, we can quickly achieve significant improvements in regions where water is a particularly valuable resource. In 2021, we reviewed the existing water map and reassessed it based on the updated WWF Water Risk Filter (see Fig. 34). That's how we know that 75 of our sites are now located in areas

of severe or severest water scarcity – previously it had been 56 sites. The increase reflects how climate change is advancing along with its implications for water supply worldwide. More and more areas qualify as a “region with water scarcity” – and this development also affects an increasing number of Bosch locations. Following reassessment of the water map, however, one particularly water-intensive location was no longer included, such that there was no significant increase in total water withdrawal at the identified locations compared with the previous status.

34 | Company sites in regions with water scarcity



Against this background, we maintain our target of reducing absolute water withdrawal at the 75 sites now identified by 25 percent by 2025 compared with our 2017 baseline. As of year-end 2022, we are on track to reach this target. Water withdrawal at the respective company locations has fallen by around 24.2 percent over the past few years – and target achievement is also at a comparable high level based on the previous water map (previous year: 21.5 percent). In 2022, company locations in regions with water scarcity accounted for around 2.37 million m³ of water (previous year: 2.45 million m³) or 12.4 percent of Bosch's total annual water withdrawal.

To reach our water target, an annual budget of 10 million euros continues to be available until 2025. To ensure that the funds are used efficiently, water coordinators in the Bosch divisions identify local savings potential and implement suitable measures together with those responsible at the locations.

Since 2019, we have launched more than 260 projects that enable us to save up to 700,000 m³ of water at our sites each year. Here are some examples of the projects carried out in 2022:

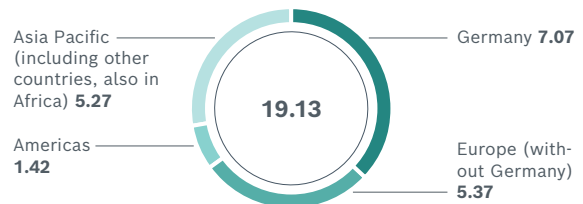
- ▶ **India:** By increasing the use of rainwater and enhancing water treatment, consumption of fresh water at the Naganathapura site was reduced by 88 percent compared with the previous year. Less groundwater is needed as a result, easing the pressure placed on regional water supplies.
- ▶ **Brazil:** At the Campinas site, water testers and smart metering have been integrated in a connected manufacturing architecture to establish an early warning system in electroplating and prevent water flowing unnecessarily in the individual production lines. This has made it possible to reduce total water consumption by 25 percent compared with the previous year. Electricity consumption was reduced by 16 percent.
- ▶ **China:** Consistently reducing the amount of wastewater, improved treatment processes, and a larger storage volume for treated water – this is the combination of measures with which the Shenzhen site was able to increase its reclaimed wastewater rate from previously 73 percent to 94 percent. By simultaneously optimizing manufacturing processes, the site succeeded in cutting its fresh-water consumption by more than 20 percent in total compared with the previous year.

Water withdrawal

Fresh water is used in many processes at Bosch, in particular for cooling purposes. In regions with strained water supplies, recycled water or rainwater is already used wherever possible. In 2022, water withdrawal by the Bosch Group increased to 19.1 million m³ (previous year: 18.8 m³). In relation to sales revenue, this constitutes a relative decrease of around 9 percent year on year (also see Fig. 35–37).

35 | Water withdrawal

Bosch Group 2022 by region, in millions of cubic meters



36 | Water withdrawal

Bosch Group 2020–2022, in millions of cubic meters

	2020	2021	2022
Bosch Group	18.08	18.81	19.13
Surface water	3.42	3.44	3.71
Groundwater	1.95	2.32	2.22
Public/private waterworks	12.67	13.00	13.16
Fresh water¹	18.04	18.75	19.09
Public/private waterworks	0.04	0.05	0.04
Other sources²	0.04	0.05	0.04

¹ < 1,000 mg/L total dissolved solids

² > 1,000 mg/L total dissolved solids

37 | Water intensity

in cubic meters/million euros of sales revenue

	2020	2021	2022
Bosch Group	252.9	238.9	216.9

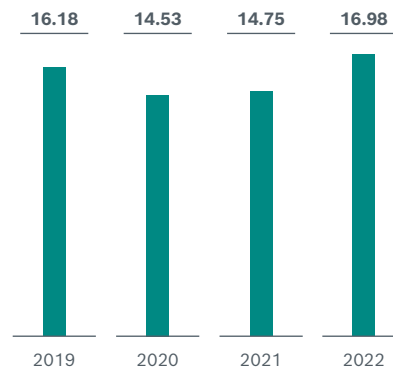
Wastewater

Wastewater at Bosch is mainly produced in sanitary facilities and canteens (50 percent) and also in connection with cooling water (28 percent). Manufacturing accounts for 22 percent of the wastewater produced. There, water is used in electroplating as well as in washing systems and machining centers, among other areas. In 2022, Bosch’s wastewater volume increased to 16.98 million m³ (previous year: 14.75 million m³). Negative impacts from wastewater are mainly caused by foreign substances or excessive temperatures. Within the core strategic topic of water, we are therefore working on further reducing wastewater flows and continuously improving quality. To this end, we centrally recorded in 2019 what quantities are involved where, how they are treated, and where they are discharged (see Fig. 39). We have established standard processes in the company for monitoring local wastewater quality requirements and standards.

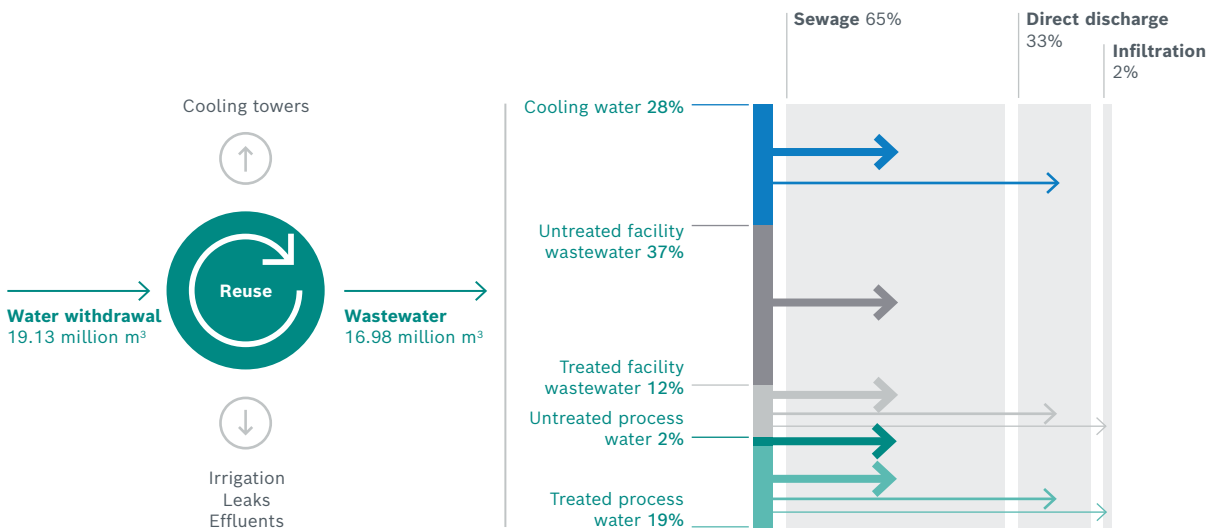
At some sites, we carry out wastewater treatment in-house, using processes such as ultrafiltration to separate solids and liquids or physical-chemical treatment methods such as precipitation or distillation, depending on local conditions.

38 | Wastewater

Bosch Group 2019–2022, in millions of cubic meters



39 | Wastewater flows and discharge routes



4.4 Waste

“Avoid, then reuse, then dispose” – that is the principle we apply at Bosch with respect to waste management. A guideline applicable group-wide ensures that the legal requirements for the transport and disposal of waste are complied with locally. All manufacturing sites have a clearly designated organizational unit responsible for sorting, classifying, and handing over waste to disposal companies. Ten incidents in which substances were released were reported via our incident management system in 2022. Only a small number caused environmental pollution. The environmental impact was classified as low.

In 2022, Bosch generated 678,260 metric tons of waste (previous year: 689,468 metric tons), a decrease of 1.6 percent. Of the volume of waste, it was possible to recycle 86 percent. In relation to the development of sales revenue, the waste volume decreased by around 12 percent year on year (also see Fig. 40–41).

An analysis of the waste at our manufacturing sites, which together account for around 80 percent of our total waste volume, has shown that around 45 percent of our waste consists of metals, 24 percent is packaging waste, and around 11 percent is hazardous waste. The analysis also revealed that there still is significant potential for improvement in the area of hazardous waste, which would allow us to make an important contribution to protecting people and the environment – in addition to reducing disposal costs. In response to these findings, we decided in 2019 to pursue two priorities: reducing hazardous waste and minimizing the amount of waste going to landfills.

At Bosch, hazardous waste mainly consists of cooling lubricants, washing water, oils, and fuels. In 2022, their volume increased by 8.2 percent to 75,807 metric tons (previous year: 70,087 metric tons). Specific measures are being implemented at sites with comparatively large quantities of hazardous waste to reduce the volume of waste. Use of vacuum distillation and ultrafiltration have permitted a reduction in the quantity of cooling lubricants that need to be disposed of, and the volume of washing water has likewise been reduced. Centrifugal treatment leads to a decrease in the quantity of oil to be disposed of.

40 | Waste volume and disposal

Bosch Group 2020–2022, in 1,000 metric tons

	2020	2021	2022
Bosch Group	606.4	689.5	678.3
Recyclable waste	521.9	602.0	584.4
Waste for disposal	84.5	87.4	93.9
thereof hazardous waste	68.7	70.1	75.8
Material-based recycling		30.9	35.4
Thermal recycling		8.2	7.0
Other recycling		7.9	7.7
Landfill disposal		3.5	3.0
Disposal through incineration		8.2	7.9
Other disposal		11.3	14.8

41 | Waste intensity

in metric tons/million euros of sales revenue

	2020	2021	2022
Bosch Group	8.5	8.8	7.7

Novel techniques are also being used at Bosch to lower the volume of hazardous waste. At the site in Clayton, Australia, a treatment process has been developed to recover nickel from the wastewater produced in diode manufacturing. An electroless chemical coating process is used to deposit the nickel dissolved in wastewater on a metal surface. This permits recovering on average 99 percent of the dissolved nickel, and the wastewater can be treated in the company's own wastewater treatment plant.

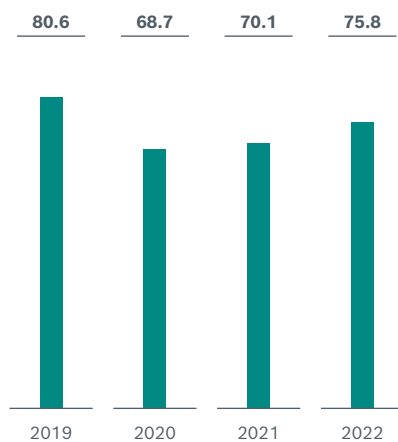
In order to reduce the amount of waste going to landfills, we want to increase the recycling rate. With this in mind, we implemented the "Zero Waste to Landfill" campaign in 2019. As in the previous year, activities in 2022 focused again on packaging. The measures taken at the Bosch site in Pećinci, Serbia, are one example. By optimizing lot sizes, packaging boxes are now filled completely, saving around 20 metric tons of packaging

material a year. At the same time, around 2,200 wood pallets were repaired and reused in 2022 that had been disposed of as waste wood beforehand.

As part of its circular economy strategy, Bosch continues to work systematically on reducing the volume of waste and, in particular, on recycling (see the "[Products | Management approach](#)" section).

42 | Hazardous waste

Bosch Group 2019–2022, in 1,000 metric tons



Associates

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Our ambition: We want to create an environment in which all associates contribute actively to the company's long-term success because they feel respected at Bosch and are able to develop their full potential.



Recognized as employer of choice

- ▶ Excellent position in Forbes' World's Best Employer 2022 ranking.



Women in Leadership positions

- ▶ The proportion of female executives at Bosch shall increase to 25 percent by 2030. **Status 2022: 19.2 percent achieved.**



Safe work environment

- ▶ By 2025, we aim to lower the number of work-related accidents to 1.45 accidents per 1 million hours worked. **Status 2022: 1.62.**

5.1 Management approach

Bosch creates technology that is “Invented for life” – that is our purpose. Bosch associates shape their company’s future with high dedication, sound expertise, and the courage to embrace change. They are key to our success, which is why they are at the heart of our strategy. These are among the most exciting times in Bosch’s history, as it transitions from a leading manufacturer of technology hardware into a leading provider of connected hardware, software, and services. To be in a position to actively shape this transformation, we are systematically developing our corporate culture further and are empowering our associates to acquire new competencies. At the same time, we are creating the conditions to win new talent for innovative, high-growth areas in highly competitive international labor markets.

Guidelines and standards



[“We are Bosch”
mission state-
ment](#)

[Basic principles
of social
responsibility
at Bosch](#)

The Bosch values are the bedrock for our entrepreneurial action. They provide a central and reliable point of reference for our associates – independently of any specific challenges we are currently facing or may be faced with in future. Our “We are Bosch” mission statement combines our strengths with our strategic alignment (also see the [“Company | Bosch Group profile”](#) section).

In the “Basic principles of social responsibility at Bosch,” which have been made publicly available, the board of management of Robert Bosch GmbH and the employee representatives commit, among other things, to complying with human rights, equal opportunities, fair working conditions, and global standards in occupational health and safety. The 11 principles are based on the core labor standards of the International Labour Organization (ILO) and they are likewise binding for our suppliers. Our executives receive training to help them comply with these principles. Translated into more than 30 languages, the principles are available on the intranet and Internet.

Responsibility for their implementation lies with the management of the divisions, regional subsidiaries, and company locations. Our associates are familiar with the basic principles and are required to report violations. The same applies to violations of the Code of Business Conduct, which is applicable to all our associates worldwide (see the [“Company | Corporate governance and compliance”](#) section).

Strategic alignment

Under our People & Organization Strategy, we match the expectations and needs of our associates with the requirements of our company. The framework conditions for our actions as a company are changing dynamically, the advancing digitalization in particular requires adapting processes, work methods, and procedures. This is also why we are reorganizing collaboration within the company. The aim is to create competence-based network structures that permit an adequate form of leadership and are characterized by flat hierarchies and wider spans of control. As the underlying foundation, our culture of leadership and collaboration is based on trust and respect and is geared toward our associates unfolding their full potential. Therefore, we want to empower them to work flexibly and autonomously, make decisions, and take responsibility.

With our strategy, we provide impetus for leadership and collaboration within the group. It sets the framework for developing suitable HR formats, processes, and guidelines as well as for working and employment conditions. We have defined six action fields that are interrelated (see Fig. 43).

Responsibilities and organization

With the support of the HR corporate sector, whose areas of responsibility include diversity and equity, a member of the board of management of Robert Bosch GmbH is responsible for human resources and social welfare. The HR corporate sector is responsible for setting the content-related parameters for HR management in the countries where Bosch operates, with the respective regional HR management reporting to central HR management.

Digitalization program

In 2020, an HR digitalization program was launched with around 200 associates worldwide. Coordinated by the central program management, project managers, including in China, India, the United States, Mexico, and in many EU countries, are working on the implementation. The aim is to further digitalize processes in HR management.

Under the program, 82 new solutions have been introduced to automate administrative processes, including a chatbot that serves as a “digital assistant” and helps associates with their applications for mobile working outside Germany. In a growing number of countries,

associates can also use an app to submit medical certificates. The knowledge platform on the HR intranet (myHR), comprising some 7,000 pages, 11,000 files, and countless articles, has been optimized and redesigned. In addition, the digitalization team supports overarching projects such as the “impact:” feedback landscape, which was made available to around 250,000 associates in July 2022.

Employment at Bosch

As a global supplier of technology and services, Bosch employs 421,338 people worldwide. To enable flexible staffing, around 12 percent of the workforce have temporary contracts. As a rule, they have the same training opportunities as associates with permanent contracts, which means they can enhance their skills at Bosch and, in turn, improve their prospects on the labor market. In addition, the company employs some 14,000 subcontracted personnel. Bosch uses subcontracted personnel when there is a need that cannot otherwise be met. No restrictions are imposed with respect to subcontracted personnel, for instance in direct functions such as manufacturing and logistics. Whenever the company draws on subcontracted personnel, Bosch gives due regard to compliance with legal frameworks, such as the German

43 | People & Organization Strategy

Focus on six action fields

#TRANSFORMATION

We empower Bosch to evolve and push the boundaries by serving as a partner in cultural and organizational development as well as transformation for growth, optimization, and restructuring.

#EMPLOYER OF CHOICE

We want to be the employer of choice – attracting and retaining people, and encouraging their personal development.

#EXCELLENCE

We are a high-performing HR team and we continuously improve our HR contribution in order to create value for the company and to increase Bosch’s competitiveness.



#LEADERSHIP & COLLABORATION

We create a setting in which everyone feels comfortable, can pursue personal development, and can deliver their best performance by embracing an inclusive “We LEAD Bosch” culture in leadership, learning, and collaboration.

#LEARNING

We want to become a continuous learning company to gain an edge in a fast-changing environment.

#DIGITALIZATION

We contribute to the digital transformation with UX-oriented solutions and our digital skills.

Temporary Employment Act (*Arbeitnehmerüberlassungsgesetz*) and any collective bargaining agreements. When there are vacant positions to fill within the company, we give preference to candidates with temporary contracts or subcontracted personnel – in accordance with the applicable legal requirements and provided they are equally suited.

Implications of the mobility transformation

The automotive industry is going through fundamental disruption that also presents considerable challenges for Bosch. The following comparison illustrates the implications of technological change in the context of more sustainable mobility: if it takes ten associates to manufacture a diesel injection system, only three are needed to manufacture a gasoline injection system, and only one for an electric drive. Challenging economic trends also leave Bosch with no choice but to adjust its workforce.

Our objective is to make this transition in as socially acceptable manner as much as possible and consistent with our People & Organization Strategy. The commitment to making the necessary adjustments as socially acceptable as possible is also enshrined in various collective bargaining agreements with employee representatives and in a combined works agreement governing how crisis situations are dealt with. As a responsible employer, we want to cooperate with the works councils and trade unions in our associates' interest, and find constructive solutions to save jobs.

Aiming to keep as many people – and their skills and expertise – on board as possible, we utilize options to reduce weekly working hours. As the various business units and locations are affected in different ways by current developments, differentiated solutions are needed. One example is the dedicated referral platforms that have been specifically set up for Bosch to refer associates internally (potentially after training) or externally to other employers (seamlessly from one job to another).

Beyond that, we prioritize adjustments based on natural attrition, early retirement, and voluntary redundancy on the basis of severance pay. We also make use of possibilities to reduce working hours, including offering our associates part-time work arrangements.

In addition, in 2022 several programs were initiated or continued with the aim of transforming company sites, both in direct and indirect units. In all cases, participation by associates in these programs is voluntary. The measures to reduce working hours agreed in 2020 with works councils at the Bamberg, Feuerbach, Homburg, and Nuremberg sites remain in effect, although the reduction of working hours in Bamberg has been suspended in response to the good utilization of capacity. At the same time, redundancies have been ruled out for the duration of the agreements.

Support and advice for our associates' professional development

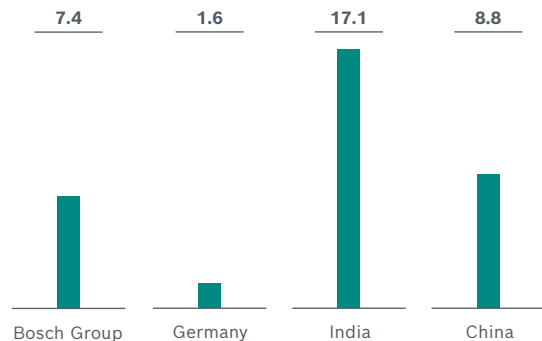
Set up in 2019, the People Acquisition Campus supports Bosch associates in Germany affected by the transformation in their professional development within the group. In the application phase they can, for example, obtain personal advice to help them find suitable job offers or have application training arranged. Under certain circumstances, there are also a wide range of qualification opportunities fully financed by the employer if associates need to acquire specific skills. Since its launch in 2019, the program has already helped some 950 specialists – many of whom from the Mobility Solutions business sector – to find a new position within the company. On top of that, a large number of associates have been able to find employment outside the company.

5.2 Employer of choice

In an increasingly highly competitive labor market, it is vital that we attract the best talent and make sure they remain enthusiastic about Bosch in the long term. This applies in particular to people who drive forward our transformation from a traditional hardware manufacturer to a leading supplier of connected hardware, software, and services. We offer extensive learning opportunities to encourage our associates to continuously advance their qualifications and help them take on new tasks and business fields. For this purpose, we continuously analyze changes in skills profiles.

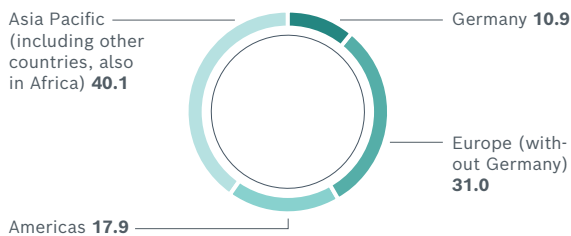
44 | Voluntary turnover rate

Bosch Group 2022, selected countries, in %



45 | New hires

Bosch Group by region, in %, as of December 31, 2022



We accompany our associates in their professional development and help them strike a work-life balance. Therefore, we offer personalized development paths to address changing needs at different life stages. In this way, we create work conditions for everyone within the company that allow each individual to reach their full potential and optimally contribute their creativity (also see the “[Learning and development](#)” section).

To position Bosch as employer of choice in an increasingly highly competitive labor market, we launched the Work #LikeABosch campaign in 2021 and continued it successfully in 2022. It is intended to convey, tongue in cheek, the core values that we as employer embrace: from a whole range of development opportunities to respectful teamwork and through to an environment shaped by clear values and a culture of sustainability (see the “[Company | Sustainability strategy and culture](#)” section). In 2022, the campaign won the Digital Communication Award 2022 in the Recruiting or Employer Branding category. The recruiting campaign also made it onto the shortlist for the Trendence Awards 2022 and the HR Excellence Awards.

We benchmark our turnover rate against the respective market average as an indicator of how attractive we are as an employer. As a result, we are able to make any adjustments necessary at an early stage, for example in our employment conditions. Our objective is to always keep voluntary turnover at Bosch below the average for each respective country. The fact that our associates rarely terminate their employment relationship speaks for itself. However, there are regional differences. While it is more common for workers in India and China to switch employers frequently, in Germany they tend to remain loyal to their company for a very long time. In Germany, where around a third of our total workforce is employed, the turnover rate is just 1.6 percent. The global average for the reporting year is 7.4 percent.

Remuneration and social benefits

Bosch sees itself as a hands-on social partner that actively helps shape agreements, sets attractive parameters, and offers its workforce pay that reflects performance and market conditions. Company pension benefits are generally paid worldwide and are also granted to associates working part time. However, there are regional differences in their terms and conditions. Where benefits are tied to the level of income, they vary in terms of amount. In addition, we offer our associates other social benefits, such as a company healthcare scheme (also see the “Occupational health and safety” section).

Basic principles of the remuneration system

Bosch has established remuneration principles applicable worldwide governing fair pay in line with market conditions. If the requirements and tasks are comparable, Bosch makes no distinction in the remuneration of male and female associates. Individual remuneration arrangements comprise fixed and variable components and typically reflect the requirements of the given job. Performance-related or market-specific aspects are additionally taken into account for some groups of associates. In the case of groups of associates subject to rules comparable with collective bargaining agreements, remuneration models are adapted to local and regional regulations. All statutory minimum wage regulations in individual countries are complied with in full.

The principles underlying the remuneration system at Bosch are governed by a central directive that is applicable worldwide. It is intended to ensure an attractive remuneration level in line with market conditions for all associates and strengthen our competitive position, while enabling the adjustment of remuneration systems to local conditions in response to the increasing volatility of markets. As a consequence, within the framework of the defined basic principles, differences can arise in the remuneration systems of individual operating units, regions, countries, and locations. Worldwide standards also apply to management remuneration at Bosch. Having become outmoded, individual bonuses were replaced by a collective profit participation model for management back in 2016.

Work-life balance

Bosch wants to support its associates in striking a balance between their individual career goals, personal lifestyle, and objectives. Therefore, we are working on the continuous flexibilization of when and where associates work – through initiatives such as Smart Work – in compliance with legal requirements. A decisive determinant of success in this context is the continuous evolution of our work culture. With this in mind, we share best-practice examples via internal communication channels to provide executives and associates with guidance on how to achieve a successful work-life balance. Our guidelines for a flexible and family-friendly working culture cover, among other aspects, a fast return to work after a period of leave, job sharing, or part-time leadership. Meanwhile, they have been introduced in many countries or adapted to country-specific requirements. Various working time models have also been introduced in this context (especially mobile working and part-time models), for example in China, India, Mexico, and the United States.

Flexible working conditions

Bosch wants to be a pioneer when it comes to regulating mobile and flexible work. We empower our associates to structure their working time individually while addressing business requirements in the best possible way. Accordingly, many different working time models are used in the Bosch Group across all hierarchy levels, including part-time work or job sharing.

46 | Part-time associates

Bosch Group, by region and by gender, as of December 31, 2022

	2022
Bosch Group	24,741
By region	
Europe (without Germany)	4,995
Germany	18,331
Americas	726
Asia-Pacific (incl. other countries, e.g. in Africa)	689
By gender	
Female	14,412
Male	10,329

Back in early 2014, we introduced in a combined works agreement in Germany the right of associates to mobile working to the extent that it is compatible with their tasks. In 2018, these rules were adopted in the collectively bargained regional agreement for the metal industry. Meanwhile, mobile working has become an additional standard for Bosch worldwide. That means that, where their job requirements allow, associates in all countries are entitled and encouraged to take advantage of the flexibility offered by mobile work.

Personalized solutions thanks to Smart Work

As many as 130,000 associates worldwide worked from home during the pandemic-related lockdowns. This enabled us to successfully master the challenges posed by the pandemic. At the same time, the opportunities that mobile and hybrid work offers for Bosch became evident.

To harness these opportunities, the company launched the Smart Work initiative. It leverages the overlap between the experiences made with mobile working and Bosch's business objectives – thereby setting out the framework for global collaboration at Bosch. One key principle in this respect is that work done outside company premises is just as valuable as work done on-site. Associates can decide where to do their work upon arrangement with their team and as long as the place of work is suitable for the task. Teams can decide together with their line managers how they want to organize their working day to fulfill their tasks. This way, Smart Work produces personalized solutions to meet the company's requirements and at the same time take account of location- and country-specific factors as well as the wishes of the diverse teams and their members. We are confident that the greater autonomy our associates enjoy is an important foundation for achieving the best possible results – and that this approach will further reinforce the appeal of Bosch as an employer.

This was also confirmed by our executives when we asked them in 2022 about their experiences with Smart Work. A large majority – around 90 percent of respondents – said they have already implemented the Smart Work approach in their teams to the satisfaction of everyone involved. The changes in terms of collaboration have

had a positive effect on work-life balance in particular – according to around two-thirds of respondents. They believe that hybrid and accordingly also mobile work generates more positive than negative effects with regard to productivity and focusing on important issues.

Web-based training was also made available to our executives recently to help them further implement Smart Work. More than 20,000 executives took advantage of this offer in 2022. At the same time, in 2022 the possibility was introduced for associates to work remotely from outside Germany for up to 54 days under "Smart Work Abroad." This new offer is in high demand from associates as well as applicants and additionally plays a role in Bosch's appeal as an employer.

Other agreements and benefits

By creating a work environment that is as flexible as possible, we help our associates strike a work-life balance. Furthermore, we support them by offering childcare at specific locations as well as the option to take parental leave or leave of absence to care for family members. In addition, they can take sabbaticals, special leave, or paid leave in special circumstances. Especially with families in mind, Bosch offers a broad spectrum of measures in order to arrange care services in emergencies, for instance. Associates are also active, for example, in "Elder Care" – a working group that offers a platform on the "family@bosch" associates network dedicated to the exchange of information on, and experience with, taking care of family members and that supports affected colleagues with advice and assistance. In principle, the aforementioned offers are also available to associates on limited-term contracts. The same applies to the use of our portal offering a nursing care information service as well as direct contact with nursing care providers.

Diversity, equity, and inclusion

Bosch values the diversity of its associates' perspectives, experience, and lifestyles. We are convinced that teams with a range of vantage points, educational and cultural backgrounds, as well as personal qualities often produce better results and that mutual appreciation of each team member's uniqueness is beneficial for the work climate. That is why we have firmly anchored diversity in our mission statement "We are Bosch" as one of our values and foster and encourage diversity as part of our corporate strategy.

Our Code of Business Conduct, too, underscores that Bosch respects and protects the personal dignity of each individual, tolerates neither discrimination nor harassment, and promotes diversity, equity, and inclusion. It is very important to us that – independent of gender, age, background, or any other aspects – all associates around the globe feel valued and can devote their individual strengths, expertise, and potential to the company.

Associates have a range of options for reporting possible violations of Bosch values or legal regulations, for example using Bosch's reporting system. This is a platform for submitting reports to the compliance department – anonymously if they wish.

Embedded within the organization

Back in 2011, Bosch established a central project team to promote diversity within the company and embed the related commitment within the organization. The project management reports directly to the relevant member of the board of management and director of industrial relations. In 2021, the project's scope was enlarged

to reinforce our focus worldwide on diversity, equity, and inclusion (DEI). Its objective was specified further at the same time: the DEI project team contributes to Bosch becoming more diverse, equitable, and inclusive. To achieve this, the team sets the framework by providing a global strategy and defines minimum standards. Throughout the group, the team members advise, support, and network people and activities. They demonstrate diversity, equity, and inclusion, and advocate the topic within and outside the company.

In order to achieve these objectives, the DEI project team cooperates closely with the DEI Booster Board, which includes 15 colleagues representing different countries, organizations, and hierarchy levels. It serves as sparring partner for the project team and as multiplier. More than 140 DEI coordinators as well as the numerous members of internal company networks also support the project team in embedding topics of diversity, equity, and inclusion within the organization and making them visible. Positive examples highlighting the benefits of DEI for Bosch are used to communicate the motto "Diversity is our advantage" around the world using various channels and invite associates to actively support the topic themselves.

As the Covid-19 pandemic made it impossible to hold International Diversity Days as an in-person event, a virtual Diversity Week was initiated in 2020 and it was again successfully continued in 2022: more than 160 events held online and on-site reached around 19,000 people around the world, fostering an international exchange on DEI.

Dimensions of diversity

We regard diverse teams as an important competitive advantage, as they strengthen our innovative power and tap significant potential for our company through their diverse perspectives and strategies for developing solutions. In order to do justice to the different dimensions of diversity, we have established a variety of measures. The following are some examples:

► **Gender:** We want to further increase the proportion of women in our total workforce, which is currently 28.8 percent (previous year: 28.3 percent). We also want to further increase the share of women in leadership positions, which – considering all management levels – is currently at 19.2 percent (previous year: 18.4 percent). The aim is that by 2030 at least one in four leadership positions at Bosch worldwide are held by a woman.

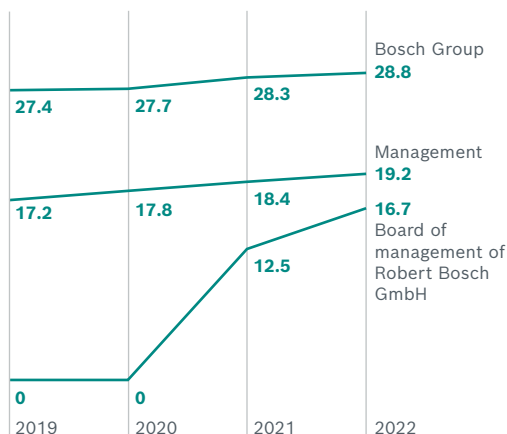
On account of legal requirements in Germany, targets apply for the proportion of women on the supervisory board, on the board of management, and in the first

two management tiers below the board of management at Robert Bosch GmbH and the German subsidiaries subject to codetermination requirements. For further details, see the annual report (page 37 et seq.).

We support female executives around the world in their professional development, for example through mentoring and seminar programs such as the Business Women's Program. Added to this, there are numerous internal diversity networks, including the global women@bosch network. The latter offers a forum for exchange and mutual support and again carried out various initiatives in this respect in 2022. For example, more than 250 mentoring tandems were formed for international mentoring, and over 700 female associates also attended Working Out Loud Circles on the subject of #Femaleempowerment. In addition to the internal measures, we collaborate with various external initiatives such as PANDA | The Women Leadership Network or Spitzenfrauen BW, a platform for women in leadership positions in Baden-Württemberg, Germany.

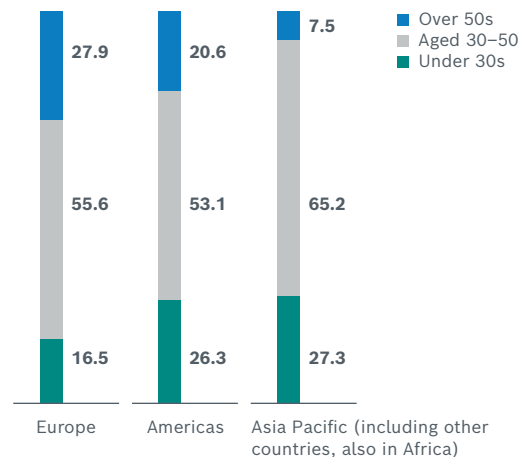
47 | Proportion of women

Bosch Group 2019–2022, in %



48 | Total workforce by age group

Bosch Group by region, in %, as of December 31, 2022



► **Generations:** We work together across generations, taking account of the various needs of different age groups and adjusting our leadership tools accordingly. Therefore, we use professional training and flexible working (time) models adapted to associates' life stages. Through Bosch Management Support, a subsidiary founded in 1999, we also temporarily assign project and advisory tasks to former associates. These specialists and executives, who can have up to 40 years of Bosch experience, are deployed above all where professional advice is needed at short notice. The pool currently comprises around 2,300 experts worldwide, who are placed internationally.

► **Internationality:** People from around 150 nations work together for Bosch. This diversity allows us to successfully cooperate with our international customers, partners, and suppliers. Accordingly, we attach great importance to fostering our international diversity networks such as "For Bosch abroad" or the Bosch Turkish Forum. With over 2,400 international assignments each year, we also encourage international exchange within our workforce. Added to this, there are numerous seminars on the subject of internationality, global collaboration, and various cultures.

► **People with restricted abilities:** We increase our innovation power by focusing on our associates' individual potential – not on their limitations. That is why we create an inclusive work environment that takes into consideration and appreciates everybody's needs and skills. Dedicated representatives at the company

sites give a voice to the interests of our associates who have restricted abilities. Internal networks, such as the Be-Adept@Bosch network founded in North America in 2021, foster exchange. In 2022, the Be-Adept network held the first global disability conference at Bosch. Some 20 virtual sessions focused on topics such as vision impairment, ADHD, synesthesia, inclusion, and mental health. Many associates shared their own experiences and described their personal challenges. The conference is to be held annually in future.

In cooperation with Werkstätten für Menschen mit Behinderung (workshops for people with disabilities), we offer additional work inclusion opportunities. With this in mind, we are also active in Germany in the association Bundesarbeitsgemeinschaft Werkstätten für behinderte Menschen e. V. (German Federal Association of Sheltered Workshops). At 5.6 percent, the share of people with severe disabilities in the Bosch Group in Germany remains at a level comparable to previous years (previous year: 5.9 percent).

► **LGBT*IQ:** At Bosch, all associates are valued – irrespective of their sexual orientation or gender identity. Our global LGBT*IQ network b:proud helps create an open corporate culture. In 2017, it launched the LGBT*IQ Ally initiative. Allies are associates from all business sectors whose role is to openly address possible incidents of bias or discrimination to help shape the transition to an open work culture. In 2022, the b:proud network further advanced international exchange and stepped up activities in the various LGBT*IQ dimensions. The network is also active beyond the boundaries of our company.

Visible commitment – beyond corporate boundaries

We advocate diversity, equity, and inclusion also outside the company. That is why Bosch is a founding partner of Employers for Equality, a program for gender equality and diversity in companies. It is aimed at companies and institutions of any size that wish to make their diversity efforts more effective and reach individual goals. The program gives Bosch associates access to a wide range of learning opportunities relating to diversity, equity, and inclusion. In addition, we became signatory to the Diversity Charter in 2007.

We support the foundation PrOut@Work, which advocates equal opportunities in the workplace for LGBT*IQ persons of any sexual orientation or gender identity as well as eliminating homophobia, biphobia, transphobia, and interphobia in the business world. Bosch regularly takes part in the Christopher Street Day (CSD) in several cities. In the Pride Month June, we also make our commitment visible through rainbow flags at many locations.

Awards as an employer of choice

Various awards that we received in the reporting period are proof that our measures to attract and retain associates are effective – and that Bosch is the employer of choice for a wide range of target groups. For instance, Bosch made 24th place in Forbes' "World's Best Employer 2022" ranking, again putting it in the top group of successful international companies, most of which were from the automotive and software sectors.

In Germany, Bosch has for years been one of the most sought-after employers. This was confirmed once again in 2022 by the Universum consulting firm in its Young Professional Survey of some 13,000 persons with up to eight years of professional experience who shared their needs and revealed their first-choice employers. Among the engineers surveyed, Bosch successfully defended its second place in the ranking, and among IT graduates we were able to improve our position compared with the previous year to rank eighth (2021: tenth). Bosch's high standing among experts and executives is also confirmed by the Professionals Barometer published by the market research company Trendence: out of a total of around 230 companies, Bosch ranked fifth.

In addition, Bosch's own employer image study shows a marked improvement in our appeal as employer of choice. It confirmed the strength of our employer brand worldwide, particularly among engineers and respondents in the IT sector. With the study, which we conduct every two to three years in our key growth markets, we aim to gain an insight into our reputation as an employer and also analyze the target groups' needs. This allows us to adapt what we offer to what is required on the market and remain an employer of choice in the long term.

5.3 Leadership and collaboration

Good leadership and collaboration are founded on a willingness to continuously reflect on our convictions and associated actions. The underlying principles are summarized in “We LEAD Bosch” – a total of ten principles addressed to managers and associates equally that describe the leadership and collaboration culture desired in the company.

It is the job of our executives to shape the conditions such that each individual associate can develop and unfold their potential (for further details on development, see the “[Learning and development](#)” section). Executives should act and be recognized as role models, create an atmosphere of trust, be reliable partners, and also promote an open corporate culture. They support their team members’ autonomy and efficacy, for example by putting agile work methods into practice and establishing conducive framework conditions.

Feedback and survey

Bosch is undergoing one of its most fundamental transformation processes in its history. To enable change, it is essential that the corporate culture also evolves. We are convinced that clear and purpose-driven feedback is the key to lasting improvement. With our new “impact:” feedback landscape, we therefore want to give associates the opportunity to express their opinions and initiate changes. As it is a digital survey, it can in future be conducted with greater frequency and on more differentiated themes. The data are collected systematically, allowing those in charge to identify any need for action or change at an earlier stage than before and, as a result, to make any necessary adjustments faster. Priority topics are strategy, teaming, and leadership. Our associates’ experience when they join the company or obtained in training courses is also taken into account. “impact:”

Leadership requires self-reflection

In times of radical change and transformation, leaders have a special responsibility toward their team. They are called on to actively shape change and also have to manage risks and uncertainties. To support others effectively in this respect, executives must first learn to lead themselves. This was the underlying conviction that gave rise in 2021 to the “transform2grow lab” in the Mobility Solutions business sector. Executives the world over are invited to embark on a virtual learning journey. Since 2021, around 1,000 associates have made use of this opportunity.

Based on the mobility strategy and the related changes affecting executives and associates alike, participants were offered a range of different modules and perspectives to help them reflect on their personal values, attitudes, and individual conduct. This increases their personal resilience in dealing with changes and challenges and also creates the basis for accompanying associates through the transformation.

The project was also noted outside the company: the University of St. Gallen recognized transform2grow lab’s efficacy as a leadership initiative with first place in the St. Gallen Leadership Awards 2022.

sets the focus on the difference associates can make with their contribution. It offers the following elements that are successively being developed and established in the company.

impact:strategy enables management to reflect specifically on the leadership and collaboration culture and develop it further. Two essential feedback elements are the Executive Pulse Check, which addresses executives in middle management or higher, and the Bosch Pulse Check, conducted for the first time in 2022, which surveys one in five Bosch associates worldwide selected at random.

impact:leadership provides executives with an instrument for obtaining regular feedback from their staff about their leadership behavior in order to engage in an open, trust-based dialogue – another important component of the new leadership culture. The methodologies offered within impact:leadership range from workshop concepts through to extensive Leadership Feedback 360°. The latter was used in 2022 by more than 900 executives to obtain feedback from their teams, supervisors, and colleagues, and to work on their leadership behavior.

impact:team is still in the design stage and is now scheduled for piloting in 2023. The rollout in stages of **impact:experience**, which started in October 2020, will continue into 2023. Some 200,000 associates worldwide are currently already being surveyed online about their experiences at pivotal moments during their individual career.

Global leadership survey

Once a year, in the Executive Pulse Check, Bosch asks executives around the world for their assessment of current strategic topics. This allows us to systematically determine sentiment in the company and identify where there is any need to change our strategic alignment. The survey results are elaborated together with recommended actions for the board of management. They are also shared transparently with all participating executives and are used as a basis for dialogue between executives and associates.

More than 60 percent of executives invited took part in the most recent Executive Pulse Check in October 2022. The content focus was placed on the current business situation, the strategic issues shaping the future, and Bosch's technological and cultural transformation. A total of 95 percent of executives said they feel well-informed about the business situation. The vast majority of executives felt sufficiently empowered to communicate the key elements of corporate strategy (90 percent). In addition, 90 percent of executives believe that group-wide carbon neutrality and corresponding sustainability activities will prove a competitive advantage for Bosch. Feedback on Smart Work, Bosch's new internal concept for mobile work and future collaboration, was very positive. Overall, 90 percent of executives confirmed that they have already successfully created a hybrid working environment to the satisfaction of everyone involved.

Representative poll of all associates

The Bosch Pulse Check, which is also part of the impact:strategy element, is a representative survey of about a fifth of the workforce that was carried out in late 2022. Twelve questions relating to leadership, collaboration, prospects, and general well-being were formulated to capture the mood among associates – especially in light of the current global crises. The board of management will announce the findings in early 2023, which will serve as a basis to determine further action.

Employee rights

Bosch has a tradition of maintaining open and constructive dialogue with employee representatives. Its aim is to make decisions in consensus to the greatest extent possible. We are convinced that we can implement the change processes needed to secure our competitiveness only in cooperation with employee representatives, in other words, if associates and the company equally share the responsibility for the future of Bosch. As part of a transparent and open information and communication policy, briefings are provided in a timely manner and with due regard to the relevant facts and national regulations. We continuously seek to consult and involve employee representatives in the process at the earliest possibility in the course of the transformation process.

The framework for cooperation with employee representatives as well as the corresponding agreements is defined by a central directive from 2017 that is applicable worldwide. This is based on the Basic Principles of Social Responsibility at Bosch that have been in effect since 2004 and govern all relations between entities of the Bosch Group worldwide and employee representatives. Among other matters, the central directive lays down regulations in accordance with ILO conventions 87 and 98, which guarantee workers' freedom of association and the right to collective bargaining. For instance, the directive sets out that workers can form independent trade unions, join them of their own free will, or participate in the election or formation of employee representation. In addition, nobody in the company receives preferential treatment or is disadvantaged on account of their membership in a trade union or employee representation. The Basic Principles of Social Responsibility at Bosch are freely accessible on the Internet in more than 30 languages and are also available on the intranet. Our executives receive training to help them comply with these principles (see the "[Management approach | Guidelines and standards](#)" section).

Associates can report non-compliant conduct via Bosch's reporting system. In addition, the Basic Principles of Social Responsibility at Bosch give everyone in the company the right to complain to their respective line manager or senior management if they believe that they have been treated unfairly or discriminated against with regard to their working conditions. Associates may not suffer any disadvantage as a result of lodging such complaints.

Another established process is in place for the handling of complaints by the international network of employee representatives (trade unions and European works council). Individual cases are then handed over, for example by the chairperson of the European works council, to the competent corporate office, the board of management, or the supervisory board.

The central directive on "Cooperation and agreements with employee representatives" provides for the appointment by the company of a negotiating partner for existing employee representatives. The person appointed must have wide-ranging powers of representation for the unit concerned, is appointed through a formal process, and is responsible for collaborating with the relevant employee representative body. This creates an important organizational factor in ensuring that the rights of employee representatives are upheld.

Cooperation with works councils and trade unions

Practically all Bosch locations in Germany have a works council and the associates are subject to works agreements. Only a few small units are the exception to the rule. Collective bargaining agreements are in effect for practically all units at Bosch in Germany, covering some 118,900 associates, or roughly 78 percent of the workforce. On account of the general validity of original national or group works agreements, even for locations without a works council, all associates of the Bosch Group in Germany are also covered by collective agreements. The only exception to this rule are senior executives.

Bosch has also concluded collective bargaining agreements in many countries outside Germany, both within the EU and elsewhere, including Turkey, Malaysia, Serbia, Japan, and India. Combined works agreements additionally govern cohesion and cooperation in the company. European works councils provide institutionalized cross-border employee representation in Europe. In accordance with the respective national regulations, there are local employee representatives in China and India, for example, but also in many other countries.

Agreements with the International Trade Union Confederation

Based on the ILO core labor standards, Bosch already entered into agreements with the International Trade Union Confederation as early as 2004. Particularly the colleagues responsible in the regions locally maintain dialogue channels with employee representatives and the relevant organizations. In this process, we relentlessly strive to improve conditions in the respective countries. Restrictions on the rights of employee representatives are identified in particular in cooperation with the combined works council, the European works council, and the international employee representatives. If any problems arise locally in the process of implementing our standards, the HR corporate sector deals with the issue and works toward finding a solution that achieves the greatest possible consensus according to our principles.

5.4 Learning and development

Dynamic technological progress as well as new working processes and methods make lifelong learning crucial for all associates. For Bosch, a qualified workforce is a strategic determinant of success. We see ourselves as a learning organization in which learning is an integral element of day-to-day work. This includes building up the competencies that will be relevant in future and empowering people to acquire knowledge faster and more flexibly. As a result, our associates benefit from increased employability and the company secures its competitive position.

Associate development

In response to ever-changing framework conditions and requirements, we continuously adapt and optimize all associate development formats. We create a framework and promote a culture that encourages all associates to shape their individual careers according to their abilities and interests. Our development formats aim to match the motivation and expertise of our associates with the needs of the company. A wide range of options are available to associates, executives, and HR business partners to discuss individual development goals together and agree on suitable measures to achieve those goals. Competence management at Bosch is a systematic process for identifying professional and methodological competencies and helping associates to develop. The aim is to ensure that the right abilities are available in the right place at the right time. By “competencies” we mean our attributes, skills, and behavior, which are key to successfully dealing with current and future tasks. Our competence model sets the framework for recruitment, feedback talks, assessment of potential, and support programs. It comprises four competence areas, each of which has two competencies assigned:

- ▶ **Entrepreneurial competence**
Result orientation, future orientation
- ▶ **Leadership competence**
Leading myself, leading others
- ▶ **Interpersonal competence**
Collaboration, communication
- ▶ **Professional competence**
Breadth of experience, depth of knowledge

The competence model is applied in different formats that support our associates in their personal development:

Goal and performance dialogue: As part of the annual goal and performance dialogue, executives and associates look back over what was achieved in the past year, discuss targets for the year ahead, and give each other feedback. Some 204,000 dialogues were held in 2022.

Personal development dialogue: To better reflect the requirements of agile working, in 2021 the personal development dialogue was introduced in units that apply agile methods. In this format, associates talk to a person of their choice about their personal development. It can replace the goal and performance dialogue in these units.

Career and development dialogue: The career and development dialogue takes place between associates and their line manager, the next higher executive, and their HR business partner. It deals with the associate's medium- and long-term development goals and sets out the course for their achievement. Some 3,500 personal development talks were held in 2022.

Talent and associate review: Once a year, supervisors, experts, and HR business partners discuss the potential of their staff so as to identify and advance talent at an early stage.

Talent pool: Talent pool members take part in training programs to prepare for the requirements of the next-higher level. Among other things, this membership gives them the opportunity to network across sectors. In 2022, the talent pool included some 7,900 associates, the largest number yet since the platform was established.

Bosch Learning Company

Launched in 2016, the Bosch Learning Company (BLC) initiative aims to get our associates in shape for the digital transformation and to establish a learning, leadership, and collaboration culture that enables self-determined, lifelong learning. The BLC program is available at all company sites worldwide and provides learning opportunities on different topics in a range of formats for associates across all organizational levels. Developed by international teams that combine various perspectives, the content offered is structured into three pillars:

► **Certified training:** The first BLC pillar combines various certified training programs with which we aim to give associates practical support in meeting new challenges. Therefore, we have developed learning opportu-

nities tailored to their needs. Here, too, the focus is on digital transformation. The new project “LernWerk,” for instance, is intended to give associates in manufacturing and logistics the skills they need to master the IT challenges in their respective unit. For this purpose, Bosch carried out two surveys on the topic of digital literacy and learning at 12 plants beforehand and created a corporate model for developing digital literacy in the workshop. This will serve as a basis to make the right content and learning paths as well as appropriate learning guides available to associates from 2023.

► **Digital learning:** This pillar covers projects on the infrastructure of digital learning. An array of digital formats is available to individual associates or complete teams to quickly and flexibly take up training opportunities tailored to their needs. As in the previous year, in 2022 the focus was again placed on enhancing the existing digital learning infrastructure. Trainers as well as HR and technical specialists can now use Bosch’s own learning portal to create learning paths using existing opportunities offered and guide associates through the training opportunities in a more targeted manner. There are also plans to personalize learning recommendations further, partly automated, to match the associate’s position and level of knowledge. The learning experience platforms available were reviewed in 2022 to determine whether they are suitable for this purpose, and one has been selected for piloting in 2023 in various Bosch units.

Skill Hub – a marketplace for capabilities

Since 2021, the Bosch Skill Hub enables associates to network with others on the basis of their individual skills in some regions. Over 6,000 listings are posted in the system for that purpose, and the number is continuously growing. Individual profiles are designed to resemble familiar social networks, making it easier for users to find their bearings quickly. Associates and mentors alike can create a post on the platform to offer their support to others wishing to upgrade their skills in a certain topic. Associates looking to advance their personal development can either search for a suitable mentor or browse specific training measures suggested by the platform.

And, last but not least, the Skill Hub offers a section for publishing what are referred to as “opportunities” – temporary offers to work in other teams. The aim is to cover staffing bottlenecks over a limited period of time, and at the same time provide an opportunity for the “new” team members to build their capabilities by working in a different field. This gives rise to a “marketplace of capabilities” to the benefit of associates as well as the company. The Skill Hub is being rolled out successively and is scheduled to be available group-wide by 2025.

► Self-managed learning and a culture of learning:

There are a variety of learning formats, some informal or self-managed by associates, in which participants can share their knowledge in a network. This also includes self-organized learning forums or, for example, the Working Out Loud initiative, which offers over 1,000 events each year. In addition, associates can publish their own instructive videos on the internal Bosch Tube platform. External digital learning platforms (e-universities) meanwhile offer associates access to over 120,000 learning content items and the means to obtain knowledge from external scientific and business experts in a self-managed and flexible format. The logical next step after the Global Days of Learning in 2021 was the creation in 2022 of the Bosch Club, an internal learning platform for informal learning that is intended to leverage the expert knowledge available at Bosch anywhere and anytime. All associates can offer online learning sessions on this platform to share their knowledge. Likewise, they can attend sessions anytime and free of charge – regardless of where they are currently located around the world.

Investment in training

In 2022, Bosch invested 280 million euros (previous year: 203 million euros) in training for its associates. Owing to the pandemic, once again a large number of classroom training courses had to be held virtually. Furthermore, in 2022, Bosch again focused its training programs on top-

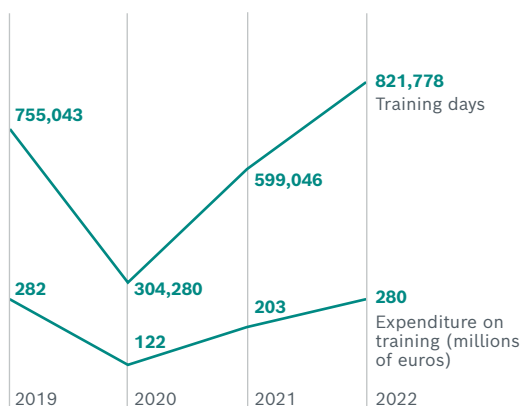
ics that are particularly relevant to the transformation in order to address the difficult economic conditions.

In total, our associates attended roughly 821,778 training days in 2022, including seminars and webinars (previous year: 599,046). These training measures are based on target-group-specific curricula set for associates with standardized profiles. At present, there are about 3,500 (previous year: 3,300) target-group-specific curricula, and roughly 156,000 (previous year: 151,000) associates use at least one such learning curriculum for their training. In an effort to enable associates to continue their training during the pandemic, numerous face-to-face events were again converted into digital formats in 2022. A total of 66 percent of all training hours in 2022 were digital. Looking ahead, Bosch will continue to focus on digitalizing the trainings offered. The aim is to offer 85 percent of all training hours in digital formats by 2025 – without compromising quality, learning success, or participants' satisfaction. In this respect, learning formats that can be used anytime and anywhere ("learning in the moment of need") are gaining in importance. In addition, associates have access to further training opportunities through e-universities. Since the corresponding licenses were introduced in 2019, some 25,500 associates have taken advantage of this opportunity for self-managed learning.

All training measures carried out are systematically evaluated. The resulting associate feedback obtained is made available by the training providers and taken into

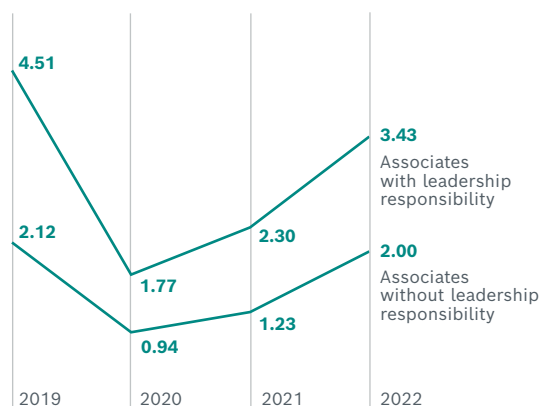
49 | Training activities

Bosch Group 2019–2022



50 | Average training days

Bosch Group 2019–2022, without Bosch Hausgeräte GmbH



account in revisions. In addition, the Learning Management System permits effectiveness audits in accordance with ISO for all formal training measures. Target-group-specific curricula aligned to the competencies required by specific groups of associates are revised each year by what are known as “subject owners” and adapted accordingly as requirements change.

Vocational training and university studies

For over 100 years, Bosch has been using apprenticeships and traineeships as a means of covering its needs for qualified young talent, while also living up to its corporate social responsibility. It was in 1913 when Robert Bosch founded the first apprentices’ workshop. Bosch’s vocational training measures are offered at about 50 company locations in Germany and 100 branches in over 30 countries. Our young talents have a choice of over 30 career profiles. At present, more than 6,100 (previous year: 6,000) Bosch apprentices and trainees around the world are preparing for their future careers, some 4,000 of those in Germany. We offer a large number of them a permanent job once their training is completed.

For years, Bosch has been training more candidates than it needs, offering in Germany alone roughly 1,200 apprenticeships and traineeships every year, with about 300 of those under programs with universities of cooperative education. We receive over 13,600 applications on average for these training positions – a testament to just how appealing training at Bosch is. After the pandemic-related interruption of international exchange programs, the number of assignments as part of training programs has started to increase again since 2022.

As a globally operating supplier of technology, Bosch sees itself as a trailblazer for the concept of dual education and training in cooperation with universities, also in Asia and Latin America. In cooperation with the Chamber of Industry and Commerce (IHK) and the German chambers of commerce abroad, we are helping establish dual training programs based on the German system in a number of countries, among them China, India, Vietnam, Brazil, and Turkey. For instance, Bosch Vietnam Co., Ltd. in cooperation with the Delegate of German Industry and Commerce in Vietnam (AHK Vietnam) and the LILAMA2 International Technology College (Dong Nai) has since 2013 been offering a 3.5-year course to qualify as an industrial mechanic or as a mechatronics engineer.

Together with Senai, Brazil’s National Service of Industrial Training, Robert Bosch Latin America in 2021 launched the Digital Talent Academy, which offers a two-year program with tailored modules for trainees aged between 16 and 19. The curriculum includes topics such as smart automation, software development, artificial intelligence, data analytics, and user experience.

Supporting students

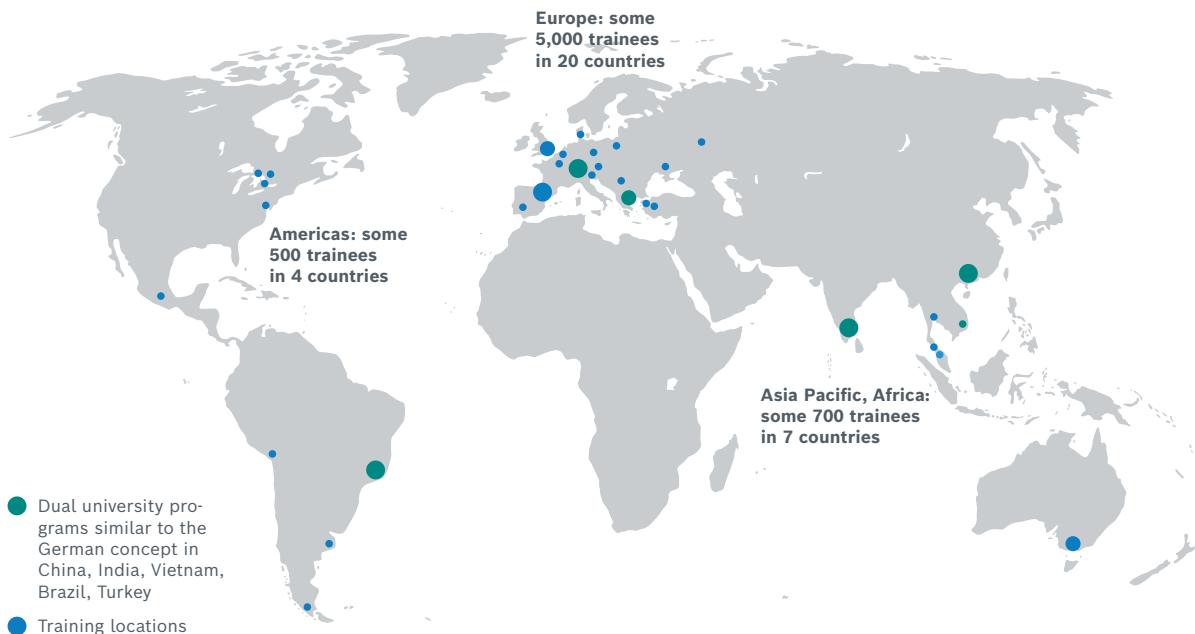
Back in 1972, Bosch together with other companies founded the model of the universities of cooperative education in the state of Baden-Württemberg (today “Baden-Württemberg Cooperative State University”), making it one of the pioneers of the dual university program in Germany. Today, it offers about 30 different programs in healthcare, social services, technology, and business. With our PreMaster program, BA graduates can obtain practical experience while they pursue an MA course. This initiative allows us to establish contact with students at an early stage and at the same time help advance their professional and personal development. The program comprises a practical phase at the company

(no longer than 12 months) and an MA course phase. Participants are assigned to a specialist department that individually structures the content of the phase served at the company and, together with a personal mentor, supports participants during the complete duration of the program. In 2022, some 680 graduates took part in the PreMaster program.

are convinced that education should not be dependent on an individual's financial means. We also have offers such as mentoring to make sure scholarship holders are ideally prepared for their future advancement. Our associates, too, can apply for a training scholarship.

While still at university, students can already gain deep insights into various fields of work, for example in an internship, on a student work placement, or while working on their final-year project thesis. Diploma and MA graduates can pursue a PhD within the framework of a three-year employment contract in close cooperation between a specialist department and their university. In addition, Bosch in Germany has been providing financial support for talented students for many years because we

51 | Training and study at Bosch



5.5 Occupational health and safety



[Guidelines of Work Safety and Environmental Protection](#)

Our associates' health comes first. Measures to protect and promote our associates' health and provide a safe working environment at all times have top priority. The Sustainability and EHS corporate department manages occupational health and safety at Bosch using a group-wide process. Management of the operating units and local company sites are responsible for compliance with the centrally set requirements and goals. Designated EHS officers support them in this context. Current progress toward target achievement is reported regularly to all executives as well as the board of management of Robert Bosch GmbH, and also ad hoc in the event of particularly serious incidents (also see the "[Company | Sustainability strategy and culture](#)" section).

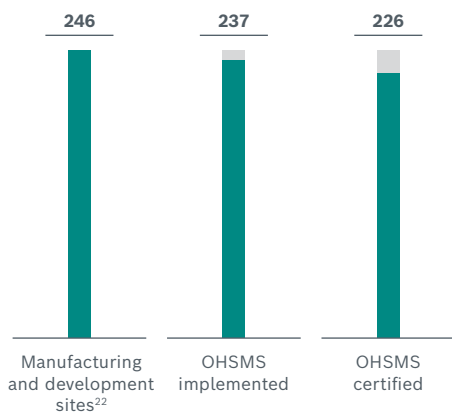
A guideline applicable group-wide defines the principles, organization, and responsibilities for occupational safety in the Bosch Group. Occupational safety and environmental protection policy is framed in the Guidelines of Work Safety and Environmental Protection. The principles and requirements of the group guideline are specified for individual target groups in a central directive that is applicable worldwide. As early as 2007, Bosch

introduced an occupational health and safety management system based on the globally recognized standard OHSAS 18001, which has since been developed further and today satisfies the ISO 45001 standard. As of the end of 2022, 237 out of the 246 relevant manufacturing and development sites²² had already implemented occupational health and safety management systems, of which 95 percent had been certified (also see Fig. 52). As a result, 99 percent of the workforce work at manufacturing and development sites that have an implemented occupational health and safety management system. Our original goal was for all relevant sites to introduce occupational health and safety management systems and have them certified externally by the end of 2020. Due to the Covid-19 pandemic, it was not possible to reach this goal, but we are continuing to work toward it rigorously.

Occupational safety

Preventing accidents and ensuring workplace safety is part of our responsibility as an employer. By 2025, we aim to lower the number of work-related accidents at Bosch to 1.45 accidents per 1 million hours worked. Whereas pandemic-related restrictions in 2020 helped lower the accident rate, we have recorded a slight increase in 2021. At 1.62 accidents per 1 million hours worked, the accident rate is at the level of the previous year. In relation to pre-pandemic years, this represents an improvement. Furthermore, there were no fatal accidents at Bosch in 2022. We believe we are on track to reaching our long-term target by 2025. Our efforts are aimed above all at minimizing the risk of accidents.

52 | Occupational health and safety management systems (OHSMS)
Bosch Group 2022



²² Manufacturing and development sites with more than 50 associates and that have been included in the scope of consolidation for more than three years.

Every year, we identify and assess potential occupational safety risks and classify them by priority. For this purpose, we refer to accidents reported in the Incident Management System as well as findings from internal audits under ISO 45001 or the audits of the internal audit department. On this basis, we develop specific risk mitigation programs and define key audit matters for subsequent audits. We analyze any occupational accidents causing at least one day of downtime, irrespective of whether Bosch associates or third-party staff are involved. In the event of serious accidents, special analysis methods are used for a detailed investigation of the root causes and to derive specific measures.

As in the past few years, in 2022 we again focused on the early detection of dangerous situations and hazards (hazard recognition). To this end, we continue to raise awareness among executives and associates through special training and in annual occupational health and safety campaigns to empower them to take a proactive approach to preventing accidents in their area.

Based on an internal regulation applicable worldwide, workplace or activity-related hazard assessments are carried out regularly. These are used as a basis for determining any preventive and protective measures needed, and our associates are instructed accordingly. We have defined clear regulations governing responsibilities and processes in order to ensure occupational safety also when we use external companies. These apply right from the outset when we select a service provider. We have set down in our Terms and Conditions of Purchase significant EHS requirements for suppliers, such as sufficient qualifications of their personnel and safe equipment. Our service providers also agree to name a person in charge of ensuring compliance with the supervision and control duty. In addition, our coordinators on-site must be consulted before work is carried out. As part of audits, we check whether the requirements and defined protective measures are being complied with. In the event of discrepancies, appropriate corrective action must be taken before proceeding with the work. Here, too, Bosch is committed to systematically developing its suppliers further (also see the [“Supply chain | Supplier assessments”](#) section).

Bosch also involves external partners, such as contractors, in its hygiene concepts for containing Covid-19. In the event that they fail to comply with the hygiene measures, for example by not wearing masks, measures can extend to their being barred from the premises.

53 | Occupational accidents

Bosch Group 2019–2022



Training and awareness-raising measures

It is our conviction that occupational safety begins with each individual's awareness for problems and their behavior. This is where we see the greatest potential for improvement, which is why we are focusing on measures to raise the awareness of associates. With six memorable principles, our Safety Basics initiative calls on all executives and associates to always consider occupational safety in their daily work:

- ▶ Safety is the basis for everything we do.
- ▶ As leaders we care about your safety.
- ▶ We ensure a safe work environment for all.
- ▶ We take care for each other's safety.
- ▶ We speak openly about safety.
- ▶ We have zero-tolerance to negligence.

Communication measures such as newsletters, posters, and videos, help to reinforce our safety culture and incorporate the principles in standard processes. Regular assessments show how safety basics are practiced and implemented at our company sites. To anchor the principles even more firmly, we also develop campaigns with a different focus each year.

As a large share of accidents is due to human error, we want to raise awareness among our associates for occupational health and safety matters as part of our EHS competence management and through occupational safety instructions and training. Activities at company sites play an important role in this respect. Our associates receive information through various campaigns to help them identify and eliminate hazards before an accident occurs. Examples in 2022 include the campaigns "Speak up, if not safe" at the site in Chennai, India, or "Sicher, gemeinsam, gesund" (safe, together, healthy) at the site in Nuremberg, Germany. We are increasingly using digital solutions to report and track critical situations and close calls. Because they are highly user-friendly, we are seeing an increase in the number of reports.

And, last but not least, the Sustainability and EHS Award is another means of raising awareness among associates. This year again, many applications from around the world were submitted in the occupational safety category. The award will be conferred on the three most impressive projects at an event with Bosch's board of management in the summer of 2023 (see the "[Company | Sustainability strategy and culture](#)" section).

Award-winning commitment

Bosch's commitment to occupational safety is recognized worldwide. The site in Hemaraj was singled out in 2022 by the Ministry of Labor as well as by the Ministry of Industry for an award for its high level of machine and occupational safety management and the low accident rate – which was zero in 2022.

In India, the Bidadi site won the Karnataka State Safety Award presented by the local authority (Karnataka Government's Department of Factories Boiler Industrial Safety & Health). The leadership culture and team spirit at the site were commended particularly as an important foundation for exemplary occupational health and safety. Furthermore, the British Safety Council selected the sites in Adegodi and Jaipur, India, for the International Safety Award 2022.

The Chinese site in Changsha was voted as one of the "China Healthy Enterprises TOP 100" by the National Health Commission of the People's Republic of China in recognition for its comprehensive health management system that includes, among other things, ISO certification, training on health and safety in the workplace, as well as awareness-raising for occupational safety matters among the workforce.

Occupational health

Each individual's health is of vital importance both for our associates' motivation and satisfaction and for Bosch as a responsible, high-performing company. We have therefore integrated occupational health in our fundamental principles of work and made them a fixed element of our corporate culture. As a person's health depends on many factors, associates and the company work together for a comprehensive approach to occupational health. Given that good leadership culture and team spirit among colleagues are key in this respect, guidelines for healthy management are firmly anchored in the "We LEAD Bosch" leadership principles.

Our occupational health management system "befit" covers a wide range of topics, from preventive medical care and physical and mental fitness to mental health and right through to tips on a healthy diet and workplace

design. An important role is also played by our reintegration management, as well as leadership, training, and competence development in relation to individuals' health, and the integration of people with reduced capacity to work and severe disabilities. In Germany and other countries, medical care is provided in the workplace by a large internal network of occupational health services with the support of external providers. In addition, many company locations have specialists on workplace design, in-house social services, and health management to answer health-related questions.

The health experts work together as a network, which also makes it possible for associates to obtain advice when they have flexible mobile work arrangements. Due to this development, the information platforms on the intranet are increasingly gaining in importance. Especially associates with mobile work arrangements can visit a "virtual health center" to obtain information about health management at Bosch or quickly find the respective contact persons. As part of our integrated approach to health management, strategic guidelines were published in 2019 to better meet the needs and tackle the challenges in the individual regions and company sites. The aim is for all health experts to work together as a network and to establish a central point of contact for health issues at the company sites.

"Safe, together, healthy" – the new occupational safety campaign in Nuremberg

Dialogue, mutual learning, and a cross-functional and cross-divisional exchange on the topic of occupational safety were at the center of the campaign launched at Bosch's Nuremberg site in 2022, "safe, together, healthy." Grouped in four action packages, all measures aim to raise awareness among associates for occupational health and safety, to develop a shared understanding of the different roles and responsibilities, and to share positive examples as quickly as possible within the company.

For example, a special risk check was introduced to increase safety in non-routine work – referred to as special work steps – and directly reduce the number of accidents. The idea is that associates should stop for a moment to consider and reflect on the checklists and case studies drawn up in workshops beforehand to identify potential hazards and mitigate these before starting the task at hand. To spread the methodology at the site, training was provided to 13 multipliers and 120 users. The risk check was applied more than 120 times in 2022 – with positive feedback across the board.

A new "shift supervisor exchange" format strengthens cross-functional exchange on occupational health and safety matters. Two shift supervisors form a tandem and conduct joint walk-throughs in each other's workplace.

A total of 40 such tandems were formed already in 2022, and some 80 site visits took place. This helps to spread positive examples and solutions quickly and beyond functions – and provides an opportunity to discuss not only occupational health and safety matters, but also topics relating to quality or efficiency.

A series of workshops were designed specifically for the around 80 safety officers at the site to explore their understanding of their own role and expectations of contact persons and executives. The aim was to strengthen the sense of ownership, motivation, and awareness among safety officers. A powerful network was created at the same time, which will continue to drive occupational health and safety at the company site.

The campaign's measures will be rounded off by the Find&Fix Award that is intended to put a spotlight on associates' EHS commitment from 2023. The best proposals for removing hazards will be selected for the occupational safety and electrical safety categories. A special prize will also be awarded to the unit that puts forward a particularly large number of effective suggestions.

In order to reduce the number of absentees due to sickness, occupational health management at Bosch sets specific priorities based on the experience of the medical service and safety engineers as well as the health report issued by the Bosch company health insurance fund. Insights from occupational reintegration management and hazard assessments are also considered. As a result, medical conditions affecting the musculoskeletal and respiratory systems as well as mental illnesses were identified as focus areas. What are referred to as the “health working groups” are responsible for implementation at the individual company locations. They comprise representatives from different internal specialist departments – among them the representatives for people with disabilities, occupational health and safety, social services, works council, medical services, canteens and cafeterias, HR and our cooperation partner, the Bosch health insurance fund – and are available to answer all health-related issues of our associates. In addition, we cooperate closely with external specialists and institutions. They are consulted where required, for example

as part of the OncoCure program which, in cooperation with the Robert Bosch Hospital in Stuttgart, enables associates with cancer to get a second opinion and, if appropriate, a genetic diagnosis. The offer is currently available to associates in Germany, Austria, and Spain. In addition, we offer our associates in Germany free preventive examinations, such as skin or colon cancer screening.

Occupational health measures

One priority area of our occupational health management is preventive medical care through medical screening, ergonomic workplace inspections, sport and nutrition offers, and seminars on stress management. Associates can obtain information about the entire range of services on an online portal. The quality of the “befit” health management system is reviewed on a regular basis. We draw on the Bosch health insurance fund’s bonus model for this purpose, which pays out a bonus

Learning from the pandemic experience

In the third year of the Covid-19 pandemic, Bosch continues unchanged to give first priority to the preventive healthcare for its associates. The medical services at Bosch in Germany and other countries offer Covid-19 vaccinations for associates. Established protective measures such as keeping a distance and hygiene are standard practice today. At the same time, the pandemic has changed collaboration within the company, and mobile work structures have become more widespread.

What did Bosch associates think of the occupational health and safety measures during the pandemic? How did the measures affect their job satisfaction? Answers to these and other questions can be found in a study on the Covid-19 pandemic, conducted at Bosch in cooperation with Tübingen University Hospital. Some 2,000 associates at six sites in Germany took part in the online survey at three points in time. One key finding was that although the work situation changed for most

associates due to the Covid-19 pandemic, this had little impact on job satisfaction. Respondents generally rated the personal and organizational protective measures as appropriate for avoiding infection. Tübingen University Hospital emphasizes that the protective measures are rated very highly across the board. One key criterion in this respect is how well associates are informed. The study illustrates that the rating of protective measures by associates is higher the better informed they feel. It also confirmed once again that information is key to avoiding infection in the workplace. The trend analysis over the three time points also showed a slight decrease in respondents’ perception of risk relating to Covid-19.

Further analyses by the study and the additional qualitative interviews are expected for 2023. For Bosch the aim is to learn from the findings and derive further insights on improvement potential in occupational health and safety.

to the company sites that can demonstrate that they meet the quality targets. In 2022, an amount of roughly 290,000 euros was thus channeled into occupational health at the company's sites in Germany (previous year: 650,000 euros). The notable year-on-year difference is due to changes in the design of the bonus model, and is not an indication of lower quality of the health management system. In addition to the bonus payments, the Bosch company health insurance fund supported and realized further benefit measures with funds of around 150,000 euros. Similar initiatives are run in other countries.

Occupational health measures and projects at the individual company sites are tailored to their size and respective needs. As the challenges differ from one country to the next, we manage the activities locally – in particular in countries such as Brazil, China, India, the United Kingdom, or Romania. Regular network meetings enable the capture of synergies between locations and also across borders in order to offer associates the broadest and most attractive range of services possible. In countries without full medical coverage, associates at many Bosch locations have the option of visiting clinics located directly on-site. We also offer a wide range of training courses on topics as diverse as work-life balance, metabolic disorders, or exercise and health. Last but not least, associates can work on their personal fitness by joining sports groups.

In-house social services

Bosch was one of the first companies in Germany to introduce in-house social services back in 1917, recognizing its social responsibility as an employer. Since 2013, our associates can also take advantage of this offer online to get support for all personal and professional matters. Over 100,000 associates in Germany can contact our in-house social services department through a portal at anytime, and anonymously if they wish. Under a works agreement in Germany, we also hold training courses on mental health designed for executives. The Psyga portal provides associates and executives with additional information and tests on mental health and, when needed, indicates who the best person to talk to is.

To further strengthen our mental health measures, we work together with the University of Ulm. In 2022, the focus was on relationship-oriented leadership. It fosters trust within the team and can reduce stress levels for everyone concerned. The training concept is currently being evaluated by the University of Ulm. This involves experts holding three pilot training courses for executives at Bosch in Germany and accompanying these from an academic perspective. The insights gained in this way are to be used to develop new training courses for executives at Bosch and update existing courses.

World Health Day 2022 – our planet, our health

There is a close connection between people's well-being and the state of our planet. The World Health Organization (WHO) estimates that more than 13 million deaths around the world each year are due to avoidable environmental causes. To mark World Health Day on April 7, 2022, the WHO placed the spotlight on this connection with the motto "Our planet, our health" – and Bosch took part in activities to raise awareness among associates around the world for their health. Close to 9,000 participants attended 51 online presentations to obtain information on topics including prevention, cardiac health, mental health, or healthy leadership.

Society



Our ambition: We want to promote progress in society and improve people's quality of life through our actions.



Helping refugees

- ▶ More than 5.5 million euros in donations in kind and cash raised worldwide.



Long-standing commitment

- ▶ More than 2,000 projects supported in a single decade – Bosch Community Fund celebrates anniversary in the United States.



Stakeholder dialogue

- ▶ Nine dialogue events held on current issues, such as the automotive industry's transformation.

6.1 Management approach

We see ourselves as a corporate citizen and take an active stance in society, also beyond the scope of our own business activities. In our activities, we distinguish between corporate philanthropy, corporate citizenship, dialogue with our stakeholders, and political lobbying.

Corporate philanthropy

Our donations focus on the common good, and we do not expect anything from the recipients in return. The focus of our charitable activities is on promoting climate action, education for technological change, and strengthening social cohesion.

Corporate citizenship

Bosch is active locally at many of its locations around the world – not only financially, but also through the volunteer work of its associates. In some countries, dedicated non-profit institutions engage in corporate social responsibility activities.

As an independent, not-for-profit foundation, Robert Bosch Stiftung demonstrates its commitment to society worldwide by supporting or implementing innovative and lighthouse projects (for more information on Robert Bosch Stiftung, see the “[Company | Bosch Group profile](#)” section).

Dialogue with stakeholders and political lobbying

Using our knowledge and our arguments, we actively take part in societal debates and help shape opinions at the level of government policy. In dialogue with policy-makers and other stakeholders, we want to contribute toward a positive development of society based on our values. Our guiding principle is to provide fact-based and technology-oriented advice aimed at harnessing technological progress for society’s benefit.

Bosch Research Foundation

The Bosch Research Foundation was established in 1986 to coincide with the company’s centenary. It supports outstanding young scientists who are working to obtain their doctorates at leading research institutes in fields such as algorithms, big data and machine learning, materials science, and medical technology. The foundation funds its support program from the income it generates with its assets and from Bosch donations. In 2022, the Bosch Research Foundation received 680,000 euros from Bosch.

6.2 Corporate philanthropy

Our social commitment in the form of donations is carried out by the respective operating units in the countries in question. In the reporting year, the Bosch Group donated 27.4 million euros worldwide (previous year: 27.6 million euros) for charitable purposes, including donations in kind. A group guideline sets out corresponding principles, assessment criteria, and responsibilities. Depending on the amount involved, either the management of the operating units or the members of Robert Bosch GmbH's board of management decide how the funds raised should be spent. All donation transactions must be documented in writing. In addition, the persons responsible keep an annual ledger of donations that is accessible for audit purposes. At a minimum, this ledger must indicate the group of recipients and the amount of the donation, along with the reasons for the donation and the date on which confirmation of receipt was received.

Realignment of corporate philanthropy priorities

At the beginning of 2022, Bosch realigned its corporate philanthropy and citizenship activities. True to our "Invented for life" mission statement, we want to make an even more effective and purposeful contribution to solving the most pressing challenges of our time. Accordingly, we have set the following priority areas for our donations:

- ▶ **Living sustainably:** citizen projects promoting climate action in everyday life
- ▶ **Education for the high-tech world:** projects to develop socially disadvantaged children and young people's skills for technological change
- ▶ **Social cohesion:** projects strengthening democracy and tolerance, especially at Bosch locations

The first projects started receiving support in 2022 under the new focus. For example, Bosch supported the "Klimaschutz nebenan" (climate action next door) competition run by the nebenan.de foundation, in which citizen projects for promoting climate action were awarded prizes and rewarded with start-up funding. Further funds in 2022 went to Calliope gGmbH, which uses mini-computers to introduce children to programming in a playful way in a bid to anchor digital education in schools even more firmly.

However, Bosch dedicated the majority of its donations in 2022 to helping people affected by the war in Ukraine. Bosch has raised a total of more than 5.5 million euros in donations in kind and cash for this cause worldwide. In the context of the more than 30 individual activities in which Bosch companies in India or the United States, among others, were also involved, various national organizations were supported under Ukraine aid initiatives. Almost 4.4 million euros went to the German Red Cross and its sister organizations as emergency aid. Bosch companies in Ukraine's neighboring countries supported the refugees with food and helped with accommodation or with children's schooling and other matters. The Bosch IT division also actively supported the aid initiatives and had 1,000 used laptops refurbished at short notice and fitted with Ukrainian keyboards with the aim of helping refugees to stay in touch with their homeland. The German Red Cross and SOS Children's Villages were each donated 500 computers, which the two organizations then distributed.

6.3. Corporate citizenship

We encourage and support the social commitment of our associates because they embrace our values, demonstrate team spirit, and seek new solutions where needed – qualities that also strengthen the innovative power of our company. We encourage the extensive commitment of our associates, for example, by offering them temporary leave. Such initiatives are always organized locally. Our program for prospective executives in Germany expressly requires that participants support a social project of a local organization.

As part of the initiative Wissensfabrik – Unternehmen für Deutschland e. V. (Knowledge Factory – Companies for Germany), over 100 Bosch associates are involved in preschools, schools, and start-ups in their free time. Bosch is a founding member of the business network, which meanwhile comprises around 130 companies and business-related foundations. The aim of the initiative is to spark the interest of young people in technology and business, advance innovation, and thereby strengthen Germany's future prospects. Bosch is represented on the initiative's steering committee, its executive board, and in task groups, and various members of management at Bosch are also personally committed to the Knowledge Factory.

Together for society

Bosch associates are working to improve social conditions in many countries, together with the company and in their own initiatives. The oldest and most comprehensive initiative is Primavera – Hilfe für Kinder in Not e. V., which has set itself the goal of helping children in need in developing and emerging countries and offering them new prospects. Founded in 1990 by ten Bosch associates, Primavera today has more than 1,500 members. Most of them are active or former associates, but

Primavera is also increasingly gaining supporters outside the company. At present, the association supports 54 projects and roughly 11,100 children in 21 countries worldwide. The projects are supervised by associates of the local Bosch sites or their relatives on a voluntary basis. Bosch supports Primavera both with donations and with administration, so that every euro donated directly benefits the projects.

Aside from its ongoing projects, Primavera was also active in 2022 to support refugees from Ukraine. Aid organizations active in this field were provided with funding amounting to 115,000 euros.

Many Bosch associates also get involved by making regular donations for the community, efforts that are supported by the company. In Germany, associates can choose to take part in the "Cents for help" initiative and donate the cent amounts from their monthly net salary payment; Bosch then doubles the total amount collected. In 2022, the donations collected this way came to more than 1 million euros. How the funds should be used is decided by a committee comprising an equal number of members from the combined works council, the combined executives' committee, HR representatives, and the donations department. Associates in Germany can also apply to the "Cents for help" initiative for funds to support charitable projects close to their hearts. In France, associates can participate in a similar program called "solidarité@bosch". There, our French regional company generously rounds up its associates' contributions.

Regional support

Some Bosch regional companies have established their own charitable institutions to carry out their CSR activities in accordance with the respective national regulations. Such institutions are usually active in the vicinity of company sites and concentrate on country-specific priorities. Despite regional and cultural differences, however, such charitable activities are required to be recognizable as concerted actions by Bosch. There is also an obligation to document the activities to make the actions transparent and to enable an evaluation of the measures and projects.

Instituto Robert Bosch

Instituto Robert Bosch has been active in Brazil for 50 years now. Founded as Associação Beneficente Robert Bosch in 1971, the organization initially set itself the goal of promoting health, later shifting its focus in 2004 to promoting education as Instituto Robert Bosch. Since then, it has pursued the goal of fostering the development of socially disadvantaged children and young people through education. This includes training social and personal competencies as well as technical skills. In 2022, the institute spent around 760,000 euros on its projects, reaching some 2,400 young people. In addition, the institute motivates Bosch associates to contribute to the projects as volunteers. Indeed, close to 2,600 volunteer hours were logged in 2022, in addition to monetary donations.

A current example of Instituto Robert Bosch's work is the TransformAção project, in which around 200 young people in the cities of Campinas and Curitiba are currently participating. Over a ten-month period, the participants – all of whom are in their first year of high school – are empowered through training to develop the soft skills needed for teamwork and communication. In addition, young people are encouraged to purposefully shape their lives and careers and to make independent decisions to that end. The project received an amount of roughly 190,000 euros in 2022.

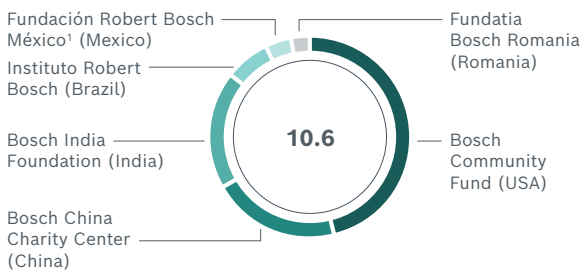
Bosch China Charity Center

Founded in 2011, the Bosch China Charity Center (BCCC) coordinates the social initiatives of our locations in China. True to its guiding principle "Charity for A Better Life," the center focuses on projects to promote education, reduce poverty, promote social community, and pursue philanthropy. In 2022, BCCC funded 70 projects for this purpose with a total sum of around 2.2 million euros. In addition, Bosch associates volunteered more than 13,000 hours.

In mid-2022, BCCC for the fifth time invited charitable organizations in China to propose projects in need of support. In total, 248 valid applications reached BCCC. Of those, 88 were dedicated to educational development, 90 proposals were aimed at combating poverty, and 70 applications were in the area of philanthropy. Following the evaluation of the applications, 26 projects will now be implemented backed by funding from Bosch China totaling roughly 1.2 million euros.

54 | Expenditure on social initiatives

Regional activities 2022, in millions of euros



¹ Fundación Robert Bosch México also accepts donations from third parties.

Bosch India Foundation

Since 2008, the Bosch India Foundation has been using its education offers to help people lead independent lives, regardless of their background. In 2022, the foundation took over the implementation of projects for all Bosch companies in India and now supports disadvantaged people in more than 220 communities. The focus is on vocational training for young people and on development at the community level. In the past financial year,²³ Bosch India Foundation's related expenditure

²³ For Bosch India Foundation, this is the period from April 1, 2021, to March 31, 2022.

totaled around 2 million euros. In addition, Bosch's local associates dedicated more than 2,300 hours of voluntary work, mainly as part of the 100 Acts of Charity campaign. An initiative of Bosch India to mark its 100th anniversary, 117 environmental and social activities were implemented within two months, reaching a total of more than 14,200 people. A total of 1,483 volunteers made their contribution – 735 Bosch associates and 748 representatives of external stakeholders. As a result, the projects benefited from active support totaling over 5,200 volunteer hours.

Bosch Community Fund

The [Bosch Community Fund](#) pools the charitable activities of 39 Bosch sites in the United States, Canada, and Costa Rica. The funded projects are in the fields of natural sciences, technology, engineering and mathematics, environmental protection and education, as well as disaster relief. The institution supported 214 projects with schools and nonprofit organizations in 2022, spending nearly 5 million US dollars (4.9 million euros). In addition, Bosch associates contributed over 9,900 volunteer hours.

In 2022, the Bosch Community Fund celebrated its tenth anniversary. Since its inception, the fund has awarded more than 38 million US dollars in grants, supporting more than 2,000 projects and reaching a total of 58,000 teachers and more than five million students. At the same time, the fund is increasingly receiving requests in the field of environmental education with reference to specific regions and problems. The fund also supports the work of organizations such as the Conservation Foundation's Mighty Acorns program, an elementary school program that encourages students and teachers in the Chicago area to care for and explore the environment and interact meaningfully with their local ecosystems.

Fundación Robert Bosch México

Founded in 2016, [Fundación Robert Bosch México](#) supports the education of disadvantaged children and adolescents in the vicinity of our company sites in Mexico. The foundation provides infrastructure and equipment for schools, awards scholarships, and promotes the development of basic competencies and skills. In 2022, the institution implemented close to 40 projects, reaching more than 24,000 children and young people. In addition to the 457,000 euros in funding, Bosch associates contributed more than 800 hours of volunteer work to the educational projects. Aside from donations from the Mexican regional subsidiary, [Fundación Robert Bosch México](#) also receives financial support from third parties.

One example of the foundation's work in 2022 is the support it provided with materials and seed worth 12,500 US dollars for a school garden. The garden serves not only to provide environmental education for approximately 360 students, the food produced also supports families who have suffered financial loss as a result of the Covid-19 pandemic. In the future, a greenhouse will be added to the garden that will serve for demonstration purposes to show students how renewable energy and modern sensor technology can be used.

Fundatia Bosch Romania

Since its establishment in 2020, [Fundatia Bosch Romania](#) has pursued the goal of bringing about positive social change for the most disadvantaged, but also for society as a whole. In various initiatives and projects, the foundation addresses social challenges by joining forces with other relevant actors and sharing resources. For 2022, the foundation had a budget of roughly 300,000 euros.

In connection with the war in Ukraine, Fundatia Bosch Romania established partnerships with other aid organizations at short notice and provided funding of over 80,000 euros in 2022. In addition, the Educare information platform was launched. The aim of the platform is to inform refugees about educational opportunities and initiatives in the Ukrainian, Romanian, and English languages and to bring together the different actors. In this way, the platform also contributes to the education of the approximately 40,000 children who have fled Ukraine and currently live in Romania.

6.4 Dialogue with stakeholders and political lobbying

As a supplier of technology with global operations, we believe it is our responsibility to put our deep technology expertise to work for the benefit of society and to point out specific solutions to current challenges in society. With this in mind, we help shape opinions at a government policy level, in associations, and in various social forums. This work is driven by our “Invented for life” ambition.

Owing to its expertise in technologies of the future such as artificial intelligence, electrification, hydrogen, and connected, automated driving, Bosch is a sought-after partner and thought leader in the policymaking process. We are in favor of standards that are both ambitious and as consistent as possible. For instance, we believe carefully considered supranational legislation at EU level is preferable to having a large number of national requirements – also in view of its potential to serve as a global benchmark. New business fields, such as connecting things and services, give rise to new regulatory requirements. At the request of policymakers, Bosch shares its knowledge to help shape the corresponding framework conditions.

Our aim is to advocate for technology and societal solutions in the fields of relevance to us with a focus on technical feasibility and impact on society. We also want to do justice in this regard to the complete spectrum of requirements of our stakeholders. We are committed to remaining politically neutral and seek to engage in dialogue with all relevant political parties.

Global guidelines provide the framework

Adopted by Robert Bosch GmbH's board of management in 2020, guidelines are applicable throughout the company governing responsibility for political lobbying at Bosch. Accordingly, the Bosch Group's government relations are assigned to a corresponding corporate sector, together with group-wide corporate communication. Activities include, among other things, representing the company's interests vis-à-vis policymakers, associations, and organizations; they are designed to strengthen the company's reputation, build trust and relationships, and support the company's profitability and sustainability.

A central directive governs interactions with politicians at Bosch. This defines proper conduct, for example, in the run-up to elections, during visits to Bosch locations, or when Bosch associates come into contact with representatives and members of the political bodies of the EU. It also sets out how to comply with the requirements of the EU Transparency Register and in what form Bosch participates in EU consultations. The central directive was likewise adopted by Robert Bosch GmbH's board of management.

Principles, responsibilities, and tasks relating to standard-setting procedures are equally clearly defined at Bosch. The corresponding regulation defines, among other matters, responsibilities for public standard-setting and industry or alliance-based (inter-company) standards.

Transparency as a matter of principle

We want to make our lobbying activities transparent. Therefore, we strictly adhere to the various requirements in the respective regions. Headquartered in Berlin, our Corporate Governmental and Stakeholder Affairs department has offices around the world. A total of 49 associates represent the political interests of the Bosch Group worldwide vis-à-vis institutions, ministries, governments, parliaments, and society. Of those, 15 associates work for Bosch from Germany, and seven represent the company in Brussels. In addition, six associates in North America, eight associates in Asia, and a further 13 associates at various European locations actively represent Bosch's political interests.



[Further information on transparency registers](#)

Transparency is a central principle for the political lobbying of Bosch's interests. Consistent with this understanding, the company is registered in the relevant transparency registers worldwide, including in the United States, in Germany, or at the level of the European Union. Depending on the respective legislation, the entries render the scope and content of political advocacy. Accordingly, Robert Bosch GmbH's entry in the EU Transparency Register describes in detail the company's position and its political interests, for instance. In addition, the entry details the consultations and working groups in which the company takes part. In 2022, we revised the register entry to reflect the new regulations of the European Union. In the process, the calculation of funds raised was adjusted and the recording of persons involved in advocacy was also refined.

On this basis, Robert Bosch GmbH spent just over 3 million euros in the reporting year on activities as defined by the European Transparency Register, including on personnel and lease expenses, for example. Five full-time equivalents (FTEs) at Bosch in Brussels are assigned to accompanying EU legislation activities, another 11.6 FTEs support these activities by contributing the technical expertise of the divisions and other corporate departments.²⁴

²⁴ In addition, two full-time equivalents (FTEs) at BSH Hausgeräte GmbH in Brussels are assigned to accompanying EU legislation activities, and another 2.2 FTEs support these activities (see BSH Hausgeräte GmbH entry in the EU Transparency Register).

Clear policy on gratuities in the political arena

Bosch has a central directive that is binding worldwide and governs gratuities in dealings with third parties. It is only permitted to offer, grant, or accept gratuities in strict compliance with numerous prerequisites. Our rules relating to office holders are especially restrictive. Here, it must be ensured that any appearance of influence being exercised is ruled out and that the internal regulations of public authorities are adhered to. Should local law in some regions prescribe stricter or more specific requirements, these must be adopted and complied with.

In Germany, as of 2021 we no longer make donations to political parties, but instead participate in the economic dialogue forums of the parties CDU, CSU, SPD, FDP, and Bündnis 90/Die Grünen. Through these memberships, we strive to provide stable financial support and engage in a productive exchange of ideas from which all participants benefit. While the regional organizations are responsible for donations made outside Germany, the guidelines require donations to political parties to be submitted to the chairman of Robert Bosch GmbH's board of management for his decision. No such matters were presented to him in 2022.

Political lobbying activities

Our political lobbying activities aim to identify at an early stage debates and developments concerning policies and initiatives that can affect our products, our company sites, or our business operations in general. As a rule, the Bosch Group supports political framework conditions that are conducive to innovation and endeavors to find possible solutions for the challenges facing society.

Due to our highly diversified product portfolio, we are affected by a large number of legislative projects, including in climate, energy, and environmental conservation policy as well as transport, research, and trade policy, data and digitalization laws, cybersecurity, or labor and social policy. At UN level, we advocate for the harmonization of technical standards, for example, for automated driving.

In principle, Bosch's political lobbying activities fall into the following categories:

► **Involvement in committees organized by governments or ministries:** Bosch is involved in committees, forums, and working groups set up and held by governments or other representatives from the public sector. We decide on which of these committees to take part in based on our priority topics. Here are some recent examples:

In 2020, the European Commission created the European Clean Hydrogen Alliance as part of the European Green Deal. The chairman of Bosch Thermotechnologie GmbH's board of management co-chairs the roundtable on clean hydrogen for residential applications.

As part of its cybersecurity activities, Bosch is a member of the Stakeholder Cybersecurity Certification Group of the European Union Agency for Cybersecurity (ENISA). In addition, Bosch is represented on the German Federal Government's National Cyber Security Council. In Germany, Bosch is a member of the Council for the Future (Zukunftsrat), which was established by the German Chancellor in 2022. In this way, our company helps to drive innovation and identify technology trends at an early stage.

At the invitation of the state government of Baden-Württemberg, Bosch has been a fixed member of the automotive industry strategy dialogue in the federal state since 2017. Once a year, the results of the working groups are discussed with the state government at a high-level meeting.

► **Contributions to industry networks with a special topic focus:** By contributing to industry networks, we work with other companies to advance topics of relevance for the development of our industry and, in turn, of relevance for Bosch as well.

In the automotive area, we are pooling our competencies in the Catena-X network to enable a secure exchange of data between companies among all parties involved in the automotive value chain. We consider this an important building block for the success of new digital services and their associated ecosystems. This way, Europe and in particular Germany could take the lead in terms of data sovereignty and technology neutrality for an entire industry.

Bosch also became a member of the Electrolyser Partnership in 2022. This is intended to serve as a catalyst for promoting hydrogen electrolyzer production capacity in Europe. The corresponding concept was developed in May 2022 at the Electrolyser Summit jointly organized by the European Commission and the Hydrogen Europe industry association, in which Bosch also participated.

► **Involvement in associations:** Aside from direct dialogue with policymakers, Bosch engages in numerous associations and is actively involved in establishing positions on topics. In Germany, at EU level, and in a number of other countries, we are members of the relevant industry associations.

In Germany, for example, we are members of the German Electro and Digital Industry Association (ZVEI), the German Association of the Automotive Industry (VDA), the German Federal Association for Information Technology, Telecommunications, and New Media (BITKOM), and the German Mechanical Engineering Industry Association (VDMA). In addition, we are active on the executive board and steering committee of econsense – Forum Nachhaltige Entwicklung der Deutschen Wirtschaft e. V. (Forum for Sustainable Development of German Business).

In Brussels, we are members of the European Association of Automotive Suppliers (CLEPA), DIGITALEUROPE, and Hydrogen Europe, and Bosch is represented in the International Chamber of Commerce. In the United States, we are also members of the National Association of Manufacturers (NAM) and the Alliance for Automotive Innovation, and we are members of various national automotive industry associations in other countries, including Brazil (Sindipecas), Mexico (INA), and India (ACMA).

► **Organization of public stakeholder dialogues:**

By means of topic-specific events, we seek to engage in dialogue with policymakers, NGOs, and interested members of the general public in order to strengthen relationships and build trust. Back in 2019, we launched a new stakeholder dialogue series for this purpose, which has since become an established format for exchange, transparency, and the joint search for solutions.

In 2022, the dialogue series was once again significantly expanded, with a total of nine events held, almost all of which with physical attendance. The topics discussed centered on the transformation of the automotive industry. Additional discussion sessions were devoted, for example, to conflicting interests of politics, the media, and society with respect to science and the challenges for a culture of public debate in light of often irreconcilable positions on critical issues.

One of the event highlights included a high-caliber panel discussion in late fall in cooperation with the European School of Management and Technology, Berlin: some 70 students discussed with decision makers from the business community, politics, and civil society how our economic system can be made more diverse, equitable, and inclusive under the heading of “stakeholder capitalism.”

► **One-on-one interviews with political stakeholders and NGOs:** Again in 2022, Bosch associates engaged in dialogue with members of the EU Commission, the European Parliament, and NGOs. In accordance with statutory regulations, all meetings at the level of the Directors General of the EU Commission, with EU Commissioners and Cabinet staff are documented and published by the Commission. In the European Parliament, rapporteurs, shadow rapporteurs, as well as committee chairs are required to publish meetings with stakeholders.

Priority topics

The priorities of our political lobbying activities are set each year by Robert Bosch GmbH's board of management. At present, our activities are primarily focused on counteracting the trend toward protectionism worldwide. At EU level, our attention centers on climate policy and the European Union's data strategy. Furthermore, we support the sustainable design of supply chains.

Our activities centered on the following topics in 2022:

► **Climate action:** The European Green Deal, which aims to achieve EU climate neutrality by 2050, is of particular importance for Bosch in the coming years. In this context, we advocate for regulation that is open to different technological solutions, while harmonizing environmental, social, and economic considerations in the interest of sustainability. To reach the EU climate goals, all technologies that reduce CO₂ emissions have to be leveraged. These include all forms of electromobility from e-bikes to trucks as well as the cross-sectoral deployment of hydrogen. At a national as well as EU level, we therefore want to further the development of the hydrogen economy. In 2022, Bosch also put this position forward in legislative processes on mobility of the future, especially with respect to carbon emissions of road traffic, as well as on expanding the emissions trading system for the road transport and buildings sectors.

Another important part of the European Green Deal is how to finance the transformation toward a resource-efficient economy. In this context, attention centers above all on the EU taxonomy for classifying products and services according to their sustainability and expanding the sustainability reporting requirements. Bosch is in favor of the EU's general efforts to achieve more transparent and comparable corporate sustainability information. In implementing these requirements, the task is now to eliminate legal uncertainty and ensure industry-wide application. The awaited European standard should be developed in close cooperation with existing, internationally recognized standards so that it is available in the near term and to avoid redundant reporting in different publications.

► **Human rights:** At EU level, a proposal for the Directive on Corporate Sustainability Due Diligence (CSDDD) was presented in 2022 to ensure human rights protection and compliance with environmental obligations in corporate supply chains. Bosch supports this objective – as it did with the corresponding legislation enacted in Germany. Legal certainty is essential for companies to implement due diligence in the supply chain. This is best ensured by setting clear requirements that can be easily implemented in practice.

Also in 2022, the EU Commission presented a new legislative proposal to ban products made with forced labor. As a company with global operations and that takes its social responsibility very seriously, Bosch supports the proposal. At the same time, we advocate for a risk-based approach to implementing the law to enable targeted and effective implementation.

► **Digitalization:** Digitalization remains an important component for an innovative and sustainable development of the economy: applications, in particular in connection with the use of artificial intelligence, must serve humans as well as be safe, robust, and explainable – and thus trustworthy. 2022 saw a large number of new regulations relating to digitalization that affect our work significantly as well. Particularly the presentation of the first EU-wide regulation for access to data is of great significance for our business activities. Bosch's position is that the interests of consumers should always be the focus of regulation.

► **Autonomous driving:** Germany is the first country in the world to enact a law permitting level 4 automated driving. This was one major regulatory hurdle for successfully realizing automated driving. It makes it possible for Bosch to gather important experience under real road conditions and rapidly advance the development of automated vehicles in Germany and Europe. At the same time, Bosch is involved at UN level in defining the technological requirements of automated vehicles in the interest of ensuring an internationally harmonized development of the technology.

► **Research and innovation:** As a matter of principle, Bosch only engages in business operations that are viable without support from subsidies. We consider temporary government support a suitable instrument only in efforts to assist breakthroughs in new technologies or for the purpose of implementing industrial policy strategies.

In the reporting period, Bosch was awarded funding totaling roughly 53.7 million euros (previous year: 45.2 million euros). Among other things, it was channeled into projects in the field of semiconductor technology (establishment of a European supply chain for silicon carbide semiconductor technology) and for training and further education of associates to open up new prospects for them against the background of the company's transformation.

Policy papers define the course

Aligned policy papers define the Bosch Group's position on relevant topics. Released by Robert Bosch GmbH's board of management, these global policy compass papers are valid worldwide. They are supplemented by specific regional position papers to take account of respective regional or national legislation. These form the basis for political lobbying and provide a summary of facts and arguments, which are also publicly available in the context of EU consultations.

At year-end 2022, global policy compass papers were available on the following topics:

- Sustainable mobility
- Artificial Intelligence of Things (AIoT)
- Connected and automated mobility
- Innovation policy
- International trade
- Radio frequency affairs – 5G
- Energy and climate (hydrogen)

Bosch's corporate department for governmental and stakeholder affairs identifies relevant topics and coordinates the policy papers' contents with the respective specialist departments. The papers are then released via the Corporate Communications and Governmental Affairs corporate department, the responsible members of Robert Bosch GmbH's board of management, and its chairman. In 2023, the global policy compass papers will be reviewed on a cyclical basis and adapted to new framework conditions as necessary.

Annexes

GRI content index

GRI indicators		Comment/reason for omission and explanation	Reference*
GRI 2: General disclosures (2021)			
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GRI 2-13	Delegation of responsibility for managing impacts		14–15
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GRI 2-15	Conflicts of interest	- Code of Business Conduct	21–22; AR: 35; 37
GRI 2-16	Communication of critical concerns	- Compliance management - Sanctions committee - Confidentiality constraints: The number of critical concerns is not published	20–25

* The references indicate the pages on which the respective GRI content is mentioned within this report. References marked "AR" refer to our annual report 2022.

GRI indicators		Comment/reason for omission and explanation	Reference*
GRI 2-17	Collective knowledge of the highest governance body		14–15
GRI 2-18	Evaluation of the performance of the highest governance body	- Remuneration system	88; AR: 77; 201
GRI 2-19	Remuneration policies	- Confidentiality constraints: Beyond the information contained in the sustainability report and in the annual report, Robert Bosch GmbH makes no disclosures about its highest governance body's performance evaluation and remuneration	
GRI 2-20	Process to determine remuneration		
GRI 2-21	Annual total compensation ratio		
Strategy, policies, and practices			
GRI 2-22	Statement on sustainable development strategy		4–5
GRI 2-23	Policy commitments	- Code of Business Conduct - Basic principles of social responsibility - Mission statement and values - Product Compliance Code - Code of Conduct for Business Partners - Target vision	9–13; 21–22; 28–33; 52–53; 62–63; 84–85; 115–116
GRI 2-24	Embedding policy commitments	- Selection, assessment, and further development of suppliers - Corporate Sustainability Board - Design for Environment - Life cycle assessments - Due diligence requirements relating to human rights and the environment - Human rights committee - Code of Conduct for Business Partners	9–15; 20–21; 23–25; 28–33; 50–59; 63; 84–85; 115
GRI 2-25	Processes to remediate negative impacts	- Design for Environment - Life cycle assessments - Supplier selection - Product Compliance Code	17–18; 22; 25; 32–33; 43–44; 59; 64; 102–107
GRI 2-26	Mechanisms for seeking advice and raising concerns	- Reporting system	20–21; 24–25; 54; 90; 96
GRI 2-27	Compliance with laws and regulations	- Code of Business Conduct - Compliance management - Code of Conduct for Business Partners	20–25; 56–58; AR: 95 et seq.
GRI 2-28	Membership associations		17–18; 116–118
Stakeholder engagement			
GRI 2-29	Approach to stakeholder engagement	- Forms of dialogue - Sustainability culture - Overview of material topics	10–11; 115–119
GRI 2-30	Collective bargaining agreements	- Works council - Works agreements - Trade unions - Collective bargaining agreements	95–96

* The references indicate the pages on which the respective GRI content is mentioned within this report. References marked "AR" refer to our annual report 2022.

GRI indicator	Comment	Reference*
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GRI 3: Material topics (2021)

GRI 3-1	Process to determine material topics	- Overview of key stakeholder groups, forms of dialogue, and topics	10–11
GRI 3-2	List of material topics		10

Economic performance indicators

GRI 201: Economic performance (2016)

GRI 3-3	Management of material topics	- Analysis of climate risks pursuant to TCFD	8–9; AR: 32 et seq.
GRI 201-1	Direct economic value generated and distributed	- Climate change adaptation	8; AR: 107
GRI 201-2	Financial implications and other risks and opportunities due to climate change	- Economic KPIs - Position on climate change	65–67
GRI 201-3	Defined benefit plan obligations and other retirement plans		AR: 157 et seq.
GRI 201-4	Financial assistance received from government		119

GRI 202: Market presence (2016)

GRI 3-3	Management of material topics	- Social benefits	87–89
GRI 202-1	Ratios of standard entry level wage by gender compared to local minimum wage	- Remuneration	88

GRI 205: Anticorruption (2016)

GRI 3-3	Management of material topics	- Code of Business Conduct	19–25
GRI 205-1	Operations assessed for risks related to corruption	- Compliance management system - Compliance training	21
GRI 205-2	Communication and training about anticorruption policies and procedures	- Risk management - Code of Conduct for Business Partners	23–24

GRI 206: Anticompetitive behavior (2016)

GRI 3-3	Management of material topics	- Code of Business Conduct	19–25
GRI 206-1	Legal actions for anticompetitive behavior, antitrust, and monopoly practices	- Compliance training - Risk management - Code of Conduct for Business Partners	AR: 95 et seq.

Environmental performance indicators

GRI 301: Materials (2016)

GRI 3-3	Management of material topics	- Materials efficiency - Nanotechnology	11–12; 28–33; 43–44; 52–53
GRI 301-1	Materials used by weight or volume	- Percentage of recycled materials used - Key materials	50
GRI 301-2	Recycled input materials used	- Circular economy strategy - Substances of concern	29; 32; 40

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GRI indicator	Comment	Reference*
GRI 302: Energy (2016)		
GRI 3-3	Management of material topics	- Energy efficiency, own generation, green power, offsets 11-12; 14; 62-63; 64-76
GRI 302-1	Energy consumption within the organization	- Energy efficiency of the products 66
GRI 302-3	Energy intensity	- Energy management system - Energy consumption
GRI 302-4	Reduction of energy consumption	- Reduction targets 12; 67
GRI 302-5	Reductions in energy requirements of products and services	- Sales-related energy consumption, energy intensity 34-41; 74-75
GRI 303: Water and effluents (2018)		
GRI 3-3	Management of material topics	- Wastewater management 11-12; 14; 77-79
GRI 303-1	Interactions with water as a shared resource	- Volume of wastewater - Quality of wastewater 11-12; 77-79
GRI 303-2	Management of water-discharge-related impacts	- Products with positive water-related effects, water efficiency 11-12; 81
GRI 303-3	Water withdrawal	- Reduction targets 11-12; 78
GRI 303-4	Water discharge	- Sales-related water consumption, water intensity - Water withdrawal - Regions with water scarcity 11-12; 79
GRI 305: Emissions (2016)		
GRI 3-3	Management of material topics	- Energy efficiency, own generation, green power, offsets 11-12; 62-63; 64-76
GRI 305-1	Direct (scope 1) GHG emissions	- Logistics and transportation - Mobility concept 69
GRI 305-2	Energy indirect (scope 2) GHG emissions	- Reduction targets
GRI 305-3	Other indirect (scope 3) GHG emissions	- GHG emissions 70-76
GRI 305-4	GHG emissions intensity	- Sales-related GHG emissions, emissions intensity 69
GRI 305-5	Reduction of GHG emissions	- Other air pollutant emissions 64-76
GRI 305-6	Emissions of ozone-depleting substances	69
GRI 306: Waste (2020)		
GRI 3-3	Management of material topics	- Waste management - Waste generation and disposal 11; 13; 14; 28-33; 62-63; 80-81
GRI 306-1	Waste generation and significant waste-related impacts	- Hazardous waste - Circular economy strategy - Sales-related waste, waste intensity 80-81
GRI 306-2	Management of significant waste-related impacts	28-33; 80-81
GRI 306-3	Waste generated	80
GRI 306-4	Waste diverted from disposal	
GRI 306-5	Waste directed to disposal	

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GRI indicator		Comment	Reference*
GRI 308: Supplier environmental assessment (2016)			
GRI 3-3	Management of material topics	- Selection, assessment, and further development of suppliers	11; 13; 22; 50–58
GRI 308-1	New suppliers that were screened using environmental criteria	- Supplier risk management	56
GRI 308-2	Negative environmental impacts in the supply chain and actions taken	- Due diligence requirements relating to human rights and the environment - Human rights committee - Social and environmental standards - Code of Conduct for Business Partners	52–58

Social performance indicators

GRI 401: Employment (2016)

GRI 3-3	Management of material topics	- Employee rights	84–86; 87–92
GRI 401-1	New employee hires and employee turnover	- Turnover rate	87
GRI 401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	- Work-life balance - Remuneration and social benefits	88–89

GRI 402: Labor/management relations (2016)

GRI 3-3	Management of material topics	- Employee rights	84–86; 94–96
GRI 402-1	Minimum notice periods regarding operational changes	- Feedback and surveys - Leadership and collaboration - Terminations - Cooperation with works councils and trade unions	95–96

GRI 403: Occupational health and safety (2018)

GRI 3-3	Management of material topics	- Occupational health and safety management system	10–11; 13; 14; 102–107
GRI 403-1	Occupational health and safety management system	- Occupational accidents and ill health - Preventive healthcare and occupational health	102
GRI 403-2	Hazard identification, risk assessment, and incident investigation	- Safety basics	102–103; 106
GRI 403-3	Occupational health services		104–107
GRI 403-4	Worker participation, consultation, and communication on occupational health and safety		103–104; 105–107
GRI 403-5	Worker training on occupational health and safety		
GRI 403-6	Promotion of worker health		104–107
GRI 403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships		42–44; 53–54; 102–107
GRI 403-8	Workers covered by an occupational health and safety management system		102
GRI 403-9	Work-related injuries		102–103
GRI 403-10	Work-related ill health		106–107

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GRI indicator	Comment	Reference*
GRI 404: Training and education (2016)		
GRI 3-3	Management of material topics	- Vocational training and university studies 84–86; 97–101
GRI 404-1	Average hours of training per year per employee	- Support program for specialists 99
GRI 404-2	Programs for upgrading employee skills and transition assistance programs	- Leadership and collaboration - Competence model 97–99
GRI 404-3	Percentage of employees receiving regular performance and career development reviews	- Learning and learning culture, digital learning, certified training - Personal development process 97 - Training activities
GRI 405: Diversity and equal opportunity (2016)		
GRI 3-3	Management of material topics	- Equity, equal opportunities - Dimensions of diversity 11; 13; 84–86; 90–92
GRI 405-1	Diversity of governance bodies and employees	- Nondiscrimination 91; AR: 37
GRI 405-2	Ratio of basic salary and remuneration of women to men	- Remuneration system 88
GRI 406: Nondiscrimination (2016)		
GRI 3-3	Management of material topics	- Grievance mechanisms, reporting system 20–25; 50–58; 90–92
GRI 406-1	Incidents of discrimination and corrective actions taken	- Equity, equal opportunities - Dimensions of diversity 25 - Nondiscrimination
GRI 407: Freedom of association and collective bargaining (2016)		
GRI 3-3	Management of material topics	- Selection, assessment, and and further development of suppliers 20–25; 50–58; 95–96
GRI 407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	- Code of Business Conduct - Compliance management - Supplier risk management - Due diligence requirements relating to human rights and the environment - Human rights committee - Social and environmental standards - Code of Conduct for Business Partners - Cooperation with works councils and trade unions 19–22; 54–58
GRI 408: Child labor (2016)		
GRI 3-3	Management of material topics	- Selection, assessment, and further development of suppliers 11; 13; 20–25; 50–58; 95–96
GRI 408-1	Operations and suppliers at significant risk for incidents of child labor	- Code of Business Conduct - Compliance management - Supplier risk management - Due diligence requirements relating to human rights and the environment - Human rights committee - Social and environmental standards - Code of Conduct for Business Partners 19–22; 54–58

* The references indicate the pages on which the respective GRI content is mentioned within this report. References marked "AR" refer to our annual report 2022.

GRI indicator		Comment	Reference*
GRI 409: Forced or compulsory labor (2016)			
GRI 3-3	Management of material topics	- Selection, assessment, and further development of suppliers	11; 13; 20–25; 50–58; 95–96
GRI 409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	- Code of Business Conduct - Compliance management - Supplier risk management - Due diligence requirements relating to human rights and the environment - Human rights committee - Social and environmental standards - Code of Conduct for Business Partners	19–22; 54–58
GRI 414: Supplier social assessment (2016)			
GRI 3-3	Management of material topics	- Selection, assessment, and further development of suppliers	11; 13; 22; 50–58
GRI 414-1	New suppliers that were screened using social criteria	- Supplier risk management	56
GRI 414-2	Negative social impacts in the supply chain and actions taken	- Due diligence requirements relating to human rights and the environment - Human rights committee - Risk analysis to ensure compliance with social and environmental standards - Social and environmental standards - Code of Conduct for Business Partners	52–58
GRI 415: Public policy (2016)			
GRI 3-3	Management of material topics	- Political lobbying	115–119
GRI 415-1	Political contributions	- Contact with policymakers	116
GRI 416: Customer health and safety (2016)			
GRI 3-3	Management of material topics	- Product quality	11; 13; 42–46
GRI 416-1	Assessment of the health and safety impacts of product and service categories	- Product safety - Substances of concern	42–46
GRI 417: Marketing and labeling (2016)			
GRI 3-3	Management of material topics	- Information and documentation requirements	43; 46–47
GRI 417-1	Requirements for product and service information and labeling	- Product information - Responsible advertising	
GRI 418: Customer privacy (2016)			
GRI 3-3	Management of material topics	- Compliance management	45–46
GRI 418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	- Cybersecurity, information security, and data protection	25

* The references indicate the pages on which the respective GRI content is mentioned within this report. References marked "AR" refer to our annual report 2022.

Independent auditor's report

on a reasonable assurance engagement

To Robert Bosch Gesellschaft mit beschränkter Haftung, Stuttgart

We have performed a reasonable assurance engagement on selected disclosures and statements within the sustainability report of Robert Bosch Gesellschaft mit beschränkter Haftung, Stuttgart (hereinafter the "Company"), which comprises the disclosures marked "☉" in the sustainability report for the period from January 1, 2022, to December 31, 2022 (hereinafter "selected disclosures").

Our engagement exclusively refers to the disclosures marked with the "☉" symbol in the German pdf version. Not subject to our assurance engagement are other references to disclosures made outside the sustainability report as well as prior-year disclosures.

Responsibilities of the executive directors

The executive directors of the Company are responsible for the preparation of the selected disclosures in the sustainability report in accordance with the "GRI Sustainability Reporting Standards" (hereinafter "reporting criteria").

These responsibilities of the Company's executive directors include the selection and application of appropriate methods for the preparation of the non-financial reporting and making assumptions and estimates about individual non-financial disclosures of the Group that are reasonable in the circumstances. Furthermore, the executive directors are responsible for such internal control as the executive directors consider necessary to enable the preparation of selected disclosures that are free from material misstatement, whether due to fraud (manipulation of the selected disclosures) or error.

Independence and quality assurance of the auditor's firm

We have complied with the German professional requirements on independence as well as other professional conduct requirements.

Our audit firm applies the national legal requirements and professional pronouncements – in particular the BS WP/vBP ("Berufssatzung für Wirtschaftsprüfer/vereidigte Buchprüfer": Professional Charter for German Public Accountants/German Sworn Auditors) in the exercise of their profession and the IDW Standard on Quality Management issued by the Institute of Public Auditors in Germany (IDW): Requirements for Quality Management in the Audit Firm (IDW QS 1) and accordingly maintains a comprehensive quality management system that includes documented policies and procedures with regard to compliance with professional ethical requirements, professional standards, as well as relevant statutory and other legal requirements.

Responsibilities of the auditor

Our responsibility is to express a reasonable assurance opinion on the selected disclosures based on our assurance engagement.

We conducted our assurance engagement in accordance with International Standard on Assurance Engagements (ISAE) 3000 (Revised): "Assurance Engagements other than Audits or Reviews of Historical Financial Information" issued by the IAASB. This standard requires that we plan and perform the assurance engagement to obtain reasonable assurance about whether the Company's selected disclosures are prepared, in all material respects, in accordance with the criteria. Not subject to our assurance engagement are other references to disclosures made outside the selected disclosures and prior-year disclosures.

The assurance engagement on the selected disclosures includes performing procedures and obtaining evidence for the selected quantitative and qualitative disclosures that are sufficient and appropriate to provide a basis for our opinion.

We exercise professional judgment and maintain professional skepticism throughout the assurance engagement. Our procedures also include:

- ▶ Obtaining an understanding of the CO₂ neutrality program and the concepts related to work-related accidents within the Group.
- ▶ Identifying and assessing the risks of material misstatement in the selected disclosures in the sustainability report, whether due to fraud or error, designing and performing procedures responsive to those risks, and obtaining 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.
- ▶ Obtaining an understanding of internal control relevant to the assurance engagement on the selected disclosures in order to design procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of these systems.
- ▶ Obtaining sufficient appropriate evidence, for example the selected disclosures during site visits for the sustainability information within the Group to express our opinion.
- ▶ Evaluating the appropriateness of methods used by the executive directors and the reasonableness of estimates made by the executive directors and related disclosures.

- ▶ Evaluating the presentation of selected disclosures in the sustainability report.

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

Opinion

In our opinion, on the basis of the knowledge obtained in the assurance engagement, the selected disclosures of the Robert Bosch Gesellschaft mit beschränkter Haftung for the period from January 1, 2022, to December 31, 2022, are prepared, in all material respects, in accordance with the reporting criteria.

Restriction of use

We draw attention to the fact that the assurance engagement was conducted for the Company's purposes and that the report is intended solely to inform the Company about the result of the assurance engagement. As a result, it may not be suitable for another purpose than the aforementioned. Accordingly, the report is not intended to be used by third parties for making (financial) decisions based on it. Our responsibility is to the Company alone. We do not accept any responsibility to third parties. Our assurance opinion is not modified in this respect.

General Engagement Terms and Liability

The "General Engagement Terms for Wirtschaftsprüfer and Wirtschaftsprüfungsgesellschaften (German Public Auditors and Public Audit Firms)" dated January 1, 2017, are applicable to this engagement and also govern our relations with third parties in the context of this engagement (www.de.ey.com/general-engagement-terms). In

addition, please refer to the liability provisions contained there in no. 9 and to the exclusion of liability towards third parties. We accept no responsibility, liability, or other obligations towards third parties unless we have concluded a written agreement to the contrary with the respective third party, or liability cannot effectively be precluded.

We make express reference to the fact that we will not update the report to reflect events or circumstances arising after it was issued, unless required to do so by law. It is the sole responsibility of anyone taking note of the summarized result of our work contained in this report to decide whether and in what way this information is useful or suitable for their purposes and to supplement, verify, or update it by means of their own review procedures.

Munich, March 15, 2023

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About this report

The Bosch Group's sustainability report has been published annually since 2011. The present report describes the progress made in terms of sustainable business practices in the 2022 financial year (January 1, 2022, to December 31, 2022). As in previous years, the report applies the guidance of the Global Reporting Initiative (GRI).

The Bosch Group has reported in accordance with the GRI Standards for the 2022 financial year. Selected key indicators and statements on climate action and occupational health and safety were audited by Ernst & Young Wirtschaftsprüfungsgesellschaft to obtain reasonable assurance. Audited content in this sustainability report is marked "☺".

Unless otherwise stated, all information in this report refers to the full consolidated group. Besides Robert Bosch GmbH, the consolidated group comprises a further 468 (previous year: 440) fully consolidated entities. Details of the scope of consolidation and the developments in the financial year relating to it can be found in the [annual report](#) (see annual report 2022, page 79 et seq.). Key environmental and occupational health and safety indicators cover 427 (previous year: 430) reportable locations.

The information was requested electronically and the data was mainly compiled using software specific to each division. As a rule, we aim to present three-year trends to enable better comparability. In individual cases, information relating to previous periods was restated as a result of changes in the methods used to collect and calculate data. Such changes are marked accordingly in the text. Discrepancies in the totals are possible due to rounding differences.

All forward-looking statements in this report are based on the assumptions valid as of the copy deadline. Due to known and unknown risks, uncertainties, and other factors, the actual results, developments, or performance of the company may differ from our forecasts, assessments, and announcements. German and English PDF versions of the sustainability report 2022 are available online. Further information can be found at sustainability.bosch.com and in the [annual report 2022](#). The next sustainability report is scheduled to be published in spring 2024.

| Annexes| [GRI content index](#)| [Independent auditor's assurance report](#)| [About this report](#)| [Publication details](#)

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