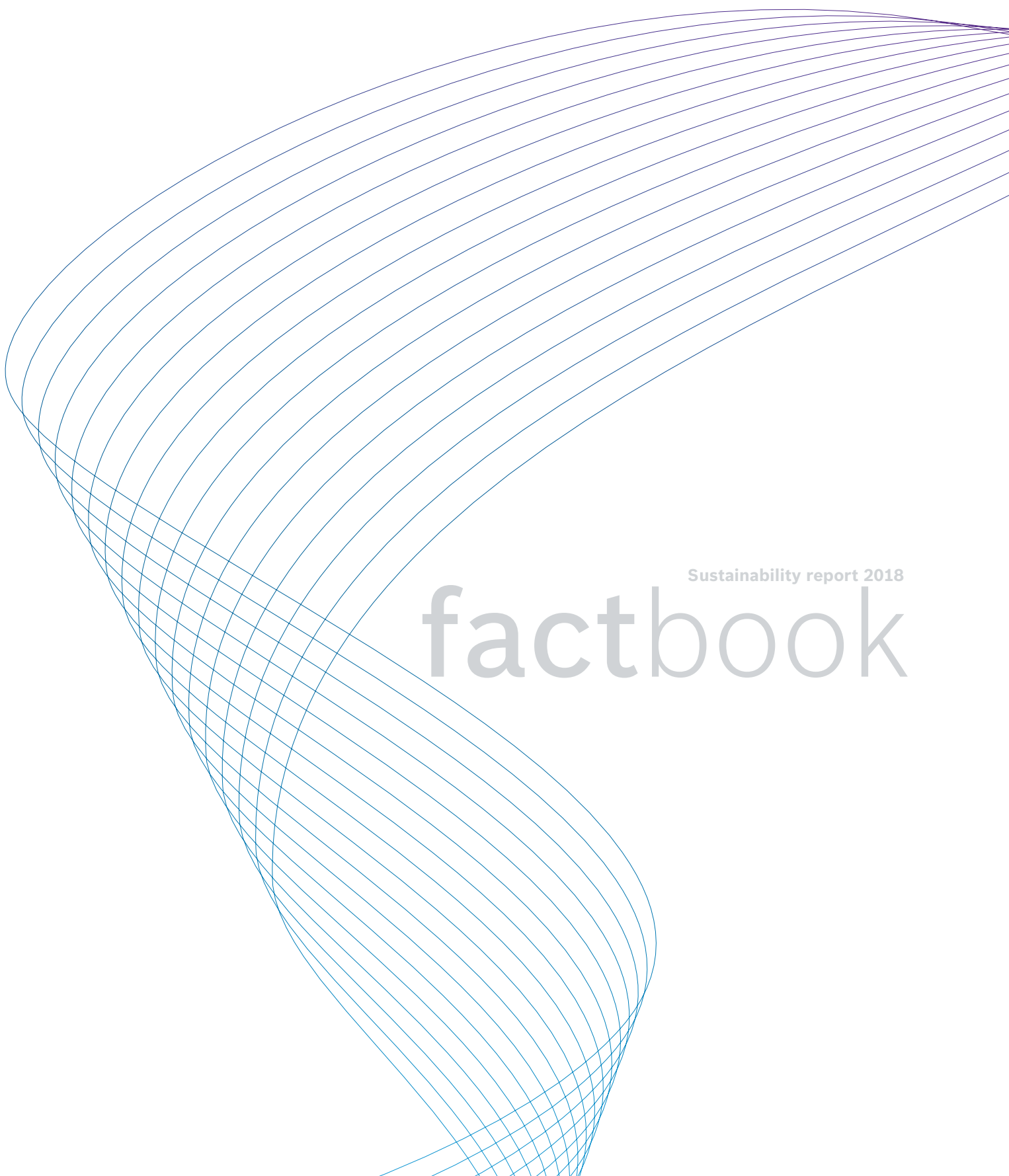




**BOSCH**

Invented for life



Sustainability report 2018

# factbook

# Editorial

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## Dear Reader,

You hold a new publication by Bosch in your hand – the sustainability factbook. Alongside the annual report and the annual spotlights magazine, the factbook offers extensive information on sustainability management at Bosch. In this context, the factbook – together with the magazine – will serve as the Bosch Group's sustainability report in the future. In compiling the information, we referred to international standards such that the factbook adheres to the standards of the Global Reporting Initiative (GRI), among others.



By extending our reporting in this way, we want to establish a basis for continued trust-based dialogue with our stakeholders. And there is a lot to report. Over the past year, for instance, we elaborated an extensive target vision for sustainability at the Bosch Group and anchored it in the company: "New Dimensions – Sustainability 2025" defines clear targets in six important issues and serves as the basis for systematic sustainability management. In this way, we want to make Bosch that little bit better every day when it comes to sustainability. Each and every one of us can make a contribution in our daily work – and we are all individually called on to do our part. Because sustainability concerns us all.

The spectrum of topics and activities is as diverse as the world we live in: from protecting the environment and the conscientious use of resources to trust-based relations with business partners and our activities as a corporate citizen right through to fair, attractive, and safe working conditions for the roughly 410,000 associates working at the Bosch Group worldwide. Many challenges and quite some effort lie ahead of us. Key to success are joint, concerted efforts and determined action – the longstanding hallmarks of Bosch.

This report describes what we do specifically for more sustainability, the objectives we pursue, and what we have already achieved in recent months.

I am pleased that we have attracted your interest, and I wish you a pleasant and inspiring read!

Sincerely yours

A handwritten signature in blue ink that reads "Christoph Kübel". The signature is fluid and cursive.

Christoph Kübel  
Member of the board of management and director of industrial relations

# Contents

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## 02\_Editorial

## 03\_Contents

## 04\_Foreword by the board of management

## 06\_Company

08 Bosch Group profile

11 Sustainability strategy and organization

16 Corporate governance and compliance

## 20\_Products

22 Management approach

24 Research and development

28 Quality policy, IT security, and data protection

31 Sustainable products

## 42\_Supply chain

44 Management approach

45 Trust-based supplier relationships

47 Selection, assessment, and development of suppliers

50 Conflict minerals and substances of concern

## 52\_Environment

54 Protecting the climate, conserving resources – our approach

55 Energy and climate protection

62 Materials and waste management

66 Water and wastewater

## 70\_Associates

72 It's people that matter

73 Attractive employer

88 Occupational health and safety

## 94\_Society

96 Active at three levels – our social initiatives

97 Donations – a global commitment

101 Political lobbying – technology orientation rather than ideology

103 Sponsorship – based on clear rules

## 104\_Annex

105 GRI index

111 About this report

111 Publishing details

# Foreword

## by the board of management

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### Dear Reader,

Some challenges concern people everywhere – but we cannot all afford to sit back and wait for somebody else to deal with them. Each one of us has to make their contribution. Protecting the environment, conserving resources, and mitigating climate change are such challenges, as is the sustainable development of our society, particularly through education and equal opportunities. All of us, including companies like Bosch, have to take responsibility for current and future generations.

Sustainable action in particular is called for – now. This becomes especially apparent for climate change. The longer we wait before we take decisive countermeasures, the more difficult it will be to mitigate the warming of the earth's atmosphere.

As an innovative company, Bosch is actively contributing toward this common duty: we provide technological solutions to ecological challenges – and secure also our own success in the process. Because only a company that acts responsibly will prove successful in the long run.

For many years, we have been outlining how we actually live up to this responsibility in our sustainability report. We have shown what objectives we have set across different fields of action and how we intend to meet them. And we disclose what we have already achieved – as well as what milestones lie ahead.

With this factbook, we are going one step further: we are expanding our reporting and are offering even more detailed insights into our activities and goals – openly, transparently, and in line with international standards. In this way, we want to create trust, the basis for any constructive dialogue.

I am particularly pleased to be able to report in this first edition of our factbook about an extremely important step in our sustainability management: by 2020, Bosch is to be carbon-neutral worldwide. There is no doubt about it: this is going to entail a major effort for the entire company. But we do not want to make do with the past success of climate protection measures so far: we want more, and we want to act now. That is why we have brought the paramount goal of climate neutrality for Bosch within reach. Our calculations show: we can achieve this goal quickly. How? We provide details of that in this factbook.

I am pleased about your interest and I hope that we can continue to count on your trust in future!

Sincerely yours



Dr. Volkmar Denner  
Chairman of the board of management



# Company

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Some 410,000 associates across the globe, 78.5 billion euros in sales revenue – Bosch is economically strong. For the Bosch Group, sustainability means securing the company’s success in the long term while at the same time protecting the natural resources on which present and future generations depend. The conviction held by our company founder Robert Bosch still guides our actions today: “In the long term, an honest and fair approach to doing business will be the most profitable.” Sustainable, ecological, and socially responsible action is hence the foundation for our success in business.

# 4

**business sectors**  
around 460 subsidiaries  
and regional companies  
in over 60 countries

# 409,881

associates as of  
December 31, 2018

# 78.5

billion euros  
in sales revenue

# 1.0 Bosch Group profile

The Bosch Group is a global supplier of technology and services, and generates nearly half its sales outside Europe. It encompasses around 460 fully consolidated subsidiaries and regional companies in more than 60 countries. The parent company is Robert Bosch GmbH, which is headquartered in Stuttgart, Germany. It started out as "Workshop for Precision Mechanics and Electrical Engineering," founded in Stuttgart in 1886 by Robert Bosch (1861–1942).

Robert Bosch Stiftung GmbH has been the majority shareholder in Robert Bosch GmbH since 1964 and currently holds about 92 percent of the shares. As a not-for-profit foundation, Robert Bosch Stiftung, however, has no influence on the strategic or business orientation of the Bosch Group. The voting rights accruing to its share are held by Robert Bosch Industrietreuhand KG, an industrial trust,

which performs the entrepreneurial ownership functions. The trust itself owns a capital share of 0.01 percent. Most of the remaining shares and voting rights are held by the founder's descendants. This ownership structure guarantees the Bosch Group's entrepreneurial independence, allowing the company to plan for the long term and make significant upfront investments in its future.

## A broad presence for a successful future

The Bosch Group is highly diversified. Our operations are structured in four business sectors:

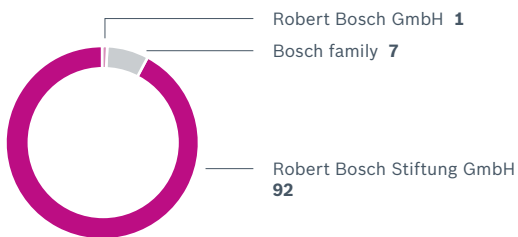
### ► Mobility Solutions

Bosch is already one of the world's largest automotive suppliers today. From engine to powertrain and steering systems, infotainment, and communication right through to safety and driver assistance systems – Bosch technology already plays a great role in making the vision of emissions-free, accident-free, and stress-free driving come true. Our fields of business also include repair-shop concepts as well as technology and services for the automotive aftermarket. We want to use our strong

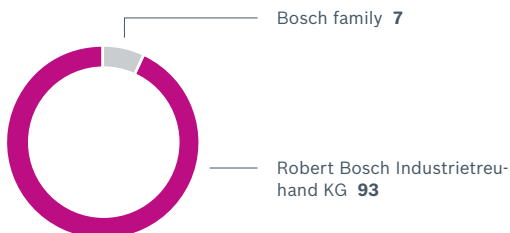
## 01

### Shareholders of Robert Bosch GmbH

Share in %



Voting rights in %

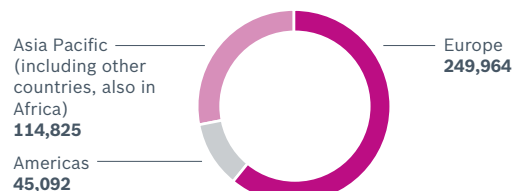


## 02

### Headcount

Bosch Group by region, as of Dec. 31, 2018

Total **409,881**





## 03

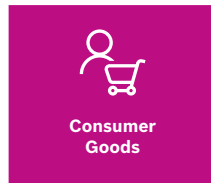
### Bosch Group business sectors



Powertrain Solutions<sup>1</sup>  
 Chassis Systems Control  
 Electrical Drives  
 Car Multimedia  
 Automotive Electronics  
 Automotive Aftermarket  
 Automotive Steering  
 Connected Mobility Solutions<sup>1</sup>



Drive and Control Technology<sup>2</sup>  
 Packaging Technology<sup>3</sup>



Power Tools<sup>4</sup>  
 BSH Hausgeräte GmbH



Building Technologies<sup>5</sup>  
 Thermotechnology  
 Bosch Global Service Solutions

<sup>1</sup> New division from January 1, 2018  
<sup>2</sup> Bosch Rexroth AG (100% Bosch-owned)  
<sup>3</sup> Robert Bosch Packaging Technology GmbH  
<sup>4</sup> Robert Bosch Power Tools GmbH  
<sup>5</sup> Until February 28, 2018, Security Systems

competitive position to become one of the leading suppliers in the field of electric, automated, and connected driving, and in smart mobility services.

#### ► Industrial Technology

Innovative solutions for drive, control, and packaging technology are core for this business sector. Here, we are increasingly positioning ourselves as a provider of Industry 4.0 solutions for the factory of the future based on software, automation, and connectivity.

#### ► Consumer Goods

This business sector comprises our wide range of tools and household appliances. The Power Tools division is a supplier of power tools, power-tool accessories, and measuring technology, and BSH Hausgeräte GmbH offers the entire range of modern and energy-efficient household appliances, which are increasingly also connected.

#### ► Energy and Building Technology

This business sector offers a broad range of products and solutions – from thermotechnology for private or commercial applications to security systems and right through to smart-home solutions.

## Business developments in 2018

In the 2018 fiscal year, the Bosch Group generated sales revenue of 78.5 billion euros (previous year: 78.1 billion euros, +0.5 percent, adjusted for exchange-rate effects +3.2 percent). Adjusted to eliminate consolidation effects, in particular from the sale of the former Starter Motors and Generators division, the Bosch Group's sales revenue increased by 2.2 percent, or an exchange-rate-adjusted 5.0 percent. At 5.5 billion euros, EBIT from operations was also above the previous year (5.3 billion euros), and, as a percentage of sales revenue, the EBIT margin of 7.0 percent exceeded the high previous-year level (6.8 percent). For further details on Bosch's business situation, please refer to the [2018 annual report](#) (page 44 et seq.).

## 04

### Sales revenue

Bosch Group 2018 by region, in billions of euros

Total 78.5



## Strategic approach

Many of the Bosch Group's business fields are set to change radically. We are responding to this. The Internet of Things (IoT) and its accompanying increases in connectivity and automation are presenting a major opportunity for the company as a whole. This connectivity affects all of Bosch's areas of business, from mobility solutions through industrial technology and consumer goods such as household appliances and power tools to energy and building technology. Another major disruption will come from increasing electrification, especially in automotive technology, but also in industrial technology and energy and building technology.

The starting point for our strategy is the objective of securing the company's future as enshrined in the will of founder Robert Bosch – in other words, ensuring the company's strong and meaningful development and securing its financial independence. Our goal is to develop products that are "Invented for life," that fascinate, that improve quality of life, and that help conserve natural resources. In this respect, "products" means not only physical products and services but also, to an increasing extent, the digitally connected, software-based solutions that go with them. For this reason, we are driving forward innovations in both products and business models, entering entirely new business fields, and developing our organization. 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, automation, energy efficiency, and emerging markets.

We want to seize our opportunities to become one of the world's leading IoT and mobility solutions companies. We regard our presence in diverse markets and industries as an advantage because of the many insights we gain as a result. We are consistently combining our competencies with our capabilities and expertise in software, sensor technology, and programming. More than 27,000 IT and software experts already work for Bosch worldwide today

and 5,000 of them on the topic of IoT. With around 1,000 artificial intelligence experts, we have extensive know-how in this area – and their number is set to increase fourfold over the next few years. Even today, our product portfolio comprises innovative solutions for smart homes, smart cities, connected mobility, and Industry 4.0 (see the "Products" section).

## Our mission – our values

Our "We are Bosch" mission statement expresses our strategy and how we see ourselves. The starting point is the mission handed down by Robert Bosch in his will: to secure our company's future as he would have wanted by ensuring its strong and meaningful development and preserving its financial independence. To achieve this mission, we have set ourselves strategic focal points to drive us forward: customer focus, change coupled with continuous further development, and a clear commitment to excellence in everything that we do. Our mission reflects the culture at Bosch.

The mission is based on seven central values that shape our corporate culture – ranging from a focus on the future and earnings to cultural diversity. Responsibility and sustainability are part of this set of values and thus of our actions. That is why it is also our ambition to play a leading role in sustainability management. We want to improve quality of life worldwide and conserve natural resources with our products, solutions, and services. Our innovative strength forms the basis – and is the driving force – for our growth. Our "Invented for life" ethos expresses this succinctly and is evident in all aspects of our product development (see the "Products" section).

# 1.1 Sustainability strategy and organization

Sustainability concerns us all – and has therefore been defined as a central task at Bosch on which the various business sectors work together. Ambitious targets and systematic sustainability management form the basis. The content and tasks as well as related controlling are firmly anchored in our processes at Bosch. Clear responsibilities and decision-making processes secure the efficiency of our actions.

We have worked toward achieving our goals over the past several years. We have achieved much of what we set out to do – and most of our targets will end in the period 2018 through 2020. That is why, in 2018, we developed a new, even more ambitious target vision for Bosch: “New Dimensions – Sustainability 2025.” It describes six globally

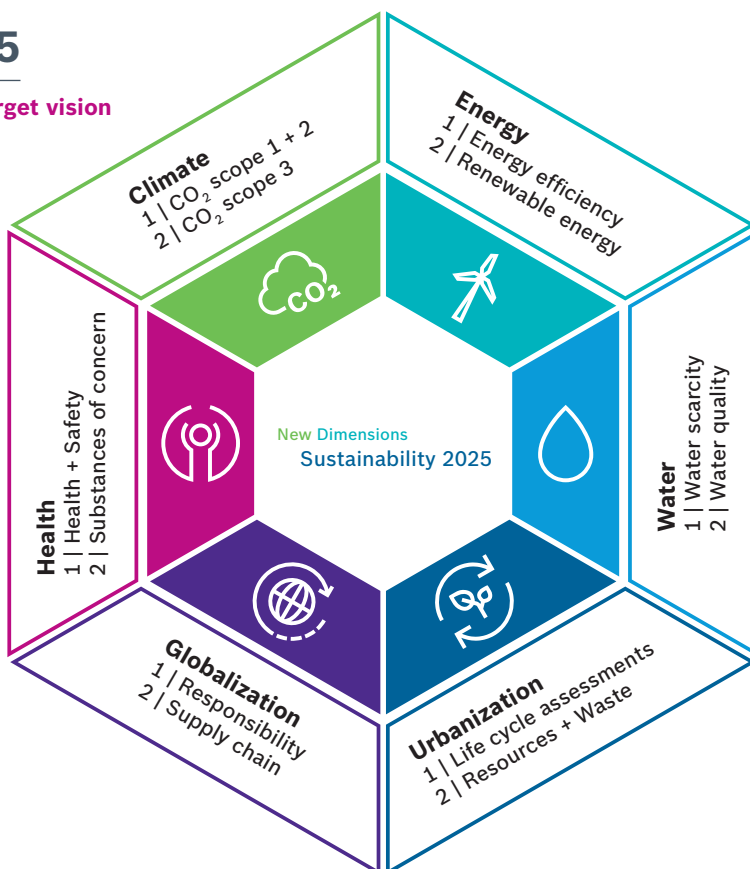
important issues, each of which is underscored by two major aspects with clearly defined, medium-term targets. Derived from the megatrends that are significant for our company, the issues set the framework for our activities in the years ahead. General sustainability trends as well as the targets and activities of companies that we consider leaders in sustainability have also been incorporated into our vision.

The issues in our vision set out the way forward and are the cornerstones for our commitment to sustainability. They include our commitment to climate protection as well as our continuous striving toward energy efficiency and the economical use of water. Even in an increasingly urbanized world, we want to keep the ecological footprint

of our operations and products as small as possible and gear our operations more and more toward the principle of a closed-loop or circular economy. As a globally operating company, we also assume responsibility for society and the environment worldwide. We make our activities transparent and include our supply chain in our efforts to do business in a sustainable and responsible manner. We also endeavor to keep people and the environment from harm – occupational health and safety, compliance with materials restrictions, and the reduction of hazardous substances are key issues in this respect. Our plans regarding each of the issues are described in the following sections in this report.

## 05

### Target vision



## Clear responsibility for sustainability

At Bosch, we take a holistic approach to sustainability. The highest technical committee for sustainability is the corporate social responsibility steering committee under the aegis of the chairman of the board of management. This committee brings together the board of management member responsible for sustainability as well as the competent department heads – for example, for HR, real estate and facilities, environment, and communications. The steering committee concerns itself with Bosch's strategic orientation in relation to sustainability, whereas goal agreements and management review for all sustainability-related issues are the responsibility of the chairman and the board of management member

### 06

#### How sustainability is organized at Bosch



responsible for sustainability. The strategic orientation in sustainability is developed jointly by the Communications and Governmental Affairs corporate sector and the EHS and Sustainability corporate sector. From a content point of view, the Communications and Governmental Affairs corporate sector focuses on sustainability communications and stakeholder engagement. The EHS and Sustainability corporate sector is responsible for sustainability management, which comprises above all preparing concepts for further development, setting and tracking goals, and designing and accompanying programs.

Responsibility for worldwide implementation of the sustainability strategy and monitoring the achievement of targets rests with the specialists responsible in the divisions. The structure we apply in sustainability management is one that has already proved successful in other areas: strategy and framework conditions are defined centrally, and the divisions focus on compliance with the standards and processes, right through to certification. Our associates in the regions and at the more than 400 Bosch sites worldwide then have the task of putting the respective requirements into practice locally and ensuring compliance with the legal framework conditions.

## Core process

To reduce complexity in our sustainability management, we use a central core process. The core process is based on the ISO standard process definitions, particularly ISO 31000.

#### The core process comprises four subprocesses:

- ▶ The **Management Responsibility** subprocess reviews the strategy, processes and policies, and organization at least once a year to ascertain whether they are still up to date and compatible with the corporate strategy.
- ▶ The **Planning** subprocess analyzes internal and external trends and performs an opportunity and risk analysis to assess these in terms of their contribution to value added and their probability of realization (opportunities) or potential loss and probability of occurrence (risks). Material opportunities and risks identified either give rise to new strategic projects or new performance indicators or, if necessary, additional policies. The outcomes are also incorporated in the central risk management.

We are confident that the topic of sustainability holds clear opportunities for a technology and services company such as Bosch. That is why we have established an ideas lab as a key unit in the Planning subprocess since January 2018. Using various creative techniques, the ideas lab regularly develops new ideas for solutions, as well as concepts or thematic areas in order to proactively address opportunities and examine their feasibility. This way, we expressly want to rethink established procedures to open the door to innovation.

## 07

### Core process



► **Operation**, the third subprocess, deals with the implementation of strategic projects, the agreement of goals, and cascading them within the organization. Policy development is also anchored here, along with good-practice sharing to disseminate exemplary solutions.

► The **Steering & CIP** subprocess comprises auditing, measure tracking, and evaluation as well as external reporting based on selected performance indicators. All data sets of the reporting entities are reviewed by validators with strict adherence to the principle of dual control to ensure data quality. In addition, a central review is performed by the EHS and Sustainability corporate sector. The data reported can be audited internally – for example, as part of local audits.

## EHS Award in recognition of exemplary projects

Commitment deserves recognition – that is why Bosch presents the annual EHS Award to honor outstanding projects in the categories of CO<sub>2</sub>/energy efficiency,

resource efficiency, and occupational health and safety. Bosch sites from all around the world can take part. A jury of experts then chooses the three best projects in each category, and the board of management member responsible for sustainability presents the sought-after trophies at an internal award ceremony. The rising number of participants shows how well-received the award is within the company – with

105 entries, the number of participants almost doubled in 2018 compared with the previous year. Almost half the entries in the past year were related to environmental or climate protection.

## Committed to more sustainability

Robert Bosch GmbH has been a member of the United Nations Global Compact since 2004 and of the German Global Compact Network since 2013. We are committed to the ten Global Compact principles relating to human rights, labor standards, environmental protection, and anti-corruption measures. With this factbook, we also satisfy the requirement of reporting on the progress we made in 2018 in terms of these principles. With our commitment, we also support the Sustainable Development Goals (SDGs) adopted by the United Nations in 2015, as we want to make our contribution to jointly overcome global social challenges. We therefore regularly benchmark our sustainability activities against the 17 goals.

When developing our target sustainability vision in 2018, we reviewed the priorities to date and confirmed most of them. At the same time, we added a separate issue to our target vision to reflect SDG 6 Clean Water and Sanitation and make our contribution with regard to water scarcity and water quality. The following SDGs remain particularly relevant to our company: Good Health and Well-Being (SDG 3), Quality Education (SDG 4), Gender Equality (SDG 5), Decent Work and Economic Growth (SDG 8), Industry, Innovation and Infrastructure (SDG 9), Sustainable Cities and Communities (SDG 11), Responsible Production and Consumption (SDG 12), and Climate Action (SDG 13). Bosch's diverse activities may also support aspects of other UN goals.

## 08

### Entries for the EHS Award 2017–2018



Our reporting serves to make our commitment transparent. We support various reporting formats, such as the German Sustainability Code, CDP, formerly known as the Carbon Disclosure Project, and the Standards of the Global Reporting Initiative (GRI).

As signatory of the WIN Charter developed by the Sustainable Business Practices initiative of the German federal state of Baden-Württemberg, we have also committed to our economic, ecological, and social responsibility at the regional level. We are also active members in a large number of other initiatives of relevance for sustainability. For example, Bosch has been a corporate member of Transparency International Deutschland e.V. since 1995 and a member of Forum Compliance & Integrity since 2007. Since 2018, Bosch has also had a representative on the board of European Business Ethics Network Deutschland e.V.

## Intensive dialogue with internal and external stakeholders

We want to hear what our stakeholders have to say and make their needs the yardstick against which to measure our activities. That is why we engage in continuous dialogue with them. Cooperative and intensive exchange is essential for us to tailor our efforts so that they can achieve their maximum potential and meet the various stakeholders' expectations. As a company with global operations and a very extensive product portfolio, we face the challenge of addressing a very wide range of external stakeholders with often widely diverging requirements:

### ► Customers

We are in regular and intensive exchange with companies from various industries. In the automotive industry, the focus is on new mobility concepts. In practically all industries and often in cooperation with other companies, Bosch is also working on topics including energy efficiency and connecting the three pillars of mobility, buildings, and industry. And, not least, our trade and retail customers appreciate tools and household appliances from Bosch. Further details of how we communicate with our customers are provided in the "Products" section.

### ► Suppliers

We are aware that our responsibility for the environment and society stretches beyond our company boundaries and into the supply chain. Accordingly, we include our suppliers in our commitment for more sustainability and perform regular environmental and social audits with them, among other measures. The exchange includes extensive analyses as well as training on topics such as resource efficiency and workplace safety. Please also refer to the "Supply chain" section of this report for details of how we keep in touch with our suppliers.

### ► Universities and research institutes

We maintain dialogue with research institutes, on the one hand, by promoting research projects in areas of relevance for Bosch such as energy efficiency, renewable energies, or electrification. On the other hand, we offer students and graduates the opportunity to write their bachelor's or master's thesis and dissertations on sustainability topics of practical relevance. For more details, please refer to the "Products | Research and development" section.

### ► Policymakers

As a supplier of technology and services with a multitude of different products, we are bound by regulatory frameworks in our endeavors to demonstrate what is technologically possible. That is why we seek an exchange at a political level via dialogue and active work in associations and committees. Bosch is regarded as a reliable partner for policymakers and is specifically requested to share its knowledge. Rather than ideologically motivated lobbying, our dialogue with policymakers focuses on issues of technical feasibility while considering the interdependence of costs and effects (also see the "Society | Political lobbying" section).

### ► Associates

The legacy of our company founder Robert Bosch also finds its expression in our corporate culture: the continuous dialogue with associates includes, for example, regular feedback talks with their respective managers. Every two years, Bosch also conducts a company-wide associate survey. The questions covered include the working conditions of associates, their identification with the corporate values, and work-life balance. In 2017, the global participation rate was 86 percent (see the "Associates" section).

Further important stakeholders in our company include the people living in the vicinity of Bosch sites around the world, as well as environmental and social nongovernmental organizations, banks, insurance companies, the media, religious organizations, and representatives of public authorities. We also engage in talks with them as

needed. By attending conferences and as a part of our work in associations and committees, we continuously review our extensive activities.

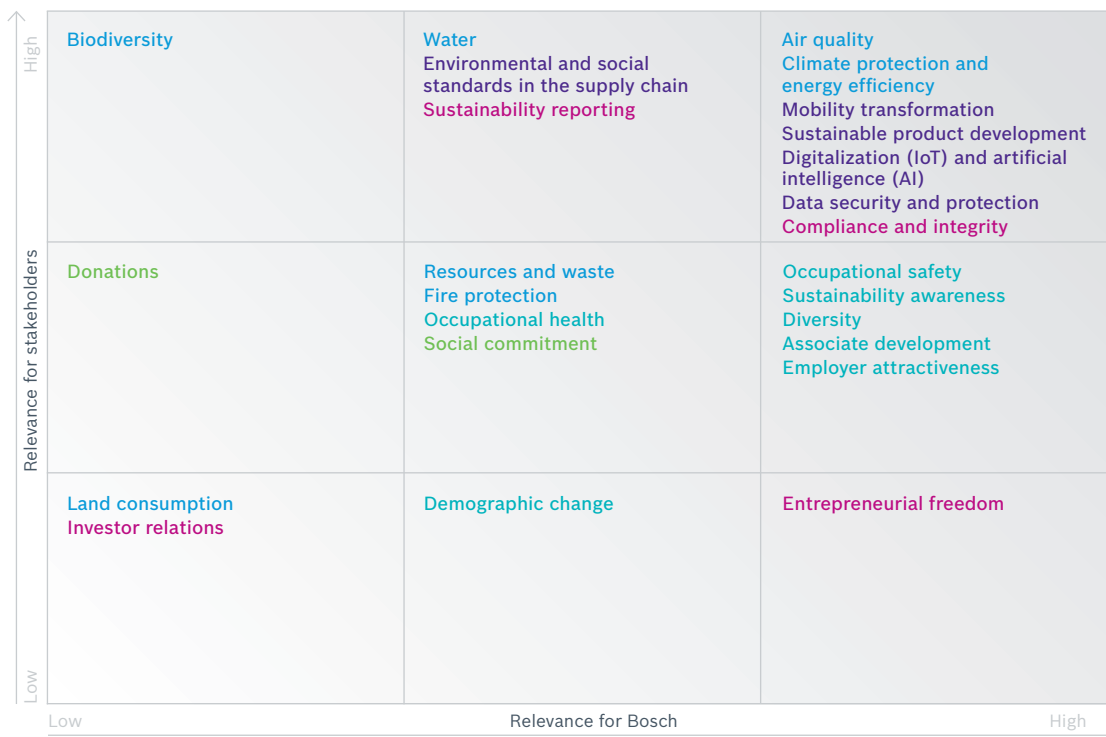
## Focusing on what truly matters

We use a materiality analysis to determine which aspects of sustainability to focus our activities on. The analysis is regularly compared against the outcome of our trends monitoring and adjusted if necessary, as was the case last year. The analysis is conducted in close consultation with the competent specialist departments, and the current status is evaluated together with the EHS and Sustainability corporate sector. The figure below highlights the aspects that Bosch and its stakeholders deem to be of material relevance within the defined fields of activity. The outcome of the materiality analysis also forms the basis for the choice of topics covered by this factbook. In order to consider potential new topics, we have also referred to the content that other companies report and reclassified some topics on that basis.

### 09

#### Materiality matrix

Sections:  
**Company**  
 Products  
 Environment  
 Associates  
 Society



# 1.2 Corporate governance and compliance

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Reliability, credibility, legality, and fairness are key components of Bosch's success in business. "We promise only what we can deliver, accept agreements as binding, and respect and observe the law in all our business transactions." We have also anchored this philosophy in our mission statement.

## Responsible corporate governance

The board of management of Robert Bosch GmbH defines the strategy for the entire company and manages the company as a whole. Its responsibilities are set out in the board of management organization chart. The Robert Bosch GmbH supervisory board 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. Robert Bosch Industrietreuhand KG acts as managing partner. In line with the mission handed down in the will of the company 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 the composition of the board of management and the supervisory board and on the remuneration of key management personnel, please refer to the [2018 annual report](#) (pages 6 and 141).

## Risk management

Managing risks in a forward-looking and responsible manner and identifying opportunities at an early stage and seizing them sets important foundations for our success in business. In the Bosch Group, risk management encompasses the entire company, including all operations, functional areas, hierarchical levels, and staff functions. Risks are identified and managed where they arise – in other words, above all in the divisions and regional organizations. The latter are also responsible for introducing measures to reduce or control risks. In addition, corporate departments for areas such as compliance management, legal services, tax, and risk management (the latter having been set up in early 2018) support, direct, and monitor the operating units' control activities. As an independent authority, internal auditing assesses the appropriateness and effectiveness of the measures and, if necessary, initiates remedial measures.

For further details on our risk management system and a detailed description of significant risks, please refer to the 2018 annual report (page 56 et seq.). The main antitrust and legal risks are also described there.

## Compliance – ethos and duty combined

At Bosch, compliance (with laws, guidelines, and voluntary commitments) is a fixed element of our set of values. To underscore the significance of this principle, Bosch has clearly and unequivocally formulated its position on legal requirements and ethical issues in its [Code of Business Conduct](#) that applies worldwide. Together with the Bosch values, it provides a foundation that we believe is key to Bosch's success in business. And because responsible and lawful conduct is important beyond company boundaries, we have formulated our expectations of our business partners in a corresponding code of conduct (see the "Supply chain" section).



## Group-wide compliance management system

Bosch's group-wide compliance management system (CMS) constitutes the organizational framework for ensuring compliance with the law and regulations. This helps us to systematically adhere to our values and policies worldwide. The Chief Compliance Officer (CCO) heads the Compliance corporate sector and reports directly to the board of management and the chairman of the supervisory board. In the regions and divisions, the CCO is assisted by the compliance offices. In addition, the corporate compliance committee, comprising representatives from legal, internal audit, and human resources (HR), supports the CCO in an advisory capacity.

We aim to keep our policies and procedures up to date, even in a constantly evolving environment. Consequently, we monitor legal developments, review our CMS on an ongoing basis, and perform regular risk analyses. The findings are analyzed and help to continuously refine our CMS.

The internal auditing corporate sector tests compliance with internal policies and processes in the course of its regular internal audits. It has unrestricted authority to demand information and perform audits, as do its local units. CMS design and effectiveness are also covered by the internal audits. In addition, our system is put to the test in external audits, which have also repeatedly attested their effectiveness in recent years. On top of the measures implemented as a result of audits, Bosch has adopted a range of additional measures to further strengthen the compliance organization and raise awareness for the topic of compliance.

## Code of Business Conduct

The Code of Business Conduct provides guidance for all Bosch associates on values-based and legally irreproachable conduct. It outlines the basic rules of conduct in the company and takes a stance on ethical issues such as how to deal with insider information, whether to accept gifts, and how to avoid conflicts of interest. Our aim is to provide clear guidance and, at the same time, to protect our associates, our company, and our business partners.

The Code of Business Conduct also includes our commitment to social responsibility, in particular with regard to respecting human rights in our actions and the prohibition of forced or child labor. Our code also extends to our business partners.

When updating the Code of Business Conduct in 2017, we attached great importance not only to content updates but also to increasing clarity and using simpler language. At the same time, there is now a stronger focus on the values formulated as part of our mission. This approach will be followed by other communication activities, such as a company-wide poster campaign, which was trialed in 2018 and will be implemented worldwide throughout the company in 2019. Our aim in all this is to move away from a largely rules-based form of compliance to one primarily based on values. It is our ambition to be a pioneer for values-based conduct that extends beyond compliance with the law.

The Code of Business Conduct is available to all associates in 33 languages and has been communicated by the chairman of the board of management to all non-tariff associates worldwide. They have confirmed in writing their acknowledgment of the Code of Business Conduct. In addition, a condensed and simplified version of the Code has been distributed to our associates; in Germany, for example, a corresponding letter was enclosed with the payroll slip sent to all associates.

## Product Development Code

In product development as well, we observe clearly formulated basic principles, which we summarized in our Product Development Code in 2017. At all times, our actions are accordingly guided by the principle of legality and our “Invented for life” ethos. That means legality and Bosch values take priority over customer requests in the event of conflicts of interest. Specifically, in normal, everyday use, Bosch products should deliver the specified quality, safeguard human life, and conserve resources and protect the environment to the greatest possible extent. The development of functions to detect test cycles or other tests is not permitted.

Our ethical guiding principles, some of which go beyond what is required by law, apply for the entire Bosch Group as well as for all Bosch products and services. If a customer does not observe the principles of our Product Development Code, we do not take part in their invitations to tender. Since mid-2017, for example, Bosch has renounced in customer projects in Europe for gasoline engines that are not designed to be equipped with particulate filters. In the event of noncompliance with the Product Development Code in the course of existing business relations, measures can extend to a stop in delivery. The Product Development Code principles were also incorporated in the Code of Business Conduct when it was revised in 2017.

## Dual use

Bosch does not conduct basic research for military use. Some of our products feature technology that might permit dual use or be used to serve military purposes. Dual use means that the products leaving our plant are in principle constructed to be used in a wide range of applications. We adhere to export control regulations without exception.

## Compliance at business partners

Bosch takes a holistic approach to corporate social responsibility. Therefore, clear policies and procedures also apply with respect to our business partners. They are subject to a standardized and risk-based compliance check, for instance. The findings are assessed using a standard process and appropriate measures are defined and introduced, where necessary. These can range from a further, more in-depth assessment right through to withdrawal from the business relationship.

In our code of conduct for business partners, we have formulated what we expect from them in terms of compliance. It is not binding as such but can be agreed as the basis for the business relationship or made a fixed contractual component, if required. Moreover, there are additional internal policies that provide clear guidance on responsible conduct and define further processes. For example, the purchasing guidelines are binding for Bosch purchasing officers and set out clear guidance as well as the regulatory framework in relation to the supply chain. The “Supply chain” section of this report describes in detail how we discharge our responsibility in the supply chain and which framework conditions are in place to ensure compliance.

## Training and communication centering on compliance

We employ extensive training and communication measures to raise awareness among our associates of the content of the Code of Business Conduct and other relevant policies. The compliance training program is available to all associates in the form of Web-based training and classroom training courses, and participation is mandatory for specific associate groups. The Web-based training relating to the Code of Business Conduct also comprises a section on our basic principles of social responsibility, including human rights and other issues. In light of their

special responsibility as specialists or executives, non-tariff associates are also regularly included in the target groups and required to take part in the compliance-related training described above.

As of the end of 2018, over 700,000 trainings were completed as part of the current mandatory compliance training cycle. The training covers the Code of Business Conduct as well as matters of product safety and product liability, antitrust law, anti-corruption, export control, and product development requirements.

By the end of 2018, for example, some 100,000 associates received training in the Product Development Code over a period of 18 months as part of the most extensive training program in the company's more than 130-year history. The classroom-based events were aimed at associates from development as well as quality management, technical sales, and marketing. A total of 400 internal trainers were trained for this purpose and continue to act as contacts and multipliers within the company. The two-hour classroom training courses took place in around 60 countries. They will be supplemented in 2019 by additional Web-based trainings, which are intended to regularly bring up to date the contents of the classroom training.

We also want to raise awareness for compliance matters among our associates beyond the training offered. To this end, we use the whole range of internal media – from newsletters to the in-house newspaper and the intranet pages. Our reporting is accompanied by further measures at Bosch sites to provide additional visibility within the company for the topic of compliance and the related contact persons. Executives and associates hold the compliance dialogue to intensively discuss compliance matters. This compliance dialogue offers an opportunity in particular to discuss with colleagues and their supervisors any dilemmas they might encounter in their specific work environment. This promotes and engrains a culture of openness and transparency. The topic of compliance is also part of the annual feedback talks held between associates and supervisors.

## Complaints mechanisms and whistleblower system

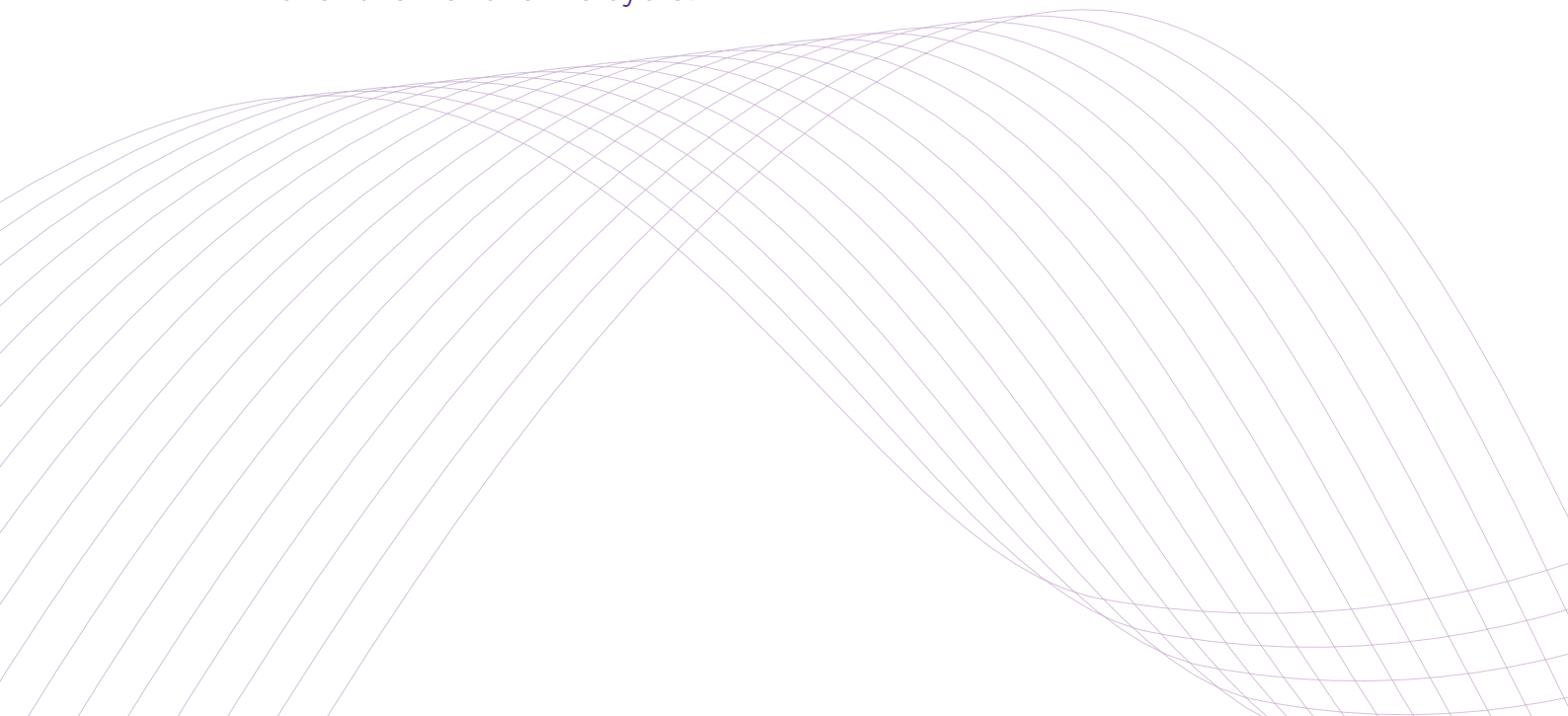
Violations of applicable law, the Bosch [Code of Business Conduct](#), or internal policies are investigated with rigor. We do not tolerate misconduct on the part of our associates and take appropriate action in such an event. If, despite all efforts, any concerns should arise about a potential breach of the compliance rules, all associates, but also business partners and other third parties, can report to Bosch. For this purpose, there is a global [whistleblower system](#) available on the Internet and intranet in 14 languages. The system offers various predefined reporting categories but also allows reporting on any other matters, such as potential human rights violations. The reports can be made via the Web, anonymously if desired, or by phone. Bosch associates can also contact their superior or the respective compliance officer in their division or region directly. The compliance organization immediately follows up on every report, involving the relevant specialists as required. Cases are dealt with in the local language, and progress and status are recorded in a central database.

In 2018, a total of 588 reports (previous year: 452) were recorded via the whistleblower system. Any events reported via the system that are not compliance-related are forwarded to the respective specialist departments for further processing. Cases of discrimination, for example, are addressed by HR.

# Products

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“Invented for life” – our products spark enthusiasm in people, improve their quality of life, and help conserve natural resources. In this way, ecological and social issues become a driver of innovation and form the basis for our success in business. With our Design for Environment approach, we have systematically internalized this connection, ensuring that the environmental impact of our products is progressively reduced over their entire life cycle.



Life cycle assessments for around

# 50 %

of products  
by sales revenue

# 5,996

patent applications

# 100,000

associates received  
Product Development  
Code training

## 2.0 Management approach

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Bosch creates technology that is “Invented for life.” Our ethos sets a clear standard for our products: we improve quality of life worldwide with products and services that are innovative and spark enthusiasm. We want to make homes more comfortable and resource-efficient, achieve emission-free and safe mobility, and – quite generally – develop products that protect the environment and conserve resources. A sustainable mindset and sustainable actions are therefore our engine for innovation – and the basis for our company’s success.

Bosch has a broad product portfolio. Our four business sectors Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology are leading providers in their fields of business. But our markets and competitive environments vary significantly in some cases. The diversity and complexity of our product portfolio is fascinating and a challenge at the same time.

Three of the six globally important issues in our target vision of sustainability focus on product-related aspects: Urbanization addresses our ecological footprint as well as the contributions that our products make toward protecting the environment, whereas health entails our aim to keep people and the environment from harm. Globalization adds the ecological and social risks in the supply chain to this view. The result is a concise profile of requirements for our products that reaches far beyond their actual usage phase. In the supply chain, we can already identify and avoid ecological and social risks (see the “Supply chain” section). By efficiently managing prohibitions and restrictions on materials, we can avoid substances of concern in production and in products. Our related internal requirements go beyond what is prescribed by law. We also aim to keep the ecological footprint of our products to a minimum at the end of their life cycle – true to the idea of a closed-loop or circular economy.

### Product development pursuant to a clear code

The principle of legality and our “Invented for life” ethos are the measure of our actions. Therefore, the development of Bosch products also follows clearly formulated basic ethical principles, which we summarized in our Product Development Code in 2017. First, the development of functions to detect test cycles or other tests is not permitted. Second, Bosch products must not be optimized for test situations. Third, normal, everyday use of Bosch products should safeguard human life as well as conserve resources and protect the environment to the greatest possible extent. This guidance applies for the entire Bosch Group. In unclear cases, Bosch values even take priority over customer wishes. Since mid-2017, for example, Bosch has no longer been involved in customer projects in Europe for gasoline engines that are not designed to be equipped with particulate filters.

As many as 100,000 associates, mainly from research and development, received training in the code by the end of 2018 as part of the most extensive training program in our company’s history (see the “Company | Corporate governance and compliance” section).

## Responsible actions – also in our communication

The Bosch values also guide us in marketing our products. It goes without saying that we comply with the applicable laws. Our advertising communication policies are summarized in a separate manual, which describes in detail the brand core and brand positioning and sets out four principles that define our advertising communications: value cultural diversity, make reliable and credible statements, be fair and respect national rules, and apply a standard to match our products' quality standards. To ensure that the aforementioned principles are applied and messages are consistent across all media used, marketing communication worldwide is organized centrally and closely coordinated with the regional companies and divisions. Advertising and marketing for the products is mostly managed locally via the divisions.

## Providing relevant product information

We ensure compliance with documentation duties which are as diverse as our products themselves. For example, in the automotive and power tools business, safety data sheets are also available online. In addition to the statutory declaration duties (e.g. REACH), we meet further requirements of our customers. The basis for this is our scalable Material Data Management for Compliance and Sustainability (MaCS) system. This facilitates checking bills of materials by product and regional regulations so

that we can document that we have satisfied the applicable requirements (also see the "Products | Sustainable products" section). Where necessary, instruction manuals are provided together with the products for our end customers. We also offer a support hotline to answer any further questions.

## Customer satisfaction and reputation

For Bosch, quality and customer trust are a top priority. The feedback we obtain from our customers via service hotlines by phone or email, or in personal meetings with customers at trade fairs, for example, is a reliable barometer. We regularly gauge our customers' satisfaction using the Reputation Monitor (RepM). This market research methodology is applied worldwide and aims to survey the perception of Bosch among selected customer groups in the B2B and B2C segments. This gives us important insights regarding indicators such as awareness or reputation and allows us to see them in relation to the results for local and international competitors. Moreover, we use the Corporate Reputation Analyzer (CoRA) to regularly survey the reputation of Bosch in comparison with our principal competitors. Our reference groups for the analysis are associates, customers, young professionals, journalists, and representatives of nongovernmental organizations (NGOs), as well as influencers. Due to its size and complexity, the study is conducted in selected countries only.

## 2.1 Research and development

At Bosch, we get to the bottom of things. Purpose-driven research has been part of the DNA of our company for more than 130 years – and it is by no means just an end in itself. With our innovations, we want to help improve quality of life such that each of our products is truly “Invented for life.” At present, some 68,700 associates – almost 17 percent of our workforce – work in the research and development network at Bosch, including some 1,400 in the Research and Advance Engineering corporate sector. Bosch research is present at 12 locations in eight countries. On top of this, there are 125 development locations worldwide. In order to make the best possible use of synergies, sharing knowledge and methodologies between business sectors is actively encouraged throughout the research and development network. Centers of competence for universal issues such as plastics or adhesive technology are just one example.

Research and development cost came to around 6.0 billion euros in 2018; research and development intensity was thus 7.6 percent. Between now and 2021, we will invest some 300 million euros in the Bosch Center for Artificial Intelligence (BCAI).

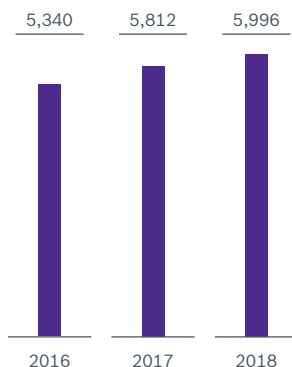
Our commitment to innovation and progress is bearing fruit. In 2018 alone, we filed some 6,000 patent applications for the Bosch Group. On average, Bosch makes an invention every 22 minutes. And even if the number of patent applications filed is declining in general in the age of digitalization, these figures demonstrate once again just how seriously we take our claim to innovation leadership.

### Research at Bosch – pioneers for innovation

Bosch research traditionally sees itself as the pioneer for innovation in the company. And since resource efficiency and sustainability are of global relevance, our experts are part of a worldwide network that attaches great importance to scientific excellence and includes dialogue with leading external partners. At the same time, cooperation arrangements with universities and long-term support programs advance research in the areas of relevance for Bosch, namely the environment, energy, and mobility. This leads to the creation of interdisciplinary teams from different cultures, with different work models and a range of academic and business perspectives. One good example of how broad our commitment is, shows our membership of the board of trustees of Fraunhofer Institute for Manufacturing Engineering and Automation (IPA).

## 10

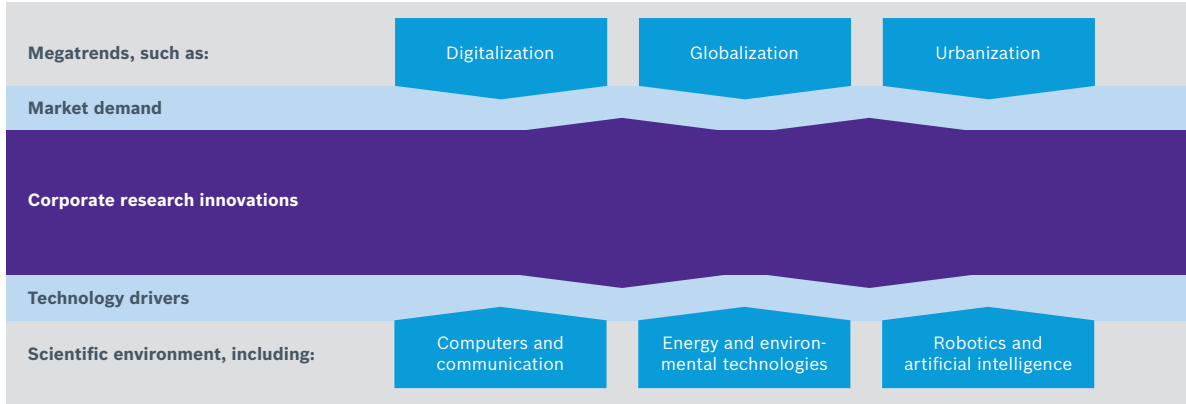
**Patent applications**  
Bosch Group 2016–2018





# 11

## From megatrend to innovation



## Ten areas of innovation define the priorities

The sheer scale of our research and development activities demands a clear structure and consistent management of all stages – from idea to product. Ten areas of innovation, derived from global megatrends and technology drivers, therefore set the priorities. Owing to the size and diversity of our company, there is a multitude of potential applications for the results in the Bosch Group – producing innovations that fascinate. Many ideas that were developed to market maturity would not have been possible without our own research findings. The products originated here range from e-bikes and motorcycle stability systems right through to smart farming – which

is intended to help increase yields in agriculture while reducing the environmental impact (also see the “Products | Sustainable products” section).

## Focus on connected and smart systems

The Internet of Things (IoT) is changing the world we live in. It creates new conditions for individual mobility of the future; it makes homes smart and factories more productive. We want to play a role in shaping this change. More and more, the development of software is supplementing our existing hardware business. And we continuously develop new possibilities for connectivity to make life

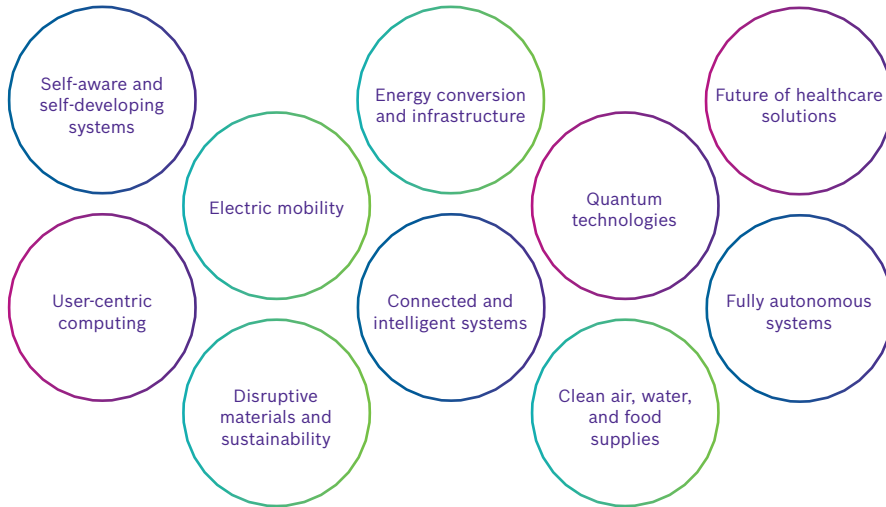
## Joining forces for flexible power supply for cities and industry

In 2018, Bosch entered into promising collaboration with Ceres Power from the U.K., a leading player in the development of solid-oxide fuel-cell technology. Together, we are researching possible applications for next-generation fuel cells as a basis for interconnected, local, and emission-free power supply. This has opened up a range of completely different areas of application – from charging points for electric vehicles to supplying power to businesses, factories, and data centers. In addition, the cells can help balance intermittent renewables and in the future convert “green” hydrogen into electricity with little environmental impact.

## 12

### Ten fields of innovation

<https://www.bosch.com/research/>



easier in every respect. We see ourselves well on the way to becoming one of the world's leading IoT companies (see the "Company" section).

About ten years ago, Bosch Software Innovations started actively shaping the IoT, and 600 of our 5,000 IoT experts work there today. To date, they have designed, developed, and carried out more than 250 international IoT projects. Via the Bosch IoT Suite, we already link up more than 8.5 million sensors, devices, and machines with their users and corporate applications: from strawberry fields to welding robots, from smart home gateways to cargo trains, and from elevators to charging points for electric vehicles.

Thanks to our broad portfolio and competence in sensor technology, software, and services, our business sectors produce groundbreaking solutions for smart homes, smart cities, connected mobility, and connected manufacturing. The strategic objective is to create solutions for a connected world.

## Artificial intelligence

For Bosch, artificial intelligence (AI) is a basic technology of the future that will enable numerous further innovations, in particular in combination with our technological capacity, our experience with industrial production, and our knowledge of the possibilities opened up by the IoT. By the middle of the next decade, 100 percent of Bosch products are to have AI, or AI is to have played a part in their development and manufacture. Associates at the Bosch Center for AI are currently working on nearly 150 AI projects. We see the benefits of artificial intelligence in complementing human abilities. It should serve humankind. To this end, we are researching AI that is safe, robust, and coherent.

One illustrative application is automated driving. Bosch is striving to make road transportation emission-free, accident-free, and as stress-free as possible. With nine out of ten accidents currently attributable to human error, AI could be used to prevent many of these from happening in the first place. Another example is connected manufacturing: In a smart factory, people and machines will work together as an intelligent team. Robots will relieve people of strenuous and dangerous tasks and learn from experience. This will reduce the burden on people.

The Bosch Center for Artificial Intelligence (BCAI) is a way for us to expand on our existing AI competence. At the center founded in early 2017, which currently has four locations around the world, we want to explore above all the rules by which machines learn and what conclusions they draw from these lessons. To promote young talent in this field, Bosch will be presenting the Bosch AI Young Researcher Award, which is endowed with 50,000 euros, for the first time in 2019.

Together with partners such as the Max Planck Institute for Intelligent Systems, the universities of Tübingen and Stuttgart, and other companies, Bosch is a founding member of Cyber Valley Tübingen, one of the largest research cooperations in Europe in the field of AI. Under the umbrella of Cyber Valley Tübingen, ten new research groups and two professorships are being created – one of which is directly endowed by Bosch: the endowed professorship for machine learning at the University of Tübingen has been financed with a total of 5.5 million euros over the next ten years; it focuses in particular on developing robust and explainable learning approaches. A case in point is the development of automated decision-making systems that apply machine learning processes to rule out any discriminatory decisions.

Another premiere in 2018 was the AI CON, an AI symposium held for the first time where more than 200 experts talked about the opportunities and challenges of AI. Organized by the BCAI and Cyber Valley Tübingen, the event brings together leading AI experts from industry and science.

## Development – from idea to actual product

Whereas research creates the foundations for our product innovations, development at Bosch gets actual products market-ready. The issue of product safety is a fixed component in all phases of the product evolution process (PEP). In-depth questions in relation to safety are incorporated in the development process already at an early stage. Is the product state of the art? What are the legal

requirements in the various markets? What differences do we need to take into account? Only when all questions relating to our product's safety have been answered and the relevant requirements have been satisfied with appropriate tests to document this is the respective product released for production.

## Design for Environment (DfE)

To make sure that environmental aspects are specifically included at the development stage already, Bosch has firmly anchored environmentally friendly product development (Design for Environment, DfE) in the product engineering process (PEP). The related principles are set out in the Bosch standard for environmentally friendly product design (Design for Environment) together with concrete design and manufacturing guidelines for developers and product owners. Accordingly, environmental aspects must be assessed using checklists and taken into account in every development process. Specially trained DfE coordinators support the divisions involved, helping them with requirements and questions relating to environmentally friendly product design. The EHS and Sustainability corporate sectors work together with the divisions to continuously refine the approach. When assessing relevant environmental aspects, we consider the whole product cycle, factoring in everything from procurement and manufacturing to use and disposal. The analysis of hot spots helps us to identify specific potential for improvement. The focus is especially on making efficient use of energy and resources as well as on avoiding substances of concern (SoC). This way, we seek to progressively reduce the environmental impact of our products throughout their life cycle (see the "Environment" section).

## 2.2 Quality policy, IT security, and data protection

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Premium quality and reliability – these are the key standards by which we measure each of our products, no matter where in the world it has been produced or where it will be used. What this entails in detail is defined in our binding quality principles, which apply across the entire Bosch Group and also include our suppliers. These principles are implemented locally at the divisions.

The Quality corporate department coordinates and is in charge of quality management at Bosch. Quality officers at the sites are responsible for local operational implementation. In total, more than 15,000 associates work for quality at Bosch. All Bosch development and production sites have implemented a quality management system (QMS) certified according to ISO 9001. At sites where components for vehicles are manufactured, the quality management systems are certified according to the IATF 16949 standard. This standard, which was developed jointly by the members of the International Automotive Task Force (IATF), combines the various requirements of quality management systems in the automotive industry and is based on EN ISO 9001.

Owing to our extensive product portfolio, we also face the challenge of complying with the various laws and regulations around the world relating to quality. We take these requirements on board already in the product evolution process and have various policies in place defining a framework for our activities.

The “Quality policy and quality management” guideline sets out a company-wide quality policy to support our strategic orientation. It also enables us to set quality objectives and commits the organization to satisfying

the respective requirements and continuously working to improve the quality management system. A further central directive on quality describes the process requirements for product safety for the operating units and associates for a product’s entire life cycle.

All guidelines, central directives, and objectives relating to quality are available to associates at all times, in the respective databases and other resources. In future, we want to increasingly provide universal documents on state of the art and product-specific implementation.

### The challenge of durability

Durability and, related to that, the possibility to repair our products and update them to the state of the art if required is a challenge to which we have found different answers in the individual divisions. The demand for a long product life cycle often conflicts with other sustainability-related goals. Older household appliances are often less energy-efficient than new ones, and in the automotive sector, likewise, a new car is usually superior to its predecessor model in terms of fuel consumption and safety.

Where repair work is feasible and advisable, we stock suitable replacement parts. In the automotive sector where a remanufacturing program is the norm, we seek to apply the idea of a closed-loop or circular economy with concepts such as Bosch eXchange. Vehicle manufacturers even give us specific instructions about how long to stock replacement parts. The situation in industrial business is similar, where we keep in stock replacement parts for facilities so as to allow repairs and maintenance work on such plants even over very long periods of time.

## Safety is quality

Safety is a key element of our value proposition, which plays a role in almost every single one of our products, it be a screwdriver or a gas-fired heating system, an emergency braking assistant or lifting equipment. At the product development stage already, we attach great importance to safety tests. One example that concerns part of our product portfolio is ISO 26262 "Road vehicles – Functional safety", which we adopted from the day it entered into effect.

Comprehensive product safety trainings ensure that all associates are committed to, and fulfill, Bosch's quality standards. All associates are regularly briefed – for example, by their superior – on the basic principles of product liability. For associates who can influence product quality, we also employ Web-based training on product safety and product liability, which must be renewed in set cycles. Further classroom training creates profound knowledge for the divisions' product liability officers, for example. They meet once a year to share information and experiences. Outstanding quality achievements are recognized by Bosch with the Bosch Quality Award. The Quality corporate department acts as the jury, presenting the internal quality award in five categories. Optimum product launches are honored as well as the best quality of software or IT systems. There is also a quality award for high and stable manufacturing quality and the best logistics. And since quality is not unrelated to creativity, there is an open category for the most inspiring implementation of the quality principles established at Bosch.

## IT security and data protection

In addition to traditional product safety, security in terms of trust in the protection of systems and data against manipulation is a decisive success factor for cooperation in the IoT. That is why data protection and data security have always been at the heart of our digital strategy. The corresponding principles are documented with binding effect in our IoT principles.

We take into consideration in particular the requirements of our customers: it is our duty to handle their data in a secure and transparent way and protect their privacy. We take a holistic approach to security and always look at the entire life cycle. This is true with regard to data protection and also the security of computer networks and infrastructure within our company, as well as with respect to the IT security of our products, to which we have dedicated a separate corporate office. The Security Engineering Process, which has been in place since 2014, ensures that security has a broad foothold in development and that a general security-by-design approach is applied. Central contact persons in the divisions are in charge of consistent implementation.

As of July 1, 2018, the overall responsibility for IT security at Bosch rests with the Chief Digital Officer, in whose organization all digital business activities are brought together. A separate steering committee meeting is devoted to holistic reporting on the topic of security to the board of management. Information security is also an integral part of company-wide risk management. The respective management system is in accordance with the internationally accepted standard ISO 27001. Related guidelines and central directives cover all relevant areas of information security at Bosch. For example, there is a separate "Information security and data protection" group guideline for the entire Bosch Group. It defines duties, processes, and responsibilities and sets out specific rules on how to handle information, which are binding for all associates.

Technical rules on operating servers and other IT systems are contained in the "IT security" central directive, which also applies throughout the group. With our subsidiary ESCRYPT, we further possess the expertise to create solutions for secure communication and the secure operation of our products. We are thus able to make our products secure without having to disclose our product know-how to external partners. We endeavor to fulfill the highest security standards and are constantly adapting our systems and products. But despite all these efforts, we know that there is no absolute guarantee. Should white-hat hackers, partners, or customers discover a vulnerability in one of our products, we have a central team that they can contact, the Bosch Product Security Incident Response Team. Security gaps can also be reported via our central

customer or compliance hotlines. When a solution has been found, we make it transparent online for all our customers. At a political level, we also advocate clear cybersecurity rules in the European Union. To this end, we played a major role in drafting the "Horizontal Product Regulation for Cybersecurity" white paper issued by the German Electrical and Electronic Manufacturers' Association (ZVEI).

## 2.3 Sustainable products

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Bosch products are “Invented for life.” Most of our products are directly or indirectly coupled with environmental or social aspects. For example, in product development in the Mobility Solutions business sector, Bosch is striving to make road transportation emission-free, accident-free, and stress-free. And anyone working as we do on the opportunities of digitalization – be it smart homes or connected manufacturing – makes a contribution toward conserving resources and increasing security. With our products, we are also able to directly improve people’s quality of life, such as with the Bosch Healthcare Solutions product portfolio.

### Strategy for sustainable products

With our EHS strategy for sustainable products, we have an overview of all opportunities and risks throughout our products’ life cycles, and this is also reflected in our target vision of sustainability. In terms of urbanization, for example, there are various opportunities for Bosch, whereas we encounter potential risks in globalization (category: supply chain) and health (category: substances of concern). With respect to climate change, we see opportunities above all in new building-related technologies (room-cooling systems) and new drive technologies such as in electromobility. The sector coupling – that is, using renewable energies to cut the use of fossil fuels in other sectors – may also offer opportunities for the Bosch Group. After all, in a distributed system of the future based on renewable energies, connected systems are indispensable in order to respond flexibly to changed conditions in power supplies or on the electricity market. We see risks in relation to our products’ sustainability above all in the complex supply chains and in materials utilization on account of the use of substances of concern.

We counter these risks by setting high standards on the quality and performance of our suppliers, also with reference to sustainability criteria. Risks arising from materials utilization are managed by consistently using our MaCS system (also see the “Supply chain” and “Environment” sections).

### Life cycle assessments highlight opportunities

With our comprehensive understanding of sustainability, based on the idea of a closed-loop or circular economy, we seek to understand the opportunities that arise throughout the entire life cycle of our products. As the previous categories in our environmental and safety portfolio were no longer sufficient for such an extensive analysis, we started to systematically carry out life cycle assessments (LCAs) for all our divisions’ key products in 2017. For the individual phases of the life cycle, we take into account various aspects and impact categories such as materials utilization, weight or volume reduction, and the potential to minimize greenhouse gases. The aim is to then use the outcomes of the analyses to define the objectives in the divisions. In individual cases, such as for new technologies, we also perform these analyses in full compliance with ISO 14040/14044.

Meanwhile, around 50 percent of our sales revenue is covered by our LCAs. In the course of these analyses, we have identified the first focal points and hot spots. In the area of materials, for instance, we have already achieved considerable savings in terms of weight and volume of the materials used.

# 13

## Life cycle assessments



Among other things, we were able to test in the course of the LCAs whether the materials used at Bosch are theoretically recyclable. The results range from 20 percent to almost 100 percent, depending on the material's composition. When recyclability is low, we can explore options to change the composition of materials used in a product. If that is not possible, the potential-for-improvement analysis focuses on other aspects. We intend to expand the assessment system used in the LCAs in the coming year and apply it to all new products at Bosch. We also aim to expand the scope to include additional criteria, such as packaging and transportation.

## Minimizing risks

As a company with global operations and a very extensive product portfolio, Bosch is subject to a large number of legal and industry-specific requirements relating to materials, including from the European Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) or the Toxic Substances Control Act (TSCA) in the U.S. In addition, there are the requirements of our customers, in the automotive sector, for example, which go beyond what is required by law in some cases.

Bosch is continuously working to identify substances of concern or hazardous substances in its products and processes, develop replacement substances, and reduce or altogether avoid hazardous substances in the long term wherever possible. Our Material Data Management for Compliance and Sustainability (MaCS) system allows us to check and track the legal and industry-specific framework as well as additional internal requirements and, if necessary, take suitable action. The material data from our suppliers, provided via systems such as IMDS or CDX, are fed into MaCS. The system makes the relevant data available to all users. This produces considerable synergies, as around 30 percent of all purchased parts are used by more than one division. For the standardized declaration of constituent substances and confirmation of nonuse of prohibited substances, we have defined our requirements for suppliers and Bosch-internal processes in the [standard N2580 "Declaration duties and prohibition of pollutants"](#) (see the "Environment" section).



## Energy-efficient products – a real contribution to climate protection

Climate protection and the efficient use of energy are core elements of our approach to sustainability. This is underscored once again by the new, ambitious climate goal we have set for our activities (see the “Environment” section). Practically all our products need power to function. It is therefore not surprising that more efficient use of energy gives rise to numerous fields of action and new business opportunities for Bosch, starting with innovative mobility solutions, spanning technologies for inductive charging and powerful battery packs, right through to power services (smart charging) and the manifold possibilities of the IoT. B2B business poses various challenges in this connection, to which we find solutions together with our customers and partners. In B2C, our product portfolio has always fulfilled the high standards that our customers set in terms of their devices and tools’ energy efficiency.

## Broad solutions approach on the path to emission-free mobility

At Bosch Mobility Solutions, our business sector with the highest sales revenue, striving for energy efficiency and avoiding emissions is the core of its business operations. Bosch endeavors to achieve a form of sustainable mobility that is low in pollutants and independent of fossil fuels. As a systems supplier for state-of-the-art injection and drive systems as well as mobility solutions, we help auto-makers (OEMs) improve energy efficiency.

Alongside the energy and heating transformation, the mobility transformation presents opportunities as well as risks for us. We want to become the world market leader for electromobility. At the same time, we believe that the combustion engine will be with us for many years to come. Our technological developments prove we can make the combustion engine – whether powered by diesel or gasoline – significantly more efficient. In this way, we

will satisfy public demand for good urban air quality. Consequently, we support measuring real on-road CO<sub>2</sub> emissions and considering all powertrain types from a well-to-wheel perspective – for if we ignore where fuel comes from and how electricity is generated, we are quite simply not telling the whole story about road traffic’s carbon footprint.

In our operations, we therefore apply a broad range of solutions that comprises battery-electric mobility, fuel cells, and synthetic fuels and also offers new mobility concepts ranging from car sharing to last-mile delivery solutions. We see the combustion engine as a bridging technology in this context. Diesel powertrains in particular still offer great potential here, as they produce 15 to 20 percent lower CO<sub>2</sub> emissions than gasoline powertrains. There are numerous examples: by refining the urea filter for the exhaust-gas treatment system, we were able to demonstrate that CO<sub>2</sub> emissions could be cut by 40 percent compared with the previous generation through the materials used. Not only that, but the product’s redesign reduced its weight.

In 2018, we demonstrated that Bosch diesel technology already achieves a record 13 milligrams of nitrogen oxide per kilometer in standard legally compliant real driving emissions (RDE) cycles. That is just a tenth of the limit that will apply from 2020. And even in particularly challenging urban trips, the levels achieved by Bosch test vehicles are down to an average of just 40 milligrams per kilometer. A combination of advanced fuel-injection technology, a newly developed air management system, and smart temperature management has made such low readings possible.

And yet even this technological leap forward does not exhaust all development options for the diesel engine. For example, we want to use the possibilities provided by AI to make an internal-combustion engine possible that, with the exception of CO<sub>2</sub>, virtually does not pollute the ambient air.

## Clear strategy on electromobility

There is no question about it: the mobility of the future will be shaped by electric drives – and Bosch is making its contribution to forge ahead with development. In 2018 alone, we acquired 30 projects worth several billion euros. And Bosch technology is already found in more than 800,000 fully electric and hybrid vehicles worldwide. In order to continuously increase this number and be the technology partner of choice for OEMs, our strategy rests on three pillars:

- ▶ **Systems expertise** – Our customers have always benefited from our expertise in intelligently linking all the components in the powertrain. This broad-based systems expertise is our unique selling point (USP). And we are relying on it in electromobility as well. The Bosch portfolio includes key components of the electrical powertrain, such as the electric motor, power electronics, and battery systems. Yet true systems expertise goes beyond the electric car's hood. Our "systemle" which we recently premiered connects the electrical powertrain with the Bosch Automotive Cloud Suite. This gives rise to Web-based services such as convenience charging, which enhance the everyday benefits of electromobility. Let's say someone is driving from Munich to Hamburg. The service shows where all the charge spots along the route are, plans recharging stops in advance, and deals with all payment transactions.
- ▶ **Energy efficiency** – We already are a market leader with our electric motors and electric axle drive, and we want to expand our position further. This is an area in which our engineers are working on new generations of electric motors, inverters, and battery systems. Modified thermal management systems can also increase electric cars' range by up to 20 percent. Vehicle users benefit directly from this: the less electricity the motor and powertrain consume, the longer the battery charge of an electric vehicle will last, and the greater its range.

- ▶ **Standardization** – For us, this is the basis for making mass-market electromobility scalable and affordable. The e-axle, our latest electric drive, is evidence of this. It integrates a motor, power electronics, and transmission in a compact unit and is suitable for all vehicle types, from small passenger cars to light commercial vehicles. The axle drive is of interest to a wide range of customers – to established automakers and start-ups alike. As Bosch can quickly and flexibly adapt the drive to the automakers' requirements, customers do not need to come up with time-consuming new designs, which speeds up their development times and reduces costs.

## Incubator for electromobility

Especially in the market for electric vehicles, start-ups are competing with established manufacturers. In that constellation, Bosch sees itself not just as systems supplier but also as incubator for electromobility. With our technologies, we give both established OEMs and new players in the market the opportunity to bring vehicles to market quickly. One example of this position is our cooperation with the start-up company Nikola Motors from Salt Lake City, which specializes in truck electrification. By 2021, it plans to launch the hydrogen-electric heavy trucks Nikola One and Nikola Two. Not only should they outpower other semi-trailer trucks, they should also prove more efficient thanks to the combination of hydrogen fuel cell technology and a new efficient electrical powertrain based on the scalable and modular e-axle from Bosch.

## Smart solutions for the energy market

More and more, the energy market is characterized by local facilities and renewable energy sources. The grid infrastructure is gradually being expanded to smart grids. At the same time, requirements are increasingly taking shape with respect to smart metering and the associated rollout of smart meters and metering systems. For systems operators, metering operators and service providers, dealers and suppliers, Bosch offers new energy management approaches. Bosch Connected Energy Solutions set new standards in simple and smart energy management. Our solutions are already successfully used by more than 250 energy companies, and we are continuously refining them. With products such as the Smart Meter Gateway Manager or software for linking up local energy generation facilities as virtual power stations, we create solutions for the renewable, distributed energy market of the future: smart demand and supply management can help to balance output and demand peaks, making the entire energy system more efficient. The environmental benefits are obvious: more renewable energy can be fed into the system, and fewer power lines are needed.

## Rexroth for Energy Efficiency

As a global partner in the field of industry with state-of-the-art technology and unparalleled industry expertise, Bosch Rexroth offers a unique portfolio of mobile applications, factory automation, machinery application and engineering. Bosch Rexroth also draws on its extensive know-how to assist machine manufacturers and industrial users with their efforts to achieve greater energy efficiency. It is bundled in the Rexroth 4EE – Rexroth for Energy Efficiency approach, which also plays a central role in the GoGreen project (see the “Environment” section) and comprises four levers: The first covers the systematic assessment of

the entire automation process, including project planning, simulation, and advice. Energy-efficient products and systems with efficient components are another approach. The third lever is energy recovery, which also includes the storage and utilization of energy that was left unused in the past. This includes, for instance, accumulator charging circuits in combination with energy-recovery drives. Energy on demand, for example, in the form of variable-speed pump drives, makes possible especially high savings of up to 80 percent and is the fourth lever in this approach.

## Great potential in energy and building technology

Besides the mobility sector, energy and building technology in particular offers great potential for Bosch. The biggest lever for achieving the climate targets for buildings and industry is thermotechnology. Only around 17 percent of all industrial plant and facilities in Germany are state of the art in this respect today. In German residential buildings, only 19 percent of all installed heating systems function efficiently using renewable energies. By using modern heating systems across the board, it would be possible to save some 31 million metric tons of CO<sub>2</sub> a year in Germany alone – the equivalent of around 20 percent of CO<sub>2</sub> emissions on German roads. Efficient technology and individual energy services could thus help to save tremendous amounts of electricity, fossil fuels, and carbon dioxide emissions – and with our products we want to make a contribution toward leveraging this potential.

Bosch condensing boilers are already operating at their physical limits, with a seasonal energy efficiency ratio of 94 percent, and with the corresponding controls, they satisfy the requirements of energy efficiency class A+. Condensing boilers can also be operated using “green” gas, from power-to-gas plants, for instance. In conjunction with power from renewable energy sources, heat pumps can run entirely without fossil fuels and in the long term open up ways toward a technology change for emission-free heat generation. Solar thermal systems also offer high efficiency in water heating and can effectively support the heating system throughout the year. Further efficiency gains can be achieved in smart homes, for example, with smart thermostats that autonomously take into account online weather data when adjusting the temperature for greater efficiency.

Projects around the world are already demonstrating what is possible with the help of state-of-the-art Bosch technology today. Take, for instance, the Xiwanglanting residential complex in Shandong, China, with more than 900 apartments: a modular air-conditioning system and heat pumps with waste-heat recovery have made possible energy savings of 30 percent compared with a conventional heating system.

## Targets change with advancing progress

In many divisions, we have made great progress in recent years in terms of resource and energy efficiency. Beyond this, we are increasingly addressing the opportunities arising for Bosch from the principle of a closed-loop or circular economy. Our household appliances illustrate how successful we are with respect to energy efficiency: they are market leaders in many of the world’s markets, not least thanks to their high energy efficiency. Between 2001 and 2016, for instance, we greatly improved the energy efficiency of refrigerators (cutting power consumption by 55 percent), washing machines (cutting power consumption by 68 percent), and dishwashers (cutting power consumption by 36 percent).

In view of the progress made, our target vision is changing, moving toward the principle of a closed-loop or circular economy that is not focused on selected aspects or product features but rather covers the entire product life cycle. The traditional, linear relationship of “production – use – waste management” is changing to “production – use – repair – replacement – reuse – recycling.” This process entails many, often fundamental, changes relating to the way in which we make our products, use them, or take them back and recycle them. We are driving this development forward to continue to offer our consumers products in future that combine high quality with being sustainable and eco-friendly.

## 14

### Changing perspectives: household appliances as an example

Avoid risks		Use opportunities	
<b>1992</b>	<b>2006</b>	<b>2015</b>	<b>202x</b>
Avoid hazardous substances (e.g. CFCs)	Improve energy efficiency	Improve resource efficiency	Circular economy

## Resource efficiency – toward a closed-loop or circular economy

One focus of the life cycle assessments for our products is placed on the efficient use of resources. This starts with how the products are made (see the “Environment” section) and covers their packaging and usage phase right through to recycling.

## Packaging solutions to conserve resources

Not only in our products’ packaging do we pay attention to conserving resources: one of the leading suppliers of process and packaging technology, the Bosch Packaging Technology division is seeing the growing importance of sustainability for its competitive position. Increasing urbanization, an aging population, and smaller households are changing the demands made on packaging. At the same time, the demand and need for sustainable packaging solutions and processes is increasing. One example of a Bosch solution is the first sealed paper packaging for dry foods such as sugar, pasta, grains, or powder. It is not made of plastic, but of mono-material paper and can therefore be completely recycled. Other promising food packaging includes bio-based plastics whose carbon footprint is often smaller than that of conventional plastics. Back in the summer of 2018, Bosch announced its decision to sell its packaging machinery business in order to sharpen its focus on the topics of the future, such as transforming the group and orienting it toward future digitalization, and to pool its resources. The related cornerstones to secure our associates’ future during and after the sale have already been agreed on with the employee representatives for Germany in a first step (see the “Associates” section).

## Resource efficiency in mobility solutions

For a large part of our automotive products, we have been able to reduce volume and weight – without making any compromises in quality and safety, of course. To give an example: by adapting the rail design of common rail diesel injection systems, it was possible to reduce the weight significantly – considering that the component has to withstand pressure greater than 1,400 bars and there are few alternative materials.

The use of remanufactured automotive spare parts under the Bosch eXchange program also contributes toward conserving resources. Workshops take back replacement parts, and worn or defective parts are exchanged. The reconditioned product then goes through the same safety and quality tests as new products before it is released for use again in certified workshops. This way, Bosch is able to save valuable resources – to the benefit of customers, workshops, and the environment alike. To make this possible, the later-stage remanufacturing is already borne in mind during the development phase (also see the “Environment” section).

## C-ECO offers circular economy services

Back in 2016, we sent out a clear signal, underlining the importance of the topic of circular economy by founding our subsidiary C-ECO (Circular Economy Solutions GmbH). In a dedicated business field, it exploits the opportunities presented by a closed-loop or circular economy and offers related services. In 2018, its 24 associates versed in remanufacturing and reverse logistics generated sales revenue of 14.3 million euros.

## Resource efficiency in consumer goods

Since late 2018, green toolboxes from Bosch Power Tools for DIY enthusiasts have been made of 90 percent recycled plastics. This makes Power Tools the first manufacturer on the market for power tools to offer toolboxes from 90 percent recycling material. Before the end of 2019, several hundred thousand Bosch toolboxes are to be made of the new material already. Thanks to the large share of recycling material used, carbon dioxide emissions are lower. This year alone, we want to save around 1,500 metric tons of carbon dioxide this way – the equivalent of the CO<sub>2</sub> emissions accumulated traveling around 13 million kilometers by car. We are reducing plastic waste by some 1,000 metric tons a year.

How design concepts can be used to further resource efficiency in consumer goods is demonstrated by the Blue Movement project in the Netherlands. Under the leasing concept for washing machines and dryers, the appliances are returned to Bosch after six years to be reconditioned for reuse and provide insights for a sustainable product design. This allows us to channel valuable resources back into the value cycle and reuse them. At the same time, customers get to use appliances that are state of the art in terms of energy efficiency.

## Safety – technology that can save lives

Bosch products provide extra safety – a further aspect of our “Invented for life” ethos. Together with our partners from the automotive industry, we work on solutions to make the roads even safer. In buildings, our sensors ensure fire protection and safety. And anyone working with tools from Bosch is also on the safe side.

## Pioneering achievements for safe mobility

In the Mobility Solutions business sector, safety is part of our core business. With its electronic vehicle safety systems, such as ABS, ESP® and the emergency braking assistant, Bosch is one of the pioneers in active and passive driving safety. Initially a special feature in premium vehicles, electronic vehicle safety systems are standard nowadays in many new vehicles – and contribute to road safety every day. In 2018, we reached a new milestone in this respect. Based on the well-proven ABS for motorcycles, the world’s first market-ready ABS for e-bikes is to enable controlled and stable braking even under difficult conditions.

Fast communication after an accident can also help to save lives. Automatic emergency call systems such as Bosch eCall play a role here. Since March 2018, such systems are mandatory for all new cars registered in Europe. But that does not mean that owners of older cars have to go without the lifesaver, as Bosch offers a practical retrofit solution: the Telematics eCall Plug that can be easily connected via Bluetooth. Simply connect it with associated smartphone app – and you have a direct line to the emergency response center on board, which organizes fast, professional help and an ambulance if required.

With our expertise in digitalization, we also create extra safety in the most diverse areas of life. For example, we offer a cloud-based solution to alert wrong-way drivers and all other motorists in the vicinity within ten seconds by push message. The mySPIN smartphone integration solution makes it safe for car drivers and motorcyclists to use smartphone apps while they are on the road. And radar-based assistance systems by Bosch – from side view assist to collision warning right through to adaptive cruise and speed control – can effectively prevent accidents. These electronic assistants are always vigilant and, in emergencies, should respond more quickly than people can. According to estimates by Bosch accident research and independent studies, automatic emergency braking systems could prevent up to 72 percent of rear-end collisions. In addition, we are continuously developing our camera technology to make improvements in driver assistance systems and will in future use AI to deliver even more reliable results.

## Bosch health and safety solutions for professionals

In the Power Tools division, solutions for greater health and safety are important criteria to set Bosch apart from the competition. With professional power tools from Bosch, our customers choose a comprehensive program that helps them to work efficiently and safely. The spectrum ranges from solutions to directly minimize the risk of injuries right through to protecting against long-term health hazards. The sensor-based KickBack Control function in the GSR 18V-60 FC Professional cordless screwdriver, for example, provides effective and immediate protection: if the screwdriver is jammed, the integrated sensor detects the sudden bind situation and cuts off motor current within a split second. KickBack Control is now integrated in 25 Bosch professional power tools, such as power drills, angle grinders, and screwdrivers.

The GSA 18V-32 Professional cordless reciprocating saw also offers long-term protection against health hazards by means of active vibration control: with an opposite movement, a counterbalancing weight permanently reduces vibrations so that virtually none are transmitted to the user's body. This anti-vibration principle is also

used for hammer drills. In addition, Bosch also offers a comprehensive dust extraction program: the Click & Clean System is compatible with a range of different dust extraction systems such as for drilling and chiseling tools or with vacuum and suction accessories for angle grinders. They extract the dust where it is created. As a result, they enable doing a healthier, less fatiguing, tools-saving, and also more precise job.

## Building technology – smart and safe

Bosch building technology, too, can save lives. In a smart home, the Bosch Twinguard acts as smoke alarm as well as air-quality sensor. This system not only serves fire prevention purposes but also continuously measures room temperature, relative humidity, and air quality – and sends a notification to your smartphone when any of the readings are outside the optimum range. And last, but not least, surveillance technology from Bosch helps to increase security at airports and can even be used – in thermal imaging cameras on aircraft, for example – to detect forest fires at an early stage.

## Health and nutrition – our contribution

### Health assistants in everyday situations

The subsidiary Bosch Healthcare Solutions (BHCS) entered the market for medical technology in 2016 with the objective of making a contribution to people's health. The subsidiary's solutions draw on the Bosch Group's core competencies: sensors to collect data, software to evaluate that data, and services based on this data analysis. Vivatmo, for instance, helps people suffering from asthma to regain more quality of life. It is the first breath analysis device that allows asthma patients to measure the degree of airway inflammation from their own home.

This means they can closely and precisely monitor their condition – similar to how diabetics monitor their blood sugar levels. They can then use the Vivatmo app to share the recorded values with their physician who can then analyze the additional data. As a result, physicians can tailor treatment more precisely to each patient's requirements. In all BHCS product development, strong partners provide a wealth of expertise: the Research and Advance Engineering corporate sector at Bosch provides the scientific basis, and the Robert Bosch Hospital lends its support in the development and testing.



## Lower noise emissions – greater quality of life

Good technology runs quietly – and to that end we continuously work to reduce the noise emissions of our devices, in particular of our household appliances. Be it washing machines, extractor hoods and dishwashers with Eco-Silence Drive, or vacuum cleaners with the SilenceSound system – everything is designed to keep noise emissions to a minimum. The same applies outside the home: thanks to Bosch ProSilence technology, lawnmowers of the new Rotak generation are the quietest high-performance mowers on the market.

The new generation includes cordless and corded models and is remarkably quiet while offering high performance. In the AdvancedRotak models, for example, we were able to lower the guaranteed sound power level from 90 to 86 decibels – cutting mowing noise by 60 percent. From the mower cover to the motor right through to the blade: every element was optimized to make tending the lawn with cordless mowers as efficient and also as silent as possible. It's not just the mower itself that is quieter – the sound has also been optimized and is now perceived as quieter.

## Sustainable agriculture in the age of digitalization

Sustainable agriculture does not necessarily mean lower yields. Our solutions for sustainable agriculture demonstrate how this can be done. From powertrain systems for tractors and hydraulic solutions for agricultural machinery to connected products for smart farming – there are very few industrial companies apart from Bosch that have

the necessary software, sensor technology, and service expertise. New business models such as Deepfield Connect support farmers in their everyday work and help optimize harvests or make operating processes more efficient. For this purpose, Bosch is also applying what are known as MEMS sensors – originally developed for passenger cars – to agriculture. They measure relevant values such as temperature and humidity and transmit them via the cloud to farmers' smartphones.

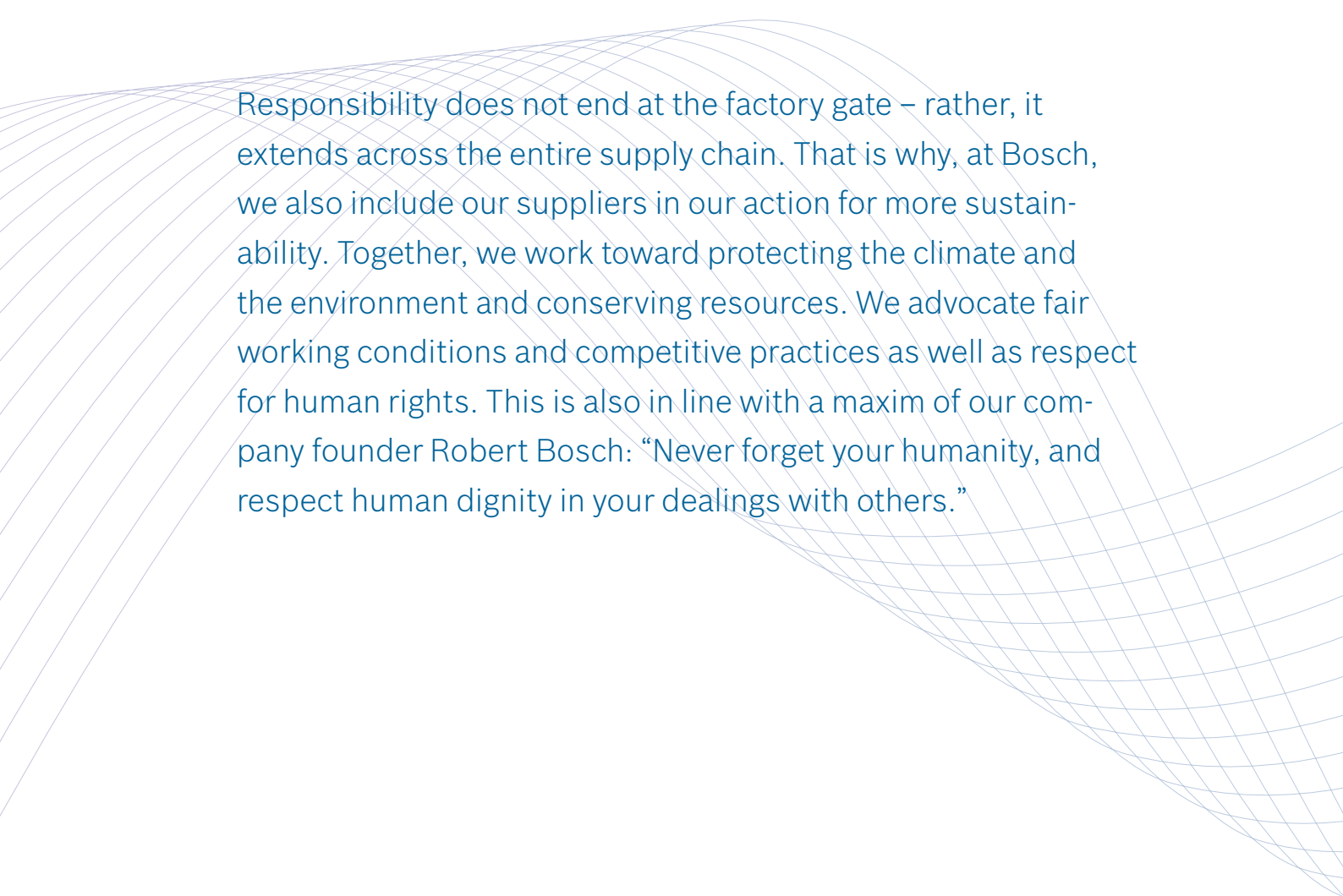
To give an example: with the Plantect sensor system, Bosch already makes it possible to predict with 92-percent accuracy today whether a disease will befall tomato plants in the greenhouse. How does this system work? Sensors installed in the greenhouse measure temperature, sunlight, and carbon dioxide. AI analyzes these values, combines them with weather forecasts, and sends warnings to farmers via an app.

Furthermore, the Bosch IoT Cloud makes it possible to connect agricultural machines. Vehicle data can be used to predict faults and remedy them in good time, preventing breakdowns and expensive repairs in the first place.

As part of a research partnership with BASF, Bosch is developing smart spraying technology. Using camera sensors, it is able to differentiate between crops and weeds and target the latter with pesticides. The positive effects include higher yields, a lower environmental impact, optimized resistance management, and a reduction in the pesticides used.

# Supply chain

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Responsibility does not end at the factory gate – rather, it extends across the entire supply chain. That is why, at Bosch, we also include our suppliers in our action for more sustainability. Together, we work toward protecting the climate and the environment and conserving resources. We advocate fair working conditions and competitive practices as well as respect for human rights. This is also in line with a maxim of our company founder Robert Bosch: “Never forget your humanity, and respect human dignity in your dealings with others.”

# 42.1

billion euros  
in purchasing volume

# 5,250

suppliers surveyed on  
conflict minerals

# 862

environmental and  
occupational health  
and safety audits at  
suppliers since 2010

## 3.0 Management approach

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Our supply chains are as heterogeneous and international as our range of products is varied and diverse. Bosch has supply relationships in 50 countries. We purchase direct materials from some 7,000 suppliers around the world; for indirect materials the number is over 30,000. Each day, more than 400 million parts – from high-precision turned parts through to packaging materials – are delivered to the logistics bays of around 300 production facilities. Our supply chain is closely linked to our production. In total, the Bosch Group's global purchasing volume is around 42.1 billion euros.

The procurement of components made of steel, aluminum, and plastic accounts for a large part of the resources used in the supply chain at Bosch. In most cases, these are semifinished products or finished components from suppliers. Only a small proportion is purchased directly as raw material.

Around 1.9 billion euros of our purchasing volume is attributable to the direct procurement of such raw material. We determine these materials' carbon footprint on the basis of data available to us about the raw materials' manufacturing process.

As a company that acts responsibly, we also look beyond the use of materials and resources to the upstream supply chain – because sustainability does not start at the factory gate. This aspect is anchored in our target vision of sustainability in the key issue globalization. Our suppliers are familiar with the high standards at Bosch. We introduce sustainability aspects to them, in particular via the Code of Conduct for Business Partners, relevant contractual clauses, and related trainings. When purchasing officers visit suppliers, they are instructed to take a critical glance at environmental protection and work safety aspects as well. We continuously analyze the ecological and social risks in our supply chain and derive measures on that basis.

### Purchasing and logistics in a worldwide network

Worldwide, some 37,000 associates work in the Bosch purchasing and logistics organization. The purchasing function at Bosch is involved in the entire product evolution process – from the initial innovation phase to the start of production right through to the end of aftermarket supplies. Specialists in the various purchasing departments support the process, contributing not only their technical expertise but also their knowledge of environmental and labor law as well as human rights and supplier-related matters. This way, the purchasing function supplies the production sites with purchased parts applying the “local for local” strategy. Bosch accordingly builds up supply chains in the respective regions in order to keep transportation and CO<sub>2</sub> emissions to a minimum. The purchasing organization also has a local presence for this purpose, and purchasing representatives are located near the suppliers.

In the logistics area, the focus is on transportation. At present, Bosch is in the process of implementing regional management for all transportation worldwide of relevance for the company. For this purpose, the land, sea, and air-freight for all divisions is managed at Transport Management Centers (TMC). These centers are already operational in the regions of Europe, India, Asia, and Latin and North America, and they are designing transport networks with the aim of reducing transport and thus avoiding CO<sub>2</sub> emissions. In addition, these efforts are supplemented by daily optimized scheduling of the freight in the network with a view to reducing the number of ton-kilometers on the one hand and increasing capacity utilization of the cargo compartment (avoiding empty runs) on the other hand. It is already possible to record transport data across the board in Europe using the TMC data platform so that the carbon footprint can be determined in accordance with an externally certified process (DIN EN 16258).

## 3.1 Trust-based supplier relationships

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Excellence at globally competitive prices – that is the challenge Bosch faces in purchasing in what is a volatile market environment. Globalization and increasing resource scarcity as well as increased connectivity via the IoT are changing markets worldwide. Many companies see these developments as a threat – at Bosch, however, we believe they are primarily an opportunity for us to shape our future. We know that no company is able to overcome these challenges alone. The performance capacity of the entire supply chain is decisive for the success of everybody involved. This applies all the more the closer and more connected we work together beyond company boundaries and national borders. That is why we believe that open and trust-based relationships with our suppliers are the prerequisite for us to be successful together and make an important contribution toward supply chain excellence.

### Preferred suppliers for long-term success

In our supplier management, we choose partnerships that offer the perspective of long-term competitiveness. Suppliers with whom we work together particularly closely are awarded the status of preferred supplier. They are involved at an early stage in strategies and development projects, which gives them the opportunity to prepare for the future. In total, we currently have around 550 preferred suppliers worldwide. Classification of the suppliers is based on a number of assessment criteria, such as technical competence, sustainability performance, product and logistics competence, and value-for-money considerations.

### Sustainability in relation to quality

For Bosch, sustainability performance and quality are closely related. We have also investigated and validated this relationship academically. In projects with universities, for example, Bosch examined the relationship between a supplier's performance and the various quality and sustainability criteria. The results showed that suppliers with a good sustainability performance also tend to have a higher maturity level in terms of quality. Our purchasing officers are aware of this connection and – as has also been confirmed in a study – are intrinsically motivated to purchase goods and services from suppliers offering convincing sustainability performance. Moreover, the internal objectives at Bosch also look to maximize suppliers' sustainability performance to the greatest extent possible. However, Bosch not only demands sustainable behavior but has also been supporting its suppliers' activities in the realm of sustainability for many years. In the reporting period, supplier days were held on certain core topics relating to quality and sustainability. These joint activities are having an impact: the quality produced by our suppliers has improved continuously. In 2018, the already very low level of complaints was reduced by a further 20 percent.

## Clear requirements – high standards

In our cooperation with suppliers, we focus primarily on costs, quality, delivery reliability, and sustainability. We make clear agreements to this effect. For example, we have concluded quality assurance agreements in addition to the standard agreements with some 5,000 suppliers. These agreements include the declaration of materials as well as compliance with environmental and social standards. The suppliers undertake to communicate the defined requirements also within their own upstream supply chain. They are also required to have a functioning environmental management system – if possible, with corresponding certification such as under ISO 14001. Only small and medium-sized suppliers are exempt. In 2018, around 5,400 of our suppliers had such a certified management system in place.

## Compliance – what we require of our business partners

Our suppliers and business partners are also subject to clear compliance policies and procedures. In our [purchasing conditions](#), we have included a compliance clause that refers to the Ten Principles of the United Nations Global Compact, among other things, and explicitly requires respect of human rights as well as the generally applicable labor standards – freedom of association, elimination of forced and compulsory labor, abolition of child labor, and elimination of discrimination. In addition, we have formulated a [Code of Conduct for Business Partners](#). It is handed out to all suppliers at the start of the business relationship, and it is also publicly available on the Bosch website. The code of conduct also requires compliance with the “Basic principles of social responsibility at Bosch.”

Our suppliers have been informed that we check whether our requirements are adhered to on a sample basis using quick scans or comprehensive drill-deep assessments.

## 3.2 Selection, assessment, and development of suppliers

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In line with our quality ambition, we expect high standards – from ourselves and our suppliers alike. We endeavor to develop our suppliers further via clearly defined processes. This process begins early during the supplier selection stage, which is preceded by a Dynamic Supplier Classification (DSC). Based on clear criteria, suppliers are classified and, if necessary, for example, in the event of illegal conduct or insufficient sustainability performance, can be barred from contract awards at this stage already. The higher the classification in this process, the greater the likelihood that the supplier will be chosen for a contract. The final classification is also the reference point for the supplier's further continuous development.

### Minimum standards in supplier selection

Sanction Party List (SPL) Screening is applied for all business partners. In addition, an automated IT-based compliance check has been applied since 2017. It checks our business partners against external compliance lists to identify any potential violation of national and international legislation and other standards. In case of any doubt on completion of the check, the compliance officer initiates suitable measures together with the purchasing officer, which can range from discussions with the business partners through to withdrawal from the business relationship. The process is fully documented. This way we seek to make sure that our business relationships have a reliable and transparent basis in terms of compliance.

### Two processes for sustainability-related supplier assessment

Suppliers are assessed regularly at Bosch – in particular in terms of their sustainability performance. There are two established processes in this context: quick scan assessments and more comprehensive drill-deep assessments. The quick scan assessments are part of regular on-site visits to suppliers by appropriately qualified associates from purchasing or the quality functions. The aim is to assess all new suppliers this way. The assessment is based on a checklist of environmental, occupational health and safety, and human rights criteria. If deviations from the requirements are found, a development process with the supplier begins: in agreement with the purchasing function or with its help, the supplier defines measures, the implementation and observance of which are supported and checked by Bosch. Certification or audits serve as evidence; findings are stored in our suppliers database. The total of around 2,000 quick scans carried out by Bosch in 2018 identified some 100 suppliers with whom development projects were then launched. After two or three years, they can be reexamined if necessary.

Bosch developed an app for performance and processing of the quick scans in 2017. It includes the most recent checklists in German and English as well as help functions, background information, descriptions, and images. This way, the app facilitates answering the checklist for the qualified associate and also makes it possible to add images and comments. As of 2019, Bosch provides the app free of charge for downloading via econsense so that other companies may also use it.

In addition to the routine quick scans, experts from our purchasing function also perform drill-deep assessments. These are used mainly in potentially high-risk regions or when there are specific indicators identified by the quick scans or whistleblower reports. The risk assessment is based on the United Nations Human Development Index and the Corruption Perceptions Index published by Transparency International.

The assessments are carried out by internally licensed assessors who receive regular training. During the one- to two-day assessments, the three areas covered by the quick scan are tested in more detail and an analysis of sustainability management and working conditions, as well as compliance issues, is performed. For each of the six issues, there is a list of categories and corresponding criteria that represent Bosch's expectations of its suppliers. The assessor evaluates the categories by maturity level, indicating the extent to which expectations are met. Drill-deep assessments are performed independently of any other supplier visits. At the end, the assessor rates the company's maturity level in the various categories and supports the supplier, if necessary, in drawing up a development plan with specific follow-up measures. The insights we have obtained to date from all assessments show that the suppliers generally meet the requirements and that improvements are only needed in a small number of aspects. In 2018, improvements focused on occupational health and safety as well as environmental issues.

Since introducing the drill-deep assessments in 2011, Bosch has conducted detailed checks of some 800 suppliers, and their number is set to rise to 1,000 by 2020. In a small number of cases, the deviations highlighted by the assessments were not remedied, and Bosch consequently terminated the supply relationship with the respective suppliers. Business relations are canceled with around five suppliers each year.

## Strict response to noncompliance

If an existing business relationship is in contravention of the requirements of the Code of Conduct for Business Partners, in a first step efforts are undertaken to further develop the supplier to thus remedy such violations. If they cannot be remedied or the supplier repeatedly violates the code or local legal requirements, Bosch has the right to terminate the business relationship.

In 2017 and 2018, for example, a number of companies were closed down in China by the government for reasons relating to environmental issues and occupational health and safety. Although Bosch suppliers were not directly affected by the closures, we reinforced our quick scans at our local suppliers and selected subcontractors in response and introduced additional supporting self-assessments for our suppliers.



## Special focus on human rights

In our purchasing conditions and in special quality assurance agreements, we request that our suppliers adhere to the principles of the United Nations Global Compact and also take them into account in their own supplier management. Human rights risks in the supply chain are identified by Bosch as part of the supplier assessments (tier 1). The drill-deep assessments in particular are used to evaluate the system requirements, such as policies and suitable organization, and also the practical implementation. The quick scans usually do not involve inspecting documents or conducting interviews. All on-site visits include a visual assessment, for example, to ascertain whether there are any minors on-site at facilities (also see the “Supply chain | Trust-based supplier relationships” section). Bosch consistently follows up on all incidents reported via the Compliance Hotline. When Bosch believes there is a risk inherent in certain business partners, they are additionally subject to a due diligence review. These include intermediaries, among others, who carry out duties in the name of Bosch.

## Consistent training at the Supply Chain Academy

Bosch works with its suppliers in partnerships, some of which have been in existence for many decades. In this context, we offer our suppliers in all regions extensive training opportunities and assist them in meeting our requirements with respect to environmental protection, occupational health, and safety. The same applies for social challenges within the supply chain, such as respecting rights at work and strict occupational health and safety. In addition, suppliers' capabilities are enhanced through supplier development projects aimed at increasing their competitiveness as well as their sustainability performance. More than 300 internal trainers regularly hold Web-based training and classroom-based events at the Bosch Supply Chain Academy aimed at purchasing officers as well as suppliers. The suppliers can also book specific training courses themselves. In addition, events such as the regional supplier days regularly highlight the requirements in sustainability matters.

## 3.3 Conflict minerals and substances of concern

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### Conflict minerals in the supply chain

At Bosch, conflict minerals are regarded particularly critically. We voluntarily take part in the conflict minerals reporting system provided for by the Dodd-Frank Act in the United States. In this context, we ask our suppliers annually to make a declaration regarding the origin of the conflict minerals tin, tantalum, tungsten and gold. In 2018, we consulted more than 4,000 suppliers in total in this respect, of whom 82 percent responded with smelter declarations. Except for gold, more than 90 percent of the smelters have already been certified under the cross-industry standard of the Responsible Minerals Initiative (RMI; formerly: Conflict Free Sourcing Initiative, CFSI). Bosch has also been a member of the initiative since late 2014.

The certification approach of the RMI for processing smelters/refineries covers the use of the conflict minerals tin, tantalum, tungsten and gold. The smelters are required to provide evidence of responsible sourcing of the resources. The RMI standard is accepted both by the U.S. Securities and Exchange Commission and by our customers (OEMs).

Due to the large number of Bosch suppliers and subcontractors, monitoring and verifying the entire upstream part of the supply chain and related process stages naturally presents a major challenge for Bosch. Therefore, we require our direct suppliers to submit the appropriate declarations. Tracing semifinished metal products using

technological-analytical means back to the intermediate products and through to resource extraction is not possible for process-inherent reasons. Bosch purchases only relatively few resources directly from mineral-processing companies. Such resources may, however, be contained in particular in the electronics of Bosch products.

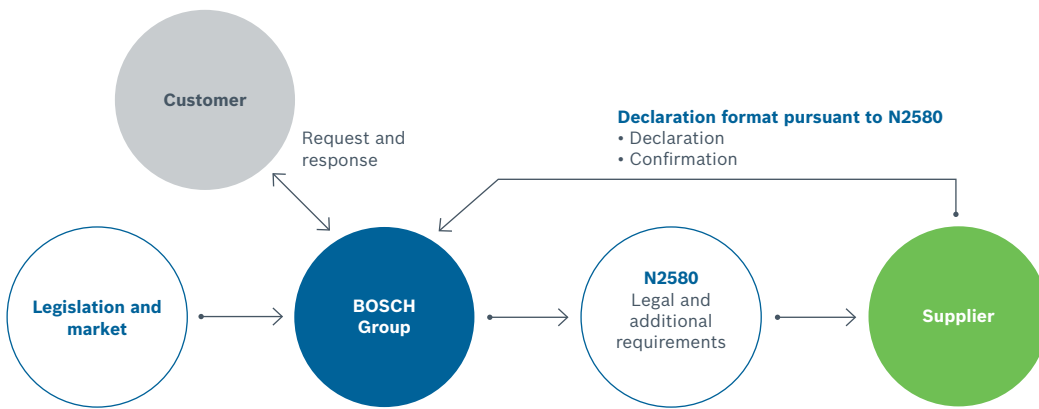
### Handling of substances of concern

Our suppliers are also called on to cooperate with us in handling substances of concern (SoC). Use of these substances at Bosch has been limited by the [Bosch standard N2580](#) for more than 30 years now. Partly due to the requirements of our customers, it considerably goes beyond what is required by law in some cases (see the “Environment” section). We require our suppliers worldwide to apply the N2580 standard and report back on this via a defined process. The content of N2580 is reviewed and updated every six months by an expert group from all operating units.

The related data from our suppliers – declared via the International Material Data System (IMDS) or the Compliance Data Exchange (CDX), for example, are stored, inspected, and evaluated in our Material Data Management for Compliance and Sustainability (MaCS) system (see the “Environment” and “Products” sections).

# 15

## Handling of substances of concern



# Environment

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We want to keep the environmental impact of our operations to a minimum. For years, we have consistently been working to reduce our ecological footprint by systematically saving energy and resources and reducing materials utilization in our production. This not only helps to protect the environment and mitigate climate change but also makes us more efficient and competitive. With this in mind, we are now taking the logical next step: the entire Bosch Group aims to be carbon-neutral by 2020.

# -31.1%

CO<sub>2</sub> emissions  
compared with 2007\*

# -3.5%

waste  
compared with 2015\*

# -6.3%

water  
compared with 2015\*

\*improvement relative  
to added value

# 4.0 Protecting the climate, conserving resources – our approach

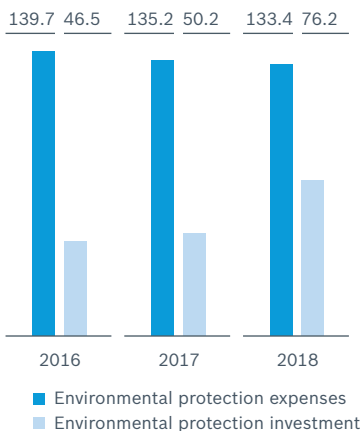
Environmental protection is very important at Bosch. Five of the six key issues in our target vision of sustainability directly relate to the environment: energy, climate, water, urbanization, and health. Our commitment has a long tradition: for years, we have consistently been working to reduce our ecological footprint, in particular to systematically save energy and resources and reduce materials utilization in our production. We use a global, target-based environmental management system to ensure that our activities are effective.

At 89 percent of our manufacturing and development sites with over 100 associates, we have an environmental management system based on ISO 14001. The majority of these systems has already been certified – by 2020 implementation and certification will be mandatory for all consolidated companies in the Bosch Group. Coordinated by the EHS and Sustainability corporate sector, the relevant key performance indicators are recorded and assessed by experts on-site and then evaluated centrally for the Bosch Group as a whole.

As a globally operating supplier of technology, Bosch complies with a large number of laws and standards relating to environmental protection such as the European Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and the European Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), as well as national legislation such as the Renewable Energies Act (EEG) in Germany. At the same time, Bosch observes regulations and directives on energy efficiency, packaging, and waste management. Added to this are customer requirements as well as our internal environmental and quality standards that go beyond what is required by law. The experts at the competent Bosch specialist departments ensure that the company and its local operations comply with the applicable laws.

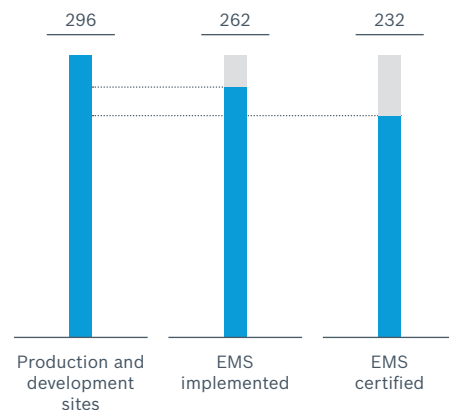
## 16

**Spending on environmental protection**  
Bosch Group 2016–2018, in millions of euros



## 17

**Environmental management systems (EMS)**  
Bosch Group 2018



# 4.1 Energy and climate protection

## Management approach

Climate change is one of the biggest challenges for humankind. Bosch supports the 2015 Paris Agreement, in particular its goal to limit the global temperature increase to below two degrees Celsius. With a comprehensive environmental and climate strategy, we want to play an active role in mitigating climate change and have anchored this aim in our target vision of sustainability with the climate and energy issues.

Climate protection and continuously striving toward energy efficiency have a long tradition at Bosch. As far back as the 1970s, this issue was driven forward at the board of management level. Even in those days, the focus was placed on both risks and opportunities – and this approach still applies today. The central committee for climate protection at Bosch is the CO<sub>2</sub> steering committee, which deliberates and decides on the relevant issues every six months. The CO<sub>2</sub> steering committee includes one member of the group's board of management as well as the specialist units for Real Estate and Facilities, Manufacturing, and Environmental Protection, as well as board members from the divisions.

## Opportunities and risks of climate change

Like all big challenges, climate change involves not only risks but also opportunities for companies and society. For Bosch, climate change is also a driving force behind our innovation work – and we want to use our technological expertise and our associates' knowledge to actively shape the future of our company. With respect to climate change, we see opportunities for Bosch above all in new building-related technologies (room-cooling systems) and in the field of electromobility. The distributed energy system of the future is based on renewable energies, and it is smart and connected. We are confident that we can

make a decisive contribution toward a successful sector coupling (mobility, buildings, and industry): we offer attractive products, which we connect and take to a new level. The fight against climate change can only be won if we all join forces in a move toward alternative forms of energy, heating, and mobility.

Risks for Bosch from climate change arise, for example, from water scarcity and extreme weather events. This can also entail a risk to the stability of the supply chain. The same holds true for other environmental risks such those that may arise from a shortage of resources and environmental hazards. In each risk assessment, we consider various topics (e.g. the availability of water) as well as the perspectives of our stakeholders (e.g. customers, associates, local communities).

As part of our risk assessment at Bosch, we assess climate risks at least at six-month intervals with a horizon of six years or more. We use as a reference the scenarios developed by the International Energy Agency (IEA) (two, four, and six degree scenarios). Key in our assessment of climate-related issues is the climate change report issued by the Research and Advance Engineering corporate sector every two years, which highlights fundamental climate change developments and their relevance for our company and society in accordance with high scientific standards. In 2017, the report addressed the physical laws and causes of climate change, and for 2019 the focus will be on changes in climate protection policies around the world. The report is presented to the board of management and also published on the intranet for access by all interested associates. To manage the respective risks and opportunities, the individual divisions incorporate the results of the risk assessment in specific plans and market forecasts. Together with our business partners, we work on strategically expanding the supply chain (e.g. for a second source), adjusting its content-related orientation, and developing our suppliers further (also see the "Supply chain" section). Climate-relevant criteria, such

as energy efficiency, use of renewables, and low water withdrawal in regions with water scarcity, have also been integrated in the process of designing and purchasing real estate, plant, and manufacturing facilities and serve as a decision-making basis in selecting new company sites.

## Climate neutrality as a goal

Bosch has set itself specific goals in relation to climate protection. Taking 2007 as the baseline year and relative to our added value, CO<sub>2</sub> emissions company-wide are to be reduced by 35 percent by 2020. With savings of 31.1 percent realized to date, we almost reached this goal in 2018. As of 2019, a new CO<sub>2</sub> strategy will replace the current relative goal.

In view of the increased challenges we face from climate change, we have now set ourselves a considerably more ambitious target: as of 2020, we want to make emissions in our direct sphere of influence (scope 1 and 2) climate-neutral worldwide. By 2030, we then want to achieve a further improvement in terms of climate protection on the basis of the quality of the measures applied. At pilot sites like Bosch in Eisenach, the requisite measures have already been launched in order to glean insights for reaching the group-wide goal. And the site in Bidadi, India – one of the current EHS award-winners – already sources a large part of its electricity needs from its own on-site photovoltaic facilities today.

## Energy efficiency and own generation capacity as major levers

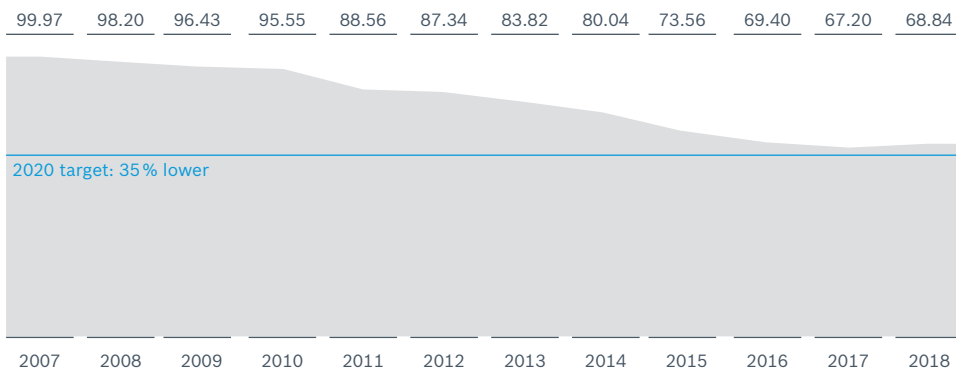
The focus is placed above all on energy efficiency and generating energy ourselves from renewable sources, as these two factors constitute the major levers for achieving our climate goal. By 2030, Bosch wants to save 1,700 GWh of energy and generate 400 GWh of its energy needs itself from renewable sources. In order to support the measures financially as well, the board of management of Bosch has approved an additional annual budget of 100 million euros for the period 2018 through 2030. At present, Bosch's energy consumption consists above all of electrical power used to operate plant and machinery in production and of heat energy used for heating and air-conditioning in buildings and to operate furnaces at the foundries. Broken down by energy sources used, 71 percent of our energy consumption is attributable to electricity (5,554 GWh), 19 percent to natural gas, and 10 percent to other energy sources (e.g. heating oil, district heating, coal/coke). Only a small number of sites in the Bosch Group have energy-intensive production facilities. Only three sites fall under the EU emissions trading system, and the volume of certificates is therefore comparatively low. On aggregate, Bosch Group entities used some 7,844 GWh of energy in 2018 (previous year: some 7,800 GWh), equivalent to 3.26 million metric tons of CO<sub>2</sub> emissions. Emissions intensity relative to added value has thus fallen by 31.1 percent compared with 2007.

In 2018 alone, some 1,000 energy efficiency projects were analyzed, designed, and launched in the Bosch Group whereby a total of 325 GWh energy could either be saved or generated on-site and in an environmentally-friendly manner. More than 300 of these projects are already in the implementation phase. Together with the projects implemented in 2018, around 109 GWh of energy will be saved annually, 66 percent of that in building technology and infrastructure and 27 percent in production. In addition, in 2018 Bosch already generated 55 GWh from renewable

## 18

### Emissions intensity

Bosch Group 2007–2018, in metric tons/millions of euros





energies itself, which is equivalent to 13.8 percent of the 2030 target of 400 GWh. At present, we are generating 15 GWh of that amount with hydroelectric facilities and 40 GWh with our 29 photovoltaic facilities annually. We plan to expand these facilities, in particular our photovoltaic facilities.

## Green electricity and new clean power

One important starting point on our path toward achieving climate neutrality at Bosch is to source “green” electricity from existing renewable energy generation facilities with the corresponding guarantee of origin. We want to consistently raise the quality of the measures by 2030, focusing on new clean power – that is, exclusive long-term purchasing agreements with investors in new renewable energy generation facilities still to be built (e.g. wind turbines or solar parks) and our own renewable-generating facilities. This way, Bosch will make an additional contribution to climate protection, as these new facilities will be built only as a result of our commitment. As of 2019, we have started to purchase a significantly higher proportion of electricity from renewable energy sources. To this end, we are in the process of conducting market analyses in many countries.

## Carbon offsetting as a bridging solution

The third lever for achieving our climate goal is offsetting measures (carbon credits). These are necessary to offset CO<sub>2</sub> emissions from combustion processes (heating, process heat). In countries in which the levers described above are not sufficiently available to achieve carbon neutrality (e.g. where green electricity can only be purchased to a limited extent), carbon offsets are also necessary. When choosing a project, we apply very high standards, such as the Gold Standard, for example. In addition, we have joined the Alliance for Development and Climate initiated by the German Federal Ministry for Economic Cooperation and Development (BMZ).

## Goal-driven implementation

In order to achieve the group-wide climate goal, the divisions work toward specific targets relating to energy efficiency measures and on-site renewable generation capacity. The regional organizations are in charge of projects relating to new clean power, green electricity, and carbon offsets. Since 2019, all respective targets, measures, and their implementation are measured and reviewed across the board. The divisions also have detailed targets for on-site renewable energy generation. These are based on a company-wide energy map that highlights the corresponding potential. The divisions and sites decide themselves about specific measures, taking into account geographical as well as economic conditions.

### 19

#### Energy consumption

Bosch Group 2016–2018 in GWh

	2016	2017	2018
<b>Bosch Group</b>	<b>7,602</b>	<b>7,803</b>	<b>7,844</b>
Natural gas	1,513	1,517	1,512
Heating oil	97	104	86
LPG	39	44	40
Coke/coal	122	130	141
Renewable energies	39	51	54
Other	264	252	258
<b>Direct energy (own combustion)</b>	<b>2,074</b>	<b>2,098</b>	<b>2,091</b>
Electricity	5,317	5,510	5,554
District heat, steam, cooling energy	211	195	199
<b>Indirect energy (purchased)</b>	<b>5,528</b>	<b>5,705</b>	<b>5,753</b>

### 20

#### Greenhouse gas emissions

Bosch Group 2016–2018, in 1,000 metric tons of CO<sub>2</sub> e

	2016	2017	2018
<b>Bosch Group</b>	<b>3,131</b>	<b>3,225</b>	<b>3,259</b>
Production	389	396	394
Vehicle fleet	66	64	65
Diffuse GHG emissions	7	7	8
<b>Scope 1</b>	<b>462</b>	<b>467</b>	<b>466</b>
Electricity	2,550	2,650	2,689
District heat, steam, cooling energy	119	107	104
<b>Scope 2</b>	<b>2,669</b>	<b>2,757</b>	<b>2,792</b>

## Reducing indirect emissions – climate protection does not end at the factory gates

In order to reinforce our commitment to climate protection further, we are currently examining the possibility of joining the Science Based Targets initiative (SBTi). Bosch is continuously expanding its activities for this purpose. Besides the direct emissions caused by Bosch (scope 1 and 2), we also want to systematically reduce indirect emissions (scope 3). For that purpose, we want to determine our carbon footprint from upstream and downstream activities in order to derive measures on that basis.

In light of our large number of business partners around the world, we face big challenges here. Upstream emissions concern categories such as purchased goods and

services, logistics, associates' commutes, or business trips. The downstream emissions that we are looking at include, for example, the transportation of our goods and products as well as the usage phase of our products.

In individual divisions, such as thermotechnology, a tool with multiregional input/output tables is used to model the flow of goods and the associated CO<sub>2</sub> emissions. This tool also makes it possible to simulate the CO<sub>2</sub> values of goods purchased by Bosch. In addition, we analyze emissions from transportation by road, air, and sea. Purchasing goods regionally can also help us to achieve our goal, as can combining and optimizing transport routes and capacity utilization.

We already analyze our products' carbon footprint in all divisions today in order to identify hot spots and derive specific potential for improvement. As of 2020, all flights of Bosch associates as well as flights with the company-owned aircrafts will be offset.

## New mobility concept – app-based ridesharing

At Bosch, we also want to make our associates' commute to work as eco-friendly as possible. In the Stuttgart area alone, more than 50,000 associates commute to work every day, and we see this as a great lever for Bosch to make a contribution toward environmental protection, air quality, and sustainability.

Multimodality is at the core of our approach: Bosch associates throughout Germany can lease e-bikes at a discount. This has proved a success with 8,000 leased bikes in the first year, and clearly makes a contribution. In addition, shuttles are offered between locations and the city (Stuttgart – Renningen, other shuttles planned to Abstatt and Reutlingen, and between Schwieberdingen and Feuerbach). Besides coming to work by bus or e-bike, Bosch offers a ridesharing app to support car pooling. And last, but not least, home office arrangements, telephone and video conferencing, and mobile work structures are to be encouraged in order to reduce CO<sub>2</sub> emissions. We also want to contribute to reducing greenhouse gas emissions through vehicle fleet management.

The most recent example: since November 2018, we use a fully renewable diesel fuel – C.A.R.E. diesel – in the vehicle fleet for the Bosch board of management. From well to wheel, this renewable fuel reduces the CO<sub>2</sub> emissions of these cars by around two-thirds (65 percent, source: Toolfuel). At Bosch filling stations in Feuerbach, Schwieberdingen, and Hildesheim, we replaced conventional diesel fuel with R33 Blue Diesel in 2018. This contains 33 percent renewable fuel components and can save about 20 percent of CO<sub>2</sub> emissions compared with conventional diesel fuel. For our associates' leased cars, there are applicable CO<sub>2</sub> limits which, if exceeded, trigger additional costs. In contrast, associates who choose cars below the limits receive a bonus. Additionally, electric vehicles have been added to the fleet of leased cars.

## Measures for energy efficiency

By implementing energy management systems and having them certified under ISO 50001, we want to continuously make progress toward more energy efficiency.

Further measures toward reaching the goal include introducing digital energy management solutions (energy management 4.0), as well as infrastructure measures in the areas of compressed air, ventilation, and lighting. Particular focus will be placed on our locations in Germany where 34 percent of our global CO<sub>2</sub> emissions originate. The following examples illustrate the broad range of measures used.

### ► Bosch Homburg – on the way to a self-learning and energy-efficient facility

The Bosch site in Homburg is getting progressively closer to the vision of an energy-efficient, self-learning facility. In 2018 alone, around 3,521 MWh were saved there – that are 1,221 metric tons of CO<sub>2</sub> – which now improve the site's carbon footprint every year. This achievement was realized by systematically revising operating infrastructure. The Homburg site now generates power and heat simultaneously in a cogeneration unit of its own and has three photovoltaic systems with an installed capacity of more than 2,600 kWp. The site thus boasts Bosch's largest solar facility in Europe. In addition, the plant is completely connected. Some 10,000 data points continuously gather data from the plant's machines and pool them in Bosch's own IoT platform – the Energy Platform.

The tool records all quality and consumption data and automatically determines what needs to be done. It enables associates to monitor the consumption of individual machines and control them in an efficient manner. By drawing on an analysis of weather data, the plant can predict its photovoltaic output, identify additional energy needs, and purchase the requisite quantities on the market at reduced costs. The plant is always looking for ways to enhance its energy efficiency – by optimizing standard measures as well as through technological innovations from the continuous improvement process.

### ► GoGreen – four levers for energy-saving production

With its GoGreen project, Bosch Rexroth already began to focus on energy-saving production back in 2011. Since the start of the project, some 200,000 metric tons of CO<sub>2</sub> have been saved through around 600 measures taken at the 30 participating plants. At the core of GoGreen is a holistic analysis of production facilities with the aim of reducing CO<sub>2</sub> emissions. Bosch Rexroth draws on its extensive development know-how for automation solutions to assist machine manufacturers and industrial users with their efforts to achieve greater energy efficiency. It is bundled in the Rexroth 4EE – Rexroth for Energy Efficiency approach, which also plays a central role in the GoGreen project. The experience gained with GoGreen can be applied to many sites: back in 2013, a central technology support team was set up, which all sites can call on. In addition, comprehensive training is offered each year that is open to all sites worldwide. Moreover, in 2017, an energy efficiency manual was published that describes the GoGreen and 4EE methodologies in detail (also see the "Products" section).

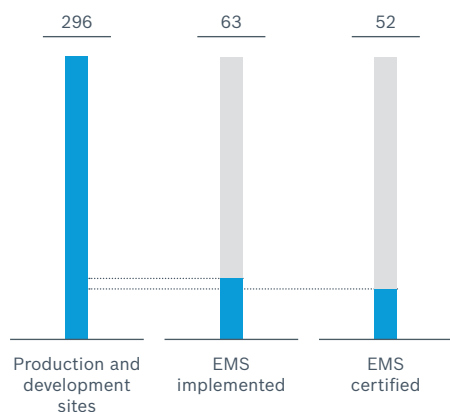
### ► Cooperation for more energy efficiency – the ETA factory

As an industry and research partner in the ETA factory (energy technologies and applications in production), Bosch also applies its extensive expertise in energy conversion. The aim of this model project led by Technische Universität Darmstadt is to further reduce energy consumption in industrial production. From the initial ideas through to the present day, Bosch Rexroth has lent its support to Technische Universität Darmstadt. The concept to optimize and connect manufacturing processes and factory infrastructure was developed in a joint effort. Bosch Rexroth derived this topic from its first holistic GoGreen potential analysis carried out in 2010. Accordingly, a real process chain for manufacturing a hydraulic component from that Rexroth plant was remodeled at the ETA factory (scale 1:1). The target efficiency improvement

## 21

### Energy management system (EMS)

Bosch Group 2018



of 40 percent defined at the outset of the project has meanwhile been achieved. Now the ETA factory solutions are also to be applied to Rexroth factories. On account of the typical metal-working processes, they can also be adopted in other Bosch facilities. A follow-on project has been launched for this purpose with ETA transfer. The results to date are promising. In 2019, the first efficiency measures will be installed in the very factory where the GoGreen story began in 2010.

## Products that protect the climate

“Invented for life” is our ethos. We want our products to fascinate people and improve their quality of life. For us, “Invented for life” is also about helping to conserve natural resources. In addition to energy efficiency measures, Bosch products naturally also contribute significantly to protecting the climate. The individual divisions have specific targets for reducing their products’ climate and environmental impact. In the industry division, for example, concepts like 4EE at Bosch Rexroth help to make facilities more energy-efficient, thereby also making an important contribution to climate protection. In recent years, we have also already achieved considerable gains in energy efficiency with our household appliances and heating systems (see the “Products” section). We will analyze the potential for reducing upstream and downstream emissions (scope 3) in a project in 2019.

## Other air pollutant emissions

We also want to keep emissions of other air pollutants to a minimum. In a project in 2019, we will examine the relevance of other air pollutants and derive measures accordingly.

## Creating competence for EHS

We have extensive competence management in place to ensure that the associates concerned always have the requisite specialist knowledge at their disposal to discharge their diverse health, safety, and environmental protection duties. Using Web-based e-learning courses and classroom training, we further our associates’ methodological skills and technical expertise, create the basis for the safe use of tools and machinery, and coach their soft skills. The target groups are intentionally wide so that every associate can receive the training needed to do his or her job. In addition to standard EHS training worldwide, there are also specific training courses that take account of the requirements of individual operating units, sites, or regions. Our executives have a special role in the implementation of EHS, as they are responsible for their staff complying with the rules and are traditionally expected to set a good example at Bosch. For this reason, we provide them with separate Web-based EHS training to assist them in fulfilling their duties. Since they were

## 22

### Other air pollutant emissions

Bosch Group 2016–2018, in metric tons

	2016	2017	2018
Chlorinated hydrocarbons	0.01	0.02	0.02
Volatile organic compounds (VOC)	1,366.6	1,495.9	1,457.8
Carbon monoxide*	192.3	216.1	197.5
Nitrogen oxides*	632.7	687.9	651.1
Sulfur dioxide*	202.7	217.7	223.8
Nitrous oxide*	382.7	402.0	404.0
Methane*	333.7	349.1	351.1
Dust*	8.8	9.8	9.2
Volatile organic compounds*	19.1	20.3	19.7

\*From combustion processes

introduced at Bosch in 2014, over 26,500 such training courses have been completed. Furthermore, health, safety, and environmental protection are a set part of executive and managerial programs at Bosch. And since safety and security are not dependent on an employment relationship, all external staff and visitors to our sites are also given the relevant instructions.

## Internal communications

Topics associated with health, safety, and environmental protection frequently feature in our internal media at Bosch. Newsletters, wikis, blogs, and online forums focusing on specific topics help to regularly make associates aware of EHS matters, provide them with the necessary information, and motivate them to engage in safe and environmentally friendly conduct by presenting good examples from within the company. These are supplemented by regular briefings, workshops, and audits.

## Dialogue with academia and policymakers

Protecting the environment and the climate is a task that no company can shoulder on its own – but every company is called on to make a contribution. With this conviction, we reach out to the various stakeholder groups, in particular to scientists, policymakers, and nongovernmental organizations. With this in mind, we have also attended the last two editions of the annual United Nations Climate Change Conference (COP 23 and 24) and have entered into discourse with suppliers and customers on climate-relevant issues. In the political arena, Bosch is part of the Alliance for Development and Climate initiated by the German Federal Ministry for Economic Cooperation and Development in a move to combine climate protection and sustainable development. In addition, we are active in the steering committee of the econsense network of companies aimed at shaping the change to a more sustainable economy. We also make our contribution as supplier of technology in the Industrial Resource Strategies Think Tank set up by the German state government of Baden-Württemberg.

## Environmental and climate protection accolades – commitment is recognized

Bosch's relentless and systematic efforts for environmental protection are bearing fruit and are repeatedly recognized externally. The Bosch site in Jaipur, India, for example, won first place in a competition organized by the Confederation of Indian Industry (CII) as best energy-efficient organization. The CII also considered Bosch's waste management in Nashik exemplary, selecting it as a winner of the 2018 Environmental Best Practices Award. This recognition proves how successful our activities are – and motivates us to consistently pursue our course.

Within the Bosch Group, the EHS Award highlights and recognizes outstanding projects for environmental and climate protection. In 2018 the first prize in the category "CO<sub>2</sub>/energy efficiency" went to Nashik in India, where comprehensive energy management is used to reduce the carbon footprint – with the largest solar park in the Indian automotive industry, among other initiatives. In recognition of its energy management 4.0 approach, the Blaichach site in Germany took second place. The plant uses online monitoring right down to machine level to identify additional efficiency potentials. The bronze medal was awarded to the Bidadi site in India for its project approach to carbon neutrality. Here, too, own energy generation capacity with photovoltaic systems plays an important role.

The winner in the new category of resource efficiency created in 2018 was the Campinas site in Brazil with a project for water self-sufficiency. It centered around an artificial lake that serves as a water reservoir, accompanied by various measures to save water and reduce wastewater. Reutlingen in Germany made second place, focusing on paperless warehousing. The jury was impressed above all by the great effect achieved for the environment at a very minor cost: it cost just 100 euros in paperless warehousing to avoid 3.3 metric tons of waste a year – and save costs of around 85,000 euros. Ahmedabad in India was awarded third place. There, substantial improvements for the environment were realized through water-saving and water protection activities.

## 4.2 Materials and waste management

### Management approach

In its various divisions, Bosch pays attention to reducing the use of resources and recycling materials wherever possible. In so doing, we are guided by the idea of a circular economy. In 2018, Bosch purchased some 2.3 million metric tons of steel, aluminum, and plastics from suppliers, around 2.5 percent more than in the previous year (2.2 million metric tons). In terms of weight – 1.7 million metric tons – and CO<sub>2</sub> emissions of 2.8 million metric tons, steel accounts for the largest share of materials, followed by 0.3 million metric tons of aluminum associated with 1.1 million metric tons of CO<sub>2</sub> emissions. In addition, 0.3 million metric tons of plastics were used, corresponding to an emissions volume of 1.3 million metric tons of CO<sub>2</sub>.

The use of plastics made of or containing recycled material make a valuable contribution toward conserving resources, and we were able to increase the proportion of these materials by almost 50 percent in the years 2013 through 2017. Plastics made from recyclates are obtained from a variety of materials today, including carpet fibers, manufacturing rejects, start-up waste and waste fiber, and packaging waste. Among others, polyamides such as PA6 or PA66 containing recyclate are available for use in appliances or vehicles. However, plastics made of or containing recycled material are not suitable to cover all areas of application in their entirety. On the one hand, availability

is not always guaranteed due to the different sources and, on the other, there are technical reasons for not using them, such as reduced durability or the limited range of colors available.

### Design for Environment encourages efficient use of resources

At product level, Bosch started defining its requirements for an environmentally compatible design back in 2000. The aim is to systematically reduce the relative quantities of raw materials used while increasing sales volumes. Bosch addresses this challenge already at the product development stage and has established the Design for Environment (DfE) process for this purpose. With this process, we want to make sure that resources (e.g. materials, energy) are used efficiently and avoid or minimize the impact on people and the environment wherever possible throughout the product life cycle (also see the “Products” section).

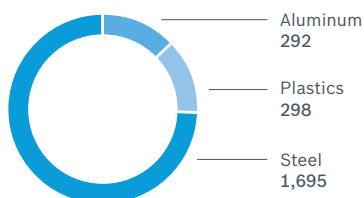
A particular focus is placed on avoiding substances of concern (SoC) that are harmful for people and the environment, irrespective of whether they are used during production or in products. In this context, we benefit from our detailed knowledge of the nature and scope of raw materials used in Bosch products, which is condensed in material data sheets and made available along the supply chain. This way, we satisfy not only our own high environmental protection standards, but also customer-specific requirements in the automotive industry, for example. Here, too, the environmental management systems that we have established at all relevant manufacturing and development sites stand us in good stead. In addition, our Material Data Management for Compliance and Sustainability (MaCS) system offers a high-performance solution for recording material data and hazardous substances used. Our suppliers’ data are also fed into MaCS.

## 23

### Key materials used

Bosch Group 2016–2018, in 1,000 metric tons

Total 2,285



Our [standard N2580 “Declaration duties and prohibition of pollutants”](#) sets out the basis for the declaration of constituent substances and nonuse of prohibited substances in accordance, for example, with the European chemicals regulation REACH (also see the “Products” and “Supply chain” sections).

after three years for hazardous waste and otherwise after five years. With respect to waste management, we apply the principle of “avoid – reuse – dispose.” Specifically, this means that waste is appropriately disposed only if it is not possible to directly reuse the material and no other use appears economically feasible.

## Waste

The treatment of waste and its appropriate disposal is governed by a standard that is binding company-wide at Bosch. Its application is intended to ensure compliance with the respective country’s requirements applicable in each case relating to transportation and disposal of waste. All manufacturing sites have established a waste management organization in charge of sorting, classifying, and handing over the waste to disposal companies. The department responsible for waste disposal decides on the disposal company and carrier. The relevant documentation is examined to ascertain whether they hold official permits for the relevant waste types. The disposal companies are selected following a review, which is repeated

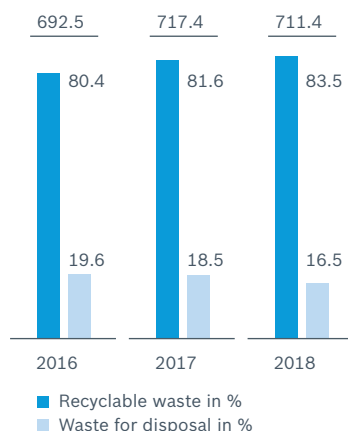
## Goal of continuously reducing the volume of waste

We have been pursuing a specific goal also with regard to avoiding waste since 2015: we wanted to reduce the relative volume of waste by 6.9 percent by the year 2018. We achieved a reduction of 3.5 percent by 2018 (baseline year: 2015). The absolute volume of waste decreased by 1 percent compared with the previous year to 711,403 metric tons. In 2018, we analyzed the waste fractions of our sites that account for some 80 percent of our waste volume. It transpired that around half of the waste volume is metal waste. Around a quarter of the waste

### 24

#### Waste by disposal type

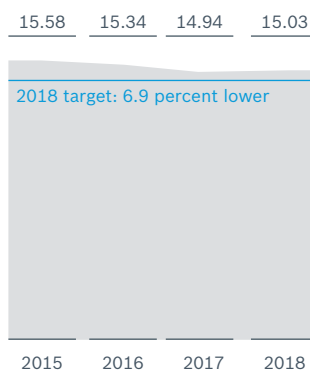
Bosch Group 2016–2018, in 1,000 metric tons



### 25

#### Waste intensity

Bosch Group 2015–2018, in metric tons/millions of euros



volume is packaging waste. Foundry sand is the third-largest waste fraction, accounting for a proportion of 13 percent. Another 13 percent approximately of the waste is hazardous waste. The analysis also showed that the potential for reducing the waste volume at site level is limited. Most approaches to reducing metal waste have a direct impact on the production process, and packaging waste is largely attributable to delivered material and components. For foundry sand as well, appropriate benchmarking revealed hardly any further potential to reduce the volume of waste. Hazardous waste, which presents high risk potential and involves high disposal costs, is the only waste fraction with which we can make any notable progress.

As a result, the current waste target no longer seems appropriate and we will devote our efforts to two prime objectives in future as part of our group-wide target vision: to further reduce hazardous waste and, if possible, completely reduce the waste disposed in landfills (zero waste to landfill) by increasing the material recycling ratio. Campaigns will be launched in both respects in 2019 to identify the associated potential and also derive suitable measures.

## Hazardous waste

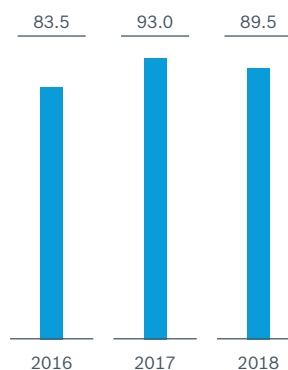
At Bosch, hazardous waste consists above all of cooling lubricants, washing water, oils, and fuels. A standard that is applicable company-wide sets clear rules for the entire Bosch Group for handling such substances and their disposal. At numerous manufacturing sites, Bosch has its own wastewater treatment facilities, for example, for treating cooling lubricants. A program for avoiding hazardous waste is currently in the process of identifying sites with comparatively large quantities of hazardous waste. In a next step, specific measures will be developed for these sites in order to reduce and process the quantities in a targeted manner. The respective campaigns will be launched by the end of 2019, and we expect to have the first results of the program by 2020.

## Measures to reduce waste

In order to continuously reduce the volume of waste, Bosch aims to recycle materials wherever possible. Contributions are made by initiatives at division level as well as activities at site level, such as with the new “zero waste to landfill” campaign. Added to this are recycling methods such as sprue recycling in plastic injection molding and vacuum distillation as well as ultrafiltration in wastewater treatment, which also have a positive effect on the volume of waste at Bosch. The Bosch eXchange program for automotive parts and accessories is also based on the idea of a closed-loop or circular economy. It makes use of remanufactured spare parts that are subject to the same high quality standards as equipment for new vehicles and provided with the same guarantee as for new parts. Reuse not just saves close to 90 percent of the material needed, it also halves energy consumption. This in turn also reduces CO<sub>2</sub> emissions by around 25,000 metric tons a year compared with manufacturing new products.

## 26

**Hazardous waste**  
Bosch Group 2016–2018, in 1,000 metric tons





## Hazardous substances and substances of concern

Bosch endeavors to keep people and the environment from harm. We have anchored this aim in the key issue of health in our target vision of sustainability and have committed to reducing the total consumption of substances of concern in our production processes. This also contributes directly toward our goal of reducing hazardous waste. In this context, our highly diverse product portfolio continues to be a challenge for managing materials restrictions and declaration duties at Bosch. The focus is placed on strict adherence to materials restrictions and the targeted reduction of hazardous substances both in our products and during production. To efficiently manage materials prohibitions and restrictions, in particular for products, we use our central MaCS system, which is regularly updated (also see the “Products” section).

In defining these rules, we mainly referred to European standards, as in our experience they set the highest requirements worldwide these days. The defined Bosch standards apply throughout the company even in cases where national legislation is less strict. Based on the information gathered in this respect, Bosch updates its in-house [standard N2580](#) every six months. It summarizes the requirements of suppliers by materials specifications and also serves to check our own products internally for compliance with legal requirements and internal customers’ specifications.

The standard comprises numerous requirements, based on European and non-European laws as well as industry standards, such as the Global Automotive Declarable Substance List (GADSL), in order to cover the entire Bosch product portfolio. Certain product categories are subject to additional legal requirements. For this reason, we have defined division-specific requirements that apply in addition to the basic company-wide requirements.

The list is in the public domain, and internal as well as external users can avail themselves free of charge of learning modules on how to use the list or how to handle substances of concern (SoC). This way, Bosch makes a contribution to raising the standards, even beyond company boundaries. The standard N2580 also lists substances that are banned for new applications.

Moreover, the substances recorded under REACH are tracked systematically. Bosch aims not to use any substances of very high concern (SVHC) in new developments and applies for authorization as an exception only if it is not possible to avoid them, which applies only in a small number of cases. Furthermore, the internal “Design for Environment” standard must be complied with, which defines requirements for handling SoC, resource efficiency, responsibilities, and other matters. Each business unit is responsible for compliance with the requirements. The DfE coordinators (see the “Products” section) offer support, for example, through training or specific advice on how to interpret the requirements.

If SoC are unavoidable in the production process for technical reasons, hazard assessments are carried out to ensure suitable protective measures are taken when handling such substances. Our long-term goal is to substitute these substances.

## Nanotechnology

Bosch is not active in the typical areas of application of nanotechnology or does use alternative substances and technologies. Yet even though there is at present no evident need for action in this respect for Bosch, we regularly follow the related discussions and analyses, for example, of the European Chemicals Agency (ECHA). The responsible use of nanotechnology is of particular relevance to us wherever nanoparticles are released into water or air, or come in contact with the skin.

## 4.3 Water and wastewater

### Management approach

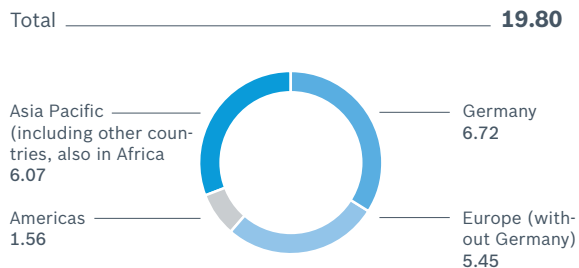
The efficient use of water has been another declared aim of Bosch for many years. Similar to the waste-reduction goal, over the last few years we have also pursued the aim of reducing the relative water withdrawal of our sites by 6.9 percent by 2018 compared with the baseline year 2015. At the end of the current goal period, we replaced the goal with an absolute water target focusing above all on sites in regions with water scarcity. By 2025, we want to reduce absolute water withdrawal there by 25 percent. To support the corresponding measures, an additional dedicated budget of 10 million euros per year is available until 2025.

This constitutes a response to the fact that current climate change scenarios and associated forecasts show that the risks related to water scarcity and insufficient water quality will become more acute worldwide. To take these developments into account in the new target vision for Bosch, all 414 reportable sites of Bosch were analyzed in terms of water scarcity in 2018 using the WWF Water Risk Filter. The result showed that 61 sites are located in regions with the severest or severe water scarcity, and they account for 16.3 percent of our total water withdrawal.

After discussing this with the WWF, we are focusing on ways to remedy water scarcity in order to achieve significant improvements in the near future. We aim to achieve greater transparency also on the issue of water quality and wastewater through a project in 2019.

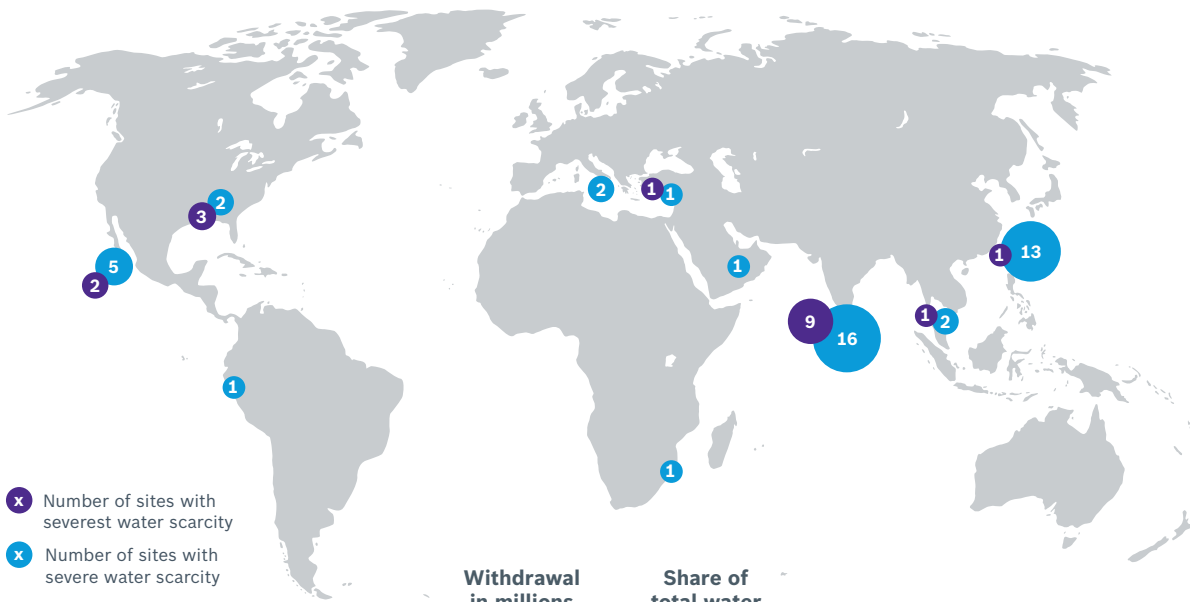
### 27

**Water withdrawal**  
Bosch Group 2018 by region,  
in millions of cubic meters



# 28

## Sites with water scarcity



- x Number of sites with severest water scarcity
- x Number of sites with severe water scarcity

	Number	Withdrawal in millions of m <sup>3</sup>	Share of total water withdrawal	Affected regions
Sites with severest water scarcity	17	0.8	4.0%	India, USA, Mexico, China, Turkey, Thailand
Sites with severe water scarcity	44	2.4	12.3%	India, China, Mexico, USA, Italy, Thailand, Turkey, Peru, UAE, South Africa

## Water withdrawal

Fresh water is used in many processes at Bosch, in particular for cooling purposes. In regions with strained water supplies, recycled water is used wherever possible. Since the current water goal was defined in 2015, water withdrawal in the Bosch Group has increased from 19.34 million cubic meters to 19.80 million cubic meters today. Relative to added value, this is a decrease of 6.3 percent, which falls short of the 6.9 percent reduction goal.

## Measures for reducing water withdrawal

To continue in our efforts to reduce water withdrawal, we set ourselves a specific target at the start of 2019: to reduce the absolute water withdrawal of the 61 locations in regions with water scarcity by 25 percent by 2025. The baseline year for calculating the reduction is 2017. Water coordinators in the divisions will identify local potential

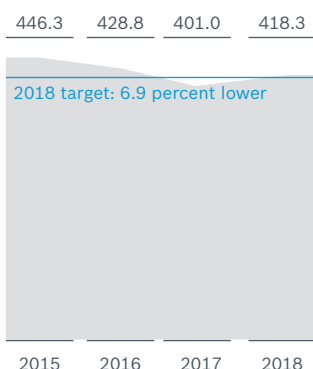
to save water and implement measures together with the parties responsible at the sites. The individual sites also each pursue their own targets based on their environmental management systems. Specific examples and best-practice measures are made available throughout the Bosch Group in a "Water Wiki."

Overall, a large number of projects were carried out in 2018, some of them with impressive results. One example is Ahmedabad in India where the use of rainwater, among other measures, has had a positive effect on groundwater levels. Or take Nashik, also in India, where rainwater will in future be used for cleaning the photovoltaic facilities, thus also helping to relieve the water situation. Both projects were honored with the 2018 EHS Award (see the "Company" section).

### 29

#### Water intensity

Bosch Group 2015–2018, in cubic meters/millions of euros



### 30

#### Water withdrawal

Bosch Group 2016–2018, in millions of cubic meters

	2016	2017	2018
<b>Bosch Group</b>	<b>19.40</b>	<b>19.30</b>	<b>19.80</b>
Surface water <sup>3</sup>			3.23
Groundwater <sup>3</sup>			2.55
Public/private waterworks <sup>3</sup>			14.01
<b>Fresh water <sup>1,3</sup></b>			<b>19.79</b>
Public/private waterworks <sup>3</sup>			0.01
<b>Other sources <sup>2,3</sup></b>			<b>0.01</b>

<sup>1</sup> <1,000 mg/l total dissolved solids

<sup>2</sup> >1,000 mg/l total dissolved solids

<sup>3</sup> Detailed data collection carried out for the first time in 2018

## Wastewater

Besides reducing fresh-water withdrawal, Bosch is also making efforts to reduce the volume of wastewater and improve its treatment. Compared with the previous year, the total volume of wastewater at Bosch has increased from 14.9 million cubic meters to 16.3 million cubic meters in 2018. We are currently working to collect more granular data, in particular regarding the individual wastewater flows, in order to derive targeted measures for optimizing and further reducing wastewater.

At Bosch, wastewater is above all a by-product of manufacturing processes such as electroplating, washing facilities, processing centers, and others. Added to this, there is wastewater from sanitation facilities and canteens, as well as cooling water. Impairments of water quality can be caused at Bosch primarily by discharged substances and a higher water temperature.

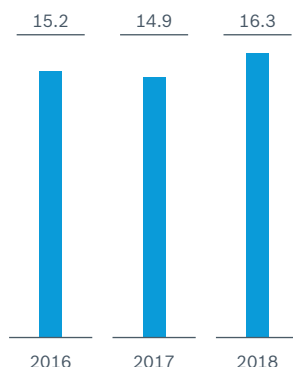
At some sites, Bosch has its own wastewater treatment facilities to ensure the most efficient treatment. Depending on the on-site conditions, ultrafiltration technology or physical-chemical treatments such as precipitation or distillation are used. One example is the vacuum distillation used in Schwäbisch Gmünd, which combines efficiency with the highest environmental standards.

As part of our strategically relevant key issue of water, a project will be carried out in 2019 to further reduce wastewater. In a first step, we will record centrally what quantities of wastewater are produced, where, how they are treated, and where they are discharged. The respective analysis should be available by 2020, making the issue of wastewater transparent throughout the company. In the medium term, the aim is to have a list of projects over different time horizons as is already the case for energy and greenhouse gas emissions.

## 31

### Wastewater

Bosch Group 2016–2018, in millions of cubic meters



# Associates

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Bosch associates share a unique corporate culture shaped by fairness, diversity, and mutual respect. In this way, all the company's associates experience a consistent level of appreciation and have optimal opportunities and parameters to fully reach their personal potential. The "We are Bosch" mission statement combines our values, our strengths, and our strategic alignment. That allows us to move forward together – and individual strengths can become shared success.

# 680,000

training days

# 16.6%

women  
executives

# 2.2

work accidents  
per one million hours  
worked

## 5.0 It's people that matter

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We know that people make success – and that is true more than ever in the age of digital transformation, in which established production and work worlds are undergoing massive change; indeed, even entire business models are being radically challenged. As employers, we have a duty to address this change early on and to actively help shape it. That is essential if we are to take advantage of the opportunities of digital change – for our company and for our associates.

Human resources management thus becomes a key task for which it is rarely possible to find a standard solution. That is why Bosch pursues a clear HR strategy that puts people at the center of all activities: “people matter.”

### Clear guidelines regulate collaboration

At Bosch, responsibility for associates is a core element of how we see ourselves as entrepreneurs. In the “Basic principles of social responsibility at Bosch” the board of management 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 in total are based on the core labor standards of the International Labour Organization (ILO) and they are likewise binding for our suppliers. Following in the footsteps of our founder Robert Bosch, we also embrace social responsibility beyond the boundaries of our company. And our activities today are still focused on public benefit, particularly equal opportunities through education (see the “Society” section).

The “Basic principles of social responsibility at Bosch” are available online on our website. Responsibility for their implementation lies with the management of the divisions, regional subsidiaries, and company locations. Every associate is familiar with the content of the basic principles and can report violations. The same applies to violations of the Code of Business Conduct, which is applicable to associates and business partners worldwide. It builds on the “Basic principles of social responsibility,” translates the legal requirements, and also contains additional, internal company rules on the topic of compliance in particular (see the “Company” section).

### Human resources management at Bosch

The key to Bosch's successful transformation lies in the topics of leadership, collaboration, and qualification. That is why we are rigorously working to advance in these areas, especially with respect to our leadership culture.

We strongly believe that cooperative leadership, networking among associates, and a culture of feedback based on openness and mutual respect serve as motivation and are essential to our future success. As a result, transparency and communication have to satisfy high standards. Within our central HR management, the various topics are classified into two areas dedicated to supporting executives, talent management, and organizational development on the one hand as well as, on the other, working conditions at Bosch and setting and continually enhancing rules for our joint collaboration including with employee representatives.



## 5.1 Attractive employer

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As an attractive employer, not only do we stay true to our corporate tradition and follow in the footsteps of our founder Robert Bosch, but we also seek to secure our entrepreneurial future.

This insight is not new. Yet the rigor with which we pursue these beliefs gives us the strength to successfully undertake the most comprehensive transformation in our corporate history. Our objective is to respond with agility to growing uncertainty, dynamic changes, and increasing complexity – with a high pace of innovation, the courage to change, and the passion to shape the future. For that purpose, we need highly qualified, motivated, and dedicated associates. And, as employer, we need to create the conditions that will allow them to reach their full potential. More than ever before, creativity and new ideas are called for – and more than ever before, it is necessary to create the working environments that favor these attributes. At the same time, it is important to review the qualifications available within the company regularly and adjust them as needed. And if we are serious about making it possible for associates to strike a balance between their careers and their private lives, we have to live up to the challenge of adequately addressing the needs of associates in the different phases of their life and the needs of different generations.

### Recognized employer appeal

Bosch is an attractive employer, as is testified to by the numerous distinctions, media reports, and rankings. In 2019, for instance, we ranked third in the list of Germany's best employers that is regularly published by the Glasdoor rating portal. The consulting and market research firm Trendence also confirmed Bosch's appeal as an employer – we made second place in the survey of young professionals. More than that, Trendence honored Bosch for its "fair trainee program."

### Leadership and collaboration

Our understanding of good leadership and collaboration at Bosch is defined in the "We LEAD Bosch" leadership principles, which address both executives and associates. The principles formulated there provide guidance and impetus for all our associates as to how to shape leadership and collaboration within a team. "We LEAD Bosch" is also the company-wide template for leadership principles in the divisions, regions, and plants. It is also the responsibility of specialist departments to explore the impetus that the leadership principles give their units.

The demands made on leadership and collaboration are changing. The business environment is more dynamic and increasingly marked by uncertainty – not least against the backdrop of digital transformation. That requires less planning, but more agile action, and a different leadership style. At the same time, the expectations of associates on leadership are also changing, as many want to take on greater responsibility and have more control over their work. Our HR strategy addresses these needs. Instead of rigid hierarchies, work instructions, and controls, three principles govern work at Bosch. They are summed up by the terms autonomy, mastery, and purpose:

- ▶ Autonomy allows every associate the opportunity to make their contribution and to shape the parameters for their own work – coupled with the expectation that they also accordingly take on responsibility for their own actions.
- ▶ Mastery refers to the creation of framework conditions that advance interests and skills.
- ▶ Purpose describes the ambition that our activities always aim to achieve clearly formulated and purpose-driven objectives.

## Good leadership requires feedback

An integral element of “We LEAD Bosch” is the feedback culture embraced at Bosch. This is premised on open and intensive communication across all levels of the company. We seek and give feedback – and lead with trust, respect, and empathy.

Through the 360° Leadership Feedback, our leadership receives feedback on their leadership skills from different perspectives. This tool is available to all Bosch executives worldwide in order to allow for a systematic comparison of self-assessments with the perception by others. Three perspectives are used for the analysis: leading my business, leading myself, and leading others. The aim is the continuous improvement of leadership and collaboration as well as a feedback culture in the spirit of “We LEAD Bosch.”

In 2018, the seminars for executives were aligned to the new leadership principles. In addition, all executives receive training on the content and how to implement the principles. Furthermore, clear signals are sent for everybody to see: for instance, more and more executives are giving up their representative offices in order to work with their team on the shop floor.

## Extensive survey of associates

Every two years, Bosch conducts a group-wide survey of associates aimed at measuring their satisfaction and identifying specific improvement potential in the company. The outcomes of the survey are discussed in the departments and measures derived, and a corresponding plan of measures is prepared and tracked.

Almost 270,000 associates took part in the last survey in 2017, which focused on the leadership principles “We LEAD Bosch” that had been established at the time. The results confirm once again the high degree of satisfaction of associates and their unique level of identification with the company and the Bosch brand. For instance, the vast majority of associates (87 percent) stated that they are proud to work for the Bosch Group. In addition, 90 percent are willing to work for the success of their operating units, beyond what is expected of them. About 82 percent would recommend Bosch as a good employer to their friends and family – and 80 percent enjoy their work at Bosch. The company’s commitment to the environment and society is viewed positively by the majority of associates (79 percent). The majority also value diversity and teamwork irrespective of background, personal opinions, experience, age, or gender. At the same time, associates understand that changes in the company’s environment necessitate a far-reaching transformation of the Bosch Group. In the assessment of results, we identified potential in the area of collaboration across operating units and functions.

## Education and training

More than ever, education and training are a major priority at Bosch. Especially against the background of the company's far-reaching transformation, it is essential to ensure the optimal qualification of associates, particularly in the future fields of digital transformation, and thereby secure our ability to compete. Consequently, Bosch views training and personal development as a continuous process that cuts across all functions, levels, and countries. Life-long learning is essential – along with the willingness to continuously enhance our skills and competencies and adjust them to the company's needs. To this end, Bosch supports associates with a broad range of modern and flexible training courses.

## Extensive investment in training

In 2018 alone, we invested a total of more than 280 million euros in the training of our associates. Our associates attended roughly 680,000 training days, including seminars and webinars, in 2018. On top of that, they worked through about 598,000 online learning courses.

These measures are based on target-group-specific curricula set for associates with standardized roles. Training measures are then implemented through the global HR

organization and on the basis of the annual goal & performance dialogue. At present, there are about 3,700 target-group-specific curricula, and roughly 139,000 associates have at least one such curriculum assigned to them.

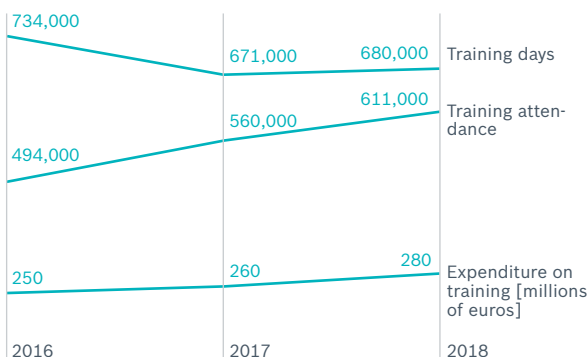
## Combined works agreement governs external training

Bosch's board of management and the combined works council consider it a shared task to support professional training also with external training measures to make it easier for associates to maintain and advance their professional qualifications. In Germany, a specific combined works agreement governs the details. Accordingly, associates are supported who enhance their qualifications at their own initiative through external training measures. In addition, the measures must generally be suitable for supporting tasks for which an operational need is expected. Numerous special rules allow utmost flexibility in this process – from the refund of training costs to special education leave through to assistance for language courses abroad. In addition, associates with more than three years of service are entitled to a temporary leave arrangement of up to five years for continuing education measures that further their professional development – after which Bosch guarantees their reemployment.

### 32

#### Training activities

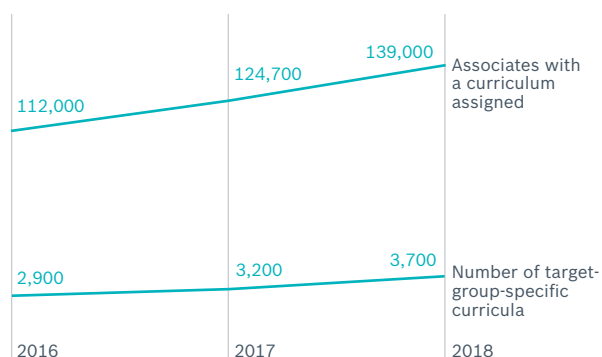
Bosch Group 2016–2018



### 33

#### Target-group-specific curricula

Bosch Group 2016–2018



## The competence model

The Bosch competence model forms the basis for the selection of associates and their personal development in the company. It is based on the “We are Bosch” mission statement and it sets the framework for recruitment, goal & performance dialogue with associates, assessment of potential, and support programs. Our “competencies” are understood to mean our attributes, skills, and behavior, which are decisive for successfully dealing with current and future tasks. With this in mind, the Bosch competence model comprises four competence areas, each of which has two competencies assigned:

- ▶ Entrepreneurial competence (results orientation, forward-looking)
- ▶ Leadership competence (leading myself, leading others)
- ▶ Interpersonal competence (collaboration, communication)
- ▶ Professional competence (range of experience, depth of knowledge)

The personal development processes for associates are anchored in the competence model and comprise several components with a fixed cycle:

### ▶ Goal & performance dialogue

Once a year, associates discuss with their supervisor goal agreements, further development, and feedback. Aside from planning tasks and projects as well as defining their goals and tracking achievement, this dialogue also deals with the assessment of competencies and performance. As needed, support measures as well as training are jointly planned as part of competence management.

### ▶ Competence management

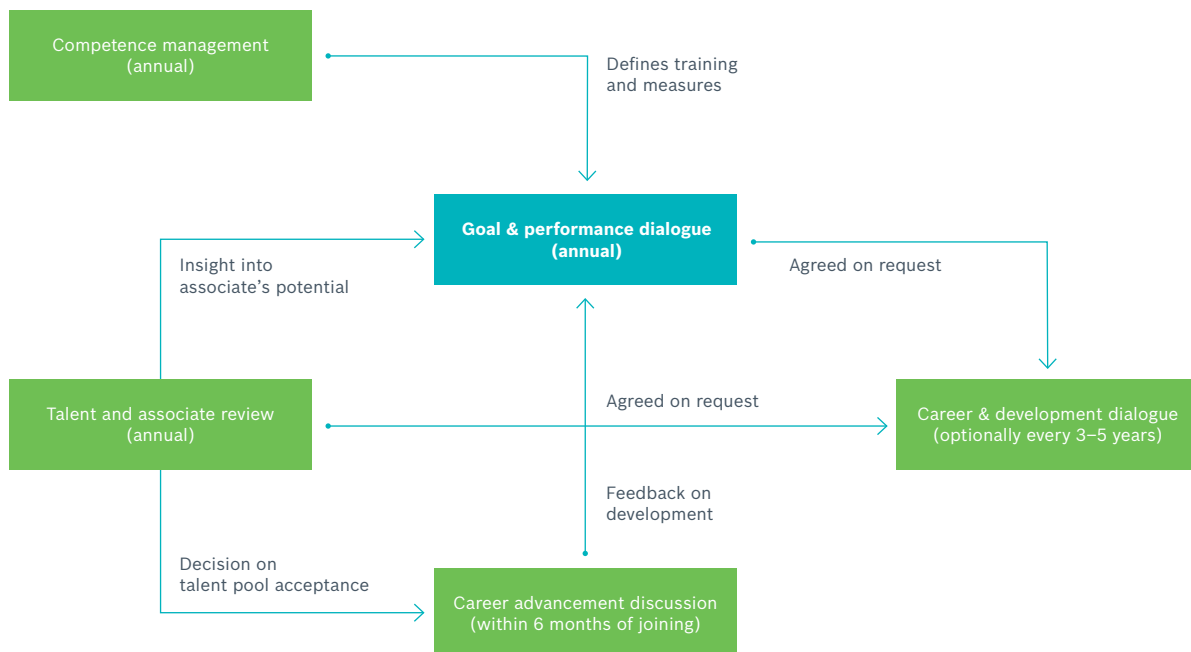
Competence management at Bosch is a systematic process for identifying and developing professional and methodological competencies. The aim is to ensure that the right abilities are available in the right place at the right time. To that end, each supervisor checks what capability building is needed in their own organizational unit and discusses the results of this process with associates at their goal & performance dialogue.

### ▶ Career & development dialogue

The career & development dialogue focuses on the career and personal development goals for the next three to five years. Associates or their direct line managers initiate the dialogue, and the next-highest line manager and the competent HR business partner are also involved. The process entails a comparison of the associate’s wishes and self-assessment with the assessment of the other dialogue participants. This results in specific goals and steps for the associate’s further career at Bosch.

## 34

### Personal development process



### ► Talent and associate review

Once a year, supervisors and HR business partners discuss the personal and technical potential of individual associates at a specific, globally comparable hierarchy level and above. That ensures that Bosch can primarily cover the need for specialists and executives internally – and that associates have the opportunity to get support for their career and to follow their own individual path at Bosch.

## Modular careers system

In order to succeed in an increasingly complex, diverse, and global environment, specialists and executives at Bosch need experience in cross-divisional and international tasks. A change of perspective between professional and private life or working at another employer can also be a source of valuable experience.

To empower this approach, “career modules” at Bosch define the criteria that need to be satisfied (e.g. change of function or experience abroad) before being promoted to the next hierarchical level. It does not matter in this context whether associates have obtained their experience at Bosch or at another employer. Other preconditions are the successful completion of training under the talent development plan and the corresponding personal and technical aptitude.

The “family time” module is one special means of striking a work-life balance at Bosch. To avoid being placed at a disadvantage in their career planning, non-tariff associates who are facing particularly high demands due to professional and family responsibilities can use this module once to replace another career module. It is not relevant in this context whether the associate has a full-time or part-time position. The decision to replace a career module with family time is made by the supporting HR department and the respective line manager together with the associate.

## Bosch Learning Company initiative

Life-long learning is a central determinant of success for the transformation at Bosch. In order to anchor this understanding within the company and support associates in their learning activities, the Bosch Learning Company initiative was launched in 2016. The initiative is driven by numerous executives and learning stakeholders. In the meantime, the program has been established worldwide and is deployed at all company sites. All associates are entitled to participate in continuous education in this context.

An international team brings together people with different perspectives and provides attractive opportunities. In this way, we want to make Bosch a place where knowledge is quickly, effectively, and efficiently adopted and generated. Here we focus on three pillars. With offers for transformation training, we aim to give associates practical support in meeting the challenges of the transformation and have developed learning opportunities tailored to their specific needs. Examples include training in the fields of electrification and digitalization.

The second pillar of the Learning Company is a modern learning architecture with a variety of learning formats so that individual associates or complete teams can quickly and flexibly take up training opportunities that are specifically tailored to their needs.

As the third pillar, we aim to establish a culture of learning throughout the company. Indeed, the continuous development of knowledge is to become an integral part of our work culture and routine. In this vein, an internal platform on which associates can publish their own instructive videos has been running since the beginning of 2019.

## Support program for specialists

As part of our support program for specialists, we train our associates without university qualifications for technical and commercial jobs in our company. The aim is to empower participants to assume some of the tasks of engineers, business graduates, or IT specialists in their current unit or factory. The program increases the appeal of

the vocational training courses for specialists and makes a contribution toward covering the company's need for engineers and other university graduates.

Eligible for the program are specialists with high technical qualifications and an interest in advancing their careers. Participation is premised on a willingness to attend some of the training measures outside of official working hours. Participants are generally preselected in the talent and associate review.

## Vocational training

For over 100 years, Bosch has been using apprenticeships and traineeships as a means of covering its needs for qualified young talent, while also assuming its corporate social responsibility. Back in 1913, Robert Bosch founded the first apprentices' workshop. Since then, more than 100,000 young professionals worldwide have been trained at Bosch's facilities.

Bosch's vocational training measures are offered at about 50 sites and 100 branches in over 30 countries. Young talent have a choice of over 30 career profiles. At present, more than 7,000 Bosch apprentices and trainees are preparing for their future careers, and 4,500 of those are in

Germany. About one-quarter (23 percent) of our apprentices and trainees are women; in technology disciplines, they make up 16 percent. With offers like the Germany-wide Girl's Day, we – like many other industrial companies – want to spark the interest of girls in STEM careers (science, technology, engineering, mathematics).

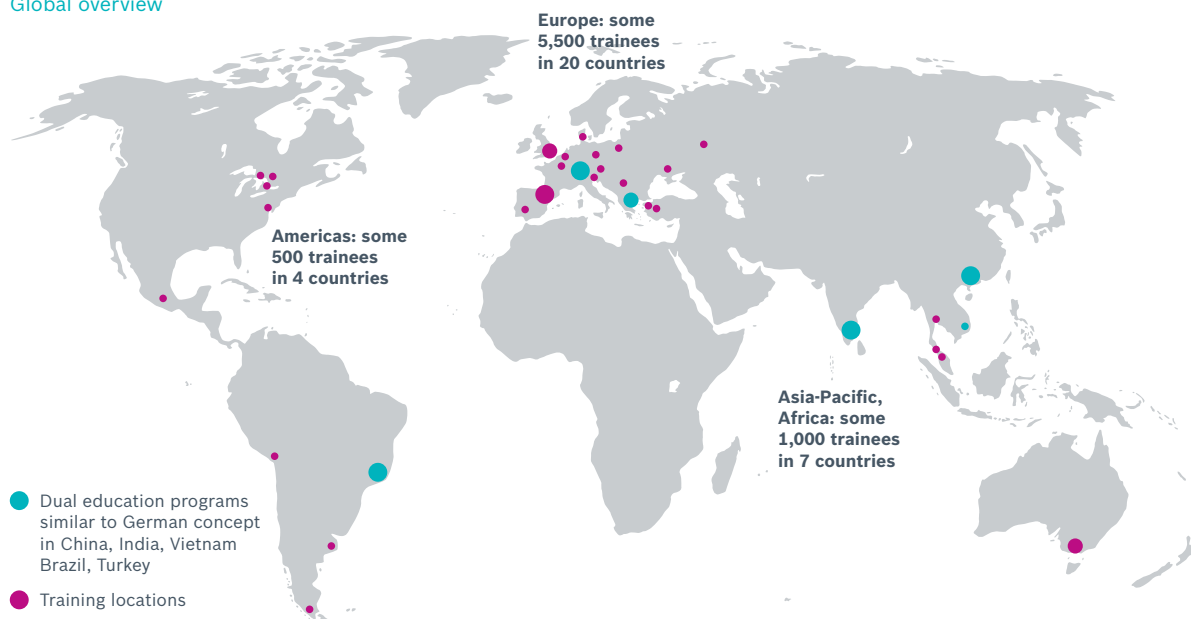
For years, Bosch has been training more candidates than needed, offering in Germany alone roughly 1,400 apprenticeships and traineeships every year, with about 300 of those under programs with universities of cooperative education. The 20,000 applications on average for these training positions are testament to just how appealing training at Bosch is for career starters. To about 20 percent of a year's trainee intake, we offer the opportunity to take part in our international trainee exchange so that trainees can obtain international experience, improve their ability to work in a team, take on responsibility, and become independent early on. Once their training is completed, we usually offer suitable young talent a permanent job. In recent years, the hiring rate was around 90 percent.

As a globally operating supplier of technology, Bosch is also transferring the concept of dual education and training in cooperation with universities to Asia and Latin America. In cooperation with the Chamber of Industry and Commerce (IHK) and the German chambers of commerce

## 35

### Training and study at Bosch

#### Global overview



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 vocational education center LILAMA2 International Technology College (Dong Nai) has been offering a three-and-a-half-year course to qualify as an industrial mechanic since 2013 – and has recently introduced another course as mechatronics engineer.

## Dual education and PreMaster programs

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 20 different programs in commercial, technical, and IT fields.

The PreMaster program allows BA graduates of technical or business programs to obtain practical experience while they pursue an MA course. In this way, we want to identify suitable students early on and get them interested in Bosch, advancing the technical and personal development of participants in order to attract qualified specialists to the company.

The PreMaster program comprises a phase at the company and an MA phase. Participants are assigned to a specialist anchor 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.

## Southern Europe apprenticeship initiative

After the great response to the “Prepare for the Future” project, with which Bosch has reached roughly 260,000 students at about 1,300 schools and universities in Italy since 2015, Bosch duplicated the project in Spain in 2018. As part of the program, students obtain initial insights into the working world and possible career profiles. At the

same time, Bosch has created 75 new apprenticeship positions for young Italian and Spanish talent – 50 of which are in Germany, 15 in Spain, and 10 in Italy. The trainees receive a variety of support, including language courses, company mentors, and assistance from social counseling professionals.

## Knowledge factory initiative

Several hundred Bosch associates around Germany took part in roughly 300 education cooperation arrangements with preschools, schools, and start-ups as part of the association Wissensfabrik – Unternehmen für Deutschland e. V. (Knowledge Factory – Companies for Germany). Bosch was one of the network's founding members in 2005. Since then about 140 companies and foundations affiliated to corporations have joined the network. The aim of the nationwide “get involved” initiative is to spark the interest of young people in technology and business and thereby strengthen Germany's future prospects. The focus is on STEM subjects as well as business thinking and action.

Many associates and trainees support the activities of the knowledge factory. Bosch managers help out, including by providing coaching for start-ups. In addition, Bosch is represented on the steering committee, on the executive board, and on various task groups of the initiative.

## “All together” for refugees

As part of the integration initiative of the German economy, Bosch prepares young refugees for living and working in Germany and supports them in their new environment. Since 2016, we have provided roughly 1,000 refugees at about 30 company sites with career-orientation and training measures assigned as needed in cooperation with local authorities and programs. The focus here is on education, language acquisition, and work experience. Bosch generally assumes responsibility for the work experience element. These offers are supplemented by local activities and voluntary work by Bosch associates in many different forms – but again in line with the specific local needs.

## Remuneration

Bosch sees itself as a hands-on social partner that actively helps shape agreements and set parameters. This is especially the case when it comes to fair remuneration and attractive framework conditions for associates.

The principles underlying the remuneration system at Bosch are governed by a central directive that is applicable worldwide. The dual objective is to ensure an attractive remuneration level in line with market conditions for all associates while structuring expenses and costs in a way that optimally supports the Bosch Group's competitive position. A number of contributing factors are taken into account in this regard: legal, collective bargaining, and internal company rules are reflected, just as much as general labor market conditions, the competitive situation of the respective operating unit, strategic aspects, or foreseeable market developments.

For associates without management responsibility, there is no binding remuneration system applicable worldwide at Bosch due to the very different premises and requirements prevailing in individual operating units, regions, countries, and company sites. Owing to the growing volatility of markets, it is necessary to ensure here in particular that it is always possible to adjust the remuneration system at short notice (reversibility).

Worldwide standards apply to the management remuneration at Bosch. Individual bonuses were discontinued in 2016 and replaced with a collective profit participation model from which associates with collectively bargained contracts in Germany also benefit. This model recognizes the increasing shift in emphasis from individual performance to team success. Talks to enlarge the group of participants are currently being held in the regions.

## Social benefits for associates

Company pension benefits are paid worldwide and they have to be coordinated with headquarters on account of their high potential cost impact at group level. In addition, associates receive other benefits such as under company healthcare schemes or as a means of improving their work-life balance to the greatest extent possible (also see the "Associates | Occupational health and safety" section).

## Collectively bargained innovation agreement

The IoT is driving the increasing convergence of information technology and production. That has a direct impact on the nature of collaboration. More and more, the emphasis is turning to creative work in mixed teams with greater responsibility of each individual so that associates need a great deal of latitude. In response to these conditions and in order to support the company's transformation, Bosch entered into a new collective bargaining agreement with the trade union IG Metall Baden-Württemberg that is applicable starting 2019 for the roughly 300 associates of the Connected Mobility Solutions division. Referred to as the collectively bargained innovation agreement, this structure transfers to associates a high degree of responsibility and autonomy, for instance, by allowing them to choose when they work, giving them a personal training budget they can appropriate themselves, as well as numerous models for paid leave and the option of converting remuneration into additional vacation days. At the same time, there is a strong emphasis on performance that is anchored in fair and transparent remuneration based on the collectively bargained salary.

In 2019, we are evaluating the experience with the new rules. If the collectively bargained innovation agreement proves successful, the next step will be to review together with IG Metall whether it can also be applied to other innovative business fields at Bosch.



## Work-life balance

Aside from remuneration and social benefits, another determinant of the company's appeal as an employer is increasingly work-life balance. Bosch wants to enable its associates to strike a balance between their personal career goals, lifestyle, and private objectives. To that end, we are working on increasing the flexibility of when and where associates work, not least by taking advantage of the opportunities afforded by information and communication technology. A corresponding determinant of success for a good work-life-balance policy is the continuous evolution of our work culture. Among other factors, this development is supported by the "Guidelines for a flexible and family-friendly working culture," which had already been introduced in 2012. Commitment to these guidelines is voluntary. They provide executives and associates at Bosch with guidance for creating a culture in which it is possible to successfully combine a career with private life.

The guidelines are based on the Bosch values and the Charter for Family-friendly Working Hours drawn up by the German Federal Ministry of Family Affairs that Bosch signed in 2011. Directly after their announcement in Germany, the guidelines began to be rolled out throughout

the Bosch Group worldwide. In the interim, they have been adopted in many countries or adapted to country-specific requirements. In this context, various working time models were also introduced (especially mobile working and part-time models), for example, in the United States, Brazil, China, India, the United Kingdom, Australia, Mexico, several European countries, and the ASEAN countries.

## Working time models and other agreements create room for individuals

With numerous working time models, we want to empower associates to structure their working time as individually as possible while optimally catering for business requirements. For example, more than 100 different working time models are used across all hierarchy levels of the Bosch Group, including part-time work, telecommuting, and job sharing. The models are structured individually by associates in consultation with their line managers. With its rules on mobile working, Bosch sees itself as a pioneer. Back in early 2014, Bosch already introduced in a

## Bosch guidelines for a flexible and family-friendly working culture

- 1. Individual solutions:** A flexible choice of working time and place benefits family and professional needs. We therefore seek individual solutions together from which both sides can benefit.
- 2. Mobile working:** Many tasks do not necessarily have to be performed in the workplace. To help reconcile family responsibilities and work, we therefore support mobile working to the greatest extent possible.
- 3. Faster return to work:** In order to ease a speedy return to work after a family-related period of leave, we also allow part-time working models – and if desired also with a decreased number of hours – to the greatest extent possible considering the job in question.
- 4. Results orientation:** We want to evolve our leadership culture toward the realization that it is not the physical presence of associates that is important but rather their commitment and achievements. That we respect our associates' vacation and breaks goes without saying.
- 5. Part-time leadership:** We actively support part-time leadership so that our executives can also fulfill their family responsibilities.
- 6. Consideration:** There are always phases in which people experience particularly challenging family situations. Our goal is to show consideration in this respect and provide the best possible support.
- 7. Binding appointments:** Binding appointments are essential to achieve a work-life balance; it is therefore our goal to hold face-to-face appointments and meetings within the guaranteed childcare or nursing care times to the greatest extent possible.
- 8. Appreciation between colleagues:** We value the dedication of associates who support colleagues with intense family commitments (e.g. those who care for family members).

combined works agreement the right of associates to mobile working to the extent that it was compatible with their tasks. In 2018, these rules also found their way into the collectively bargained regional agreement for the metal industry and are disseminated internationally as a fundamental principle.

Aside from various working time models, other agreements offer associates freedom to balance professional and private commitments in the best possible way. Examples of such agreements include the rules on parental leave – but also the care of family members, or offers of sabbaticals, special leave, and 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. To this end, various company sites also cooperate with service providers in order to help find individual childcare or tutoring services, take care of pets, or provide help around the house and garden.

Associates themselves are also active in this regard. For example, some founded the “Elder Care” work group, which has a platform on the “family@bosch” forum for associates dedicated to the exchange of information and experience with taking care of family members and supporting affected colleagues with advice and assistance.

## Company mobility management

The commute to work is another important factor in the context of work-life balance – and it also impacts our company’s carbon footprint. That is why, in 2018, we launched a new project for a multimodal mobility concept comprising a number of components.

For instance, in the wider Stuttgart area, the aim is to reduce the volume of individual traffic by using shuttle buses. After over 8,000 associates took advantage of the offer to lease a bicycle in the first year, the bike-leasing scheme will be continued. And the Bosch vehicle pool now includes electric vehicles. At the larger company sites, we are planning to provide associates with co-working spaces so they can always choose the work location that is closest to them. We have completed an extensive online survey of daily mobility that allows us to understand the mobility patterns and needs of associates in order to develop and establish adequate offerings.

## Employee rights

The Bosch Group has always maintained open and constructive dialogue with employee representatives. The objective is to engage in productive and constructive cooperation in order to make decision in consensus with employee representatives to the greatest extent possible – and that for a good reason. We are convinced that we can only implement the change processes needed to secure and enhance our competitiveness in cooperation with employee representatives. In this way, associates and the company equally share the responsibility for the future of Bosch.

A central directive applicable worldwide defines the framework for cooperation with employee representatives as well as the corresponding agreements. This is based on the “Basic principles of social responsibility,” which have been in effect since 2004 already and govern relations between entities of the Bosch Group and employee representatives. For instance, they prescribe that associates can form independent trade unions as far as the company is concerned and join them of their own free will. In addition, nobody in the company receives preferential treatment or is disadvantaged on account of their membership in a trade union or employee representation. At the same time, the Bosch Group respects the right of associates to

choose of their own free will not to elect or form employee representations. Further, for the forwarding of information to employee representatives as well as talks, consultations, or negotiations, the central directive sets out that the company has to assign a negotiation partner who has coresponsibility for trust-based cooperation with employee representatives.

## Constructive cooperation with works councils and trade unions

As is typically the case for a German industrial company, practically all our company sites in Germany have works councils. Only a few small units are the exception to the rule. Collectively bargained agreements are in effect for practically all units at Bosch in Germany, covering some 120,000 associates. A large number of combined works agreements additionally govern cohesion and cooperation in the company. Outside Germany, associates are typically represented by trade unions. In this respect, Bosch accompanies supraregional dialogue between employee representatives across Europe and worldwide.

## Common regulation with the International Trade Union Confederation

Based on the core labor standards of the International Labour Organization (ILO), Bosch had already entered into agreements with the International Trade Union Confederation as early as 2004 – making the company once more a pioneer with regard to employee rights.

We rigorously pursue the implementation of agreements in our regions. In this ambit, we face challenges time and again on account of our highly heterogeneous organization and broad footprint. Particularly the colleagues responsible in the regions locally maintain dialogue with

employee representatives and the relevant organizations. In this process, we relentlessly strive to improve conditions in the respective countries. If any problems arise locally with implementing our standards, the HR corporate sector deals with the issue and works toward finding a solution that achieves the greatest possible consensus and is consistent with our principles.

## Above-average length of service

Bosch associates typically remain loyal to their company for a very long time. We have set ourselves the objective of keeping labor turnover below the average value for each respective region. In times of change, this ambition poses a challenge as we endeavor to win new associates for Bosch and thereby generate new impetus for the company. Our apprenticeship management, with which we attract more than 1,400 apprentices in Germany year after year, helps Bosch master this challenge.

## Subcontracted labor, temporary employment, and service agreements

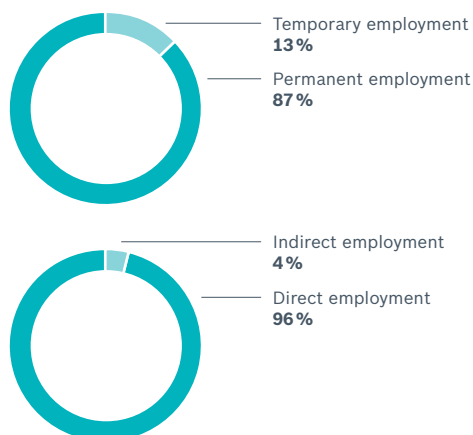
Bosch only uses subcontracted labor and other temporary employment solutions to cover requirement peaks for limited periods such as production starts or to help shoulder the workload from special contracts. Accordingly, the company has a low share of subcontracted labor, with fewer than one percent of associates working for Bosch under such arrangements. It goes without saying that we give due regard to subcontractors' compliance with legal frameworks and that collectively bargained agreements are respected.

Over ten percent of our workforce have temporary employment contracts, with the primary focus again on the flexibility of personnel deployment. At the same time, the temporary associates often benefit from their assignment at Bosch, as it allows them to improve their skills and, in turn, their prospects on the labor market. Bosch draws on other employment forms whenever it does not have the expertise for specific topics in-house or when only a limited number of workdays are needed. Examples include service agreements with consulting firms or conventional freelancers, such as IT experts, who are generally not interested in a permanent position.

### 36

#### Terms of employment

Bosch Group 2018



## Redundancies remain the exception

Bosch associates rarely terminate their employment relationship; the number of associates who hand in their notice is also very low compared with the industry as a whole. However, there are large regional differences. While associates in India and China generally switch employers more frequently, associates in Germany remain loyal to their employer for a very long time. Owing to the low number of associates handing in their notice, Bosch does not record this metric or the turnover rate in detail.

As a responsible employer, Bosch goes to great lengths to avoid redundancies. Furthermore, depending on the number of jobs lost, the board of management has to be involved in the corresponding decisions of the operating units. Redundancies are the exception at Bosch.

When job losses are inevitable, Bosch generally pursues a socially acceptable approach and uses instruments such as severance payments, early retirement, or phased retirement schemes. As a rule, employee representatives are involved at a very early stage in the coordination and mediation process in connection with restructuring and divestment measures.

At present, the transformation of mobility poses a series of challenges for Bosch that impact employment in this field. Here, too, the goal is to shoulder the structural change in a socially acceptable manner on the basis of workable agreements with employee representatives.

## Diversity and opportunities

Bosch values the diversity of ways of thinking, experience, and lifestyles of its associates. We are convinced that mixed teams often produce better results and that appreciation of individuality is beneficial for the working atmosphere. That is why diversity is a fixed element of our corporate strategy and firmly anchored in our mission statement "We are Bosch." Our Code of Business Conduct also states that Bosch respects and protects the

personal dignity of each individual, tolerates neither discrimination nor harassment of associates, and promotes diversity. In this way, Bosch ensures that all associates – irrespective of gender, age, or background – feel valued around the globe and can freely devote their individual strengths, experience, and potential to the company.

patterns of thinking and conduct. Unconscious bias was also the focus of the fifth Bosch Diversity Day held on April 26, 2018, and in which more than 200 company sites worldwide took part.

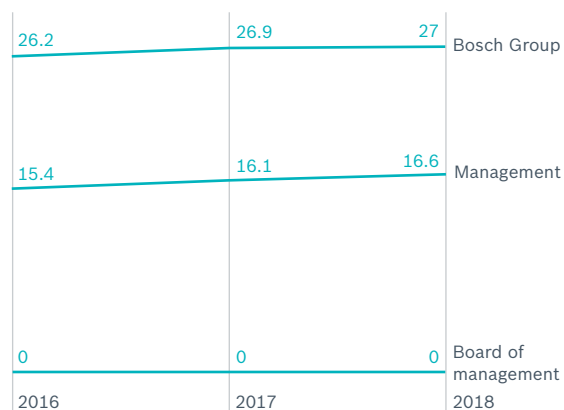
## Diversity initiative

The HR corporate sector is responsible for managing diversity at Bosch – and thus for equal opportunities in the company. It also manages the Bosch Diversity initiative. Launched in 2011, the initiative is intended to create awareness for diversity at Bosch and to bring it to life by highlighting positive examples. It pursues an integrative approach in this context: “Diversity is our advantage” – this message is communicated worldwide through a variety of channels. It illustrates the benefits for Bosch and every individual and encourages participation. In this way, we want to get as many associates as possible involved and strategically anchor diversity in the company.

Bosch is also exploring unusual avenues in this context and, for example, is paying greater attention in its diversity management to unconscious bias, which is one of the causes of stereotyping. Since 2015, Bosch has already held roughly 180 workshops with over 4,000 multipliers at 37 company sites in Germany. Added to this are numerous workshops in over 20 countries worldwide, at which associates were also made aware of their own unconscious

## 37

### Proportion of women Bosch Group 2016–2018, in %



## Diversity has many advantages

- ▶ **Excellence and innovation power:** It is most often mixed teams that come up with new ideas and approaches.
- ▶ **Customer focus:** Diverse teams have a better understanding of different customers and markets.
- ▶ **Effective collaboration:** An open attitude and mutual understanding enhance the ability of teams to perform.
- ▶ **Motivation:** Appreciation of differences and similarities creates a positive and motivating work atmosphere.
- ▶ **Change is an opportunity:** Diverse teams are more flexible in their approach to finding solutions and more active in shaping change.
- ▶ **Employer attractiveness:** An open and appreciative corporate culture as well as flexible working (time) models increase Bosch's appeal as an employer.
- ▶ **Business success:** Diversity boosts profits, market share, and the likelihood of penetrating new markets.

## Dimensions of diversity

Diversity has many facets. In order to do justice to the different dimensions of the topic, we have established a wide variety of measures. Here is a brief overview:

**Gender:** Mixed gender teams are more successful because they capture the potential inherent in having different vantage points and solution strategies. That is why we encourage mixed teams at all levels and draw from our entire pool of talent. Against this backdrop, equal pay is a decisive principle in our company. At Bosch, associates get equal pay for equal work. In particular, Bosch wants to increase even further the proportion of women in its total workforce from the current level of 27.0 percent. In this context, the aim is also to further increase in particular the share of women in leadership positions, which is currently at 16.6 percent. Mentoring and seminar programs such as the “Business Women’s Program” for women in specialist, project, and leadership positions are intended to make a contribution to this end. Numerous internal networks support women additionally in their professional careers, among them the women’s network [women@bosch](#), the network for women engineers [heratec](#), or the forum “Frauen in Technik” (women in technology). Bosch is also a founding member of the “Chefsache” (top management priority) initiative. Under the patronage of the German Chancellor, this network of high-profile organizations and companies is dedicated to promoting a balanced mix between women and men in management positions. Based on legal requirements in Germany, the share of women on the supervisory board and the board of management is subject to targets that are to be reached by December 31, 2021. For further details, please refer to the [annual report 2018](#), page 24 et seq.

**Generations:** At Bosch, all generations work together, from generation Y to the baby boomers. In this context, we take account of the various needs and adjust our leadership instruments accordingly. In order to live up to this aspiration, Bosch places an emphasis on vocational training that is aligned to the different phases of life of associates, among other initiatives.

Through Bosch Management Support (BMS), a subsidiary founded in 1999, Bosch also temporarily assigns project and advisory tasks to former associates. Our former specialists and executives, some of whom have more than 40 years of Bosch experience, are highly valued, and they tend to be called on especially whenever professional advice is needed at short notice.

Training on demographic change and cross-generational cooperation rounds out our efforts. Just one example of many: together with the Swiss association “Generationentandem” (generation tandem), Bosch helps younger and older generations quite literally interact more with each other as they undertake an array of tasks.

**Internationality:** People from different cultures work together for Bosch at more than 400 company sites in over 150 countries. We draw on this diversity so that we can successfully collaborate with our international customers, partners, and suppliers.

To that end, we have organized in particular international networks of associates such as [afric@bosch](#), [chinese@bosch](#), “For Bosch abroad,” and the Bosch Turkish Forum. With over 2,200 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 the various cultures. This way, as a company we do not only want to be active worldwide, we also want to act internationally in a very real sense.

**Culture:** We promote a working culture in which our associates can be authentic. Diversity can be achieved when we are also attractive for people who think out of the box and come to us from nonconventional career paths. That is why we need the support of a courageous and open leadership culture. Examples of these efforts include activities such as project MORE (Mindset ORganization Executives), with which we make flexible and mobile working models tangible for our managers and encourage them to take advantage of them. We are also taking new approaches to recruitment. Take for instance the new online tool JobConnector, which connects associates interested in job sharing.

**People with disabilities:** We increase our innovation power by focusing on the unique abilities of our associates and not on their limitations. That is why we create an inclusive working environment that takes into consideration and appreciates everybody's special needs and skills. Indeed, all associates add to our diversity and contribute their own personal strengths. Representatives for disabled persons at the company sites give the interests of associates with disabilities a voice at Bosch. In cooperation with workshops for people with disabilities, we also offer additional work participation opportunities. With this in mind, Bosch is also active in Germany in the association "Bundesarbeitsgemeinschaft Werkstätten für behinderte Menschen e. V." (National Working Group Workshops for Disabled People).

**LGBT:** At Bosch, all associates are valued – irrespective of their sexual orientation or gender identity. We help associates network and encourage dialogue and mutual understanding between people of different sexual orientations and identities. At Bosch, everybody should be given the opportunity to make an authentic contribution.

We demonstrate this stance in a wide variety of activities. For instance, Bosch supports the foundation PrOut@Work, which advocates equal opportunities in the workplace. And corresponding networks are also encouraged within the company, such as the global network for LGBT associates RBg (Robert Bosch gay). RBg helps create an open corporate culture – irrespective of the sexual orientation or gender identity of associates. RBg's commitment extends beyond the company and out into the community. RBg has been taking part in the annual Christopher Street Day (CSD) event in Stuttgart since 2014, with many Bosch associates joining in. In 2017, the network launched the LGBT Ally initiative. Allies are associates from all business sectors who are open and approachable on matters related to this topic. Allies are also called on to openly address possible incidents of bias or discrimination, to raise awareness among associates, and to help shape the transition to an open working culture.

## Commitment is recognized

Our commitment to diversity and equal opportunities is also resonating with people outside the company who recognize our efforts. In Germany, for example, the Feuerbach, Eisenach, Salzgitter, and Blaichach sites have been awarded the TOTAL E\_QUALITY accolade for equal opportunities with the add-on "Diversity." The award recognizes organizations from the private sector, academia, and public administration as well as associations for their forward-looking, successful, and sustainable HR policy. It is presented by the TOTAL E\_QUALITY initiative, which advocates equal opportunities between women and men as well as diversity in the workplace.

At our Campinas site in Brazil, associates are actively involved in inclusiveness work. In the project "Ambassadors of Inclusion," more than 300 specifically trained ambassadors work to address the needs of associates with disabilities. They help increase visibility in the daily work of the roughly 200 colleagues with disabilities, they drive projects to improve infrastructure designed to be accessible for people with disabilities, and they motivate the workforce to actively remove mental barriers and attend sign language courses, for example. In 2018, the concept received the global recognition award "Good Practices of Employability for Workers with Disability" of the United Nations in New York.

The German foundation "PrOut@Work" recognized the work of Bosch's global LGBT network "RBg" with the Big Impact Initiative Award 2018. The work recognized included public-facing drives such as media relations work, social media campaigns, and networking that served to strengthen equal opportunities in the workplace as a societal topic.

## 5.2 Occupational health and safety

### Management approach

It's people that matter – and we want to maintain and encourage their long-term health. Consequently, occupational health and safety are priority at Bosch and are firmly anchored in our sustainability vision through the health issue. The central core process that is consistently deployed throughout the Bosch Group manages the related topics. While requirements and targets are set centrally, the persons in charge of EHS in the regions and at company sites are responsible for compliance with requirements and achieving targets. An array of documents define the internal framework for action, first and foremost the guideline “Occupational safety, fire safety, environmental protection and emergency control” and the corresponding principles. In addition, the central directives on organization and policy deployment address the topics of occupational health and safety. We report on the degree of goal achievement in our six-monthly report to the board of management or – in particularly serious incidents – in ad hoc reports (also see the “Company | Sustainability strategy and organization” section).

### Occupational safety

Lasting operational excellence is only possible in a safe working environment. Occupational safety and accident prevention measures improve associates' performance and motivation and ultimately help Bosch stay competitive.

Bosch wants to keep people and the environment from harm and pursues a clear vision in this regard: by 2020, we want to reduce the accident rate within the Bosch Group to 1.7 accidents per one million working hours. As part of a project in 2019, targets and potential performance indicators are being defined for the period after 2020. A special focus of this work is on priority topics such as handling of hazardous substances and mitigating

the risk of accidents. Besides avoiding work accidents, other core topics for protecting people and the environment include compliance with materials restrictions and reducing hazardous substances – both in our production and our products. To efficiently manage materials prohibitions and restrictions, especially for products, we are upgrading our central IT system MaCS. You can find further information about this IT system and how it is used at Bosch in the “Products” section of this report. We are also further developing our established IT system to support the safe management of hazardous substances in production.

### Clear standards and high-performance management systems

Standards in emergency control as well as occupational and fire safety have been in place at all manufacturing and development sites for many years. We take a highly systematic approach to occupational health and safety, and we use high-performance management systems. As early as 2007, Bosch introduced an occupational health and safety management system based on the globally recognized standard OHSAS 18001 and has since developed it into an integrated EHS management system. We have since transitioned to the new ISO standard 45001, which replaces the OHSAS standard, combines for the first time occupational health and safety management, and focuses not only on risks but also on the corresponding opportunities.

With our activities, we want to avoid, to the greatest extent possible, any work accidents and injuries as well as incidents that cause damage while identifying risks and introducing effective countermeasures. We have defined a specific target in this ambit as well: all manufacturing and development sites with more than 250 associates are to introduce occupational health and safety management

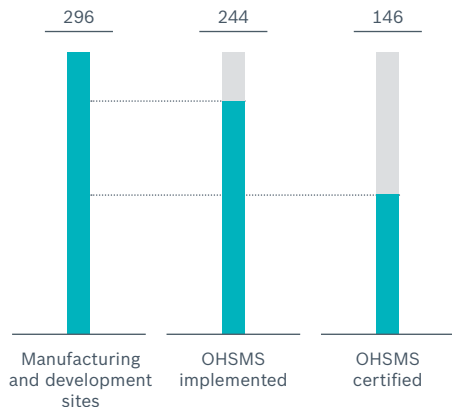


systems and have them certified externally within the next two years. We are well on the way to achieving that. As of the end of 2018, 244 of the 296 manufacturing and development sites had already implemented occupational health and safety management systems, almost 60 per cent of which had been certified.

## 38

### Occupational health and safety management systems (OHSMS)

Bosch Group 2018



## Declining accident numbers for years

Our occupational health and safety activities are having an impact. In the past five years alone, the number of accidents per one million hours worked has decreased from 6.9 to 2.2. More than that, no Bosch associates lost their life due to a work accident in 2018.

## Best-in-class measures

In order to roll out and implement especially effective and exemplary measures quickly in the company, we started a project in 2013 at all manufacturing and development sites aimed at identifying all such best-in-class measures. In this context, sites with an accident rate of zero or sharp declines in accident numbers were identified, and the measures implemented there were analyzed. This led to the identification of six best-in-class measures, resulting in specific improvements. Aside from rigorously analyzing accidents and deriving risks or dangerous hot spots, the identified measures included actions to mitigate hazards, for instance, caused by pollutant emissions. Not least, the analysis reconfirmed once more the importance of training and the sensitization of associates with respect to occupational health and safety.

## 39

### Work accidents

Bosch Group 2016–2018



## Deriving risks

At Bosch, risks to occupational safety are identified, assessed, and clustered by risk priority annually on the basis of accidents reported in the Incident Management System (IMS) as well as findings from internal ISO audits or the audits of the internal audit department. The analysis then forms the basis for developing risk mitigation programs and determines the focus of subsequent audits.

In addition, hazard assessments are conducted at company sites based on an internal standard applicable worldwide throughout the Bosch Group. The standard also indicates the risk factors that are included in the assessment scope for various activities. In Germany, the standard is also extended in response to national requirements on the assessment of physical hazards.

At present, we see improvement potential, for instance, in the coordination of third-party companies, in the changes made to machines and production facilities, and in the assessment of hazards and the implementation of corresponding measures.

We counter risks inherent in the deployment of external service providers at Bosch sites with clearly defined responsibilities and processes. For instance, the respective colleague responsible at the company site must ensure that service providers performing work on-site are coordinated by a qualified Bosch associate and that they have been given safety instructions before commencing their work. Implementation of these requirements is checked on a sample basis. In the event of irregularities identified, the work can be discontinued and the purchasing department considers the possible implications (also see the “Supply chain” section).

## Mitigating hazards

We take particular care to protect associates exposed to risks as a result of their work with hazardous substances or pollutant emissions. For instance, the standard governing the assessment of hazards requires a review of the use of hazardous substances in a first step. We are currently working on compiling a central registry of hazardous substances in order to support the process company-wide. Added to this are specific measures for assessing hazards relating to tasks, workplaces, and machines, as well as workplace-specific instructions, and the use of personal protective equipment. We have a series of measures designed to raise awareness among associates in order to change behavior in individual cases. In fact, this is where we see the greatest improvement potential with respect to occupational safety.

## Safety basics – raising awareness among associates

Since 2016, the safety basics initiative has been setting clear priorities for occupational safety at Bosch. For this purpose, safety experts have developed six compelling principles intended to help associates and supervisors avoid accidents in their daily work. The ambition is to embrace safety as an element of leadership culture, to integrate it in standard processes, and to share lessons learned with colleagues. Newsletters, posters, and videos support the corresponding communication. Regular assessments at company sites shed transparency over how safety basics are practiced and implemented locally.

## More safety in the workplace with virtual reality

Aside from training as part of EHS competence management, Bosch prepares associates for their work with instructions and training. Occupational health and safety are priority topics in this context. That is because, in the majority of cases, the causes of accidents at Bosch can be traced back to human error.

In 2017, Bosch therefore decided to take a different approach to training its associates. At its site in Abstatt, Germany, the Chassis Systems Control division has developed augmented reality safety training in cooperation with Heilbronn University of Applied Sciences. This method allows virtual modeling of different safety areas, such as offices or production environments. One of a total of 55 critical situations has to be solved in each room. Safety training of this kind thus combines fun, curiosity, and safety-conscious behavior, thereby raising awareness for the topic of occupational safety. Starting in May 2019, the application is to be available at all division sites.

## EHS Award – recognizing safety

The company-wide EHS Award dedicates a category specifically to occupational safety. Every year, the submitted nominations contain a series of good-practice solutions (also see the “Company” section). In 2018, a total of 42 projects from 11 countries were submitted. The thematic areas spanned the entire spectrum of safety measures, from videos and training courses to rules of conduct through to protection barriers developed at the respective company sites.

## Occupational health

Health and fitness are preconditions for associates' ability and willingness to perform and are thus contributing factors for Bosch's competitiveness. Aside from a safe work environment and avoiding accidents, Bosch therefore also sets great store by occupational health management. This covers a broad spectrum of topics – from preventive medical care and the maintenance of the ability to perform both mentally and physically to mental health through to workplace design and tips on healthy nutrition. Occupational reintegration management as well as integration of people with severe disabilities and reduced capacity to work also play a major role. At many company sites worldwide, associates can draw on the services of our in-house medical staff, workplace designers, social counseling professionals, and fitness experts.

## Principles of occupational health management

Occupational health is anchored in the fundamental principles of work at Bosch and a fixed element of the corporate culture. Both associates and the company have a joint responsibility in this respect. Because, aside from operational parameters, factors external to the company likewise affect health. Irrespective of distinctions between internal or external factors, Bosch supports the health of associates in all relevant areas. Team spirit among colleagues helps as does a positive leadership culture – in fact, protecting health is defined as a leadership task at Bosch and firmly anchored in the “We LEAD Bosch” leadership principles.

## Focus topics and organization

In view of the aging workforce, the number of absentees due to sickness increased in the last two years from just under 29,000 to roughly 31,500. In order to counter this trend, occupational health at Bosch sets clear priorities. These are derived based on the expertise of in-house medical staff and safety engineers. In addition, the health report of the Bosch company health insurance fund (BKK) is also factored into the assessment, along with insights from occupational reintegration management and the global survey of associates as well as hazard assessment results. The focus is on conditions affecting the musculoskeletal and respiratory systems as well as mental illnesses.

The core health team at corporate headquarters defines strategic modules for deployment at company sites as needed. Modules range from work organization, healthy nutrition, and mental health to physical and mental fitness, medical checkups, and healthy leisure and sports activities. On-site implementation of modules is the responsibility of the health working groups, in which all relevant experts and functions are represented.

To this end, the internal stakeholders work closely together – among them the Bosch health insurance fund (BKK), representatives of severely disabled associates, the occupational safety function, social counseling, the works council, and the company medical staff. This ensures that associates get fast and competent support in all matters of relevance to their health. External support from specialist physicians or medical laboratories is obtained as needed. One example of such cooperation with externals is the OncoCure program, in which the company – in cooperation with Robert Bosch Hospital – enables associates with cancer to get a second opinion and a genetic diagnosis.

## Occupational health in connected manufacturing

Anybody seeking to help shape the digital transformation also has to consider the implications of connected manufacturing on the health of the workforce. That is what motivated Bosch to inspect different company sites to see which repetitive or monotonous work could be left to robots. For example, at Bosch in Homburg, collaborative robots were recently introduced to assist our associates with monotonous work and nonergonomic tasks so that they can concentrate on activities that create value. In addition, we are creating personalized workplaces that address the needs of individuals with regard to the information required, language, and ergonomic design.

## Broad spectrum of measures

Occupational health is as differentiated as our associates are diverse – and, at Bosch, it spans a broad array of measures. The options available locally depend on the size of the respective facilities and the needs in the given region. Our company sites also frequently cooperate with each other so that they can offer associates the most appealing options possible.

Offers include free health checks for skin and bowel cancer, for instance, that all associates at the respective sites are entitled to. Sports groups offer a broad spectrum of options for associates to improve their personal fitness. In countries without full medical coverage, associates have the option of visiting clinics located directly on-site. An extensive range of training offers makes it easier for associates to take ownership of their own health. Training topics include work-life balance, metabolic disorders, or exercise and health.

In Germany, training courses are offered on mental health based on a works agreement. In addition, the Psyga portal provides associates and executives with information and tests on the topic of mental health and, when needed, indicates who the best person to talk to is. Bosch was one of the first companies in Germany to introduce in-house social services back in 1917. Since 2017, associates can also take advantage of this offer online and get support for all personal and professional matters. Over 100,000 associates in Germany can contact a social counseling professional from our in-house social services department through a website at any time, and anonymously if they wish.

## befit – systematic health management

Under the “befit” umbrella brand, the various internal specialist disciplines in Germany and all offers and measures related to health are combined in an integrated and people-oriented health management system. Aside from medical checkups, ergonomic workplace inspections, or sports and nutrition offers, associates can also access a service that helps arrange nursing care, for example, as well as seminars for managing mental and physical stress. A virtual healthcare center is currently being set up through which associates can easily obtain information regarding the complete range of services available.

The quality of the befit health management is measured based on a capability maturity model that was developed in cooperation with the Bosch health insurance fund. With this management tool, local health working groups can

assess their benefit health management system and use this as a basis for continually developing their local requirements. In order to systematically improve the quality of benefit, objectives are mutually agreed. If the objectives are achieved, the Bosch insurance fund pays out a bonus, the amount of which is governed by a master agreement between the insurance fund and Bosch. In 2018, an amount of roughly 680,000 euros was thus channeled into occupational health at the company's sites in Germany (previous year: roughly 670,000 euros). Similar initiatives are also in place in other countries.

Time and again, the impact of our activities is recognized with awards. In the United States, for instance, Bosch received the Workplace Health Achievement – Gold Level Recognition of the American Heart Association in 2018, which recognizes the quality and effectiveness of occupational health management. In Spain, three operating units received the “Healthy Company” award of the National Institute for Safety and Health in the Workplace (INSSBT).

## A global commitment to health

For a company active worldwide like Bosch, occupational health has many, very different facets. From one country to the next, the challenges differ, as do the tasks that need to be solved. That is why this is another area in which there are no uniform objectives applicable around the globe – instead, we have very extensive activities, especially in countries such as Brazil, China, India, and Romania, where the healthcare coverage available varies substantially.

In China, Bosch offers an annual healthcare check at a local hospital through the Health Screen program. In addition, Bosch offers a platform that provides associates information on relevant medical examinations depending on age, gender, or health condition. More than that, the platform also explains which forms of cancer are most frequent in China and how associates can assess their individual risk.

The impact of occupational health measures at Bosch is illustrated by India, to take one example. In 2017, a total of 3,941 people there took advantage of our offers, and 1,600 of them were vaccinated. At the same time, the cost of inpatient treatment and sick leave also decreased significantly. Awareness of healthcare benefits among individuals is growing so that we can expect the situation to improve even further in the coming years.

# Society

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Social responsibility has a long tradition at Bosch. We see ourselves as part of the society in which we operate as a business. And we play an active role: with our skills, our expertise, and our financial resources, we want to steadily improve people's quality of life. Because we need a cohesive social environment if we are going to achieve lasting success as a company. That is why our activities are always focused on the common good and equal opportunities. In this context, we consciously promote education as one of our priorities, in order to support the advancement of society for future generations as well.

# 153.04

million euros total  
funding by Robert  
Bosch Stiftung

# 24.5

million euros  
in Bosch donations  
for charitable causes

# 5

regional  
institutions

## 6.0 Active at three levels – our social initiatives

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Improving people's quality of life – that is the aim of Bosch's ethos of creating solutions that are "Invented for life" and its extensive commitment to the development of society. Bosch sees itself as an active member of society even the business activities that are at its core. We want to play our part – and are taking different avenues to that end. In our activities, we clearly distinguish between donations, political lobbying, and sponsorship. Our donation work focuses on the common good, and we do not expect anything from the recipients in return. Clear guidelines ensure compliance with the law.

In our political lobbying work by contrast, we pursue specific objectives and we seek to actively contribute with our arguments to the political decision-making process. Our guiding principle in this context is to provide fact-based and technology-oriented policy advice with a clear objective: making technology advancements work for people. To this end, we want to engage in dialogue with decision makers in order to develop society without being led by ideologies or political interests.

Finally, sponsorship at Bosch mainly serves advertising objectives such as strengthening our brand or the level of awareness among specific target groups, among them prospective customers or associates.

### Cents for help

In order to make a joint, sustainable contribution to society, the board of management of Robert Bosch GmbH and the employee representatives of the Bosch Group founded the "Cents for help" initiative in Germany in 2017. The name says it all: associates can voluntarily donate the cent amounts from their monthly take-home pay. Bosch then rounds up the amount collected in this way by the end of the year – and the cents become tangible aid. In 2018, roughly 70 percent of Bosch associates in Germany took part in the initiative. Bosch thus collected an amount of 500,000 euros, which it then rounded up to one million euros. Associates of the Bosch Group in Germany can apply for funds for a public-benefit project that they consider a good cause.

A committee made up half-and-half of employee representatives (of the combined works council and the combined executives committee) and company representatives (associates of the departments HR policy and donations) decide how the donations should be used. Associates and the company thus jointly breathe life into the Bosch Group's basic principles of social responsibility – with a contribution from the heart.



## 6.1 Donations – a global commitment

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### Donation volume of the Bosch Group

Bosch's social commitment in the form of donations is carried out by the respective companies and, in some countries, through dedicated institutions. These entities work together with a variety of partners in the implementation of projects locally. Aside from Bosch's financial commitment, many of our associates also contribute to society in an array of projects – perfectly in step with our corporate culture and our values.

### Clear rules for the contribution of operating units

In the reporting year, the Bosch Group donated 24.5 million euros (previous year: 24.6 million euros) for charitable causes. In this context, individual operating units acted on their sense of corporate social responsibility and made donations in cash and in kind to education, science, culture, and social initiatives. The members of the board of management of Robert Bosch GmbH or the managers of the operating units decide how the funds raised should be spent. A corresponding corporate guideline sets out principles, examination criteria, and responsibilities for the granting of donations. It also prescribes strict adherence to the principle of disinterested action in granting donations. Grants to political parties are likewise governed by the guideline, although they are clearly differentiated from donations. A clear distinction is also made between sponsorship and donations.

All donation transactions must be documented in writing and the documentation archived. The persons responsible keep an annual ledger of donations that is accessible for audit purposes. At a minimum, this ledger must document the recipient of the donation, the amount of the

donation, the reasons for the donation, and the date on which confirmation of receipt was received. Donation purposes are likewise clearly outlined by the guideline. Bosch thus makes donations for education and for supporting young professionals, as we see good education as the key element for providing for the future and a core concern for any company. As a technology group, we also support universities and research institutions in fields of relevance for our company. In this way, we want to play our part in advancing progress in the sciences and support the education of qualified future talent.

In the regions surrounding its company sites, Bosch makes donations to schools and childcare centers as well as social and cultural institutions. We support nature conservation and environmental protection as well as popular sport and other nonprofit organizations to which our associates volunteer their time. More than that, we also make donations in response to natural disasters, particularly in the vicinity of Bosch sites.

### Volunteering

Bosch encourages the social commitment of its associates, as they work for social cohesion – in the spirit of our values. Moreover, in the course of a wide array of activities, they demonstrate team spirit and develop creative solutions – skills that directly enhance our company's innovation power. That is why, for instance, part of the program for prospective executives at Bosch in Germany involves supporting a local social organization in the implementation of a current project.

Bosch encourages the commitment of its associates in a wide variety of ways. The spectrum stretches from temporary leave to supporting regular volunteer meetings through to promoting joint activities. However, initiatives are always organized locally at the respective companies, as local commitment always delivers the greatest impact.

## Regional institutions promote local projects

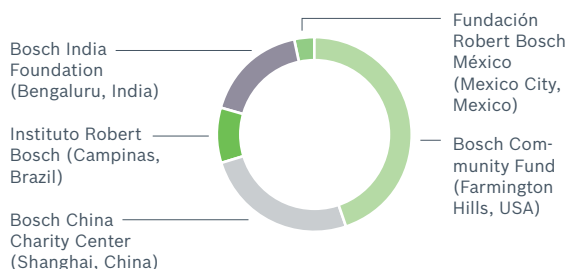
In five countries, Bosch's regional companies have established dedicated institutions tasked with distributing donations. These entities are organized as national public-benefit institutions. Specifically, the institutions are as follows:

### 40

#### Spending on social initiatives

Regional activities, in millions of euros

Total project grants \_\_\_\_\_ 9.8



#### ► Instituto Robert Bosch

First formed as an association back in 1971, Instituto Robert Bosch has been promoting in particular education and training projects in the locations of Bosch's Brazilian factories since 2004. Through its work, the institute helps children and young people from socially disadvantaged families improve their future prospects. In 2018, 0.9 million euros in donations were dedicated to that cause (previous year: 0.9 million euros). As part of the long-term project "Peça por Peça" in Curitiba, Brazil, for example, the institute contributes toward systematically supporting

people in a city district that is rife with drugs and poverty. For this purpose, an extensive education program was developed together with the city's authorities that among other subjects also offers two-year training courses in fields such as industrial production or electrical engineering.

Year after year, numerous Bosch associates take part in the volunteering program of Instituto Robert Bosch. In so doing, they promote the social and intellectual development of children and young people in the context of leisure activities, through the mutual exchange of experience or – quite simply – by helping with reading, math, and studying in general. In 2018, the foundation spent roughly 164,000 euros in connection with the project. In addition, 780 associates got involved in the program and rendered 7,032 hours of voluntary work. Bosch supported this volunteering effort by granting partial leave to four associates to work on the project organization.

## Primavera Hilfe für Kinder in Not e.V.

Founded in 1990 by ten Bosch associates, the Primavera association's aim is to help children from poor areas in developing and emerging countries and offer them better prospects. Although the number of members has since increased substantially, the association still largely consists of former and active Bosch associates. At present, the association supports over 40 projects and roughly 15,000 children in 15 countries. The projects are supported by volunteer associates of the local Bosch sites or their family members. This approach ensures that the aid goes where it's needed. Bosch supports Primavera both with donations and with administration work. As a result, every euro donated by associates, friends, and sponsors flows directly to the projects.

However, the aid is not just limited to the children's medical care and basic needs. Primavera also wants to show them ways out of the poverty cycle and supports many educational or vocational training activities that will allow them to lead an independent life in the long term.

### ► **Bosch China Charity Center**

Founded in 2011, the Bosch China Charity Center coordinates social work at Bosch sites in China and implements long-term projects. In accordance with its guiding principle “Charity for A Better Life,” the center, which has an annual budget of around three million euros, primarily pursues educational programs for reducing poverty. Roughly 145 projects have thus been promoted so far, from which more than 300,000 people have benefited in total.

One of the current projects, for instance, deals with the systematic vocational training of about 4,000 preschool teachers in Gansu and Qinghai provinces, with the objective of improving the quality of the pre-school education of more than 70,000 children in China’s rural communities. However, the center’s commitment extends further, even to third-level education. For instance, the Bosch University Freshman Bursary Program has been supporting students in need since 2011 at 11 universities. They receive financial assistance so that they can concentrate on their academic work. At the same time, the program also seeks to encourage the students to pursue social initiatives themselves by offering training and start-up financing. Bosch associates serve as mentors on the program. Funds of about 1.8 million euros have thus been dedicated to the program in the last eight years. A total of 2,894 students were directly supported, along with 49 social projects in which 352 students were involved.

### ► **Bosch India Foundation**

Since 2008, the Bosch India Foundation has been using its education offers to help people lead an independent life, whatever their background. The offering spans computer-training courses for unemployed young people from India’s rural areas through to language and self-defense courses or bicycle repair workshops for street children. In cooperation with Indian organizations, the foundation also helps finance operations for sick children or pays for pregnant women to receive the medical care they need. In addition, the Bosch India Foundation makes a contribution to help secure the basic needs of local people. In one instance, the foundation helped create a kitchen to serve daily lunches to 12,000 schoolchildren. And more than 7,500 families have been provided with access to clean drinking water.

With its BRIDGE initiative, the foundation trains its focus on the growing need for well-educated new talent. The program was especially designed for young people with low levels of education from economically deprived backgrounds. Launched recently in 2013, the initiative is already represented in private and public organizations nationwide with 250 centers – and roughly 20,000 young people have received training in the services sector.

### ► **Bosch Community Fund**

The Bosch Community Fund (BCF) combines the non-profit activities of the about 90 Bosch sites in the United States and has been supporting nonprofit projects with up to four million dollars per year since 2012. Its priorities are in the promotion of education in science, technology, engineering, and mathematics, as well as in environmental protection. The work of the Anderson Institute of Technology in South Carolina is one example of the many projects in which BCF is involved. As part of the Fostering Innovation Through Teaching (F.I.T.T.) program, the fund donates almost 43,000 dollars for the vocational training of teachers and the purchase of learning materials in order to promote science and technology education in grades 9 to 12. In that way, Bosch as one of the biggest local employers makes a concrete contribution through its foundation to help remedy the shortage of well-educated young professionals.

### ► **Fundación Robert Bosch México**

Founded in 2016, Fundación Robert Bosch México mainly supports the education of disadvantaged children and young people in the vicinity of Bosch’s company sites in Mexico. The focus is on the natural sciences and languages. In 2018, 31 projects were implemented and Bosch associates volunteered more than 7,000 hours of their time. The company doubled every euro donated by associates. The projects and the volunteer work reached over 42,000 children and young people.

As regional nonprofit institutions, the five entities pursue country-specific objectives and set corresponding content and local priorities, typically in the vicinity of our company locations. Despite regional and cultural differences, such charitable activities must be recognizable as joint actions by Bosch. In addition, these organizations document their work to make their activities transparent and enable their evaluation.

## Robert Bosch Stiftung

Due to its special ownership structure, Bosch's long-term entrepreneurial success creates the foundation for a large number of social activities: of the share capital of Robert Bosch GmbH, 92 percent is held by the not-for-profit foundation Robert Bosch Stiftung GmbH. The latter does not have operating activities and has transferred its voting rights to Robert Bosch Industrietreuhand KG. It finances its work from the dividend it receives as a shareholder in Robert Bosch GmbH. In 2018, Robert Bosch Stiftung spent about 153 million euros on charitable causes.

Since it was established in 1964, Robert Bosch Stiftung has been carrying on the company founder's public welfare endeavors. It is devoted to social challenges and promotes projects whose aim is to develop innovative solutions and models for our future. To this end, it is active in the areas of international relations, healthcare, education, science, and society. Robert Bosch Stiftung sees itself both as an operative foundation that pursues its objectives with programs of its own and as a supportive foundation that enables others to develop and implement their projects.

With more than 50 years of experience, Robert Bosch Stiftung has extensive knowledge in the fields it supports, the capacity to develop solutions, and an extensive network of partners, experts, and practitioners on the ground. For further information on Robert Bosch Stiftung and its projects, visit [www.bosch-stiftung.de/en](http://www.bosch-stiftung.de/en).

## 6.2 Political lobbying – technology orientation rather than ideology

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As a supplier of technology with global operations and a large number of different products, Bosch is affected by the large number of regulatory frameworks at national, European, and international levels. We believe it is our responsibility to put our technology expertise to work for the benefit of society and to indicate concrete opportunities and solutions. With this in mind, Bosch helps shape opinions at a policy level, in associations, and in various social forums. This work is driven by our ethos “Invented for life” and Bosch’s general stance on environmental and social issues.

Bosch is in favor of standards that are both ambitious and as consistent as possible. For instance, carefully considered EU legislation is preferable to having a large number of different requirements at national level, and it can frequently serve as a global benchmark. New business fields in the realm of connecting things and services also create new need for regulation. In their efforts to design the corresponding framework conditions, policymakers have for years valued Bosch as a reliable partner and routinely ask the company to share its knowledge.

In this context, our aim is to lobby for the best technical and technology solutions in the fields of relevance to us. So instead of pursuing ideological lobbying, the question of technical feasibility is at the heart of our activities. We also want to do justice in this regard to the complete spectrum of requirements of our stakeholders. For instance, Bosch takes a differentiated view on the discussion regarding tomorrow’s mobility and pursues a broad solution corridor. That includes a new and complete view of CO<sub>2</sub> emissions in road traffic that considers all sources of emissions from well to wheel and factors them into the assessment (see the “Products” section).

Our political lobbying activities aim to identify at an early stage political regulation and intervention that can affect our products, our company sites, or our business operations in general. After all, due to its highly diversified product portfolio, Bosch is affected by a large number of legislative projects, including in energy and environment

policy, international trade policy, data protection law, or labor and social policy. As a company with operations worldwide, we are often directly affected by policy decisions and are dependent on a constructive dialogue with policymakers. Generally speaking, Bosch only enters into business operations if the underlying business is viable also without subsidies. Having said that, government assistance – temporarily – can prove a suitable tool to help a new technology achieve a breakthrough, for example, or to implement a strategic decision in the realm of industrial policy to secure the viability of a business location or maintain key industries in a region. For instance, in the case of our wafer fab in Dresden, EU subsidy approval as part of the first “Important Project of Common European Interest” (IPCEI) was a key factor behind the project’s success and also helped secure Europe’s viability as a business location.

### Political activities

The political activities of Bosch are split into technical areas of competency. The political affairs and governmental relations department is active in Berlin and Brussels, where it represents the political interests of the Bosch Group vis-à-vis EU institutions, the German Federal Government, the German Bundestag, and wider society. Activities at EU level also include membership in the high-level working groups of the EU Commission on key enabling technologies and AI. Among other activities in Germany, Bosch is a member of various working groups of the newly established National Platform Future of Mobility (NPM) and the advisory committee of the sustainable mobility initiative Agora Verkehrswende.

## Transparency as a fundamental principle

We want to make our lobbying activities transparent. To this end, we strictly adhere to the various requirements in the respective regions. For instance, Bosch is entered with its Brussels office in the Transparency Register of the European Commission and usually voluntarily publishes responses made in the course of EU consultations. A total of 10.2 full-time equivalents (FTE) at Bosch are directly assigned to EU legislation activities, with five of them directly in Brussels. In the reporting year, we spent about one million euros on our activities related to the European Transparency Register including personnel and lease expenses. In the regions with relevant business activities, Bosch also employs governance coordinators (about 25 FTEs). In the United States, we are additionally subject to an obligation to publish and document political activities. Moreover, only accredited lobbyists are permitted to engage in pertinent talks there.

Aside from direct dialogue with policymakers, Bosch engages in numerous associations and is actively involved in establishing positions on topics. For instance, in Germany, at EU level, and in a number of other countries, Bosch is member of the industry associations of relevance for its business activities. In Germany, for example, we are members of the German Electrical and Electronic Manufacturers' Association (ZVEI), the German Association of the Automotive Industry (VDA), and the German Mechanical Engineering Industry Association (VDMA). At an international level, Bosch is represented on the International Chamber of Commerce, among other organizations. Bosch also informs policymakers, NGOs, and the general public at events on relevant topics. In 2018, for example, as part of the "Real Driving" tour through Stuttgart, we made a contribution to the current debate on the subject of air quality and transparently showed how emissions standards can be adhered to.

## Clear rules in dealing with policymakers

Worldwide, Bosch upholds an extremely strict policy with regard to donations to political parties. The corresponding guidelines stipulate that only the shareholders in combination with the board of management are authorized to make political gratuities. Beyond that, Bosch has a central directive that is binding worldwide and governs gratuities in dealings with third parties. Accordingly, it is only permitted to offer, grant, or accept gratuities in strict compliance with numerous prerequisites. The rules relating to officials and elected representatives are especially restrictive. Here, it must be ensured that any appearance of influence being exercised can be ruled out and that the internal rules of public authorities are adhered to. Should local law in some regions prescribe stricter or more specific requirements, the corresponding rules must be adopted and complied with. Another central directive specifically dealing with political and government relations regulates interaction with political officials, for instance in the run up to elections. Bosch is committed to remaining politically neutral and seeks to engage in dialogue with all relevant political parties, particularly in Germany.

Bosch regularly makes donations to political parties, mainly in Germany, in order to make a contribution toward a functioning political discourse. From a conceptual perspective, donations are distributed based on fairness criteria. The Bosch Group makes donations to the parties CDU, CSU, SPD, FDP, and Bündnis 90/Die Grünen. All of these donations to political parties are disclosed in the parties' statements of accounts. We comply with the relevant requirements governing the amount of such donations and their publication. We do not at present centrally compile information at an international level on donations made to political parties and institutions adjacent to the political system.

## Priority setting

Aside from the priority agenda of political activities set by the board of management, the regions can set additional specific topics and formulate corresponding objectives. Through the feedback it obtains from the regions, Bosch also gets an indication of the extent to which priority topics are of relevance worldwide. When selecting topics, we also consider regulation that might have a major influence on Bosch's current business activities or future topics that concern our company.

On this basis, the following topics were deemed particularly important for Bosch in 2018: air quality and traffic bans in cities, CO<sub>2</sub> reduction and e-mobility, IoT, AI and cybersecurity, and research and innovation policy. A special focus is also placed on trade policy, especially in view of the possibility of Brexit as well as continuing negotiations for various trade agreements. For 2019, we expect automated and connected driving, climate change mitigation policy, and data policy (i.e. data protection and access issues) to gain in importance.

Aligned policy papers define the Bosch Group's position on relevant topics. They form the basis for political lobbying and, depending on their relevance, are released by the board of management. In what we refer to as Bosch Political Viewpoint, we summarize facts and arguments and provide them targeted to external contacts. Meetings and talks on individual topics are only held once the corresponding policy papers are available. In addition, related measures are clustered by topic in order to assess their impact.

## 6.3 Sponsorship – based on clear rules

A central directive also governs the Bosch Group's sponsorship activities. Individual measures have to be logically integrated in an overall communication strategy or a corresponding concept for them to be deemed eligible. The objective of measures also has to be clearly defined and focused on increasing brand recognition and reputation, promoting sales, winning customers, and attracting associates. For any sponsorship measures in excess of 30,000 euros, headquarters must be consulted. In addition, when sponsorship measures exceed a certain amount, measurement criteria have to be defined that allow an assessment of the measure's success. Binding criteria apply to the process of selecting sponsorship initiatives. One such criterion is the principle of customer neutrality: as a rule, the Bosch Group does not engage in sponsorship with individual customers, unless key technology developments are realized together with the customer. Moreover, only sponsorship measures are pursued that directly communicate the strengths of the Bosch brand or other brands of the Bosch Group and in which these are clearly profiled.

A focal point of Bosch sponsorship is on motorsport. Starting in the 2019 season, Bosch will be official partner of Formula E for an initial three years. Bosch's involvement in the racing series marks a continuation of its motor racing tradition: Bosch has been official sponsor of DTM as technology partner for many years.

# Annex

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# GRI index

GRI indicators		Keyword	Reference*
<b>General disclosures</b>			
<b>Organizational profile</b>			
GRI 102-1	Name of the organization		111
GRI 102-2	Activities, brands, products, and services	- Business sectors	8–9
GRI 102-3	Location of headquarters		8
GRI 102-4	Location of operations		8
GRI 102-5	Ownership and legal form	- Shareholders of Robert Bosch GmbH	8
GRI 102-6	Markets served		8–9
GRI 102-7	Scale of the organization	- Number of associates - Subsidiaries and regional companies	8–9
GRI 102-8	Information on employees and other workers	- Forms of employment - Terminations	8; 84
GRI 102-9	Supply chain	- Purchasing volume - Logistics and transportation	44; 62
GRI 102-10	Significant changes to the organization and its supply chain		44
GRI 102-11	Precautionary principle or approach	- Design for Environment - Life cycle assessments	27; 54–56; 63–64
GRI 102-12	External initiatives		13–14; 50; 61
GRI 102-13	Membership of associations		13–14; 27; 101–102
<b>Strategy</b>			
GRI 102-14	Statement from senior decision maker		4
<b>Ethics and integrity</b>			
GRI 102-16	Values, principles, standards, and norms of behavior	- Code of Business Conduct - Code of Conduct for Business Partners - Mission - Product Development Code - Basic principles of social responsibility	10; 17–19; 22; 46; 72; 81; 84–87
<b>Governance</b>			
GRI 102-18	Governance structure	- Board of management and supervisory board	12–13; 16; 85
<b>Stakeholder engagement</b>			
GRI 102-40	List of stakeholder groups		14–15
GRI 102-41	Collective bargaining agreements	- Works council - Trade unions	82–83
GRI 102-42	Identifying and selecting stakeholders		14–15
GRI 102-43	Approach to stakeholder engagement	- Forms of dialogue - Materiality analysis	14–15
GRI 102-44	Key topics and concerns raised		15

GRI indicators		Keyword	Reference*
<b>Reporting practice</b>			
GRI 102-45	Entities included in the consolidated financial statements	- Consolidated group	111
GRI 102-46	Defining report content and topic boundaries	- Materiality analysis	15
GRI 102-47	List of material topics	- Materiality analysis	15
GRI 102-48	Restatement of information		111
GRI 102-49	Changes in reporting		111
GRI 102-50	Reporting period		111
GRI 102-51	Date of most recent report		111
GRI 102-52	Reporting cycle		111
GRI 102-53	Contact point for questions regarding the report		111
GRI 102-54	Claims of reporting in accordance with the GRI standards		111
GRI 102-55	GRI content index		104–110
GRI 102-56	External assurance		111

## Economic performance indicators

### Economic performance

GRI 201/103	Management approach disclosures	- Economic KPIs	9
GRI 201-1	Direct economic value generated and distributed	- Climate change adaptation - Position on climate change	9; AR p. 44 et seq.
GRI 201-2	Financial implications and other risks and opportunities due to climate change		55–56

### Market presence

GRI 202/103	Management approach disclosures	- Remuneration	80
GRI 202-1	Ratios of standard entry level wage by gender compared to local minimum wage	- Social benefits	80

### Anti-corruption

GRI 205/103	Management approach disclosures	- Code of Business Conduct	17
GRI 205-1	Operations assessed for risks related to corruption	- Code of Conduct for Business Partners - Compliance training	17
GRI 205-2	Communication and training about anti-corruption policies and procedures	- Risk management	18–19

### Anti-competitive behavior

GRI 206/103	Management approach disclosures	- Code of Business Conduct	16–17
GRI 206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	- Code of Conduct for Business Partners - Compliance training - Risk management	16; AR p. 58 et seq.

GRI indicators		Keyword	Reference*
<b>Environmental performance indicators</b>			
<b>Materials</b>			
GRI 301/103	Management approach disclosures	- Key materials	54; 62; 65
GRI 301-1	Materials used by weight or volume	- Materials efficiency	62–65
GRI 301-2	Recycled input materials used	- Hazardous substances - Nanotechnology	62; 65
<b>Energy</b>			
GRI 302/103	Management approach disclosures	- Energy management system	54–61
GRI 302-1	Energy consumption within the organization	- Reduction targets	57
GRI 302-3	Energy intensity	- Energy consumption	56
GRI 302-4	Reduction of energy consumption	- Energy efficiency, own generation, green power, offsets	56
GRI 302-5	Reductions in energy requirements of products and services	- Sales-related energy consumption - Energy efficiency of the products	56 33–36; 60
<b>Water and effluents (2018)</b>			
GRI 303-1	Interactions with water as a shared resource	- Wastewater management	66–69
GRI 303-2	Management of water discharge-related impacts	- Water-stressed regions	69
GRI 303-3	Water withdrawal	- Reduction targets	66–69
GRI 303-4	Water discharge	- Use of water - Sales-related water consumption - Wastewater - Products with positive water-related effects	69
<b>Emissions</b>			
GRI 305/103	Management approach disclosures	- Reduction targets	44; 54–61
GRI 305-1	Direct (Scope 1) GHG emissions	- GHG emissions	57
GRI 305-2	Energy indirect (Scope 2) GHG emissions	- Energy efficiency, own generation, green power, offsets - Sales-related GHG emissions - Mobility concept	57
GRI 305-4	GHG emissions intensity	- Logistics and transportation	56
GRI 305-5	Reduction of GHG emissions	- Other air pollutant emissions	56
GRI 305-7	Nitrogen oxides (NO <sub>x</sub> ), sulfur oxides (SO <sub>x</sub> ), and other significant air emissions		60
<b>Effluents and waste</b>			
GRI 306/103	Management approach disclosures	- Waste management	63–66; 69
GRI 306-2	Waste by type and disposal method	- Waste disposal	63–64
GRI 306-4	Transport of hazardous waste	- Sales-related waste - Hazardous waste	64
<b>Environmental compliance</b>			
GRI 307/103	Management approach disclosures	- Compliance management	11–14; 17–19;
GRI 307-1	Noncompliance with environmental laws and regulations	- EHS management - Environmental management	54; 60–61 19

GRI indicators		Keyword	Reference*
<b>Supplier environmental assessment</b>			
GRI 308/103	Management approach disclosures	- Supplier standards	45–49
GRI 308-1	New suppliers that were screened using environmental criteria	- Code of Conduct for Business Partners - Supplier risk management - Selection, assessment, and development of suppliers	47–48
<b>Social performance indicators</b>			
<b>Employment</b>			
GRI 401/103	Management approach disclosures	- Work-life balance	80–83
GRI 401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	- Remuneration and social benefits - Forms of employment - Employee rights	80–83
<b>Labor/management relations</b>			
GRI 402/103	Management approach disclosures	- Leadership and collaboration	72–74; 82–84
GRI 402-1	Minimum notice periods regarding operational changes	- Associate survey - Works council and trade unions - Terminations	82–84
<b>Occupational health and safety (2018)</b>			
GRI 403-1	Occupational health and safety management system	- Occupational health and safety management system	88–89
GRI 403-2	Hazard identification, risk assessment, and incident investigation	- Safety basics - Occupational accidents and ill health - Preventive healthcare and occupational health	90
GRI 403-3	Occupational health services		92–93
GRI 403-4	Worker participation, consultation, and communication on occupational health and safety		88–92
GRI 403-5	Worker training on occupational health and safety		60–61; 90–92
GRI 403-6	Promotion of worker health		92–93
GRI 403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships		29; 38–40; 90
GRI 403-9	Work-related injuries		89
GRI 403-10	Work-related ill health		91
<b>Training and education</b>			
GRI 404/103	Management approach disclosures	- Personal development process	75–79
GRI 404-1	Average hours of training per year per employee	- Education and training - Support program for specialists	75
GRI 404-2	Programs for upgrading employee skills and transition assistance programs		76–77
GRI 404-3	Percentage of employees receiving regular performance and career development reviews		76–77

GRI indicators		Keyword	Reference*
<b>Diversity and equal opportunity</b>			
GRI 405/103	Management approach disclosures	- Equal opportunities	84–87
GRI 405-1	Diversity of governance bodies and employees	- Nondiscrimination	85
GRI 405-2	Ratio of basic salary and remuneration of women to men	- Dimensions of diversity	86
<b>Nondiscrimination</b>			
GRI 406/103	Management approach disclosures	- Equal opportunities	18–19; 84–87
GRI 406-1	Incidents of discrimination and corrective actions taken	- Nondiscrimination - Dimensions of diversity - Complaints mechanisms	18–19
<b>Freedom of association and collective bargaining</b>			
GRI 407/103	Management approach disclosures	- Code of Business Conduct - Works council and trade unions	16–19; 45–50; 82–83
GRI 407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	- Code of Conduct for Business Partners - Selection, assessment, and development of suppliers - Compliance management	16–19; 47–50
<b>Child labor</b>			
GRI 408/103	Management approach disclosures	- Code of Business Conduct - Code of Conduct for Business Partners	16–19; 45–50; 82–83
GRI 408-1	Operations and suppliers at significant risk for incidents of child labor	- Selection, assessment, and development of suppliers - Compliance management	16–19; 47–50
<b>Forced or compulsory labor</b>			
GRI 409/103	Management approach disclosures	- Code of Business Conduct - Code of Conduct for Business Partners	16–19; 45–50; 82–83
GRI 409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	- Selection, assessment, and development of suppliers - Compliance management	16–19; 47–50
<b>Human rights assessment</b>			
GRI 412/103	Management approach disclosures	- Code of Business Conduct	16–19; 46–50
GRI 412-1	Operations that have been subject to human rights reviews or impact assessments	- Code of Conduct for Business Partners - Selection, assessment, and development of suppliers	16–19; 46–50
GRI 412-2	Employee training on human rights policies or procedures	- Compliance management	18–19
<b>Supplier social assessment</b>			
GRI 414/103	Management approach disclosures	- Code of Conduct for Business Partners	45–50
GRI 414-1	New suppliers that were screened using social criteria	- Selection, assessment, and development of suppliers	47–48
<b>Public policy</b>			
GRI 415/103	Management approach disclosures	- Political lobbying	101–103
GRI 415-1	Political contributions	- Contact with policymakers	102

GRI indicators		Keyword	Reference*
<b>Customer health and safety</b>			
GRI 416/103	Management approach disclosures	- Product quality - Product safety	28–29; 31–32; 38–40
GRI 416-1	Assessment of the health and safety impacts of product and service categories	- Life cycle assessments	28; 31–32; 38–41
<b>Marketing and labeling</b>			
GRI 417/103	Management approach disclosures	- Responsible advertising	23
GRI 417-1	Requirements for product and service information and labeling	- Product information	23
<b>Customer privacy</b>			
GRI 418/103	Management approach disclosures	- IT security and data protection	29–30
GRI 418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	- Compliance management	19
<b>Socioeconomic compliance</b>			
GRI 419/103	Management approach disclosures	- Code of Business Conduct	16–19
GRI 419-1	Noncompliance with laws and regulations in the social and economic area	- Code of Conduct for Business Partners - Compliance management	16; 19

\* The references indicate the pages on which the respective GRI content is mentioned within this report. References marked "AR" refer to our annual report 2018.

## About this report

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The Bosch Group's sustainability report has been issued annually since 2011. The present report describes the progress made in terms of sustainable business practices in the 2018 fiscal year (from January 1, 2018, to December 31, 2018).

As in previous years, the report is aligned with the internationally recognized guidance issued by the Global Reporting Initiative (GRI). This year for the first time, this report has been prepared to the best of knowledge in accordance with the GRI Standards: core option. We have not sought external assurance for the content.

Unless indicated otherwise, all disclosures in this report relate to the entire consolidated group. Besides Robert Bosch GmbH, the consolidated group comprises a further 462 (previous year: 442) fully consolidated companies. For details of the consolidated group and related developments in the fiscal year, please refer to the annual report (see annual report 2018, page 85 et seq.). Environmental and occupational health and safety performance indicators cover 414 (previous year: 399) reportable sites.

The information was collected electronically, and the data were mostly recorded using sector-specific software. In certain cases, it is not yet possible to present three-year trends, but we aim to do so in the future. In individual cases, facts related to previous periods were corrected. If data are added up, differences may occur due to rounding.

All forward-looking statements in this report are based on assumptions that were valid when this report was authorized for issue. Actual results, developments, and the company's performance may diverge from our forecasts, estimates, and announcements as a result of unknown risks, uncertainties, and other factors.

The sustainability report 2018 is available online in PDF format in German and English. Additional information can be found at [sustainability.bosch.com](https://sustainability.bosch.com) and in our [annual report 2018](#). The next sustainability report is scheduled for publication in the spring of 2020.

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