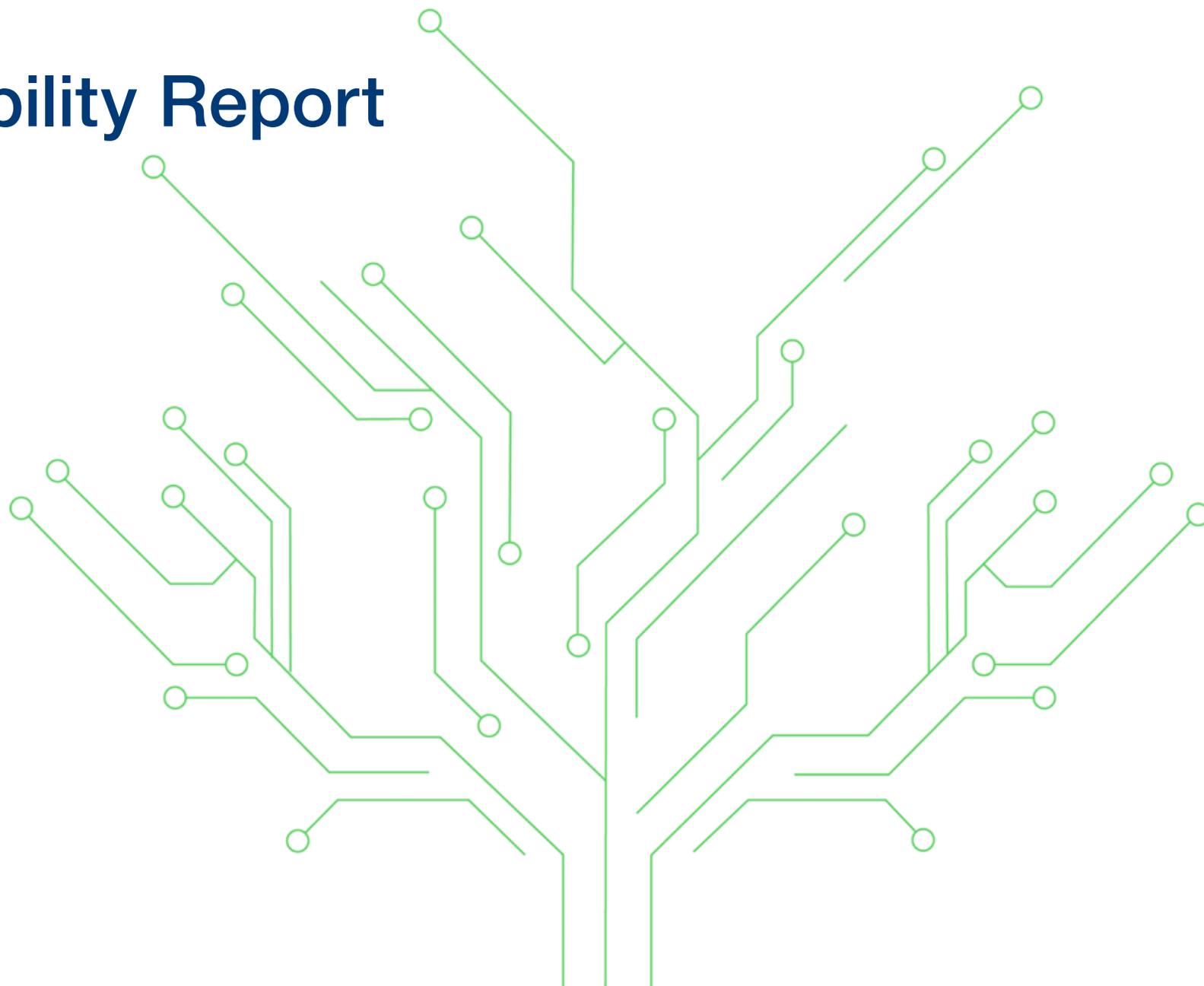


Sustainability Report 2018



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_Foreword



Dear Readers,

Companies that do business sustainably keep the present and the future equally in view, and attach greater value to long-term success than to short-term profits. Voith acts according to this fundamental principle. As one of Europe's longest-standing family companies we have proved this time and again in over 150 years of company history.

We have been successful as a company for so many years precisely because we achieve our successes in an environmentally and socially sustainable way. In today's age of digital transformation, what might sound almost old-fashioned is in fact the key to success – especially when it concerns the multifaceted challenges that we face as a technology company in the digital age.

Doing business sustainably means keeping risks firmly in view while at the same time identifying and harnessing the many and varied opportunities that the future offers. On the strategic level Voith has acted coherently in this regard for many years. We structure our company consistently for the future, also through applying a systematic sustainability management approach that we have pursued for many years now.

We set ourselves clear targets in order to reduce our energy and water consumption by sales revenue and to avoid waste wherever possible. We were not able to reach all of these targets, although we have made good overall progress in recent years. However, at the end of the target-achievement period it became clear we had set the bar too high as exchange-rate effects, among other external factors, impacted our revenue development. Nevertheless, with our activities over the last few years we achieved annual savings potentials of over €12 million euros for Voith. We have thus made Voith significantly more competitive and have moved closer to our goal of making Voith the industry benchmark for sustainability.

Today we already number amongst the leading companies in terms of sustainability. The rating we received last year from oekom research AG confirmed this, awarding Voith Prime status. Furthermore, we have just heard that we have been awarded Gold status in the rankings compiled by the sustainability assessment platform EcoVadis.

These awards confirm the positive impact of our work, and additionally demonstrate that doing business sustainably can quite literally pay off. Awards and rankings such as these are playing an increasingly important role for banks when it comes to setting conditions for corporate loans and credit facilities. For a company like Voith that manufactures major plant assets requiring considerable financing, a sustainable approach delivers tangible economic advantages.

The environment, our employees and society as a whole all benefit from Voith's sustainability effort – and naturally so does our company itself. I can assure you that we will continue to work in future to raise our competitiveness this way. This is fully aligned with the philosophy of our Company Founder Friedrich Voith, and is advantageous for the environment and society, and for the future of Voith. We will continue to travel this path and I will be delighted if you continue to accompany us as partners in sustainability!

Sincerely yours,

A handwritten signature in blue ink that reads "Toralf Haag". The signature is fluid and cursive, with the first name "Toralf" and the last name "Haag" clearly distinguishable.

Dr. Toralf Haag

President and CEO

1_Strategy and Integrity

1.1 Our Profile

The Voith Group is a global technology group. With our broad portfolio of production plants, products, industrial services, and digital applications, we set standards in five markets: Energy, Oil & Gas, Paper, Raw Materials, and Transport & Automotive. As one of Europe's major family companies, the way we conduct business has always been geared towards sustainable, profitable growth, with clearly defined values serving as our compass. In view of this, our shareholders, the Supervisory Board, and the Voith Corporate Board of Management work together under a joint commitment to develop the company in an economically, environmentally, and socially sustainable way.

Our economic strength is based on the following four strategic principles which we have carefully established over the decades:

- A diversified product portfolio based on megatrends
- An international footprint and strong local roots
- Our innovative capabilities, and
- Our financial independence as a family-owned company.

Overview of The Group

Voith has a global presence, with a comprehensive network of production, service, and sales units in over 60 countries on every continent.

<http://voith.com/corp-en/about-us/markets-locations.html>

Voith GmbH & Co. KGaA, headquartered in Heidenheim an der Brenz, Germany, is the management holding company and parent company of the Group. The Group's core functions are also concentrated within it. The Corporate Board of Management of Voith Management GmbH is responsible for the strategic and operational management of the Voith Group. Voith Management GmbH, which is 100 percent family-owned just like Voith GmbH & Co. KGaA, manages the businesses of Voith GmbH & Co. KGaA

as the personally liable shareholder. The General Managers of Voith Management GmbH are appointed by the Shareholders' Committee of Voith Management GmbH. The supervisory body of Voith GmbH & Co. KGaA is the Supervisory Board.

We are currently working to simplify the Voith Group's legal structures. In a first step, the material operating companies in Germany from the Group Divisions Paper, Turbo, and Digital Ventures were merged into J.M. Voith SE & Co (formerly J.M. Voith GmbH & Co. Beteiligungen KG) – a process we had completed by October 1, 2018. The Group Division Voith Hydro is not part of this legal structure as it is a joint venture with Siemens.

 [Annual Report 2018, p. 62 et seq.](#)

Simplifying our legal structures cuts bureaucracy and enables us to act faster and with greater impact. Among other things, this relates to the number of financial statements to be prepared, agreements between individual Voith corporate entities as well as fees, contributions, and registrations. In a second step, we plan to further reduce the number of operating entities globally.

The changes to our legal structure do not have any effect on the organizational structure within the Group. The operating business remains concentrated in four Group Divisions:

- The Group Division Voith Hydro is a leading full-line supplier for equipping large and small hydropower plants, and providing customized, long-term solutions and services covering the entire plant lifecycle and all major components.
- The Group Division Voith Paper is a leading full-line supplier in the paper industry, and offers its customers technologies, products, and services for all sections of the production process.
- The Group Division Voith Turbo is a specialist in intelligent drive solutions, systems, and leading-edge services. It works with customers from highly diverse industries

such as oil & gas, energy, mining and mechanical engineering, ship technology, and rail and commercial vehicles.

- The Group Division Voith Digital Ventures (known until September 30, 2018 as Voith Digital Solutions) brings Voith's long-standing automation and IT expertise together with extensive hydropower, paper machine, and drive technology know-how. Founded in 2016, this Group Division plays a central role in the development of new digital products and applications for new markets. Furthermore, it is responsible for advancing the development of new and existing digital venture activities.

 [Annual Report 2018](#), p. 67 et seq., [Group Strategy](#)

Business Development 2017/18

Voith performed well in the 2017/18 fiscal year. While we did not meet all our targets in an often challenging environment, our operating business developed solidly once again. Net income – adjusted for the effect in the previous year from the sale of shares in KUKA Aktiengesellschaft – increased significantly. In addition, we further strengthened our equity ratio and advanced our digital agenda.

On a currency adjusted basis, sales (€4,209 million, previous year: €4,224 million; –0.4%) and orders received (€4,285 million, previous year: €4,367 million; –1.9%) fell slightly. Orders on hand remained at a high level (€5,172 million, previous year: €5,193 million). The broad-based positioning of the Voith Group has once again paid off. While the Group Division Voith Hydro suffered unexpected deterioration in a challenging environment, the Group Division Voith Paper stood out positively with very good figures, particularly in orders on hand. The Group Division Voith Turbo also performed well. The fledgling Group Division Voith Digital Ventures showed the expected strong percentage growth in sales.

We were unable to reach the previous year's level in the Group's operating profit (€211 million; –17%), primarily due to the Group Division Voith Hydro performing below expectations. Profits were also impacted by currency effects as well as by a negative non-recurring effect in Voith Turbo. As announced, the profitable core business was able to shoulder the build-up costs for the fledgling Group Division Voith Digital Ventures.

 [Annual Report 2018](#) p. 72 et seq., [Business Development](#)

Investments

Voith continues to invest consistently in the future, both in the fledgling Group Division Voith Digital Ventures as well as in the expansion of our core business. In the 2017/18 fiscal year we invested €94 million in property, plant and equipment, and intangible assets (previous year: €96 million; –2%). As a percentage of the Group's sales, our investment ratio amounts to 2.2% in the reporting year (previous year: 2.3%).

Management System: EBIT to Be the Central Performance Indicator

The key financial performance indicators for the Voith Group were previously the development of sales and orders received as well as profit from operations and return on capital employed (ROCE). In future, EBIT will replace profit from operations as our central performance indicator for operating results and we will consistently base our forecasts on the new EBIT performance indicator.

 [Annual Report 2018](#) p. 64 et seq., [Management System](#)

 [Fact base](#) [Economic Indicators](#)

 [Fact base](#) [International Focus](#)

Central Principles Defined to Achieve Profitable Growth

In the reporting year the Corporate Board of Management worked together with top executive management to define central principles for the further development of the

company. The objective is to enter a phase of sustained profitable growth on the basis of the key strategic decisions taken in previous years.

Five core growth drivers were identified in the process:

1. Simple and fast-acting structures as a basis
2. Reinforcing the excellence initiatives
3. Innovations and organic growth
4. Strong market orientation of our digitalization activities
5. Targeted M&A activities.

Guided by these central principles, further action will be taken in the 2018/19 fiscal year to specify the details of the Group strategy.

Expansion in Strategic Partnerships

While there were no fundamental changes to our Group Divisions' portfolios in the reporting year, we also created key prerequisites in this area to pave the way for further positive business development.

These include the Group Division Voith Turbo agreeing to form a joint venture with the Chinese company CRRC Corporation Limited, the world's largest manufacturer of rail vehicles. This joint venture will decisively strengthen our business in the important Chinese rail market, although the joint venture remains subject to approval by the supervisory bodies of both partners.

In addition, Voith has entered into a strategic partnership with the robotics company Franka Emika. As part of this, Voith has taken a 10% financial stake in this company. The recently founded joint venture Voith Robotics – A Voith and Franka Emika Company is to be expanded to become a global systems provider for robotic automation and an expert in the process integration of robots.

Excellence Initiatives Reinforced

The pursuit of excellence remains one of our core principles, which is why we are continuing, expanding, and reinforcing the initiatives of our Group-wide excellence program. In the reporting year we added a sixth module – Digitalization – to our existing five modules: Operations Excellence (OPEX), Administration Excellence (ADEX), Product Improvement & Engineering Excellence (PEEX), Sales Excellence (SALEX), and Quality@Voith. Since the end of the 2017/18 fiscal year the six modules have each been managed directly by a Member of the Corporate Board of Management, which reinforces their importance. In addition, cooperation within the Group is being intensified across Group Division boundaries, and synergies within interdisciplinary topics such as production, quality, and distribution are being put to better use. The primary objective of our activities is to achieve a sustainable rise in quality and productivity.

Further Developing Our Digital Agenda

Voith intends to play a major role in shaping the digitalization of industry – and we believe we have an excellent starting position to achieve this. Within the framework of our digital agenda, we are pursuing three strategic directions: Firstly, refining the existing product portfolio to include digital capabilities that offer customers additional functions and added value; secondly, developing new digital solutions for our traditional core markets; and thirdly, developing new applications for markets not yet covered by Voith.

We have reinforced Voith's digital competence substantially over the past two years and reached an important milestone by establishing the organizational structures of the Group Division Voith Digital Ventures (known until September 30, 2018 as Voith Digital Solutions). In 2018 we further developed and improved collaboration and the distribution of responsibilities between the Group Division Voith Digital Ventures and the three Group Divisions that make up the core business.

Starting in the 2018/19 fiscal year, the three Group Divisions – Voith Hydro, Voith Paper, and Voith Turbo – are responsible for marketing of the digital product portfolio

for our traditional markets. This means they are being given significantly more responsibility for the further expansion of the digital business in their markets. The sales generated will continue to be attributed in full to the respective Group Divisions of the core business. This will enable us to align our digital offerings even more closely to customer requirements and market them in a more targeted way.

Voith Digital Ventures will also steer the development and management of new digital venture activities and act as an incubator to drive forward new digital business models for the entire Group. This extends to responsibility for investments in businesses that originate from incubation projects (e.g. merQbiz), or come into being through collaborations with other companies (e.g. Voith Robotics), or are purchased (e.g. Ray Sono). For organizational purposes, these participations were brought together under the umbrella of this Group Division as of October 1, 2018.

1.2 Strategy and Organization

Sustainability Is a Core Objective

As a family-owned company we are committed to environmentally friendly, fair, and long-term business practices. Furthermore, we intend to create measurable added value for the sustainable development of our company, society, and the environment.

The goal we set ourselves regarding the way we conduct business is also correspondingly high: We want to make Voith the benchmark in sustainability issues globally and in all markets and sectors in which we are active. With clearly structured processes and an effective sustainability organization, we see ourselves as well positioned to meet this objective.

Indeed, our efforts in this area are also viewed positively by external parties. As an example, we achieved Prime status from ISS-oekom, which enables Voith to obtain more favorable terms on the capital market.

Efficient Sustainability Organization

At Voith, sustainability is seen as a cross-functional responsibility shared by our Corporate Board of Management, Group Divisions, and Corporate Departments.

The central function Corporate Sustainability & HSE sets the framework for our strategic focus and the way we organize sustainability. Furthermore it advises the Group companies and Corporate Departments. It is responsible for the strategic development of the topic and reports directly to the President and CEO. It takes decisions on the necessary tools and methods, such as our sustainability database and associated reporting tools, used within our Group to measure and steer our sustainability activities. Furthermore, this central function is responsible directly for the global specialist organization Health, Safety, and Environment (HSE) as well as the Sustainability Office (see also the sections 2_Environment and 3_Employees).

To further develop our Sustainability Strategy and derive corresponding objectives, the Sustainability Office is currently working on determining the position of Voith in the area of sustainability. The results of the ongoing stakeholder dialog activities, external ratings of the company's sustainability performance, and trends in the competitive environment are incorporated into this assessment.

The Corporate Sustainability Council (CSC) – our central steering committee for all sustainability activities – reports directly to our Corporate Board of Management. The Council draws up decision-making principles, and as a steering and monitoring body it also supervises the operational implementation of strategies, objectives, and measures in the Group Divisions.

The CSC plans to refocus itself to become even more efficient in fulfilling its responsibilities. To achieve this, it has developed an organizational strategy; however, until the Corporate Board of Management approves this initiative, sustainability activities will continue on departmental and operational levels.

Group-wide Approach to Sustainability

We have embedded the topic of sustainability in our Group through five fields of action. Practicing sustainable corporate governance and our pursuit of profitable growth are just as much a part of these fields of action as our responsibility towards our products, the environment, and our employees. We routinely bring transparency to these topics, publish our objectives and activities, and document our progress.

We take a systematic approach to implementing our Sustainability Strategy. As an example of this, our quarterly report contains a detailed list of measures outlining the tasks, responsibilities, and deadlines for each operational level – with top priority given to informing and raising the awareness of our employees.

Targeted Reporting Increases Transparency

Since 2009 we have kept our stakeholders updated about our progress through our annual Sustainability Report and via additional online information. In 2016 we devised a complementary reporting resource geared even more closely to our audiences' requirements and which we have used consistently ever since.

In our traditional Sustainability Report, we focus on the fields of action that matter most to our company and stakeholders. We have supplemented this with an extensive online fact base that includes detailed information intended mainly for sustainability experts and specialists. To make even greater use of the possibilities offered by online communication, we will continue to develop the reporting resource during this current fiscal year. In addition to the above, we have explained our sustainability activities for many years now in our annual reports.

Comprehensive Stakeholder Dialog

Maintaining ongoing dialog with stakeholders is vital for a global group such as Voith and we have done this for many years.

Our key dialog partners include shareholders, supervisory committees, employees, the Works Council, our customers, suppliers and investors, as well as neighboring communities, trade associations, academia, government agencies, and policy makers. We also focus on NGOs, such as the World Wide Fund for Nature, as well as the broader interested public.

Fact base Memberships and Association

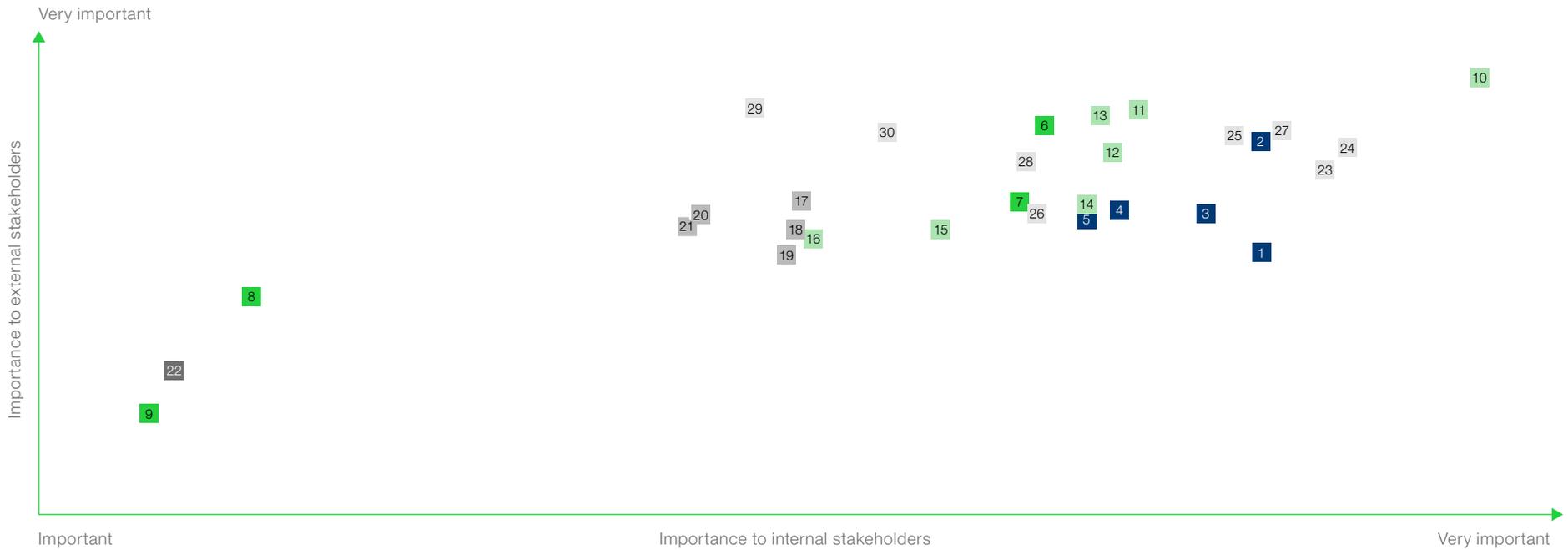
A regular stakeholder survey provides the basis for analyzing feedback from various stakeholders and then incorporating this into our company's decisions. In the reporting year we began to revise the survey model, as we intend to better reflect our stakeholders' varying expectations and also consider the often highly differing requirements of the regions. We also plan to increase the frequency of surveys to allow us to respond even more promptly to our stakeholders' proposals.

Materiality Analysis Underpins Our Sustainability Activities

We use a detailed materiality matrix to prioritize our sustainability activities and define the crucial aspects for our company. At present, we still use the results of the 2016 stakeholder survey as the basis of our analyses.

In the reporting year we once again held a stakeholder survey, in which we conducted detailed interviews. We will incorporate the results into our existing materiality analysis and they will be included in our sustainability activities from the 2018/19 fiscal year onwards. Details on the methodology and results will then be included in the upcoming Sustainability Report.

Materiality Analysis



Management

- 1 Anti-corruption
- 2 Data Protection
- 3 Economic Stability
- 4 Good Governance
- 5 Human Rights

Supply Chain

- 6 Supply Chain Anti-corruption
- 7 Supplier Relations
- 8 Environmental Standards
- 9 Social Standards

Employees

- 10 Occupational Safety
- 11 Education
- 12 Health Benefits
- 13 Training
- 14 Work-life Balance
- 15 Remuneration
- 16 Diversity

Environment

- 17 Material Efficiency
- 18 Emissions Reduction
- 19 Energy Efficiency
- 20 Water Efficiency
- 21 Renewable Energies

Society

- 22 Social Engagement

Products

- 23 Customer Collaboration
- 24 Innovation Management
- 25 Reliability
- 26 Value for Money
- 27 Energy-efficient Products
- 28 Product Safety
- 29 Resource-efficient Products
- 30 Water-efficient Products

1.3 Values and Compliance

How We See Ourselves

Voith unites the tradition of a family-owned company with the needs and culture of a global group. Clear values define the way we conduct business: We are respectful and reliable, open, and ambitious. Our values, and the guidelines we derive from them, ensure that Voith acts according to a unified set of business principles and a consistent philosophy worldwide. We have summarized this mission statement in our claim: Inspiring Technology for Generations.

Code of Conduct Binding on All Employees

Voith's main business principles have remained unchanged for almost 100 years. Back in 1927 Hanns Voith stipulated that: "In the business world one must be ethical, decent, and honest. If a contracting party or competitor behaves unfairly, this does not give us the right to deviate from this principle." These principles still govern the way we conduct business today. Our Code of Conduct defines the way we act towards customers and business partners, as well as how employees behave towards one another within the company. It can be viewed online and provides information on points of contact and the Voith Compliance Committee.

 <http://voith.com/corp-en/about-us/compliance.html>

We require every single one of our employees to comply with prevailing legislation and our company's internal regulations across our Group and all hierarchical levels. On signing the employment contract this obligation is formally established in writing, and any breaches are met with disciplinary measures. We constantly update our rules and procedures, and adapt them to meet current requirements. In addition, our values play a central role in the Voith Academy training programs, such as our Start-up Leadership Program for prospective executives.

The Voith Code of Conduct sets out clear standards that are aligned with established external charters and principles. The key principles include:

- Observance of the rules of fair competition.
- No anti-competitive agreements.
- No corruption or bribery: No offering and granting, or demanding and accepting of unfair advantages.
- Transparency on donations and sponsorship.
- Safeguarding our own trade secrets and patents, and respecting those of third parties.
- No undue preferential treatment of suppliers and service providers.
- Respect for human rights, fair working conditions, and rejection of child and forced labor.
- Tolerance and equal opportunity.

 **Fact base** [External Charters and Principles](#)

Clear Responsibilities: The Voith Compliance Organization

The Voith Compliance Organization establishes, develops, and coordinates our Compliance Program, revises compliance regulations, and coordinates training. This organization meets monthly and comprises the Head of the Group Legal Affairs Department (Chairman) as well as the respective Heads of the Group Human Resources Management and the Group Audit Departments. Its Chairman reports directly to the Corporate Board of Management of Voith GmbH & Co. KGaA. The CFOs of the Group Divisions and the individual Group companies serve as the Compliance Officers in their units. Within their area of responsibility, our Compliance Officers are responsible for implementing our Code of Conduct and also serve as Group-wide points of contact. This is also in keeping with our other Risk Management organization.

Keeping Knowledge Up to Date Is Mandatory

All of our employees are required to keep themselves regularly updated on compliance issues and on our Code of Conduct via our e-learning programs. Through their

successful participation, employees also explicitly document that they are fully aware of our Code of Conduct and have understood the appropriate regulations. Around 98% of our employees with a computer workstation completed our programs on Anti-Corruption and Antitrust Law, as well as on Leadership and Employees. A higher degree cannot be achieved owing to customary headcount fluctuation in a company, so we assume the programs cover all employees. Employees who do not have a computer workstation are trained by their line manager to ensure their knowledge is up to date.

In the reporting year we continued to hold face-to-face courses, which are assigned automatically to employees. 949 employees, comprising mainly managers and employees from Sales and Purchasing, took part in 34 events. Separate, highly detailed training courses were offered to Compliance Officers from our Group Divisions.

 **Fact base** Compliance Training

 **Fact base** External Security Personnel

Group-wide Information and Complaints Reporting System

In principle, any stakeholder, including our own employees, can report complaints to Voith or notify us about abuses or breaches of the Voith Code of Conduct. They are free to report these instances to a variety of points of contact: the direct line manager, competent HR representative, the Group company's or Division's Compliance Officer, or any member of the Compliance Committee. Details on how to get in touch with these points of contact are provided to employees in an appropriate way throughout the Group, including via the Compliance intranet page.

An employee who reports a suspected breach of the Code of Conduct on the basis of firm evidence will not suffer any detriment. If necessary, Voith will take measures in each individual case to protect the employee who reported the suspected breach against such detriment. To the extent possible and permissible under law, Voith will maintain confidentiality regarding the identity of employees reporting a breach of the

Code of Conduct or a suspected breach of its guidelines. The same applies to the identity of employees involved in the investigation of breaches of the Code of Conduct or a suspected breach thereof.

We also follow up on complaints that have been submitted anonymously via our Group-wide whistleblower system, with the number and type of breaches documented centrally.

This whistleblower system can also be accessed by external parties at any time via our company website, so it is open to all business partners and suppliers too. Any type of complaint on any subject can be reported. And to ensure the strictest confidentiality is maintained, as a matter of principle information about the number, type, and nature of the complaints is not disclosed to external parties.

Reports relating to environmental protection can also be submitted to the local Environmental Officer. The exact complaints process and escalation paths are set out in our HSE Group Directive and its annex Environmental Incidents. Complaints are communicated based on their severity along disciplinary and functional reporting lines. We are pleased to report that Voith was not notified of any such instances in the reporting period.

 **Fact base** Breaches of Compliance Regulations

 **Fact base** Escalation Paths

Compliance Reviews Guarantee Effectiveness

The Internal Audit Department examines observance of all compliance regulations in a routine risk assessment involving around 35 operating units annually. We ensure that our business partners comply with our regulations by means of a Supplier Self-Assessment (SSA). Compliance also forms part of our General Purchasing Conditions (GPCs).

As in virtually all companies, in the reporting year we also had isolated cases where compliance regulations had been breached at Voith. Appropriate action was taken in all instances.

Continuous Optimization of Compliance Organization

We work tirelessly to optimize our Compliance organization and adapt it to meet new standards and requirements. As an example of this, in January 2017 we implemented the principles of the UK Modern Slavery Act declaration in our company. In light of this, among other things we also published our Management Board Declaration on Human Trafficking, Forced Labor and Child Labor.

 <http://voith.com/corp-en/about-us/compliance.html?undefined%5B%5D=4>

Furthermore, we reviewed our compliance system against the requirements of the German federal government's National Action Plan on Business and Human Rights. We are pleased to report that no modifications were necessary.

Never Letting Up Against Corruption

For Voith, taking rigorous action against corruption goes without saying. This is why all Compliance Officers are required to keep a Risk Control Matrix, which also includes potential corruption risks for their specific Group Division, and to name and assess the identified risks. This structured process covers all Voith locations worldwide. The results of all Group Divisions are aggregated and, among other things, form the basis of internal compliance audits.

Our risk assessment is based on many factors including the Corruption Perception Index (CPI) published annually by Transparency International. The index ranks virtually all countries by their perceived levels of corruption on a scale of 1 to 100. As our company maintains business relationships the world over, special precautionary measures apply to high-risk countries, whereby the risk manager responsible decides on the measures.

Human Rights

As a global group, Voith observes human rights as a matter of course. Our Code of Conduct as well as relevant Group directives set out the framework for this. Through our General Purchasing Conditions we also ensure that our suppliers and business partners are involved in upholding human rights. As part of this, we also incorporate the assessments of our internal management systems, such as the Risk Country List, into our action-planning activities.

Confidential Treatment of Information

Information security and the protection of confidential data take top priority at Voith. Every employee is expected to show appropriate awareness of security and a sense of responsibility. Our information technology and security management system is certified according to the international standard ISO/IEC 27001. Appropriate handling of company, business-partner, and personal data is also governed by our Group Directive on Information Security and Data Protection. We are pleased to announce that there were no notifiable breaches of data security in the reporting period.

Taxation Compliance

It goes without saying that Voith complies with all statutory taxation requirements and fulfills its tax obligations. Our Group's taxation strategy follows our company's values and we are committed to dealing with tax authorities in a fair and transparent manner.

Transfer prices within the company are always based on the "arm's length" principle and are always lawful. In addition, Voith avoids implementing artificial structures purely for tax purposes.

To further improve compliance in the area of taxation, Voith is currently further developing its internal taxation auditing system to become a tax compliance management system that is almost completely integrated within the Group's compliance management system.

1.4 Responsibility for Society

We see ourselves as a company that plays an active social role – something that has been part of our DNA ever since we were founded. In Heidenheim, where we have our headquarters, as a good neighbor we are actively involved in various initiatives including as sponsor of a training program run by the Sonderberufsfachschule Hanns Voith (Special Vocational College Hanns Voith). We focus on the areas of sports, education, social affairs, and culture, which we support either through direct financial contributions or in-kind benefits.

Group Directive Sets out the Framework

Ever since 2008 our Group directive on Donations and Sponsorship has set out the type and scope of our commitment. It also outlines the financial frameworks of our donations. The budget is based on the previous year's Earnings Before Tax (EBT), limited to a maximum of 1 % of EBT or at least two-thirds of the volume of funding in the year before last. This ensures that we can provide consistent support, irrespective of any volatility in our company's development. We record our donation and sponsorship activities once every six months, covering all our global activities and across all business units using our internal management systems. The Head of the Legal Affairs Department updates the Corporate Board of Management once a year on how funds have been allocated across the entire Voith Group.

We use clear criteria to select projects. To qualify for assistance, above all we must be convinced of the recipient's integrity and that their project is a worthy one. We also take into consideration the regional relevance and the appropriateness to our business segments, values, and corporate culture. Furthermore, we consider the frequency and volume of previous contributions, ensuring these are distributed as widely as possible. Irrespective of this, in humanitarian emergencies where urgent action is demanded we provide help quickly and directly.

By contrast, our sponsorship activities always focus on the appropriateness of the contribution and the benefit we receive in return. This is because we follow additional, mainly communicative goals besides providing sponsorship. Irrespective of this, it is

also highly important to us that our sponsorship partnerships are engaged in worthy and reputable causes.

Social Engagement Activities Follow Set Guidelines

Our social engagement activities are managed by Voith GmbH & Co. KGaA, headquartered in Heidenheim. In terms of organization, within our company we have also taken into account our activities' differing objectives. The Corporate Office coordinates our donation activities, while Corporate Communications controls our sponsorship activities. Individual Group Divisions and local Group companies can also launch and run their own assistance and sponsorship projects, provided they comply with our Group Directive.

Many of our employees volunteer their spare time to assist people in need. We support them by granting temporary paid release from work and providing materials or equipment that is no longer required.

We also support numerous initiatives and projects in coordination with the Hanns Voith Foundation. Through its activities, this independent foundation regularly engages in numerous local and cross-regional initiatives, and also provides financial support in the form of annual donations to various projects.

Our Engagement Activities in the Reporting Period

In the reporting year we invested around €1.64 million in social engagement activities (previous year: €2.96 million). We provided €0.71 million in the form of donations, while €0.93 million was used for sponsorship measures. We spent the greatest share on sports (52%), followed by education (28%), social projects (12%), and cultural projects (7%).

In the reporting year no political parties or political organizations received any financial contributions from Voith.

Involvement in Sports with a Local Focus

Voith sponsors professional as well as amateur sports and supports sports clubs and events around the world, albeit with a focus on Heidenheim. In the reporting year we invested €0.86 million in this area. Voith is a long-standing supporter of the professional soccer club 1. FC Heidenheim 1864 e.V., based in the same city as our headquarters. This involvement includes sponsoring the naming rights to the Voith Arena and supporting the club as the principal sponsor of the soccer shirts and perimeter boards. Through this, we intend to increase the attractiveness of the location for our employees and make it a more appealing place for them to spend their free time.

In addition, we sponsor the fencing center of the Heidenheimer Sportbund 1846 e.V. (HSB – Heidenheim Sports Association) as well as the local HSB baseball team and the HSB Athletics Department, whose training site bears the name Voith-Sportzentrum (Voith Sports Center). We believe supporting local initiatives is an investment in the attractiveness of the region, and one that benefits both the regional citizens and our employees. Furthermore, in the 2017/18 fiscal year we provided financial assistance to the cycling club sunpor St. Pölten and the Crailsheim Merlins basketball team.

Many Levels of Educational Involvement

We support kindergartens, schools, and universities around the world, as we believe firmly that a good education and training provide the basis for the best development opportunities in life. In this sense we are continuing the tradition of Hanns Voith. Starting way back in 1946, Voith has dedicated itself in the German state of Baden-Württemberg to preparing disadvantaged young people for vocational training schemes and the world of work. What initially started as a vocational preparation and training course has since become an institution, and has been recognized since 2004 as the Sonderberufsfachschule Hanns Voith (Special Vocational College Hanns Voith).

15 years have passed since we began supporting the Germany-wide business@school education initiative of The Boston Consulting Group. It gives senior high-school students a closer look at business, including hands-on experience, over the course of a full academic year.

At university level we support young talent through the German Deutschlandstipendien scholarship initiative. Furthermore, we provide endowments for professorships at the German universities of Stuttgart, Ulm, and Aalen. By doing so, we aim to contribute – without influencing the research content or teaching practices – to training new academic talent and promoting research in scientific areas relevant to Voith.

Promoting Culture at our Heidenheim Location

We want to give as many people as possible access to culture. As an example, in the reporting period we provided financial support to various institutions in Heidenheim, including a €94,000 donation to the Opera Festival.

Integration Assistance

For many years, Voith has actively pursued its global social engagement, aimed at improving people's living conditions and promoting intercultural exchange. For instance, Voith is one of the initiators of the German industry integration initiative Wir Zusammen (We Together) that helps refugees integrate in Germany. We are involved in providing an introductory vocational training course for young refugees to facilitate their start into professional life or vocational training.

2_Environment

2.1 Environmental Management Approach

Regarding the environment, as an industrial company Voith is required to comply with numerous national, regional, and industry-specific laws, regulations, and guidelines. In addition, we see ourselves as responsible towards our employees and neighbors for avoiding environmental risks and using resources responsibly. As a manufacturer, our main focus therefore lies on energy and resource management. This is why we are committed to continually reducing our energy consumption and related greenhouse gas emissions, making efficient and safe use of direct materials and raw materials, and minimizing waste. We also aim to continually reduce our water withdrawal and wastewater volumes.

We have taken a consistent approach to organizing our environmental protection activities – combined with our occupational health and safety activities – in a uniform business partner structure aligned with the Group's Shared Services system. The Center of Competence HSE provides methods, tools, and standards from a single source for our Group Divisions. Furthermore, each Group Division is assigned one employee from the Center of Competence HSE as a business partner. As the central point of contact, this business partner advises the Management Board of the Group Division on all HSE matters.

Our operating units are responsible for implementing health, safety, and environment activities locally. Seasoned experts accompany the process via the Center of Competence HSE, helping to continuously improve HSE, leverage synergy potentials, and in doing so optimize service costs. Furthermore, as skilled partners they can be called upon to identify risks and systematically reduce them through a continual improvement process. Our hse+ software solution provides support that all colleagues can access anywhere in the world.

The HSE Steering Team comprises the Heads of the regional HSE service organizations and the members of the Center of Competence HSE. It meets biannually and

is chaired by the Head of the central function Corporate Sustainability & HSE. The HSE Steering Team also conducts regional HSE audits.

Our HSE organization oversees and coordinates activities for over 97% of Voith employees worldwide. The remaining 3% of the Voith workforce is covered by qualified external service providers coordinated and integrated by the respective regional HSE service organization. This mainly concerns countries where we only have a few local employees.

Our activities can be divided into two subject areas, irrespective of how they are embedded organizationally:

- Operational Environmental Protection – Eco Standards provides strategic and operational support to our divisions and locations in complying with and implementing environmental regulations as well as internal environmental protection policies. In the reporting year we optimized our internal management process by systematically recording all requirements and obligations arising from approvals. All relevant data is now available in our central hse+ database, enabling us to work faster and more effectively.
- Resource Protection – Ecological Business Management (EBM) improves energy and resource efficiency at our locations. We are making progress in this area too: In the reporting year we optimized the energy consumption of a large production site right from the start-up phase, among other achievements. We report on examples of our Group Divisions' progress in terms of resource conservation in the Products section from page 41 of this report.

2.1.1 Operational Environmental Protection

The overarching aim of Voith's operational environmental protection is to minimize all environmental impacts of our operating activities. We attach particular importance to strategic and operational control, with the objective of ensuring environmental regulations are implemented and upheld. This includes the analysis and internal communication of potential environmental risks, categorized into risk classes according

to their probability and impact. This also allows us to assess the increasing weather-related risks posed by climate change.

Our HSE Steering Team coordinates and standardizes our operational environmental protection activities. Through this, we ensure that our environmental protection processes and procedures are organized in a way that is as unified and standardized as possible. In addition, we work tirelessly to continually reduce the amount and number of materials used at Voith. To help us achieve this, hazardous materials management supports our efforts to replace particularly harmful materials with harmless substitutes. In the reporting year we began to categorize hazardous materials and consolidate them into application groups both to prevent an increase in the number of hazardous materials we use and to support the phasing out of redundant materials from our organization.

Our HSE Group Directive sets out specific requirements on how environmental protection is to be organized at a local level, with every Voith location required to appoint an Environmental Officer. Their tasks cover a wide range of topics including immission control and water protection, waste management, hazardous materials and goods, and preventing environmental incidents. They also advise operations managers on new plant constructions, modifications, and approval processes, and conduct regular site inspections and audits.

In line with our Shared Services system, full-time environmental experts at the regional HSE service organizations ensure our Group companies are provided with high-quality, organized support. Regular on-site visits as well as the documentation and tracking of measures in our hse+ system have proved effective, as evidenced by the positive feedback from both the sites and the authorities. They reported that the biggest advantages of the software – which is in use globally – are the ability to store and manage all relevant documents centrally as well as manage appointments reliably, and program reminders.

Field Service employees were also increasingly involved in activities, with dialog further strengthened recently through workshops with colleagues. As part of these workshops, construction sites were visited to allow relevant topics to be compared as realistically as possible. A range of projects were carried out successfully in the regions through our HSE platform, including one to assess hazards in Brazil and one run within the scope of hazardous materials management in Germany.

Our Central Information Resource hse+

Our Group-wide hse+ IT system supports the work of our environmental experts. With its ability to store and manage all relevant processes, documents, and analyses centrally, as well as its reminder function for safety-related appointment management of inspection intervals, thresholds, and restrictions, the system forms the basis for efficient operational environmental protection and matrix certification.

Fact base Certifications

The powerful scheduling and reminder function allows all necessary steps to be planned reliably in advance of inspections and audits. In addition, this increased transparency has improved proactive communication with authorities. And because all Voith colleagues can access the software, it has also improved backup support if a colleague is ill or on vacation, for instance.

In the reporting year we successfully completed development work on our extensive environmental risk assessment tool. This data will be provided globally via hse+ during the current fiscal year.

hse+ also allows experts to access a central legal database. It contains all the relevant HSE regulations and standards that apply to us in each region. Current legislative texts are available there, including summaries and comments in the respective national languages. The legal requirements are assigned via the system to the relevant officer,

who then becomes responsible for ensuring the requirements are met. The same applies to Voith standards, approvals, and requirements. hse+ is also used to perform location-related environmental risk analyses, with the measures derived from them assigned implementation responsibilities and deadlines which are documented and controlled in hse+.

ISO 14001 environmental certification requirements changed in the reporting year. Furthermore, the OHSAS 18001 standard was superseded by ISO 45001, giving rise to new requirements. However, we see the changes as an opportunity to integrate health, safety, and environment aspects even better into our daily processes. The process of adapting to the new requirements posed by ISO 14001 went to plan and was completed successfully. Besides this we launched our plans to transition to the new ISO 45001 standard and are investing a great deal of effort in driving them forward. Through our active participation in the committees we are informed early on about upcoming changes and can thus implement them progressively.

Group-wide Reporting System to Record and Analyze Environmental Incidents

All environmental incidents at Voith are recorded and analyzed centrally each month using a Group-wide reporting system based on standardized criteria. The Corporate Board of Management is informed about the results of the analysis on a quarterly basis. We use existing occupational health and safety categories to evaluate and rate incidents across topics according to the same standards. We established that as awareness of our Group-wide standardized process increases, so too does its use – with the positive result being that a constantly growing database also increases the quality and conclusiveness of the analyses. We are also raising our employees' awareness through targeted internal communication measures.

We are pleased to announce that no incidents requiring public reporting were registered in the reporting period.

 **Fact base** Noise Complaints

Our Own Dedicated Occupational Health and Safety App

Our eVAP occupational health and safety app covers occupational health and safety as well as environmental aspects. Our employees can use it not only to report actual incidents quickly and easily, but also to report potential risks. We have seen a steady rise in the number of reports since the app was launched, with 2,700 observations reported in the reporting year – five times as many as in the same period the previous year. This is a sure sign that our employees have actively adopted the tool.

Targeted Hazardous Materials Management Increases Safety

Voith uses hazardous materials in its production processes, such as paints, lacquers, thinners and solvents, adhesives, resins and hardeners, lubricants, cleaning agents, and industrial chemicals. To ensure these materials are handled as safely and securely as possible, we have established a Group-wide hazardous materials approval process. A central hazardous materials database allows us to perform a uniform global analysis of the environmental, health, and safety risks of work materials and hazardous materials, providing us with a valuable decision-making basis. We have been working hard for many years now to consolidate the wide range of hazardous materials we use to eliminate particularly harmful materials and further encourage the use of low-risk substitutes as well as advance the harmonization of safety standards across the Group.

 **Fact base** Work Materials and Hazardous Materials Approval Process

We are also reducing hazard potentials as well as costs by cutting the wide range of redundant materials we use. By adhering strictly to the “polluter pays” principle, we aim to ensure that approved materials in our hazardous materials database are used in preference to all others. Doing so means we meet environmental protection, occupational health and safety, and compliance requirements while achieving the greatest possible degree of standardization.

We have been using our Materials Navigator tool since 2016. This allows us to understand quickly and reliably at any time which hazardous materials are used in our

products and which hazardous materials are contained in certain product groups. We update the tool regularly, and it also allows us to check quickly if and to what extent a (sub)product contains certain hazardous materials. It also allows banned or restricted materials to be checked against current standards, so Purchasing does not buy problematic materials in the first place or we can stop their use as soon as possible.

Since 2014 around 6,800 materials have been recorded centrally – 850 of which have either not been approved or have been blocked for future use. In the reporting year 1,326 applications were processed, of which around 5% were rejected: Over half (60%) of these were rejected because they contained banned or critical materials. The other rejected applications were returned with the request to select a suitable substitute from the list of approved materials.

While we continue to progressively reduce the number of hazardous materials we use, the sheer volume of materials to be recorded in the database and the inclusion of additional sites presents us with challenges that mean the consolidation is taking longer than was expected at the start of the project in 2011. Currently, we expect that the consolidation process for the German-speaking region and the overall European region will be completed in the 2019/20 fiscal year. In the 2018/19 fiscal year we will begin recording existing materials in the Americas and Asia in the database. Based on our previous experience, we expect the consolidation process to have been completed to a high degree (up to 80%) by the end of the 2019/20 fiscal year at the earliest.

 **Fact base** Nanotechnology

2.1.2 Efficient Use of Resources

Through Ecological Business Management (EBM) we aim to identify ecological and economic potentials for improvement in our production processes and leverage these by performing analyses at process, system, and component level.

Production-related Energy Consumption

specific value in MWh/€ million in revenues



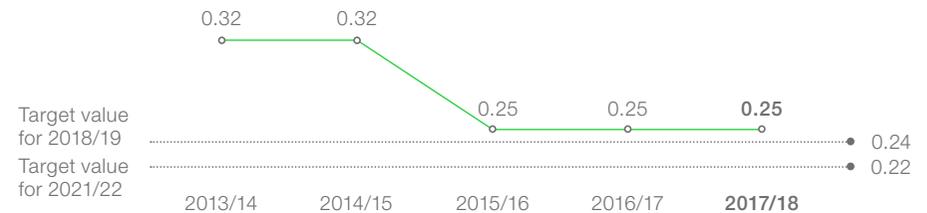
Waste

specific value in t/€ million in revenues



Freshwater Consumption

specific value in m³/€ thousand in revenues



Among other activities, in the reporting year we improved how we record self-generated indirect energy sources to account for our new grid mix target. We also began to put into operation our new resource-efficiency targets in the divisions and simplify quarterly reporting. Going forward, detailed information on the development of resource efficiency will be communicated in an internal sustainability report, which will be supplemented by benchmarks on resource costs and consumption at our locations around the world.

Our activities focus on the areas of energy, waste, and freshwater, for which our Corporate Board of Management set specific targets taking the 2011/12 fiscal year as the benchmark: Based on sales, we aimed to reduce our energy consumption by 20%, our waste by 25%, and our freshwater withdrawal by 10% by the 2017/18 fiscal year. The sales situation at two divisions made achieving our relative targets especially challenging, as we were unable to achieve economies of scale in terms of our consumption. Detailed information on our progress can be found in the respective sub-sections of this report.

Fact base Environmental Goals

Start of New Target Period

The 2018/19 fiscal year marks the start of our next target period. Our targets will be carried over based on the 2011/12 fiscal year, with the three main drivers – energy, waste, and water withdrawal – remaining the focus of our attention going forward. By the end of the 2021/22 fiscal year we aim to reduce our energy consumption by 30%, our water withdrawal by 40%, and our waste volumes by 35%.

We also intend to make an additional contribution to climate protection through specific CO₂ targets by taking the values from the 2016/17 fiscal year as the benchmark and following a scientific approach in accordance with the Paris Climate Agreement. To set our targets we employ a forecasting method that considers both our internal changes, such as the development of Industry 4.0, and external factors, such as the change in the energy mix in different regions.

In a first step, by the end of the 2021/22 fiscal year we aim to achieve a 25% reduction in our CO₂ emissions from our electricity consumption by optimizing our grid mix. By the end of 2024/25 we aim to reduce the total CO₂ emissions of our value-adding activities by 35%. The target is to achieve a 90% cut by the end of 2049/50. We will set additional interim targets and milestones for our CO₂ targets from 2024/25, taking into account our business development.

To achieve our grid mix target for 2021/22 and the interim target for 2024/25, Purchasing is developing an electricity procurement strategy that reflects the very different conditions for the procurement of eco-friendly electricity. The focus will initially be on the German and US markets, as the Chinese eco-electricity market is still in a very early stage of development.

Green Controlling Process Delivers Maximum Transparency

To ensure that our resource management activities deliver both economic and environmental added value, we employ a four-stage Green Controlling process. It enables us to be transparent about the pipeline of measures, shows our progress towards implementing the measures mapped out in it, and depicts their impact on the development of indicators. This enables us to actively manage the target-achievement process. Our approach to environmental management has already received numerous awards, and thanks to regular controlling in the reporting year we succeeded in optimizing the energy consumption of a large production site right from the start-up phase.

Hot-spot Analyses Leverage Further Potential

Hot-spot analyses serve to address both specific and cross-location topics. For example, they bring transparency to the energy consumption of a specific process step, making targeted intervention possible where needed. For efficiency reasons, we focus on the greatest drivers of consumptions in each case. At Voith Hydro this is the foundry; at Voith Turbo these are the buildings, machine tools, and test stands; and at Voith Paper this is the heat-setting process.

In the reporting year we conducted five hot-spot analyses in Asia and South America which to some extent were cross-divisional. The analyses focused on waste management, water recycling, lighting, and load management. In addition, findings were incorporated from cross-location benchmark analyses conducted the year before on coolant lubrication management. A need for updating was identified, particularly in regard to organizational and conduct-based topics.

The recent analyses also confirm the findings from the previous year. These show that we are increasingly moving away from facility infrastructure topics (lighting, compressed air, heating, ventilation, and air conditioning) towards process-specific topics (such as the use of steel grit for sandblasting, and the heat-setting process for felt production). In doing so we are gradually leveraging the greatest value potentials; at the same time, the expense involved in implementing the measures is rising. Furthermore, it became clear that organizational and conduct-based solutions need to be validated on a regular basis.

 **Fact base** Hot-spot Analysis Methodology

2.2 Performance in the Reporting Period

2.2.1 Energy Efficiency and Greenhouse Gas Emissions

Energy Consumption Falls Slightly

In the reporting year Voith consumed 437,134 MWh of energy (previous year: 453,012 MWh). 104 MWh of energy was needed per € million in sales, a fall of 3.2% versus the previous year (107 MWh per € million in sales).

The year-on-year decrease in energy consumption is due to several factors. These include a considerable increase in the volume of measures implemented to reduce energy consumption. These were very successful, particularly at our new production facility in Shanghai. Furthermore, the closure of our felt plant in Wilson, North Carolina, also contributed to the reduction. In the coming months we expect to achieve even more significant energy savings from a range of different contracting projects in Heidenheim, which were only fully completed at the start of the 2018/19 fiscal year.

In the reporting period the identified potential for action in the pipeline rose from 123.7 GWh to 130.8 GWh (+5.8% versus the previous year). Measures with a volume of 23 GWh (previous year: 9.8 GWh; +135%) were implemented in the reporting period; as a result, the total amount of measures implemented corresponds to 106.3 GWh. Taking the figures of the 2011/12 fiscal year as our benchmark, while we achieved a 17.6% improvement we narrowly missed our target of 20%.

On the one hand, sales and energy consumption did not develop completely in parallel. This is because energy is used at sites, such as for heating and air conditioning, regardless of the main operational purpose. On the other hand, currency effects also impacted on sales and thus distorted the picture. Last but not least, in the 2011/12 benchmark year various production facilities, including the VT plant in Shanghai, were not yet operational with their current production structures.

 **Fact base** Energy Consumption by Scope

 **Fact base** Energy Saving Measures and Further Potentials

Regular exchange between EBM (Ecological Business Management) experts serves to identify further potentials, compare processes, set benchmarks, and implement the best solutions in each case at Voith through the sharing of best practices. In the reporting year the meetings focused on optimizing reporting on CO₂ emissions and improving the projection of absolute savings requirements in terms of relative KPI targets. A cross-divisional analysis in São Paulo focused on topics including site-wide load management as well as optimization of the compressed air supply and air conditioning systems. As a result, consumption visualizations implemented there were also used to perform analyses in Heidenheim.

Another Slight Improvement in Our Energy Mix

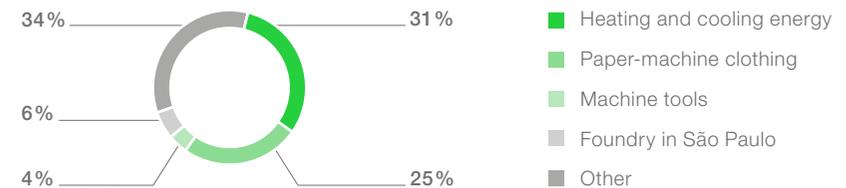
19.2% of the energy we consumed came from renewables, with 80.8% from non-renewable resources. This means we achieved another improvement over the previous year's figures (18.2% from renewables; 81.8% from non-renewable resources). This calculation includes all energy sources associated with our production-related energy consumption. Given our newly defined CO₂ targets and the associated ramping up of our CO₂ management activities, we expect to continue to optimize our energy mix in the coming years. A range of projects on regenerative power generation have already been implemented or are at an advanced planning stage.

Besides heating and cooling, which account for around 31% of our energy consumption, the production of paper-machine clothing remains the key driver of our production-related energy use – accounting for 25% of our global consumption. Apart from weaving processes, heat-setting is especially energy-intensive – particularly in felt production. The operation of machine tools consumes 4% of the energy used at Voith, with 6% of production-related energy consumption accounted for by our foundry in São Paulo, Brazil.

 **Fact base** Production-related Energy Consumption

Main Sources of Energy Consumption

in %



Main Source of Energy Consumption 2017/18

In the reporting period there was no real change in the proportion of direct (29%) and indirect (71%) energy consumption. With a share of 82%, natural gas remains the key energy source for our direct production-related energy consumption, followed by LPG (liquefied petroleum gas), diesel, and heating oil with percentage shares in single digits. Among other purposes, we use these fuels for heating and heat-intensive thermal processes. Diesel is used primarily to operate backup generators and generate steam at our locations in Karawang, Indonesia, and Shanghai, China, as well as for thermal processes in São Paulo, Brazil.

 **Fact base** Proportion of Direct and Indirect Energy

New Production Plants Bring Further Savings

In the reporting period Voith consumed 240,417 MWh of electricity (previous year: 242,735 MWh) – a drop that is thanks once again to the improved efficiency of our production plants and processes. In terms of our electricity mix, the share of energy sources supplied by external providers was 64.6% (previous year: 66.4%) from non-renewable and 35.4% (previous year: 33.6%) from renewable resources.

Newly formulated CO₂ targets provide an additional incentive to increase the share of renewables further. In addition, the commissioning of new facilities, such as a hydropower turbine which has been connected to the grid since November 2018, will enable us to further improve our electricity mix.

Among non-renewable resources, once again there was a decline in nuclear power in favor of electricity generated from coal. At Group level, this is resulting in a slight increase in the emission factor as well as greenhouse gas emissions, despite an increase in renewables.

 **Fact base** Renewable Energies

 **Fact base** Electricity Mix

 **Fact base** Environmental Impact of Buildings

Progress on Cutting Greenhouse Gas Emissions

We aim to minimize the environmental impact of our business activities by continuously improving our energy efficiency. This is a commitment that is reflected in our newly

formulated environmental targets, particularly our firm CO₂ target. We are deliberately starting at this point as our energy consumption is the main driver of greenhouse gas (GHG) emissions.

 **Fact base** GHG Emissions: Recording Methodology

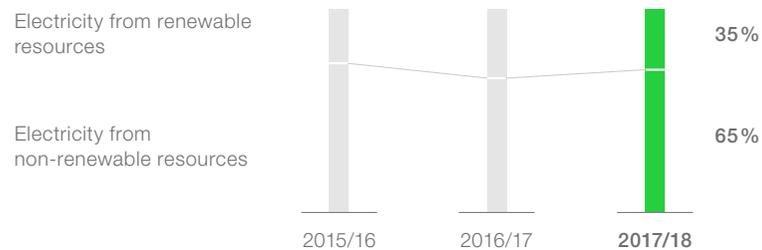
In the 2017/18 fiscal year our facilities' GHG emissions fell by 3.4% to 153,408 t CO₂e (previous year: 158,876 t CO₂e). The share of direct GHG emissions fell by 3.5% to 27,380 t CO₂e (previous year: 28,370 t CO₂e), while indirect GHG emissions also decreased to 126,028 t CO₂e (previous year: 130,506 t CO₂e).

 **Fact base** GHG Emissions by Scope

Since the 2011/12 fiscal year we have reduced our absolute energy consumption by 24.9%, with absolute GHG emissions also falling in the same period by 17.5%. Our energy-saving measures alone achieve annual GHG savings of around 7,300 t. Differences in national electricity mixes as well as shifts in the mix of direct energy

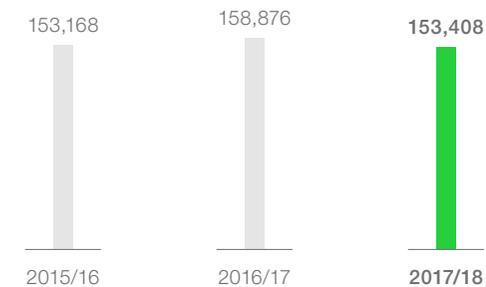
Electricity Mix Consumption by Resource Type

in %



Production-related Greenhouse Gas (GHG) Emissions

total GHG emissions in t CO₂e



sources are causing the energy and GHG emissions indicators to diverge. This means that energy savings at individual locations or even production relocations vary in their impact on GHG emissions.

Fact base GHG Emissions: Location-based vs. Market-based

We also consider the challenges of climate change when developing products (see also the section Products). Through our products' lifecycle analyses we know that compared to the production stage their environmental footprint is far greater when they are actually in use. This is why we pay special attention to the way we develop our products. As a fundamental principle we aim to be the technology leader in all of our markets – where Voith products feature regularly in the highest efficiency class. This way we support our customers in delivering their services in a more energy- and resource-efficient way. Through this, we live up to our responsibility not only towards our customers, but also towards society by helping to tackle climate change through our product portfolio. Furthermore, our hydropower solutions are contributing to climate-neutral power generation around the world. By gearing our technology roadmaps at Voith Turbo towards electric drives, we are driving forward climate-friendly mobility. And with our solutions from Voith Paper, we have helped the overall paper industry achieve significant cuts in its CO₂ emissions in recent years.

Fact base GHG Emissions: Specific (Scope 1 and 2)

Fact base GHG Emission Reduction Measures

Fact base Transport Emissions

Fact base Emissions Trading

Fact base Air Pollutants

2.2.2 Material Efficiency and Waste

At Voith, we intend to make our processes as resource-efficient as possible. To do so, we manage the use of direct materials and raw materials across the Group. However, the breadth of our product portfolio and the correspondingly diverse process landscape present us with special challenges. We are also faced with a range of requirements in the project business at Voith Hydro and Voith Paper as well as in mass production at Voith Turbo.

Material Efficiency Further Optimized

In the reporting period we purchased approximately 215,000 t of materials from suppliers, a drop of around 2% versus the previous year (220,000 t). The distribution in terms of the materials we purchased is as follows: 62% semifinished products (previous year: 65%), 28% raw materials (previous year: 26%), 8% packaging (previous year: 7%), and 2% auxiliaries (previous year: 2%). Since more wood was used for packaging, especially at Voith Turbo and Voith Paper owing to an increase in their business activities, the share of renewable materials increased year-on-year to 8% (previous year: 6%).

Fact base Materials Used

In the reporting period, once again around 38% of the materials we used were recycled. The proportion was 60% (previous year: 55%) for auxiliaries, 45% (previous year: 46%) for raw materials, 29% (previous year: 30%) for semifinished products, and 80% (previous year: 80%) for packaging.

The use of hot-spot or Ishikawa analyses allows us to further optimize our material efficiency. We utilize these in line with our Voith 150+ Next Level success and growth program, which provides us with key starting points to identify potentials for improvement in product development and engineering.

Focus Remains on Waste Volume

In the reporting period Voith generated 34,261 t of waste (previous year: 30,786 t), a year-on-year increase of 3,475 t or 11.3%. The main reason for this rise is an increase in transport packaging and scrap steel, due to higher utilization of the production facilities. However, this is not yet fully reflected in the sales trend, which means that there was an increase in the volume of waste relative to sales in the reporting period. The corresponding indicator rose to 8.1 t (previous year: 7.3 t). As at the end of the target period we succeeded in reducing our waste volume by 23.7%; while this means that we narrowly missed our target of a 25% reduction, if 2017/18 sales are adjusted for currency effects then we would have achieved our target.

Fact base Volume of Waste

In the reporting period the gains from measures already implemented from the pipeline increased from 4,423 t to 8,596 t (+94%), in particular thanks to improvements in the foundry in São Paulo. The identified potential for action in the pipeline increased by 49.3% to 9,021 t in the reporting period. While more significant saving measures remain almost only achievable as part of complicated product re-qualification measures, the effort that is typically involved in the changeover must always be balanced against the resulting benefits. The measures covered relate mainly to material efficiency; the effects of make-or-buy decisions or sales shifting to less waste-intensive processes are generally not reflected.

Wood, paper, and cardboard waste generally accounts for a high proportion of our waste. This is due mainly to packaging and making one-off production components safe and secure for transportation. Owing to the size of components, it is not economically viable to transport back empty packaging for reuse – and even from an environmental perspective this is questionable, in view of the transport emissions involved. In addition, owing to the high proportion of one-off and custom-made products at Voith, it is often not economically viable to use separate types of material-optimized packaging; nevertheless, in the reporting period we succeeded in increasing the share

of recycled packaging. At our Heidenheim location, for instance, we switched over our supply of polymer raw materials and fan impellers to reusable systems.

Fact base Waste-saving Measures and Further Potentials

Share of Hazardous Waste Virtually Unchanged

In the 2017/18 fiscal year we generated 3,180 t more non-hazardous waste and 295 t more hazardous waste than in the previous year. Our waste classifications remain virtually unchanged versus the previous year, with around 82% of our waste deemed non-hazardous and the remaining 18% classified as hazardous.

Fact base Hazardous Waste

The increase in hazardous waste is due to increased production utilization, particularly at our foundry in São Paulo, Brazil, which produces almost one-third of our hazardous waste.

The collection of hazardous waste at Voith is regulated by internal guidelines, with disposal performed by external disposal and recycling companies – Voith does not transport any waste itself. We are pleased to announce that in the reporting period we were not notified of any violations of the law in relation to the disposal of waste by our external disposal and recycling companies.

Fact base Waste Disposal

2.2.3 Water

Freshwater Withdrawal Falls Again

In the reporting period our freshwater withdrawal fell by 7,125 m³ or 0.7% to 1,033,843 m³. Of this, we use around a third for cooling purposes only, which do not contaminate it. As a ratio to sales, our freshwater withdrawal fell year-on-year by 0.4% to 0.25 m³ per € thousand in sales.

Fact base Water Consumption

Nevertheless, we again increased the volume of identified measures in the pipeline by 9.9% to 816,573 m³ of freshwater in the reporting period. In the same period, the gains from measures already implemented from the pipeline rose by 12% to 789,000 m³ of freshwater.

With a total reduction achieved so far of 31.1% since the benchmark year, we have surpassed our target of 10%; with sales adjusted for currency effects, we would have achieved a 33.8% reduction.

Fact base Freshwater Savings Measures and Further Potentials

We intend to continue improving upon the high level we have already achieved. Following many years of continuous improvement, our efforts to reduce water withdrawal are increasingly declining in marginal utility.

By the end of the current fiscal year we also intend to update our 2011 studies on water scarcity and biodiversity. We will then incorporate the findings into our action planning for our newly defined environmental targets. We base our analysis on freely accessible databases such as the WBCSD's Global Water Tool and the WRI's AQUEDUCT.

We are paying particular attention to the development of water withdrawal at facilities located in regions faced with water shortages. This concerns our water conservation measures especially at our facility in São Paulo, which has been increasingly affected by droughts and water shortages in recent years. We are pleased to announce that the local situation eased somewhat in the reporting period. Furthermore, the management team at our location is striving within technical and economic limits to reuse as much water as possible with the help of our reprocessing plant. We also focused on South Africa in the reporting period; however, our local unit there is very small and does not have any water-intensive processes.

Essentially, water and, as a result, wastewater play a lesser role in our manufacturing processes compared to other industries. Consequently, our minimum standards meet respective legal requirements. Nevertheless, we analyze and manage our water withdrawal in the same way as our energy and material consumption. This is because water is an elementary and precious resource, and in this respect we are committed to using it carefully. Water is also a key resource for our customers' processes and we aim to support them with efficient solutions.

We distinguish between boiler feedwater, groundwater, and surface water. Primarily, we try to reduce boiler feedwater consumption to also relieve the local supply. Currently, we are pleased to report that our local withdrawal activities have no impact on the environment or on our stakeholders. If there were to be any, these would be responded to by our environmental incident reporting process resulting in a thorough root-cause analysis and resolution.

Continued Reduction in Wastewater

In parallel to our lower freshwater consumption, we also generated less wastewater in the reporting period. At 837,656 m³ the volume of wastewater we generated in the reporting period was 2.6% lower than in the previous reporting period (860,395 m³). Around 38% (previous year: 37%) was discharged into rivers, lakes, or the soil, while 62% (previous year: 63%) was discharged into the sewage system.

Fact base Wastewater: By Method of Discharge and Quality

We use recycled water in our processes wherever it is worthwhile in terms of economic, environmental, and social aspects. This includes cooling processes (São Paulo) and processes in closed cooling water circuits (Garching, Summerville, Kunshan). We also operate our own wastewater treatment plants at our locations in São Paulo, Garching, and West Monroe.

We work tirelessly to close water cycles. In the reporting period our achievements in this area include savings realized through the use of quench baths at our Summerville location in the USA as well as in Kunshan, China, where sealing water for vacuum pumps now circulates in a closed system. And by modernizing a test stand, we also closed the local water cycle in Heidenheim.

In direct comparison to other industrial companies our manufacturing processes only have a minor impact on water. Therefore, we are rarely required to measure water quality, with only a small number of locations required to take continuous or repeated monitoring measurements. However, the overall burden of BOD, COD, TSS, heavy metals, nitrogen, and phosphorus cannot be derived owing to the low sampling requirements. We are pleased to announce that no reports of limit violations were registered in the reporting period.

 **Fact base** Water and Neighboring Habitat Protection

 **Fact base** Sealing of Soil Surfaces

 **Fact base** Environmental Incidents

Outlook

We intend to continue creating both environmental and economic added value through our activities. With our sustainable development targets up to the 2021/22 fiscal year and beyond, we will continue on our successful path – for the equal benefit of the company and the environment.

3_Employees

3.1 Employees – Our Aspiration, Our Responsibility

Voith's success depends fully on the success of our employees. Qualified, motivated, and committed employees are our guarantee of future success, which is why we offer them a challenging role, personal development opportunities, and an attractive working environment. We aim to promote the talents in each individual employee, and to deploy our people according to their strengths. Our newly formulated HR vision summarizes this claim: "Voith – People at their best". In doing so, we are creating the prerequisite for us to continue our successful tradition that stretches back over more than 150 years.

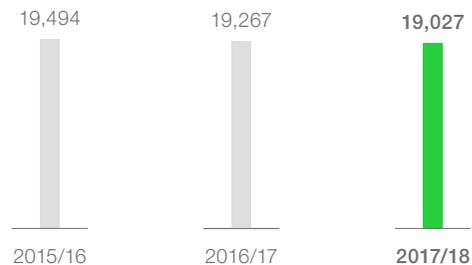
Voith as an Employer

At the end of the 2017/18 fiscal year the Voith Group's workforce stood at 19,535 (previous year: 19,267 employees), representing a year-on-year increase of 1.4%. Around 57% of our employees work in EMEA, 22% in the Americas, and 21% in the APAC region.

Fact base Workforce Structure

Number of Employees

in individual people



Workforce Changes

The Group Division Voith Hydro shed 736 (-15.6%) jobs globally in the reporting year in workforce adjustments due to the market situation. Most of these redundancies were attributable to the very challenging economic situation in Brazil. However, some of those affected found a new role in other areas of the company or regions. We also utilized every option available, such as deliberate hiring freezes for certain business areas or countries, the targeted use of working-hours accounts, and early retirement offers, to prevent our employees having to face hardship.

The ongoing expansion of our Group Division Voith Digital Ventures led to an increase to 2,344 FTE positions (previous year: 1,211 FTE positions) in the reporting year. The increase in headcount is attributable mainly to the acquisitions of Ray Sono (Germany, 196 employees) and Flow Link (India, 964 employees).

Fact base Workforce by Employment Type

Challenges and Focus Topics

Through our company's current transformation process, we plan to set the course for our continued success in the future – something that has also given rise to new challenges for our HR area.

Our employees and their skills profiles are facing new requirements, particularly as a result of increasing digitalization in business and society. This is why our HR area set itself the task of supporting employees in this process. At the same time, we are scrutinizing our HR processes and programs with the aim of identifying activities that can be performed better digitally or through automation.

As part of this, we are currently devising a new HR strategy that takes these challenges into account and provides the best support for our transformation process.

Shared Services Pass Internal Audit

At Voith much of our HR administration is distributed across four regional Shared Services Centers. Centralizing and bundling activities has enabled us to achieve significant savings already, while also improving process quality in many areas. The reporting year was dominated by process stabilization as well as the first of our major internal audits, which we are pleased to report we passed successfully. Furthermore, we made further self-service options available on mobile platforms.

In Germany, we expanded Recruiting Services to meet the increased demand for new capabilities and skills in the areas of robotics and digitalization.

3.2 Highly Attractive Employer

Voith enjoys an excellent reputation as an employer brand, as we combine the stability of a 150-year-old family company with the opportunities of a truly global player – one which is having a considerable impact on shaping the digital transformation process in our industry. This is also repeatedly confirmed by external institutes, on ratings portals, and in employer rankings. In this regard, the reporting year was no exception, with Voith featuring highly in DEUTSCHLAND TEST, Trendence, and Potentialpark rankings.

Our fledgling Group Division Voith Digital Ventures allows us to offer exciting digitalization opportunities to employees in the fields of computer science, electronics, and automation technology.

 [Fact base Rankings and Ratings](#)

Performance-based Market-competitive Remuneration

Voith always aims to remunerate its employees in line with the market. We calculate remuneration in a gender-neutral way and based exclusively on professional

qualifications and performance. Remuneration schemes and other benefits are in line with the prevailing market situation in each region. The analyses currently available to us, especially for the core countries of Germany, the USA, China, and Brazil, confirm this assessment.

At our German locations we routinely follow collective bargaining laws when deciding wages and salaries.

Our Global Job Grading project, which aims to establish a uniform job-evaluation system at Voith, is now in its final phase. In the 2017/18 fiscal year we assessed all non-tariff positions worldwide. In relation to this, in the current fiscal year we will now inform the respective job holders in writing and notify all employees via our internal communication channels, such as the intranet and the employee magazine.

 [Fact base Expenditures for Employees](#)

 [Fact base Collective Bargaining Agreements](#)

 [Fact base Details on Upholding Employee Rights](#)

Voith provides its employees with fair working conditions that comply with all statutory requirements. We reject all forms of forced labor and child labor, and we do not obstruct lawful employee representation. Our Compliance Committee monitors the implementation and enforcement of our Code of Conduct, ensures rights and laws are always complied with, and that workers' rights are upheld globally. In the 2017/18 fiscal year 81 % of all Voith employees worldwide were covered by a collective bargaining agreement.

Diversity and Equal Opportunity

Our company's international nature is also reflected in the composition of our workforce, with employees from 91 nations working at Voith. The Voith Senior Management Circle also has an international composition, with 74 members from eleven countries.

We promote cultural diversity in management through job rotation and inpat programs, where we bring talent from other regions to our head office for a specific period. The objective behind this is to prepare managers from different regions and of different nationalities to assume top management positions.

To encourage international collaboration at all levels of our company and increase mutual understanding, tolerance, and communication skills, we offer our employees intercultural training and language courses.

 **Fact base** Employment Ratio of People with Disabilities

 **Fact base** Diversity in the Management Team and in the Workforce

Our Diversity&Inclusion (D&I) program, which we introduced across our Group as early as 2012/13, additionally supports our aspiration to promote diversity and equal opportunity in our Group. We understand diversity as recognizing and embracing the uniqueness of our employees in terms of the five aspects of gender, age, nationality or ethnic origin, education and professional experience, as well as personal differences such as beliefs, physical abilities or sexual orientation. We understand inclusion as the aforementioned culture of appreciation in which everyone is respectful towards one other – as a result, everyone can develop their potential freely and contribute different perspectives, ways of thinking, and approaches. We see respect as a prerequisite in enabling us to offer solutions, even to more complex requirements, to our customers around the world on the basis of our employees' rich and varied experience.

Equal Opportunity Officers at our various locations, typically the local Head of HR, review detailed information on violations of our general equal treatment principles and take appropriate action.

Our D&I program requires all locations to introduce suitable measures in addition to taking a systematic approach to raising employee awareness. The regions are

responsible for each focus area and implementation of the measures, while the central HR area coordinates the program. This ensures that we take a uniform approach across the Group, share best practice approaches, and also take into account the highly varied challenges we face worldwide.

Our mandatory awareness workshops for the upper four management levels have been raising our employees' awareness for many years now. In the reporting period we continued these workshops, especially for new executives, and to some extent also expanded training to the fifth management level. We placed a special focus once again on the Asia Pacific region, which was established in the previous year, while in Europe we offered optional awareness workshops for all employees. In November 2018 we also held an internal D&I conference for our Senior Management Circle. The aforementioned events help to continuously raise awareness among managers throughout the Group regarding D&I issues as well as draw attention to specific, practice-related topics such as unconscious bias. This ensures that our managers assign great importance to D&I topics. A corresponding toolkit, available to managers in our D&I SharePoint, also contributes to this. It provides specific ideas, descriptions, and suggestions on D&I measures for working in teams. We also keep our employees updated through our global communication initiatives, which also include some interactive D&I campaigns.

Our corporate HR areas D&I, Compensation, Recruiting, and HR Development are in regular discussion to ensure that our HR processes also do justice to our employees' diverse skills and talents. Thanks to this, since 2018 a D&I workshop has been a mandatory module of our Start-up Leadership program for aspiring managers. Likewise, our trainees will in future be advised on and made aware of the topic of D&I through our Global Graduate program. With regard to our recruitment processes, we have examined whether applicant diversity is taken into account and which measures can be taken to improve this. To learn together with other companies and to share experiences and best practices on the topic of D&I, we organized a Diversity

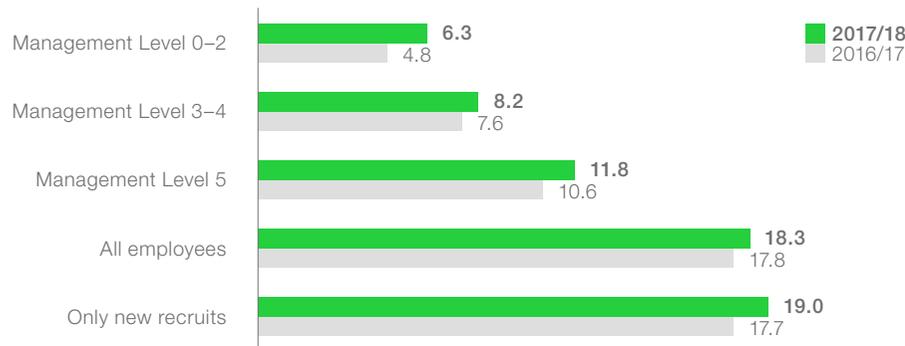
Round Table Talk in China. In addition, we take part regularly in D&I network meetings and conferences.

As women are still underrepresented in technical apprenticeship occupations and higher education courses, we are also focusing on this area and striving to increase the proportion of female employees further in our overall workforce. As at September 30, 2018 the proportion of women in the workforce stood at 18.3% (previous year: 17.7%) – a proportion we intend to continue to increase. To get girls and young women more interested in technical professions, we have participated for many years now in Girls' Day, when girls get to learn about the range of opportunities open to them in technical professions and receive information about professional career options at Voith.

Increasing the proportion of female managers in the company is particularly important to us. In the Voith Senior Management Circle, the proportion of women currently stands at 6.8% (previous year: 5.2%). In our middle management circle, the proportion

Percentage of Women by Management Level

in %



of female employees has increased by two percent to 12.4% since the introduction of the D&I program. We are well aware of the need to take further action in this respect. This is why we have initiated a range of measures which, alongside our D&I program activities, will in future serve to attract more women to management positions.

Balancing Work and Private Life

At Voith we see ourselves as a family-friendly company – an understanding that is embedded in our Group-wide guidelines to offer a flexible and family-conscious work culture. Through ongoing communication measures, we work to increase openness to this issue among our managers; after all, our stated goal is to offer our employees an attractive working environment. This also includes flexible working models that meet ever-changing personal circumstances. In consultation with their supervisors our employees can also agree personal working time models, ranging from the use of a home office through to part-time work and job sharing.

To realize this, in the reporting year we introduced a new form of working time arrangement through our Mobile Working works agreement. As part of this, the employee and supervisor agree whether and to what degree work can be performed outside of the usual workplace. The only prerequisite is that the work area in question must be suitable in principle for mobile working. An employee can work up to 40% of the regular working hours through this model, which is based on a voluntary arrangement and a significant degree of trust between the company and the employee. Through this, we aim to make workplaces even more flexible and attractive, while putting ourselves in the best position as an employer to meet the changing demands placed on jobs and the future of work.

In connection with this, in 2018 an agreement was also reached with the Works Council to introduce part-time training leave in the company. In an “active” phase, this allows employees to work for reduced remuneration. In a following “passive”

phase, employees can utilize the time available for vocational training and continue to be remunerated.

Through our semi-retirement models, occupational pension schemes, and a solidarity fund, we also take care of employees and support relevant groups of individuals who are about to retire, have become incapacitated for work, or whose employment has been terminated for other reasons. Last but not least, Voith is also a member of the familyNET 4.0 pilot project whose main focus is on the opportunities offered by digitalization to balance work and family life.

 **Fact base** Flexible Working Time Models

 **Fact base** Parental Leave

Employee Satisfaction

We always keep a close eye on our employees' satisfaction, which is why we engage in a range of measures including the regular analysis of illness and employee turnover data.

Our employee turnover rate fell in the reporting period to 10.3% (previous year: 11%). 4.3% of this rate (previous year: 3.7%) is due to employees terminating the employment relationship. As part of exit interviews we ask them why they are leaving Voith, and evaluate this feedback to identify potentials for improvement.

 **Fact base** Employment Length

 **Fact base** Employee Turnover

3.3 Attracting and Promoting Talent

The competition for suitably qualified employees is getting tougher in many areas, and we continually face the challenge of attracting qualified employees at all our locations. Our new detailed plan for HR marketing campaigns is intended to make our efforts in this area even more successful.

In the reporting year we began to define Voith's employer brand to position ourselves globally as an attractive employer. In addition, we are also working on Voith's value proposition as an employer with the aim of further emphasizing Voith's unique characteristics so that they can then be used to specifically target potential employees. In a first step we held high-level management interviews and employee workshops. In conjunction with this we relaunched our careers homepage, which now offers a state-of-the-art user experience that is suited to its audience and can be viewed on a variety of devices. Last but not least, in the 2017/18 fiscal year we further increased the efficiency of our Group-wide Global Graduate program through the use of an online assessment.

 <http://voith.com/corp-en/careers.html>

One of the focus areas of our HR marketing activities was continuing support for the recruitment of qualified employees for our Group Division Voith Digital Ventures. However, the need for additional personnel dropped significantly compared to the previous year.

We are currently facing particular recruiting challenges in the field service area owing to demographic changes, particularly in Europe, as well as the changing requirements of potential applicants in relation to their work activities. To meet these challenges, in the reporting year we developed new solutions and measures which we will implement

in the coming fiscal year. These include specific employee retention, acquisition, and development measures aimed at providing specific career prospects for the individual.

Fact base New Hirings

High Aspiration – High Level of Training

By tradition we are committed to providing world-class vocational training. Our commitment has remained steadfast for over 100 years. Voith apprentices repeatedly complete their vocational training with outstanding results in state and nationwide comparisons. We are currently offering apprenticeships in over 13 commercial, technical, and trade occupations, with interdisciplinary learning and the integrated provision of social and specialist expertise high on the agenda. Furthermore, we typically take on our apprentices on completion of their vocational training, and offer them the opportunity to get their foot on the career ladder in our company.

Last year saw the launch of our Social Internship, something we continued in the current fiscal year. As part of this, all apprentices in their second year of vocational training spend one week at a sheltered workshop for the disabled. In addition, in the reporting year several of our apprentices completed an Energy Scout training course at the Chamber of Industry and Commerce IHK Ostwürttemberg – an opportunity we have continued to offer our apprentices since last year.

Advancing digitalization is also bringing with it changes to vocational training requirements. As a pacesetter and pioneer of vocational training in Germany we are meeting this challenge at various levels. Among them, in the 2017/18 fiscal year we integrated new digital activities into the apprenticeships for technical occupations. This involves interdisciplinary competencies such as additive manufacturing processes using 3D printers, operating manufacturing execution systems (MESs), or the use of augmented reality (AR). Alongside this, we put a great deal of effort into supporting the institutional adaptation of metalworking and electrical trades in Germany through our expert witness work. From the apprenticeship year 2018/19, our companies will train their up-and-coming generation of skilled workers in eleven updated industrial metalworking

and electrical trades whose training regulations have been enriched with greater IT content and adapted to integrate state-of-the-art technology.

As at the end of the 2017/18 fiscal year, Voith employed 801 apprentices and students (previous year: 959). 519 (previous year: 599) of our apprentices work in Germany, over half of whom work in Heidenheim (302; previous year: 360). While we expect the number of apprentices to remain at a similarly high level in Germany, we forecast a shift towards dual-study programs.

Voith trains employees around the world. To do so, we utilize our own Training Centers in Heidenheim and Kunshan (China). Our international locations also deliver vocational training that, while based on the German dual-study system, also incorporates cultural and country-specific considerations. The success of this approach is illustrated by our experiences at our São Paulo (Brazil) location, where we have been training young people for many years. In collaboration with local training institutes, we have developed a training model for a typical four-year apprenticeship aimed at young people over the age of 15. This approach regularly produces exceptionally well qualified new technical talent.

Fact base Apprenticeships and Opportunities

Lifelong Learning – Both a Right and a Commitment

In times of dynamic change driven by technological progress, we expect our employees to be committed to lifelong learning. This is why we support them with a comprehensive range of training and education measures. Our leadership concept sets out the framework for this, with numerous management tools. A performance objective meeting is held at the start of the fiscal year between every employee and their supervisor to discuss and set the person's contribution to achieving our corporate goals. The additional employee appraisal focuses on work activities and the working environment, the relationship between the employee and supervisor, and the employee's own personal development perspectives. The outcome of these meetings is entered in our pep. HR IT system together with findings of the Management Review

process. This approach means we are always aware of our employees' training requirements, and can tailor our offerings and initiate personal development measures accordingly.

In the reporting period 91.4% (previous year: 82.7%) of Voith employees took part in an employee-supervisor appraisal. In doing so we reached all employees who were not prevented by sickness, on parental leave, or who were exempted from the appraisals as they were about to take on new functions. Over the course of the next few years we plan to further stabilize the high level we have already achieved.

Fact base Training and Education & Career Development

The Voith Management School is of great significance within the overall strategy of our training and education measures. Here we provide special training to employees from specific departments such as Sales and Purchasing. Special development programs for executives establish a uniform understanding of management within the company across Group Divisions and regions. These programs are mandatory for all executives with supervisory roles.

Hours of Further Education



The difference to previous years is due to a variety of factors, including extended data-gathering.

Since 2015 we have been working towards establishing a further component in our leadership development program within our divisions. We call it our Business Forum, and following the successful pilot at Voith Paper we will now roll out the tool at Voith Hydro and Voith Turbo. The two-day event format focuses on topics arising from daily leadership practice as well as key aspects of the personal work-life balance for executives. This also underscores our aspiration for our top management level to show commitment to lifelong learning and a readiness to take active steps to prepare for future tasks and challenges.

Since 2018 our DRIVE platform has given all our employees the opportunity to gain an understanding of digitalization in a hands-on, playful way. This allows them to acquire basic digital skills, enabling them to develop a digital mindset that they can put to use in the organization. We are also promoting topics such as agile working at Voith, especially in project management where we are introducing agile approaches such as scrum where appropriate. All these measures are progressively increasing digital expertise within our organization and making Voith fit for the future.

Various programs in our individual divisions are also intended to improve our employees' professional and methodological skills in association with our corporate objective to achieve excellence. A range of measures enables executives from all regions to share their views. Among them, executives from all regions meet annually at the Voith Academy to learn more about each other's different experiences. To encourage and promote this exchange, we deliberately invite executives from around the world to attend our executive training programs. In addition, we introduced the PaperSchool in the reporting year, where customers and employees familiarize themselves with current topics as well as ones relevant to Voith Paper. Last but not least, in the reporting year our various Group Divisions held train-the-trainer programs to further improve product training for customers. Voith Hydro also introduced e-learning product training courses for employees.

In the 2017/18 fiscal year our employees completed an average of 13.7 training and further education days (previous year: 16.6). We aim to always offer our employees training and further education measures where required in individual cases. Furthermore, we are working tirelessly to improve our training program, which is why we ask participants about their experiences after each training course, and provide the findings to the trainers and the HR area. In addition, the supervisor's assessment is obtained as an appropriate means to assess the success of a measure.

Leadership at Voith – Utilizing the Opportunities Offered by Digitalization Through New Skills

The standards we set our executives are high. We expect them to lead their staff in a way that enables them to carry out jointly agreed tasks largely on their own responsibility. In addition to this, the ability for employees to work under their own initiative is coming more and more to the fore: This is because working at Voith is being increasingly shaped by greater team self-management. As such, we intend to encourage freedom for employees to act on their self-initiative and strengthen their engagement. The restructuring and focusing of our values in 2017 created a key foundation for this. We also support employees through job rotation schemes, offering them special orientation discussions if they are posted abroad, for example, or when finding their feet in a new management position.

Outlook

Always attracting the right number of well-qualified employees and retaining them in the company will remain the key challenge for our HR work at Voith. At the same time, employees still need to be prepared for the increasingly digital world of work and supported in their development. As familiar qualification measures alone are no longer enough, our goal now is to create a culture of agility and a willingness to embrace change through a systematic approach to change management. This is why we will offer an increasing number of training courses to enable our employees to easily find their footing in the digital world. This is how we are already laying the basis today for our future success.

3.4 Occupational Health and Safety

Occupational health and safety take top priority at Voith. By taking a responsible approach when designing workplaces and processes, we work to prevent accidents and work-related illnesses as far as we can. The best basis for this is our established HSE (Health, Safety, Environment) organization. In addition, our systematic approach to implementing our Shared Services structure ensures that individual locations and regions receive the most comprehensive support possible.

We have implemented corresponding processes to identify hazards and risks in occupational health and safety. These are transparent to everyone involved, all information can be accessed in one system, and lessons learned can be shared among business areas.

Fact base [Approach to Preventing or Dealing With Negative Health and Safety Impacts](#)

A Group Directive sets out the requirements and responsibilities for occupational health and safety, and lays down binding minimum requirements and standards for the Group. It also includes all standard operating procedures (SOPs) on HSE at Voith. In principle, while all locations are covered by this directive, the more stringent provision in each case always applies when reconciling the regulations with regional requirements. As a third step, customer agreements are binding if they impose stricter or more specific requirements.

All occupational health and safety policies are accessible globally via our Group-wide hse+ IT system, just like our environmental protection regulations. Moreover, the majority of countries can enter relevant laws and regulations directly in the system and assign the resulting responsibilities to those accountable.

We are also well prepared for the upcoming transition from OHSAS 18001 to ISO 45001. For example, thanks to ongoing improvements in the reporting year the number

of identified nonconformities further increased, laying a key basis for a successful migration.

Joining Forces with Employee Representatives

Company agreements on occupational health and safety, as well as on preventing addiction, complement the regulations embedded in our HSE Group Directive. A monthly Safety Committee Meeting brings together all employee and employer representatives at each production location to develop the annual occupational safety program and implement it in monthly actions. In addition, we attach great importance to the early involvement of Data Protection Officers in all issues relating to HSE reporting, controlling, and communication.

 **Fact base** Employee Representation in Committees

3.4.1 Occupational Safety

In 2009 we anchored accident frequency and severity reduction in our corporate goals. Over the past few years we have made continual improvements in this area, making Voith one of the world's leading companies – across all industrial sectors – in occupational safety.

This is confirmed by the Accident Frequency Rate (the number of notifiable accidents per 1 million working hours), which we calculate based on the international standard. It shows that we reduced our AFR very significantly from 12.6 in the 2008/09 fiscal year to 1.5 in the reporting year. This corresponds to 54 notifiable accidents (previous year: 50) – still a particularly low figure compared to other industries. By comparison, the average AFR of companies in the Professional Association of Plant and Mechanical Engineering is 22. However, in the reporting year we suffered an increase in the Accident Severity Rate (ASR): With 341 working hours lost per million in the reporting year (previous year: 271), the previous year's value was exceeded significantly.

We deeply regret that the 2017/18 fiscal year was overshadowed by two fatal occupational accidents. One happened in February 2018 at Voith Hydro plant in China, and another in April 2018 at a Voith Paper plant in the USA. These were the first fatal work-related accidents at any of our plants in a decade. We are all deeply affected by the incidents that caused the deaths of two of our employees.

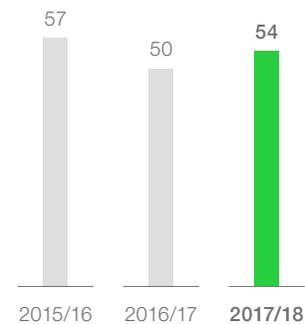
We worked together with the relevant local government agencies in thorough detail and with absolute transparency to examine the circumstances that led to both

Frequency Rate

specific figure in accidents
per 1 million working hours



absolute figures

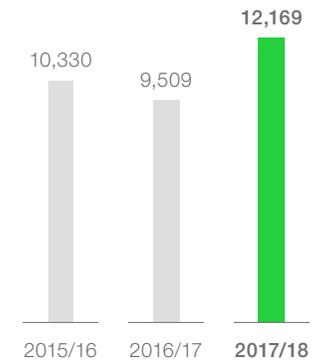


Severity Rate

specific figure in lost hours
per 1 million working hours



absolute figures



unfortunate events, placing particular emphasis on identifying the root causes and further optimizing our processes. Besides specific measures at both sites, in June 2018 we launched additional activities throughout the Group to improve occupational safety. Among them, all production sites were put through an additional security audit to identify cross-site weak spots. In addition, we restarted Group-wide information and educational campaigns on the topics of occupational safety and accident prevention. Even though we have achieved a great deal in the past in terms of occupational safety at Voith, the two accidents underscore once again how important it is that we continue to take a consistent and uncompromising approach to occupational safety.

Fact base Occupational Accidents

Extensive Occupational Safety Program

Our occupational safety program fundamentally includes every employee. We also involve service providers in occupational safety activities through our “Coordination of Visitors and Contractors” Occupational Safety Directive.

Executives with supervisory roles have a particular responsibility in this regard: They are responsible for risk assessments, as nobody else knows the technical requirements or the level of education and experience of their staff better than they do. Furthermore, executives have a clear duty to ensure that information and targets are cascaded as prescribed, right from the Board of Management, through the respective executives, and down to employee level. Employee training and the active communication of key developments also fall within their area of responsibility. Employees must be given documented instruction at least once a year, with centrally prescribed training documents supporting this process. To lend a helping hand, our health and safety specialists provide assistance with queries on using our hse+ software as well as on other HSE-specific questions.

Besides annual instruction, brief summaries are published regularly, sometimes even daily, on HSE issues and information sheets are made available on selected topics. In

the reporting year we continued to put significant effort into using our HSE software for online instruction, even though we in no way see this additional medium as a replacement for supervisor-led face-to-face instruction. Individual business areas are also increasingly switching over to the online delivery of training courses tailored specifically to their needs, some of which they have developed themselves.

We intend to raise our production employees’ awareness through short, high-impact presentations. Beyond the annual instruction we provide, these five- to ten-minute presentations on current topics keep the aspect of occupational safety firmly in employees’ minds as they carry out their daily work. In some cases, employees are involved directly in these presentations, for instance if they are involved in a private or voluntary capacity in the Fire Service, meaning they are highly credible when presenting fire safety topics.

We document instruction sessions that are required by law. Here too, we are increasingly providing them as online tutorials – especially since pilot projects have been greeted so positively in recent years. We will therefore progressively start offering online tutorials on various topics via our hse+ software, with our initial focus areas being decentralized organizations such as site construction, service and sales employees, and administration.

We place particular emphasis on the training of our experts in the regional HSE organization. They have already been rigorously trained on the use of hse+: We have used this online system at Voith since the 2015/16 fiscal year to display information globally, uniformly, and transparently on audit planning and audit results as well as key information on hazardous materials, compliance, and risk assessments. Over the next two years we plan to make sure our people worldwide use as many hse+ modules as possible equally intensively. Furthermore, we intend to further expand the documentation and follow-up of measures derived.

Fact base Occupational Safety Training

Special Responsibility with Field Service

When on construction sites or service calls, Voith field service employees take responsibility for occupational safety and environmental protection in a wide variety of ways – whether as supervisors without authority over other service providers, right through to taking full construction-site responsibility that includes authority over subcontractors.

A cross-divisional working group, “HSE in Field Service,” is responsible for analyzing the related challenges we face and has the long-term goal of standardizing existing regulations. The working group meets every six months with the objective of developing specific solutions in the field of occupational health and safety and environmental protection on construction sites, based on examples and best-practice solutions from various countries. Topics such as customer enquiries and supplier evaluations are also approached jointly and in a coordinated manner. Ultimately, these activities will result in the creation of a uniform cross-divisional standard.

Documenting, Analyzing, and Preventing Accidents

At Voith we record all accidents centrally to ensure that the direct supervisor is reliably informed and that the notifications can be published on the intranet. This also ensures that the Corporate Board of Management is informed within 24 hours in the event of serious incidents. Investigation teams, comprising stakeholders, supervisors, and safety experts, review and document the accidents. Especially serious accidents are examined separately once again at our Center of Competence HSE. A detailed description of accident definitions is given in our Group Manual, and these are presented in a way that makes them comparable internationally with other companies.

In the reporting period we began to take a more systematic approach to analyzing the notifiable occupational accidents resulting in downtime. We investigated every incident in detail, following the Ishikawa methodology to further improve our understanding, recording the root causes, and deriving fundamental preventative measures alongside taking specific action based on the incident.

Voith’s own eVAP app involves employees actively in accident prevention. It enables them to log potential accident causes quickly and easily on the spot, and then sends this information to a central database. Clear icons facilitate the entire user interaction within the app. The data is analyzed automatically and then published in target group-specific media along with corresponding instructions. This allows us to raise our employees’ awareness of unsafe actions and situations before accidents occur. In addition, increased data quality across sectors and countries makes even more targeted prevention work possible.

Our HSE experts currently receive an average of 350 reports each month. Following the Group-wide roll-out of eVAP we are now in the process of adding further smaller app modules. Our aim is to achieve further improvements in the number of audits performed, as well as in terms of the quality of the content.

Using accident analyses, audits, and other measures we make sure we are always up to date in terms of HSE, and can take immediate action in response to serious accidents, or if specific accident types occur frequently. Our global HSE Flash News (information on the accident/incident focus areas in occupational health and safety, and environmental protection) enables us to inform the affected employees immediately and directly.

In the reporting year we produced and sent specific information on the operation of work equipment such as cranes. We also addressed other topics such as hand injuries, and approached these by means of a poster campaign.

Routine Communication of Security Issues

We employ several communication channels to keep every single employee within our Group updated on changes and developments. Besides fortnightly conference calls, the Safety Steering Team also meets annually in two regions, ensuring a rigorous internal and external information exchange and discussion.

Following this, meetings are held at a regional level to communicate the points discussed. In turn, this information is then shared with the individual locations in the

monthly occupational safety working groups. The local experts are also responsible for translating the guidelines and standards into their respective languages. Centrally produced publications, such as the regular HSE and EBM Newsletters, complement our information offering.

Outlook

We intend to maintain this high level of occupational safety going forward, with our hse+ IT platform playing a key role in this regard. It enables us to further improve the transparency of our actions and derive measures in an even more targeted way. In the current fiscal year, we will continue working towards establishing a uniform quality level throughout the Group. To achieve this, we will roll out the same modules globally and, in conjunction with employee motivation measures, make rigorous use of these modules. Once again, our activities will focus on crane operation, as accident statistics show a clear need for a major information drive in this area.

3.4.2 Occupational Health

Regardless of where our employees work, we want them to stay fit for work and retire healthy at the end of their professional lives. From our analyses we know that the statutory frameworks and cultural differences in the respective countries also require different emphases within occupational health management. This is why we pursue a consistent, region-specific approach to occupational health protection in which our fledgling Group Division Voith Digital Ventures is fully integrated.

In the reporting year we continued to work on focus areas. To assist with these activities, with the help of an external consulting firm we launched a pilot project at our Group Division Voith Turbo on the topic of health management. The project covered sick-leave analysis, company inspections, structural analyses, and employee surveys as part of one-to-one interviews and group workshops. The objective in the first step was to work out the factors that have a positive or negative impact on motivation. Based on these, location-specific and additionally Group-wide guidelines

were developed in parallel in seven specific fields of action. We are now focusing on developing and establishing an overarching health management organization prior to defining specific activities for each of these fields of action.

Illness and Stress Support

For the reporting period we are pleased to announce that we achieved further improvements in occupational medical care at our German locations. As planned, we completed the roll-out of our standardized occupational reintegration management system. Thanks to our cooperation with an external service provider, our employees in Germany can obtain information and support relating to the care of family members and childcare. We are currently continuing to work on establishing robust illness- and stress-support processes at our locations. Once this is done we will – as far as permissible under data-protection legislation – roll out a central reporting system on this topic.

4_Products and Supply Chain

4.1 Product Responsibility

4.1.1 Management Approach

Voith products and industrial services serve five major markets around the world: Energy, Oil & Gas, Paper, Raw Materials, and Transport & Automotive. As these markets impose wide-ranging requirements on our company, we ensure our solutions are just as varied to meet them.

The Group Division Voith Hydro develops customized, long-term solutions and services for hydropower plants across the globe. Its broad portfolio of products and services covers the entire lifecycle and all essential components for hydropower plants of any size – from generators, turbines, pumps, and automation systems to spare parts, maintenance and training services, and digital solutions for intelligent hydropower plants.

As a pioneer in the paper industry, the Group Division Voith Paper continuously optimizes the paper production process through its innovations and enables the efficient use of resources in paper production. Through Servolution, as a dependable partner Voith Paper offers its customers customized service solutions for all stages of the production process. Thanks to Papermaking 4.0, paper manufacturers can optimally interconnect their equipment and raise their competitiveness through the effective and secure use of the data generated.

The Group Division Voith Turbo is a specialist in intelligent drive solutions, systems, and pioneering service solutions. Customers from numerous sectors such as oil & gas, energy, mining and mechanical engineering, marine technology as well as rail and commercial vehicles rely on Voith's cutting-edge technologies and comprehensive expertise.

Through Voith Digital Ventures (known as Voith Digital Solutions until September 30, 2018) we combine our long-standing automation and IT expertise with hydropower, paper machine, and drive technology know-how. This Group Division was founded in 2016 and is a key driving force behind our Group's digital transformation.

Our Responsibility – Our Fields of Action

Given the diversity of our product portfolio and the very different market requirements we face, regarding product responsibility our Group Divisions are confronted with a broad spectrum of challenges. To identify these demands systematically and evaluate them in terms of their materiality, we draw on the results of our stakeholder survey of early 2016. As part of a Master's thesis we also evaluated external benchmarks, including those of the IÖW (German Institute for Ecological Economy Research) and ISS-oekom. In conjunction with our Group Divisions' evaluations and assessments, we defined the material fields of action for our company with regard to product responsibility:

- Quality and reliability of our products and services
- Guarantee of maximum product safety
- Long service life of products
- Technological expertise and innovation
- Customer dialog and cooperation
- Product resource efficiency
- Minimizing products' environmental impacts.

Systematic Identification of Trends and Challenges

In 2017 we launched a Technology Foresight project, so we are always prepared to meet long-term challenges. Led by the Chief Technology Officers (CTOs) of each of our Group Divisions we developed future scenarios for water, paper, mobility, and the environment extending right through to 2040. The project is now in its final phase, with initial results already available for some Group Divisions.

Among these, future scenarios for energy and water were formulated at Voith Hydro. Alongside the large hydro sector, the focus is also on the growth areas of small hydro, services, and digitalization. From the 2018/19 fiscal year onward the findings will be discussed with our customers and business partners, and compared with their own assessments.

At Voith Paper the Technology Foresight project is now also in its final phase. With the support of the Fraunhofer Institute for Industrial Engineering IAO and further partners, three future scenarios were formulated.

Strategic objectives for 2025 as well as through to 2040 were derived from these scenarios. Fields of action for these objectives were then defined based on a gap analysis, which in turn were used to develop a technology roadmap. This will soon be completed, so that implementation can start.

In the reporting year Voith Turbo worked out scenarios for mobility, water, and environmental technologies; strategic search fields for innovations and technologies are now being derived from these. Building on the results, a range of design-thinking projects are also planned for the 2018/19 fiscal year. A technology roadmap will then be produced during the current fiscal year, similar to the other Group Divisions.

In its Foresight project, Voith Digital Ventures highlights the opportunities presented by the use of digital technologies in the markets Voith serves. These primarily concern solutions that deliver demonstrable added value to our customers, such as cost savings, quality and production increases, process stabilization, and improved maintenance management.

Trends and Current Challenges

Each Group Division is faced with very different challenges, as they are active globally with a diverse product portfolio and a wide range of customers.

Among them, hydropower competes with other forms of renewable energy. Here, alongside specific cost drivers, implementation periods and technology-related subsidies are increasingly playing a role. We are also continually monitoring global developments relating to climate change, such as increasing reservoir sedimentation, urbanization, and electrification.

When forecasting and evaluating trends, Voith Hydro always needs to keep an eye on special regional aspects and their specific requirements regarding quality, safety, and product responsibility. In China, for instance, there is a clear trend towards the strong expansion of pumped storage power plants and thus highly efficient machinery that is optimized for both pumping and turbine operation.

In addition, there is increasing competition in the area of storage technologies, both for short-term requirements (Li-ion) and long-term storage needs (flow batteries, power-to-x). The topic of offering fish easier passage will also gain further importance.

The same applies to decarbonization efforts, where the aspects of sector coupling and power-to-x, i.e. the conversion of electricity into forms of energy that offer better storage characteristics, are attracting special attention. Voith Hydro sees a potential growth market here, which can also lead to a much more sustainable, decarbonized energy system thanks to renewables – especially hydropower.

Since 2016 Voith Paper has been using a comprehensive methodology to identify trends. This is based on five pillars: Trend Analysis, Technology Outlook, Customer Perspective, Consumer Perspective, and Radical Technologies – technological changes that are radically altering the paper production process and can affect the entire value chain.

The trends already identified such as digitalization, sustainable consumer behavior, population growth, and increasing urbanization remain intact and are decisive for consumer behavior and the development of markets. The foresight and trend analysis methods have since been steadily expanded and adapted to define fields of action driven by overarching trends. Among them, the aspect of sustainability is determined in particular by consumers' purchasing and consumption patterns, for instance in the area of sustainable packaging solutions based on paper instead of plastic.

Thanks to this methodology, Voith Paper identified the trend of water scarcity just as early as the trend to the use of alternative plant-based raw materials in the paper-making process. This is enabling the Group Division to support its customers in using these new raw materials, and to align production processes and plant accordingly.

Voith addresses a number of challenges in the growth market of tissue paper. In the medium term, Voith Paper needs to offer compelling solutions to its customers, particularly through specialized and affordable product systems on the paper machines. An excellent basis for this is the expertise and customer focus of the Business Line Fabric & Roll Systems.

It is important that Voith Digital Ventures exploits the huge growth opportunities in the area of the Industrial Internet of Things (IIoT) while at the same time meeting customers' exacting demands for safety and reliability. Cybersecurity in particular is one area in which it can differentiate itself significantly from the competition. In connection with this, in the reporting year Voith entered into a strategic partnership with the Kudelski Group, a Swiss company specializing in digital security systems. The collaboration aims to develop cybersecurity products and services for industrial customers that increase the security of networked technologies.

For Voith Turbo, decarbonization and e-mobility are still the main trends. The trend towards e-mobility combined with significantly more demanding emissions targets (CO₂ certification) has further accelerated. The Voith Turbo Division Mobility is addressing this challenge by developing hybrid transmissions and a pure electric drive. In addition, extensive e-mobility projects have already been set in motion together with Voith Digital Ventures. Among other achievements, in the reporting year this collaboration led to the presentation of a demonstration electric bus that entered into service in Heidenheim at the end of 2017.

Furthermore, Voith Turbo is predominantly active in high-security industries, such as rail transport and refineries. As a result, the Group Division is essentially faced with very high demands on the quality and reliability of its products.

Voith Turbo continues to focus on the digitalization of its product portfolio in the areas of status monitoring, optimization, and modularization to enable resources to be used even more efficiently. As an example, the DIWA NXT with CRU (Central Recuperation Unit) was developed in collaboration with Voith Digital Ventures. The initial results are positive, with bench trials and test drives meeting efficiency and emissions-reduction expectations. The new transmission has an optional 48V mild-hybrid system and offers an optimal gear ratio for intercity bus and coach applications.

Megatrend Digitalization

We intend to capitalize on digitalization as an opportunity, and combine our long-standing automation and IT expertise with hydropower, paper machine, and drive technology know-how. Collaboration between individual divisions, especially with Voith Digital Ventures which was founded in 2016, is enabling numerous new products and service approaches – some of which are already being implemented.

Voith Hydro considers the development of sensor technology a prerequisite for further interconnectivity on the road to making the interconnected digital power plant a reality. This will provide customers with specific advantages such as even safer operation within a broader operating range, as well as condition-independent maintenance resulting in higher electricity-generation availability.

Voith Hydro is also moving forward in the area of the Industrial Internet of Things (IIoT), in collaboration with Voith Digital Ventures. Collaboration with other companies and customers is essential for this. For example, in collaboration with the Swiss energy group Axpo, Voith Hydro is currently testing several new digital applications

for hydropower plants at Axpo's Sarelli plant in the Swiss canton of St. Gallen. The project aims to optimize plant productivity, minimize downtime, and increase production reliability with solutions such as OnCare.Acoustic, OnCall, OnCare.Asset, and AR (augmented reality) applications. Underlying this smart combination is Voith's recently founded OnPerformance.Lab. The high level of interconnectivity offered by the individual systems is unique in this form, transforming the system into an intelligent hydropower plant.

However, for Voith Hydro this increased digitalization poses an additional challenge regarding plant security. This is because large-scale hydropower plants count as critical infrastructure in many countries, so they need to meet more stringent requirements – particularly in the area of cybersecurity.

Voith Paper and Voith Digital Ventures are also working together on developing predictive maintenance techniques as an additional service for customers. One example is the Talking Roll, a sensorized functional roll, which learns by itself, predicting remaining roll run time and actively communicating service requirements; the safe operating window regarding predictive maintenance is calculated using cloud-based data analysis techniques.

In contrast, Voith Paper has withdrawn from the Kopernikus project on the use of flexible energy supplies in the paper industry. Prior to the project exit at the end of 2018 energy consumption data from several pilot plants was analyzed to assess potential savings.

In the reporting period Voith Turbo worked together with Voith Digital Ventures on the BeltGenius project. This digital project optimizes the operation of mining belt conveyors, which are typically subject to heavy variations in load. BeltGenius monitors the conveying systems continuously, enabling the comparison of their performance and the optimization of their energy consumption.

Research and Development

Our success largely hinges on our technological expertise and ability to constantly apply our know-how in innovations that generate added value for our customers. This is why research and development (R&D) has traditionally been a top priority at Voith. In the reporting year we invested €225 million (previous year: €217 million) in R&D activities. At 5.4%, the share of our Group's sales dedicated to R&D was slightly above the previous year's level (5.3%).

Our engineers have been writing history with their technological inventions ever since our company was founded. This is reflected in our strong patent portfolio, with several thousand active patents to our name around the world and hundreds of new ones added to our portfolio in the reporting year.

Our Group Divisions perform the majority of our R&D activities. While these activities have a global focus, they are centered on Germany. Our R&D centers in the Americas, Asia, and the rest of Europe deliver valuable specialized research and development contributions in the relevant Group Divisions.

 [Annual Report 2018](#), p. 99 et seq, [Research and Development](#)

 [Fact base](#) [Research & Development Expenditure](#)

Current Developments in the Group Divisions

Voith Paper continues to develop sensor-based systems to forecast the service life of products. This approach improves operational reliability, making sudden system failures virtually a thing of the past. Several products are currently under development, with some approaching the pilot phase.

In the area of digitalization, Voith Paper is focusing R&D on the field of simulations. It is putting a great deal of effort into developing a digital twin of machines and production processes. To achieve this, various purely physical as well as empirical, data-based simulation techniques are deployed. The digital images created are initially used

internally to enhance products, but they will also be incorporated at a later stage into various products and services for Voith Paper customers.

In the reporting period Voith Turbo continued to drive forward the collaboration with its partner FSubsea to develop variable-speed drives for the operation of single-phase and eventually multi-phase pumps on the sea floor. The torque converter has been tested successfully in Crailsheim and will now be integrated into the customer machine for overall system testing.

Voith Turbo sees good growth opportunities in coming years in the heavy trucks sector – the main market for Voith retarders. While the switchover to electric powertrains is not currently expected to cause a significant change in the retarder business, a new generation of retarders will still be necessary.

A significant proportion of city buses will be battery-powered from 2025, so Voith Turbo is progressively expanding its R&D activities in the direction of electromobility. Here, bridging technologies such as DIWA NXT with a CRU will be essential. Diesel engines will continue to play a significant role, in conjunction with alternative fuels and downsizing. In this regard, with its new generation of transmissions and mild hybridization Voith is well equipped to face upcoming combustion engine developments. Various customer requests confirm the growth expectations in the above-mentioned areas.

VT section

Voith Hydro's R&D activities continue to center on making the interconnected digital power plant a reality. To establish a fundamental prerequisite for this, it is focusing on using sensors to communicate information on system operations. In the reporting period the spotlight was on the prediction of fatigue for various components depending on the plant's mode of operation.

The interconnected digital power plant of the future will lead to a further reduction in electricity generation costs through higher availability, also thanks to predictive maintenance of critical plant components.

In the course of digitalization, many companies have established pilot projects to prove and measure the benefits of Industrial Internet of Things (IIoT) solutions. In terms of IIoT technologies, this is why Voith Digital Ventures continues to develop tailored customer solutions to maximize each customer's return on investment (ROI). At the start of these processes, workshops are held with customers to identify priority challenges and potential solutions.

For many customers, dealing with vast amounts of data is a challenge. In many cases, extensive data is collected which needs to be made usable. Voith Digital Ventures develops solutions together with the customer as part of 4.0 pilot projects and supports them with their company-wide roll-out.

In addition, knowledge of optimal, location-independent information processes and migrating from reactive to predictive (prescriptive) maintenance are challenges for many customers. Besides digital solutions, we also provide support with our expertise in this area – that is, our deeper understanding of industrial processes.

Collaboration Projects with External Partners Deliver Important Insights

Voith's Group Divisions are market and technology leaders in many business segments. For this reason they are also in constant dialog with research institutes, universities, associations, and other companies along the supply chain.

Among them, Voith Paper collaborates with a range of institutes and universities with clearly defined fields of action. To achieve the targeted 80% CO₂ reduction by 2050, Voith Paper is already working actively on bringing the technology to market-readiness within the next decade. As part of this, in the reporting year the EU-wide Provides

project was concluded, which aims to achieve a drastic reduction in the CO₂ footprint of pulp production.

Together with the Hamm-Lippstadt University of Applied Sciences, in 2018 Voith Paper initiated a forming-section research project. The project aims to reduce overall drive load to significantly cut energy costs and optimize the paper machine start-up process following downtime.

In collaboration with the Leibniz University of Hannover (LUH), Voith Hydro conducted experimental and theoretical studies on loss mechanisms in a separately excited hydropower generator. For research purposes, Voith Hydro has provided the university with a realistic model of a hydropower generator. The findings from these studies enable the efficiency, service life, and material use to be optimized in the design of such machines. In addition to industry-funded doctoral theses, Voith funds a junior Professorship in Hydropower Generators. The Hydropower Generators lecture series ensures that young students will continue to be inspired by hydropower technology.

Fact base Voith Hydro Collaboration Projects

Voith Turbo is currently working on a research project funded by the German Federal Ministry for Economic Affairs and Energy that also involves DLR (the German Aerospace Center). In this project, composite-structure sensors are being developed for use in mobile applications such as for rail vehicles. Its aim is to detect component damage at an early stage before this results in critical structural failure. Furthermore, optimized utilization of material-specific load limits based on constant monitoring of the material allows a lighter construction to be achieved. Based on the tests, significant component weight reductions were achieved (over 25%) while maintaining the same performance. The corresponding component will be tested extensively during the course of 2019.

Customer Dialog

Maintaining close customer relationships and a deep understanding of customers' needs has always been one of Voith's strengths. All divisions are in constant contact with their customers, and they are also included in Foresight-related activities and trend analyses. This contact also includes targeted surveys such as on customer satisfaction or future requirements on our products' capabilities. At the same time, digitalization is playing an increasingly important role in our Group Divisions' customer communication activities. In this regard, we aim to improve both our own and our customers' understanding of digitalization in equal measure, and in doing so give our customers the edge through increased interconnectivity and the intelligent combination of industry know-how with analysis and IT expertise.

Resource savings, whether in terms of fibers and other raw materials, water, wastewater, or energy, remain central topics within Voith Paper's customer dialog activities. In addition, an ever-increasing number of customers ask us for detailed information such as on individual materials used in the product manufacturing process. And from a consumer perspective, environmentally friendly packaging, in which more paper is used than plastic, matters a great deal and thus influences the requirements on paper production.

It became clear from customer feedback in the reporting period that the market success of the BlueLine stock preparation family is mainly based on the robust machinery design, the stock preparation systems' low specific energy consumption, and their high fiber-yield efficiency. In addition, the feedback confirmed the high level of energy efficiency of Voith tissue machines. Involving customers in the design-thinking processes results in shorter development times and more targeted product solutions, allowing Voith's sustainable solutions to be utilized more rapidly.

Fact base Customer Dialog Voith Paper

In the reporting year, as part of the Sales Excellence program Voith Hydro established a uniform, global customer analysis process and also made it more comprehensive;

initial findings are expected in the next fiscal year. The increasing internationalization of our customers requires a supplier management structure that allows comprehensive acquisition across all product areas and globally consistent project support. With our newly introduced global Key Account Management organization, we now also offer selected customers enhanced support.

Voith is receiving an increasing number of enquiries from customers asking how digitalization can help extend maintenance cycles and reduce costs in hydropower plants. To meet this need, today Voith Hydro is able to provide appropriate solutions and products that add significant value for its customers.

With the opening of additional regional HyService centers, Voith Hydro continues to put its service activities on a regional footing, thus enabling it to respond even more quickly to customer requirements. Among its new centers, Voith opened a Hydro office in Sydney, Australia in March 2018. It supports hydropower projects across Australia and New Zealand, and as a HyService center it also makes it easy for manufacturers and customers in the region to request and receive direct assistance. In May 2018 a new head office for hydropower projects in East Africa was established in the Ethiopian capital Addis Ababa. From our new location, we plan and coordinate projects in nine countries in the east of the African continent.

In Brazil, Voith Hydro continued its long-standing cooperation with EDP Brasil – a leading company in the Brazilian power industry – with highly successful results. Over the last few years, Voith Hydro has been able to extend the intervals between planned downtime at EDP Brasil plants by 50%. This has led to a 30% reduction in overall downtime and significantly improved the availability of the hydropower plants.

 **Fact base** Customer Dialog Voith Hydro

Voith Turbo identified close customer contact, a strong regional market presence, and world-class service as business success factors. In the customer satisfaction surveys conducted in 2018, e-mobility and smart services emerged as the main topics.

As part of product development, Voith Turbo customers are involved early on in the development process to gather their feedback – in some cases even on a prototype or MVP (Minimum Viable Product) basis. Examples of this approach include the BeltGenius product for the mining sector as well as various development projects in the area of mobility.

Our customers are increasingly requesting condition-monitoring systems, and work is already underway on realizing these together with those requiring them. The systems monitor critical processes in the oil and gas sector. In addition, together with customers we have developed the market-ready Smart Accelerate product: This allows fuel savings to be achieved in city bus operations and is already proving its worth in trials.

 **Fact base** Customer Dialog Voith Turbo

It is essential to Voith Digital Ventures that the widely differing customer interests and experiences are understood. To achieve this, a system for performing structured customer satisfaction surveys is currently being worked on. As part of the Group-wide initiative on customer satisfaction surveys, a dedicated system is being developed to cater for Voith Digital Ventures' frameworks and objectives. In addition, a customer satisfaction survey was conducted in the reporting year at offices in regular contact with customers. This Group Division also maintains regular contact with its customers through training sessions, which are usually an integral part of projects.

 **Fact base** Responsible Marketing

4.1.2 Reliable and Safe Products

Voith is renowned the world over for the safety, quality, and reliability of its products. We are fully aware of the value of this important competitive advantage, so we have set out the principles of our quality and technical risk management processes in a Group Directive. Our Group Divisions and their companies then expand on these principles and supplement them accordingly.

We document and certify our activities according to the international ISO 9001, IATF 16949, and ISO/TS 22163 quality management standards; we also supplement these with many of our own QM methods. Virtually all Voith locations are certified to one of these standards. With the help of clearly defined project scopes, a Group-wide Operational Excellence initiative places an even stronger focus on the quality of our products and processes. The aim in this regard is to continuously improve quality while reducing associated costs. To achieve this we focus on four core projects: Quality-cost Transparency, Problem-solving Methods, Continuous Improvement Processes, and Quality in Engineering.

As part of the Voith 150+ Next Level program in the reporting year we set uniform KPIs to enable the various Group Divisions to be benchmarked against each other as well as within their respective industrial sectors. In doing so, quality costs are now recorded uniformly across the Group, making them comparable.

Voith products always meet the statutory and regulatory requirements of the countries we supply. Our Group Divisions are responsible for implementation, while the relevant Quality Assurance Departments ensure process compliance. To achieve this, they rely on our Group-wide TRQM (Technical Risk and Quality Management) system and division-specific regulations.

Fact base TRQM

We train employees regularly on how to handle regulations, and make these available to them via our Group-wide database and internal communication channels. In addition, we provide our customers with the relevant know-how through training courses held either at our training center or directly at our customer's location.

We evaluate the effectiveness of our quality assurance measures in our respective Group Divisions using division-specific KPIs as well as internal and external audits; our suppliers are also involved closely in these activities.

Fact base Quality Management in Our Group Divisions

Fact base Voith HydroSchool

A key quality of Voith machines and systems is their long service life, which is why Voith Turbo gear systems and Voith Hydro turbines have been in reliable operation for decades. The same applies to our paper machines. Because of this, our Group Divisions are committed to supplying spare parts even after many decades of operation. This means that the key requirement of ensuring our products can be repaired is factored in right from the development stage. Furthermore, Voith engineers are constantly tasked with supplying spare parts for third-party components – such as for transmission units produced by competitors that are no longer active in the market – to enable customers to continue operating a system.

Product Impacts by Group Division

By further developing our products, we work to make them more environmentally and resource-friendly throughout their lifecycle. In doing so, we meet our customers' demands, statutory requirements, and ultimately our own aspiration. The primary aim of all our Group Divisions is therefore to conserve resources and to minimize the environmental impact of our products. To achieve this we follow a decentralized management approach.

We predominantly supply components that, as part of an overall system, have differing energy and material footprints. We employ a range of tools to gain an even more detailed picture of our products' energy and raw-material efficiency. Among these, for many years now we have conducted product Life Cycle Assessments (LCAs) in accordance with ISO 14040 and 14044.

With our broad product portfolio and our active role in a variety of markets, we constantly face the challenge of producing a balanced account of our activities in a uniform, standardized report that covers all Group Divisions. By way of an example, in the following we have outlined the lifecycle of a main product of each Group Division that also shows its environment and social impact.

Voith Hydro

Hydropower Plant
Sustainability aspects



Voith component lifecycle

Complete Equipment from Voith
Contribution to greater sustainability



	Upstream/Supply Chain (Hydropower Plant Planning Phase)	Creation (Hydropower Plant Construction Phase)	Utilization Phase (Electricity Generation)	End-of-Life
	<ul style="list-style-type: none"> · Environmental & social acceptability checks · Stakeholder engagement 	<ul style="list-style-type: none"> · Management of social and environmental aspects · Safe working conditions 	<ul style="list-style-type: none"> · Electricity generation · Inexpensive, low-carbon multi-purpose benefit of the plant (e.g. flood protection, irrigation) · Plant safety · Environmental impact 	<ul style="list-style-type: none"> · Modernization allows continual extension of a plant's operating life
	<ul style="list-style-type: none"> · Reduction in supply chain risks through GPTs, CoC · ISO 9001, ISO 14001, and OSHAS 18001 matrix certification for production locations 	<ul style="list-style-type: none"> · High global safety and quality standards · Technical customer training courses on optimal environmental and economic operation (HydroSchool) 	<p>VH products offer:</p> <ul style="list-style-type: none"> · A high level of efficiency and durability <p>VH products/services can:</p> <ul style="list-style-type: none"> · Improve operation and cost-effectiveness · Mitigate environmental impacts and facilitate the integration of renewable energy sources into the grid 	<ul style="list-style-type: none"> · Extension of the utilization phase through the renewal of components · High proportion of reused products

Voith Hydro

Voith technologies play a decisive role in minimizing the environmental impact of hydropower plants – from improving water quality through aerating turbines and oil-free hubs that prevent water contamination, through to innovative runners that improve fish passage through rotors.

Voith Hydro works tirelessly also to minimize the remaining environmental impacts. As part of this, our engineers receive systematic training right from when they receive their internal vocational training.

Our customers focus on their own energy requirements and material use during the utilization phase to optimize their operating costs, especially in the case of large systems and equipment. This is because hydropower plants have a long service life; indeed, 70 years is not uncommon.

To further limit our environmental impacts we aim to switch over our production to using environmentally friendly materials wherever this is technically possible. Voith Hydro also aims to install new hydropower plants at existing dams and weirs to generate renewable energy growth without having a further environmental impact on the surroundings. Using our StreamDiver solution, small-scale hydropower plants can be installed at existing irrigation dams even where strict environmental regulations apply. In the reporting year we sold 14 StreamDivers as part of three projects. In addition, as part of a Master's thesis Voith Hydro has developed a lifecycle analysis for scalable StreamDiver hydropower applications. It focused on the CO₂ footprint of the hydropower applications, with all phases included in the product lifecycle. One of the findings shows that with values between 2 and 10 g CO₂e/kWh the greenhouse gas emissions of the StreamDiver applications are very low.

Voith Paper

Paper Facility

Sustainability aspects



Voith component lifecycle

Voith Paper Machine

Contribution to greater sustainability



	Upstream/Supply Chain (Procurement of Materials and Services)	Creation (Paper Facility Construction Phase)	Utilization Phase (Paper Production)	End-of-Life (Decommissioning of the Paper Facility)
Paper Facility Sustainability aspects	Potential risks: · Social & environmental impacts in the supply chain	Potential risks: · Land use · Loss of biodiversity · Emissions (air, wastewater, noise, goods transportation) · Occupational accidents	Potential risks: · Unsustainable virgin fibers and fiber loss · Increased resource requirements · Use of chemicals and process residuals Potential opportunities: · Use of fibers from waste paper · Closing of cycles	Potential risks: · Process residuals, hydraulic oil Potential opportunities: · Recyclable materials such as metal, structural/civil engineering materials, plastics, oil
Voith Paper Machine Contribution to greater sustainability	· Reduction in supply chain risks through GPTs, CoC, and LSA · ISO 14001 and OSHAS 18001 matrix certification for production locations	· Planning services for entire paper facility · Ensuring the occupational health and safety of our employees when at the customer's location	Efficient paper machine technology helps reduce: · Energy, water, and fiber consumption · Emissions · Use of chemicals	Extension of the utilization phase through: · Renewal of components · Modular design · Service offering

Protecting the environment is also increasing public acceptance of hydropower, resulting in reduced implementation times for new plants and modernization projects.

The modernization of the small-scale Mucomir hydropower plant in Scotland in the reporting year demonstrated how increased efficiency and improved environmental standards can go hand in hand. Voith Hydro rebuilt, installed, and commissioned the turbine unit, installed a control system, circuit breaker, and hydraulic power unit, and rehabilitated the generator. The plant was then reconnected to the grid in autumn 2017 following its successful commissioning. Thanks to state-of-the-art developments in system hydraulics, a higher degree of efficiency has been achieved; at the same time, the hydropower plant now meets the highest environmental standards.

The special design of the new runner improves fish passage, allowing them to pass through the turbine without significant restrictions. This also allows local fishery interests to be widely considered. In addition, oil- and grease-free bearings were installed as part of the modernization activities to minimize environmental impacts. Moreover, the hydropower plant is now equipped with a remote control system ensuring safe and efficient unmanned operation that also allows fast fault analysis when necessary.

The largest variable-speed pumped storage power plant in Europe, Frades II in Portugal, entered into service in the previous reporting year. In autumn 2018 it won the prestigious VGB Quality Award from VGB PowerTech e.V. – the international technical association for generation and storage of power and heat. The award went to the operator EDP and the consortium comprising Voith Hydro and Siemens that

Voith Turbo

Bus

Sustainability aspects



Voith component lifecycle

Voith Components

Contribution to greater sustainability



	Upstream/Supply Chain (Procurement of Materials and Services)	Creation (System Construction Phase)	Utilization Phase (City and Overland Transportation)	End-of-Life
	Potential risks: · Social & environmental impacts in the supply chain	· Emissions (air, wastewater, noise, goods transportation) · Occupational accidents	Potential risks: · Oil loss (30 liters of transmission oil) · CO ₂ emissions and transportation noise · Noise emissions (transportation noise) Potential opportunities: · Emissions reduction in local public transport	Potential risks: · Operating fluids and interior fittings, etc. Potential opportunities: · Operating fluids and interior fittings, etc. Recyclable materials such as aluminum, copper, steel, less plastic
	· Reduction in supply chain risks through GPTs, Code of Conduct, and LSA · ISO 14001 and OSHAS 18001 matrix certification for production locations	· Ensuring the occupational health and safety of our employees when integrating the transmission unit at the customer's location	· Reducing emissions through acceleration and topography-based gear shifting and Smart Assist · Optimization of operating costs through Smart Maintenance and service-friendliness	· Transmission Exchange Program (reconditioning of transmission units) · Correct handling and disposal

supplied the plant. The hydropower plant is considered an international flagship project and is making a significant contribution to grid stabilization and to further expansion of renewable energy generation in Portugal.

 **Fact base:** Progress on Social and Environmental Impacts – Voith Hydro

Models for the predictive maintenance as well as repair and overhaul of products throughout their lifecycle help to conserve resources while increasing efficiency. Residual life calculations are also used, which allow the degree of wear and the residual service life to be determined by analyzing the mode of operation and performing specific system measurements. This allows customers to perform their own maintenance and repair work on the basis of the degree of wear instead of fixed intervals – saving them both material and personnel costs.

Voith Paper

As the average operating lifetime of a paper machine is around 40 years, even minor improvements in equipment efficiency can have a major impact. However, while the actual process of manufacturing a machine has a negligible environmental impact, the amount of energy required to operate a paper facility exceeds that which is required to manufacture the machine by a factor of 300. Steel, as well as materials for structural and civil engineering, account for the largest share of material types in the supply chain. For the reporting period we are pleased to announce that we reduced the use of iron significantly through the use of steel drying cylinders.

Voith Paper aligns its product strategies with growth markets and meets their different requirements on paper types and regional aspects to the greatest extent possible. One area is tissue, where demand is linked directly to the development of the world population and to economic growth in emerging countries.

Digitalization of the highly complex paper production processes will determine competitiveness in the future. First and foremost the decisive factors will be the efficiency of the machines used, followed by optimization of the paper production processes.

Voith Paper aims to produce the greatest added value for its customers through maximum resource-friendliness in operation and efficiency in design. To Voith Paper, resource conservation means above all reducing the specific consumption of freshwater as well as electrical and thermal energy per tonne of paper produced. Moreover, it also means reducing fiber loss and wastewater, and achieving time savings in paper production for customers through the use of machines that offer maximum efficiency.

Voith Paper is increasingly using renewable raw materials, and working tirelessly to close material, water, and auxiliary cycles.

Today, Voith already has so many HydroSeal components in circulation worldwide that in terms of numbers, over 20.6 million m³ of water are being saved annually compared to conventional technology. This is equivalent to the annual German consumption level of 460,000 people – roughly equivalent to the population of Duisburg. On top of this, significant energy savings are being achieved. In the reporting period Voith Paper also developed a new disc filter drainage element, which offers a significantly larger filter surface and thus increases the filter's effectiveness. Through targeted retrofitting, this means an existing machine can continue to be used when production is expanded.

We intend to continue further reducing the environmental impacts of paper production while increasing the cost-effectiveness of plants. Moreover, Voith Paper is always looking for opportunities to increase the recycling rate of its own production processes.

 **Fact base** Social and Environmental Impacts – Voith Paper

 **Fact base** Recycling in Detail Voith Paper

Voith Turbo

Voith Turbo plans to offer its customers increasingly energy-efficient and eco-friendly product generations, and makes ongoing efforts as part of a continual improvement process in which customers are also involved. As part of this, it always focuses on the impact of using Voith components on the total cost of ownership (TCO). Energy costs account by far for the largest share, so reducing them takes top priority for all business areas at Voith Turbo. Products such as VoreconNX, VECO-Drive, DIWA NXT with its recuperation unit which is currently in development, and the development of our e-drive for city buses all demonstrate the success of these activities. Smart solutions are increasingly complementing the Voith offering, enabling operators to cut energy costs when operating their facilities.

Voith Turbo also aims to reduce its use of those materials with a negative impact on human health or the environment to an absolute minimum. The product development process already incorporates these aspects right from its early stages, with harmful materials replaced by other materials as early as the engineering phase, wherever technically and economically feasible.

In the reporting period Voith Turbo achieved the following progress in terms of its energy efficiency and in reducing the environmental impacts of its products and services:

In the reporting year the VECO-Drive, the new variable-speed drive for compressors and pumps, was sold for the first time. Thanks to this, the coal-fired power plant operator Nansha will achieve significant energy savings in the operation of its boiler feed pumps by retrofitting its old drive solutions.

Voith Turbo is also driving forward the development of Voith RailPacks to meet the tighter rail emission regulations that enter into force in 2021 for railcars and locomotives. In a joint project with the Liebherr Group, rail vehicle diesel engines are currently being developed that meet the latest emissions standards, offer 23% more

power in the same installation space, and deliver fuel savings of around 8% versus the competition. Furthermore, Voith Turbo is also responding to the trend towards bi-mode rail vehicles that can be operated on non-electrified track sections using ultra-low emission diesel engines or batteries.

Our AeroMaXX product for gear units in power generation plants reduces power loss and oil consumption by 30%. The solution uses the latest bearing technology and separates the oil needed for lubrication and cooling, resulting in significant reductions in ventilation losses. The technology has been tried and tested, and is already being used successfully by major providers.

To minimize material costs and noise emissions in gear drives, the Voith Turbo Division Powertrain Technology developed bionic toothing, which is already in mass production and in use in rail-vehicle gear units.

Voith Turbo is one of only a handful of suppliers that can provide a complete powertrain for city buses from a single supplier. The presentation of the Voith E-Drive System for city buses and the e-bus demonstrator in Heidenheim marked a continuation of our decades of activities in the field of hybrid and electric drive technology. In addition, in the reporting year Voith Turbo and its partner Transdev GmbH placed an order for six additional e-buses for use in Schwäbisch Hall and Heidenheim. We are also currently dealing with enquiries from further bus OEMs for an electric drivetrain.

 **Fact base** Progress on Social and Environmental Impacts – Voith Turbo
 **Fact base** Challenge: Long Service Life

Voith Digital Ventures

Voith Digital Ventures plays a pivotal role in our Group's digital transformation. With its process know-how and human resources, it will continue to support the Hydro, Paper, and Turbo divisions in developing their respective digital product portfolios.

A major part of Voith Digital Ventures' product portfolio is aimed at increasing the efficiency of plants and systems – and thus also reducing negative environmental impacts. Essentially, the products are divided into two areas: Asset Performance Management (OnCare) and Process & Operation Controls (OnQuality, OnEfficiency, OnControl).

OnCare products focus on technical availability. Here, Voith aims to accompany customers on the journey from the current reactive system maintenance towards prescriptive maintenance, where machines and plants try largely themselves to autonomously correct problems or adjust settings for optimal operation. This means that resources are better utilized and material efficiency increases. At the same time, the risk of unforeseen and therefore often more dangerous failures, which could put people at risk, is reduced. However, such a fundamental change cannot be achieved at the touch of a button, which means Voith Digital Ventures offers not only the solution, but also appropriate training and comprehensive process support.

OnQuality, OnEfficiency, and OnControl products focus on quality and runability, i.e. the proportion of operating time in which the maximum production output is available. In this regard, Voith Digital Ventures works particularly closely with other Voith divisions.

Specific examples from Voith Paper include:

- OnEfficiency.Strength enables customers to migrate from offline paper-strength testing to real-time machine control. By stabilizing quality, the customer can work closer to the target specification, reducing raw material consumption and out-of-spec production.

- OnEfficiency.Dewatering first stabilizes and optimizes the dryness of the paper web in real time by controlling the vacuum, based on the water content. This leads to lower energy consumption, more consistent quality, and a smoother machine run at better runability.
- OnEfficiency.DIP optimizes a paper machine's deinking system by increasing the yield and reducing the consumption of bleaching chemicals. This is achieved by optimizing the mechanical and chemical treatment process when removing ink from waste paper.

Together with Voith Hydro, the joint agenda includes automation solutions right through to the digital power plant. This has produced solutions such as HyCon automation for pumped storage power plants required for grid stabilization. The increase in wind farms and solar parks means significantly more starts and stops than originally planned, placing greater strain on turbines and generators. This makes condition-based maintenance (with OnCare.Asset & OnCare.Health) increasingly important. Voith solutions can also help regulate river water volumes, which is an additional task of run-of-the-river power plants.

Completing our list, in the area of mobility our solutions such as OnEfficiency.DriverAssist and OnEfficiency.SmartAccelerate are helping to reduce the fuel consumption of city buses. The central challenge in this regard is to motivate people to adopt a specific driving style.

Product Responsibility Outlook

We expect a further tightening of environmental protection legislation as well as a continual rise in customer demands regarding the environmental and resource efficiency of our products – something that affects all our Group Divisions.

We continue to see great potential for all Group Divisions through Industry 4.0. As part of this, one of the main emphases for Voith Digital Ventures is on the interoperability of various systems, as customers increasingly want to use the opportunity to

connect different systems together seamlessly to form complex systems. Above all, potentials lie in solutions for producing the digital twin of facilities and systems as well as in the use of artificial intelligence. From an environmental perspective, solutions that reduce energy and waste are a key issue for customers, as they also positively impact financial results.

For Voith Hydro, the digitalization of assets for the long-term operation of hydropower plants will become increasingly important. In this regard, the use of (static) engineering data from facility planning in conjunction with (dynamic) information from subsequent operation of the facility will allow customers to fully exploit the potential offered by digitalization.

Over the coming years Voith Paper expects new emissions legislation, which took effect from mid-2018 in the EU and in all signatory countries to the Kyoto Protocol, to provide considerable stimuli. As a consequence our customers are giving greater consideration to energy-saving projects. Our machines, products, and modification projects strongly support this focus. As part of this, Voith Paper is concentrating on the topic of wastewater treatment and the further closure of water cycles in particular.

In general, Voith Turbo also sees a considerable increase in demand for energy-saving solutions in the power plant and raw materials segment, driven by various government incentives. There are also an increasing number of approaches to rolling out systems and services that monitor and increase the efficiency of entire plants – an area in which Voith Turbo works closely with Voith Digital Ventures.

In China, expansion of the high-speed rail vehicle network shows no signs of stopping. To meet this demand, Voith Turbo is developing reliable final-drive units and investing in the development of new smart couplings and complete front ends. The benefits of these include enhanced functionality, ease of use, and low energy consumption. In doing so we are meeting the need for the modularization and standardization of functions and interfaces.

In Europe in particular, Voith Turbo expects a further tightening of rail and commercial vehicle emission regulations as well as growing customer demands for greater vehicle energy efficiency.

4.2 Responsibility in the Supply Chain

Purchasing naturally focuses on price, quality, and delivery reliability as well as on full compliance with all applicable statutory provisions: These include employment, occupational health and safety, and environmental protection laws, as well as the bans on child and forced labor. Differing legal requirements and the constantly growing demands for documentation of all the above-mentioned aspects continually place high requirements on our company. The conservation of resources and social responsibility are firmly anchored in all our supply chains, and are also established in the strategy and process description in the Voith Purchasing Manual.

Continued High Purchasing Volumes with a Highly Diverse Spectrum of Goods

In the 2017/18 fiscal year we once again purchased goods and services worth over €2 billion from our external suppliers and service providers. The spectrum of the goods we purchased was, as always, highly diverse. Measured by overall invoicing volume the purchase of complete plant systems represented the largest item of expenditure, as in the previous year.

 **Fact base** Procurement Markets

Fair Business Relationships around the World

As an internationally active company Voith currently does business with suppliers from 90 different countries, above all in the Europe, Americas, and Asia Regions. We place 80% of our purchasing volume with around 2,300 suppliers. As a fundamental principle we work to build long-term relationships with our business partners, and therefore closely monitor the economic sustainability of our requirements on them. In

this regard, fairness is the core element in establishing and maintaining a long-term, trust-based business relationship. To ensure this we regularly engage in strategic dialogs with our key business partners.

Clear Conditions: Code of Conduct Sets the Framework

Our Code of Conduct (CoC) is the core guiding principle for our purchasing activities. Together with our General Purchasing Conditions (GPCs), the CoC defines our understanding of partnership-based collaboration and sets out guidelines on dealing with issues regarding compliance as well as environmental and social standards. Amongst other stipulations, it requires full compliance with our ban on all forms of discrimination. In addition, the GPCs contain a directive governing the declaration of hazardous materials.

Our CoC and GPCs are freely accessible on our corporate webpage. They provide the basis for sustainable agreements with our suppliers, and also require them to place their own subcontractors and upstream providers under equally strict (or stricter) obligations.

By drawing up country-specific versions of our GPCs we ensure that our Purchasing organization takes national particularities into account, for instance with regard to payment conditions, environmental requirements, and customs regulations. In the reporting period we produced country-specific versions for three further national markets.

 **Fact base** Country-specific GPTs

 **GPCs** <http://www.voith.com/corp-en/about-us/supplier-ecosystem.html>

 **CoC** www.voith.com/cn/coc-english.pdf

Anchored in Our Organization

Our Corporate Strategic Purchasing (CSP) Department is responsible for sustainability topics within Voith's purchasing activities. Besides reporting, the department also focuses on supplier-specific compliance aspects. Current topics are discussed and agreed in the Purchasing committees on a cross-Group divisional level, together with representatives from each division.

Employee Development and Training

The Voith Purchasing Training Program was specially developed for our Purchasing organization. We actively encourage our employees to take part in Voith's global further education offer to ensure that our people are always fully up to date on legal compliance requirements, on using our IT systems, and on supplier negotiations. The further education measures include a compulsory one-day, onsite training unit on Compliance, and the regular New Buyer Academy for Purchasing employees. In the onsite courses, local trainers also present key elements of the respective market culture and characteristics. Webinars and e-learning offers additionally ensure training content is globally available and constantly up to date. Seminars and webinars are now delivered in all Voith regions around the world.

The regular ongoing Compliance training courses mean that in the reporting year almost all Purchasing employees took part in an onsite course, or in e-learning sessions. Overall, Purchasing employees received 10,832 training hours in the year under review, 1,514 of these as part of the Purchasing Training Program.

 **Fact base** Scope of Training

Active Supplier Management

The switchover to “Voith SLM & eSourcing” (Supplier Lifecycle Management), the Supplier Management System we introduced in the 2016/17 fiscal year, is now complete. The roll-out process was also used to correct and eliminate redundant and obsolete datasets. The new solution is not only more stable and a major technical improvement, it also covers more Voith locations and its clearer layout makes it more user-friendly. Suppliers can log into Voith SLM & eSourcing as users directly via the Voith homepage, update their details themselves, complete survey questionnaires, upload certificates, and respond to calls for tender.

The system also comprises further supplier management aspects, in addition to the Compliance and Sustainability Checks as well as the Supplier Evaluations as detailed below: These aspects include a document database for contracts and contractually related documents such as Non-disclosure Agreements (NDAs), as well as a certificate database that includes quality certifications. Beyond this we are working to implement a uniform supplier classification within the system. In the medium term a risk management database and an audit report file are also planned.

A further core function of Voith SLM & eSourcing is eSourcing itself, aimed at raising transparency in purchasing processes. This makes it possible for suppliers to process requests online via a unified platform that additionally interfaces with the Voith SAP system. Price negotiations on individual tenders can also be carried out online.

To minimize risks in the overall purchasing process we continue to require regular self-assessment documentation from our suppliers. The Group-wide standardized Supplier Questionnaires ensure that the data from these Supplier Self-assessments are collated and processed in a logical and optimally coordinated way. As at the end of the reporting period the system already contained a valid Compliance and Sustainability Check for over 3,000 Voith suppliers. The suppliers assessed in this way represented 68% (previous year: 55%) of our overall supplier expenditure. Alongside material-specific questionnaires, the Supplier Self-assessment on HSE (occupational safety, health, and environmental protection) complements our Supplier Self-assessment initiatives.

 **Fact base** Supplier Self-assessment

In addition to the Supplier Self-assessment, working together with our buyers our employees in the specialist departments also assess our active suppliers. A standardized procedure with transparent criteria ensures cross-Group comparability of the results. While in previous years we worked mainly to achieve a high supplier-coverage

to supplier-expenditure ratio in our assessments, we are now increasingly switching to case- and classification-based assessment: This new approach allows us to focus more closely on the content of our supplier interactions and business relationships. Although we once again achieved a higher Supplier Evaluation rate (49%) in the reporting period versus the preceding year (36%), the fact that current assessments for almost 1,000 individually identified suppliers worldwide are visible in the system is far more important.

These Supplier Self-assessments continue to include sustainability criteria, from which we derive the Sustainability Ratio: This shows our specialists' subjective assessment of our suppliers regarding compliance with environmental and social standards. The business partners we assessed in the reporting period reached an average ratio of 87.4%, which broadly matches the ratio achieved in the previous year.

Fact base Evaluations of Suppliers

The new reporting system was also rolled out in Purchasing within the period under review. This creates higher transparency and provides additional opportunities for analysis, together with a clear improvement in user-friendliness. The tool interfaces with all relevant Enterprise Resource Planning (ERP) systems, thus making the latest data constantly available.

Process Enables Checks Prior to Business Relationship

The newly established (supplier) creditor process comprises a set of differing Compliance and Sustainability Checks that enable Voith to screen a potential supplier

before entering into a business relationship with them. For instance, as part of the new creditor screening process our Critical Country Check establishes whether the specific supplier is based in a risk country, or is even blacklisted (Blocked List Check). Supplier-data consistency, including their banking records, is double-checked by at least two Voith specialists.

Consistent Response to Violations

If a supplier violates applicable laws or the Voith Code of Conduct, or loses their creditworthiness, our Purchasing organization is required to terminate the business relationship and to place the respective supplier on the Group's central blacklist. Violations of Voith's occupational safety, health, and environmental protection standards can also trigger Group-wide blacklisting.

Voith Master Data Management is responsible for the effective blocking of a supplier in our systems. This department is being progressively expanded and is to oversee Group-wide, cross-Functional master data management.

Suppliers can also report violations of sustainability standards in the supply chain on their own initiative: The Voith Compliance Helpdesk is available to them, just as it is to our own employees, and will handle their report anonymously.

Fact base Supplier Compliance

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305-7	Nitrogen oxides (NO _x), sulfur oxides (SO _x), and other significant air emissions		Fact base: Air Pollutants (76)
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306-4	Transport of hazardous waste		23 Fact base: Hazardous Waste (78)
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407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	Voith is not aware of any significant incidents 54 Fact base: Details on Upholding Employee Rights (83)

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Child Labor			
103/408	Management Approach		9–11, 27, 52 http://www.voith.com/corp-en/coc-english.pdf http://voith.com/de/brochures_modern_slavery_en.pdf
408-1	Operations and suppliers at significant risk for incidents of child labor	Voith is not aware of any significant incidents	54
Forced or Compulsory Labor			
103/409	Management Approach		9–11, 27, 52 http://www.voith.com/corp-en/coc-english.pdf http://voith.com/de/brochures_modern_slavery_en.pdf
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	Voith is not aware of any significant incidents	54
Security Practices			
103/410	Management Approach	We ensure our employees are protected mainly by working together with external service providers. Like all our service providers, they are subject to Voith's General Purchasing Conditions. Like Voith's own security personnel, they are likewise obligated to comply with the Code of Conduct.	http://www.voith.com/corp-en/coc-english.pdf http://voith.com/de/brochures_modern_slavery_en.pdf
410-1	Security personnel trained in human rights policies or procedures	Security service providers are obligated to support compliance with the Code of Conduct by suitable means. Voith does not currently have any data on training held by our service providers.	Fact base: External Security Personnel (68)
Human Rights Assessment			
103/412	Management Approach		9–11, 27, 52 http://www.voith.com/corp-en/coc-english.pdf
412-2	Employee training on human rights policies or procedures		9–10, 52–53 Fact base: Compliance Training (67) Fact base: Scope of Training (98)
412-3	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	Global respect for basic human rights is enshrined in our Code of Conduct. All investment decisions are subject to this code.	

Disclosures		Comment	Reference
Supplier Social Assessment			
103/414	Management Approach		9–11, 52–54
414-1	New suppliers that were screened using social criteria	When reviewing existing and new suppliers, Voith always takes their working practices into consideration. A separate evaluation of the percentage of new suppliers that have been reviewed is not available.	52–54 Fact base: Supplier Self-assessment (98) Fact base: Evaluations of Suppliers (98)
Public Policy			
103/415	Management Approach		9–11
415-1	Political contributions		12
Customer Health Safety			
103/416	Management Approach		44–45 Fact base: TRQM (93) Fact base: Quality Management in Our Group Divisions (94–95)
416-1	Assessment of the health and safety impacts of product and service categories		44–45 Fact base: Quality Management in Our Group Divisions (94–95)
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	Voith did not receive reports of any significant incidents in the reporting period.	
Customer Privacy			
103/418	Management Approach		11
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	Voith did not receive reports of any significant incidents in the reporting period.	
Socioeconomic Compliance			
103/419	Management Approach		9–11
419-1	Non-compliance with laws and regulations in the social and economic area	Voith did not receive reports of any significant incidents in the reporting period.	

Fact base 2018

1. Bases for Our Actions

1.1 Our Profile

Economic Indicators		FY 2017/18	FY 2016/17 ¹⁾	FY 2015/16
	Key Economic Figures in € millions			
	Revenues	4,209	4,224	4,252
	Operating result before non-recurring items	170	225	275
	Income before taxes	152	694	140
	Direct Economic Value Generated and Distributed in € millions			
	Direct economic value generated (= revenues)	4,209	4,224	4,252
	Economic value distributed			
	Operating costs	2,905	2,880	2,863
	Employee wages and benefits	1,447	1,408	1,401
	Payments to providers of capital	25	76	89
	Payments to government	–	82	51
	Community investments	n.d.	n.d.	n.d.
	Economic value retained	53	596	29
	Expenditures for Employees in € millions			
	Wages and salaries	1,194	1,159	1,155
	Social security contributions, retirement pensions, and assistance	253	240	247
	Business Area Portraits in € millions	FY 2017/18	FY 2016/17	FY 2015/16
	Revenues			
	Voith Hydro	1,103	1,381	1,388
	Voith Turbo	1,302	1,283	1,397
	Voith Paper	1,746	1,527	1,456
	Voith Digital Ventures ²⁾	40	13	–
	Germany	563	558	n.d.
	Europe	1,185	1,096	n.d.
	Americas	1,067	1,195	n.d.
	Asia	1,253	1,111	n.d.
	Other	141	264	n.d.
	Profit from operations			
	Voith Hydro	77	106	105
	Voith Turbo	76	91	144
	Voith Paper	114	107	76
	Voith Digital Ventures ²⁾	–46	–43	–

¹⁾ Data provided for the 2016/17 fiscal year were corrected retrospectively.

²⁾ Independent segment only since 2016/17; previously in process of being established

International Focus	Locations by Regional Distribution	FY 2017/18	FY 2016/17	FY 2015/16
	http://voith.com/corp-en/about-us/markets-locations.html			
	Sales Markets in %			
	Germany	13	13	12
	Europe excluding Germany	28	26	28
	Americas	26	28	27
	Asia	30	27	27
	Other	3	6	6

1.2 Strategy and Organization

Memberships and Association Voith and its Group companies represent their interests through approx. 570 different association memberships, on which we spend around €2.2 million annually on membership fees.

Voith association activities by substantial membership contributions:

- VDMA – Verband Deutscher Maschinen- und Anlagenbauer e.V. (German Engineering Federation)
- SWM – Südwestmetall Verband der Metall- und Elektroindustrie Baden-Württemberg e.V. (Baden-Württemberg Employers' Association of the Metal and Electrical Industry)
- FVA – Forschungsvereinigung Antriebstechnik e.V. (Research Association for Power Transmission Engineering)
- DIN – Deutsches Institut für Normung e.V. (German Standards Institute)
- VDB – Verband der Bahnindustrie in Germany e.V. (German Railway Industry Association)
- Förderkreis der Deutschen Industrie e.V. (Society for the Advancement of German Industry)
- IHA – International Hydropower Association
- Paper Machine Clothing Association
- ATC – Austrian Technology Corporation GmbH
- NIFE – Union des Industries Ferroviaires Européennes (Union of the European Railway Industries)

1.3 Values and Compliance

External Charters and Principles The Voith Group's Code of Conduct sets out clear standards, which are aligned with established external charters and principles.

Compliance Training	Number of Employees who Underwent Further Training			
Management from the upper four levels, new managers at the Voith Academy, Sales, Sourcing (1 day)		949	542	241
Decentralized training by compliance officer (1.5 hours)		1,095	1,479	904
Instruction by supervisor (0.5 hours)		1,659	2,699	2,710
Compliance officers (2 days)		17	34	30
	Number of Training Sessions			
Management from the upper four levels, new managers at the Voith Academy, Sales, Sourcing (1 day)		34	23	12
Decentralized training by compliance officer (1.5 hours)		n.r.	n.r.	n.r.
Compliance officers (2.5 days)		2	2	2
Employees trained in compliance in %		100	100	100
Compliance officers trained in %		100	100	100

External Security Personnel	For cost reasons, Voith appoints external safety personnel at the majority of its locations and construction sites. Voith does not train these external safety personnel on the Voith Code of Conduct.			
Breaches of Compliance Regulations	Compliance Helpdesk Number	FY 2017/18	FY 2016/17	FY 2015/16
	Reports via the Compliance Helpdesk (no complaints regarding suppliers)	0	0	0
	of which reported violations against environmental standards	0	0	0
	of which reported violations against social standards	0	0	0
	Comment: The Voith Code of Conduct is an integral part of our compliance training.			
Escalation Paths	<ul style="list-style-type: none"> • Compliance Officer • GD Compliance Officer • Compliance Committee • Corporate Board of Management • Supervisory Board 			

1.4 Responsibility for Society

Donations and Sponsorship	Donations and Sponsorship in € millions			
	Voith Group	1.64	2.95	1.99
	of which donations	0.71	1.91	0.80
	of which sponsorships	0.93	1.04	1.19
	Sponsorship Aid by Project in %			
	Education	28	54	29
	Social affairs	12	9	8
	Sport	52	32	57
	Culture	7	3	7
	Sponsorship Aid by Region in %			
	Germany	83.6	85.7	86.1
	Europe excluding Germany	1.5	5.9	1.7
	Americas	3.8	3.1	6.6
	Asia	8.3	3.8	4.3
	Other	2.8	1.5	1.3

2. Environment

2.1 Environmental Management Approach

2.1.1 Operational Environmental Protection

		FY 2017/18	FY 2016/17	FY 2015/16
Certifications	Existing Voith-location Certifications in € millions			
	ISO 50001	9	n.d.	n.d.
	ISO 14001	55	56	58
	ISO 9001	63	64	69
	OHSAS 18001	59	57	60
	Degree of Coverage based on Employees in %			
	ISO 50001	21	n.d.	n.d.
	ISO 14001	84	77	70
	ISO 9001	85	81	76
	OHSAS 18001	84	78	71
Noise Complaints	We work tirelessly to minimize noise pollution at our locations and rigorously follow up on any information or complaints. In the reporting period we received no complaints concerning noise.			
Work Materials and Hazardous Materials Approval Process	<p>In principle, before we introduce any new work materials or hazardous materials they first undergo a central and a local approval process.</p> <p>First, specific material-related information and a safety data sheet for the material to be approved are drawn up and logged. The material-related information is then checked to see whether the material has already been recorded in the central hazardous materials database. If not, it is entered into the database.</p> <p>This is followed by the central approval process, in which a systematic and automated check is made against applicable legal regulations (e.g. the ECHA Candidate List or REACH annexes).</p> <p>With prior central approval, downstream local approval can focus on workplace and site-specific topics (e.g. water protection area, local regulatory requirements, storage location, on-site transportation, disposal). This means that the use of centrally approved materials can still be blocked at a local level for location-specific reasons.</p>			
Nanotechnology	<p>Nanoparticles are embedded in the following products:</p> <ul style="list-style-type: none"> • Voith Turbo: Cooling systems for monorails, locomotives, railcars, special vehicles and high-speed trains. The particular coating process is performed by a service provider, and currently less than 10 kg of material is in field use. • Voith Paper: Calendar and roll covers in the area of finishings. The NanoPearl coatings represent the latest in calendar cover technology thanks to an improved nanoparticle filler system. According to the manufacturer's statement, the quartz particles are produced in situ with the resin and are not released at any stage of the manufacturing process. When rubbed during use, the particles are still surrounded by plastic, so pose no hazard. No particles are released in thermal processing either. 			
	2.1.2 Efficient Use of Resources			
Environmental Goals	Environmental Goals in %			
	Reduction in specific energy consumption compared to 2011/12	-17.6	-14.8	-15.6
	Reduction in specific freshwater consumption compared to 2011/12	-34.3	-34.1	-31.7
	Reduction in specific waste volume compared to 2011/12	-23.7	-31.6	-18.4

Hot-spot Analysis Methodology	When conducting a hot-spot analysis, the consumption of each control and analysis level (i.e. region, Group Division, location, system, process) is determined and displayed graphically. Data is prepared both according to physical consumption and by associated cost, bringing transparency to "hot-spots" with high consumption levels and costs. Based on this, we develop and approximately evaluate project ideas before gradually developing them further using a stage-gate process through to implementation. As part of this, we employ economic and environmental evaluation criteria, in accordance with our Green Controlling cycle. We regularly review the distribution of consumption based on changing patterns and general conditions (location activities, economic activity, changes to the fleet of machines and plant, etc.).
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2.2 Performance in the Reporting Period

2.2.1 Energy Efficiency and Greenhouse Gas Emissions

		FY 2017/18	FY 2016/17	FY 2015/16
Energy Consumption:	Total Energy Consumption in MWh	628,788	641,736	635,647
Total	Production-related energy consumption	437,134	453,012	452,294
	Business travel	52,648	53,066	59,581
	Logistics	139,006	135,658	123,772
	Total Energy Consumption in %			
	Scope 1	12	13	5
	Scope 2	4	4	0
	Scope 3	0	26	25

Data-gathering: The required unit of data is gathered, validated, and evidenced centrally each month by means of a data-gathering process at the locations. The units are converted in the database.

Energy use (total, renewable, non-renewable); total biomass + renewable energy sources; total energy use for own fleet from non-renewable energy sources was **2,263,635 GJ**.

Direct Energy Consumption:	Direct Energy Consumption (Scope 1) in MWh			
Scope 1	Direct energy consumption in production	127,557	137,286	143,687
	Direct energy consumption of the Voith vehicle fleet	22,491	22,492	24,435
	Company cars ¹⁾	5,005	5,295	5,432
	Logistics	17,485	17,197	19,003
	Natural gas in %	82	83	82
	Heating oil in %	4	4	4
	Diesel in %	6	6	6
	LPG in %	7	7	7
	Biomass/biogenic energy sources in %	-	-	-
	Other renewable energy sources and captive generation of renewable energy in %	< 1	< 1	< 1

Data-gathering: The required unit of data is gathered, validated, and evidenced centrally each month by means of a data-gathering process at the locations. The units are converted in the database.

¹⁾ Company cars do not include: Taxis, employees' personal cars, rental cars.

Indirect Energy Consumption: Scope 2	Indirect Energy Consumption (Scope 2) in MWh	FY 2017/18	FY 2016/17	FY 2015/16
	Indirect energy consumption (purchased and captive, only if the fuels are not included above)	309,577	315,726	308,606
	Electricity	240,417	242,735	249,206
	Long-distance heating	61,338	63,774	58,305
	Steam	7,822	9,216	1,096
	Energy sold	346	125	242
Indirect Energy Consumption: Scope 3	Indirect Energy Consumption (Scope 3)			
	Business travel in MWh	47,642	47,771	54,149
	Rail in %	1	< 1	< 1
	Car (not belonging to the Voith fleet, e.g. rental cars) in %	7	7	6
	Flight (short-distance) in %	4	2	3
	Flight (long-distance) in %	88	90	91
	Logistics (upstream and downstream) in MWh	121,520	118,461	104,769
	Rail in %	< 1	< 1	< 1
	Truck in %	14	14	11
	Ship in %	6	6	4
	Flight in %	81	80	85
	Comment: Only the stated uses of energy and greenhouse gas emissions have as yet been able to be recorded with reference to Scope 3. We are working to include other significant uses of energy and sources of emissions in our calculations.			
Energy Saving Measures and Further Potentials	Reduction of Energy Consumption as a Direct Consequence of Conservation and Efficiency Drives in MWh			
	Reduction in energy consumption	22,964	9,789	23,634
	Among other achievements, we realized the following savings in the reporting year:			
	<ul style="list-style-type: none"> • 1.1 GWh/a (360 t CO₂e/a) through lighting projects at 13 locations, especially in Garching and Düren (Germany), York (USA), and Haaksbergen (Netherlands) (870 MWh/a / 240 t CO₂e/a) • 1.0 GWh/a (730 t CO₂e/a) through optimization of compressed air supplies and consumers at locations in Kunshan and Shanghai (China), St. Pölten (Austria), and Garching (Germany) • 330 MWh/a (100 t CO₂e/a) through improved stand-by controls at our location in Crailsheim (Germany) • 170 MWh/a (40 t CO₂e/a) through improved insulation of tempering furnaces at our location in Heidenheim (Germany). 			
	Energy saving potential since FY 2011/12 in GWh	130.8	123.7	107.0
	of which achieved in the FY	23.0	9.8	23.6
	savings already achieved since FY 2011/12	106.3	83.4	73.6
	Method: The relevant Ecological Business Manager checks the effectiveness of measures recorded at location level. A special tool is used to check measures centrally.			

Production-related Energy Consumption	Specific Production-related Energy Consumption (Scope 1 and 2) in MWh/€ millions revenues	FY 2017/18	FY 2016/17	FY 2015/16
	Specific energy consumption/greenhouse gas emissions (Scope 1 and 2)	103.9	107.3	106.4
	Production-related Energy Consumption (Scope 1 and 2) by Region			
	Total energy consumption in MWh	437,134	453,012	452,294
	Germany in %	36.7	35.8	35.1
	Europe excluding Germany in %	12.5	13.2	14.2
	Americas in %	31.1	32.1	34.5
	Asia in %	19.6	18.7	16.1
	Other in %	< 1	< 1	< 1
	Reduction of Production-related Energy Consumption in %			
	Reduction of production-related energy consumption versus previous year	-3.5	0.2	-7.6
	Reduction of direct energy consumption	-7.1	-4.5	-6.5
	Reduction of indirect energy consumption	-1.9	2.3	-8.1
	Key Drivers of Energy Consumption in %			
	Heating and cooling energy	30.5	31.1	31.9
	Paper machine clothing production	25.2	26.2	26.6
	Machine tool operation	4.2	3.8	5.8
	São Paulo foundry	6.0	5.8	5.0
Proportion of Direct and Indirect Energy	Direct and Indirect Energy in %			
	Proportion of direct energy	29.2	30.3	31.8
	Proportion of indirect energy	70.8	69.7	68.2
	Energy Mix Largely Unchanged			
Renewable Energies	Energy from Renewable and Non-renewable Resources in %			
	Proportion of direct energy	19.2	17.8	14.8
	Proportion of indirect energy	80.8	82.2	85.2
Electricity Mix	Electricity Mix in %			
	Renewable resources	35.4	33.6	26.7
	Non-renewable resources	64.6	66.4	73.3

Environmental Impact of Buildings Voith takes environmental aspects fully into consideration when we construct new plants or modify existing ones. In doing so, we involve environmental experts from the regional HSE service organization in the project right from the planning phase. They provide expert advice on minimizing environmental impacts and ensuring compliance with applicable legislative requirements, and also assist with approval processes. When it comes to new plant constructions and modifications, our experts focus particularly on measures to improve the energy and water efficiency of the building. The procedure they follow is set out in an Environmental Group Directive, which is part of our HSE Group Directive. This also lays down energy and resource efficiency standards for the procurement of new or replacement production systems and their components.

Our actions also receive external recognition. At our production facility in Kunshan, China, one production building and the new Training Center are certified to the LEED Gold Standard.

GHG Emissions: We calculate our greenhouse gas emissions by energy source and based on specific CO₂e factors. We derive these from a database as CO₂ equivalents.

Recording Methodology

Since the 2016/17 fiscal year our global locations have reported on and evidenced their location-specific CO₂ factor for power, replacing country- or region-specific factors. This allows us to achieve even greater accuracy. As part of this change, we also adjusted the factors for district heating and steam, which gave rise to retroactive changes in previous years of approx. 6,000 tonnes. We now also gather data on the GHG effect of refrigerant emissions. Other GHG factors are now taken from DEFRA or the GaBi database.

Recording emissions as CO₂ equivalents based on conversion factors also allows us to factor in the emission of other greenhouse gases such as CH₄, N₂O, HCF, PFC, and SF₆.

GHG Emissions:

Total

Greenhouse Gas Emissions in t CO ₂ e	FY 2017/18	FY 2016/17	FY 2015/16
Total energy consumption	204,866	210,752	203,637
Production-related energy consumption	153,408	158,876	153,168
Business travel	14,324	14,397	16,308
Logistics	37,134	37,480	34,161
Greenhouse Gas Emissions Total in %			
of which Scope 1	15	16	18
of which Scope 2	62	62	60
of which Scope 3	23	22	21
Production-related Greenhouse Gas Emissions (Scope 1 and 2) by Region			
Total energy consumption in t CO ₂ e	153,408	158,876	153,168
Germany in %	29	28	26
Europe excluding Germany in %	4	5	7
Americas in %	26	28	35
Asia in %	41	39	33
Other in %	< 1	< 1	< 1

GHG Emissions:	Direct Greenhouse Gas Emissions (Scope 1)	FY 2017/18	FY 2016/17	FY 2015/16
Scope 1	Direct energy consumption in production in CO ₂ e	24,675	26,442	30,554
	Direct energy consumption of the Voith vehicle fleet in CO ₂ e	6,149	6,095	6,869
	Company cars ¹⁾	1,267	1,312	1,463
	Logistics	4,882	4,783	5,406
	Volatile greenhouse gas emissions in CO ₂ e	2,706	1,928	n.a.
	Natural gas in %	78	79	79
	Heating oil in %	6	6	5
	Diesel in %	8	7	8
	LPG in %	8	7	8
	Biomass/biogenic energy sources in %	–	–	–
	Other renewable energy sources and captive generation of renewable energy in %	< 1	< 1	< 1
	Other in %	0	0	0
	Comment: In FY 2016/17 volatile GHG emissions were recorded for the first time as production-related emissions.			
GHG Emissions:	Indirect Greenhouse Gas Emissions (Scope 2) in t CO ₂ e			
Scope 2	Indirect energy consumption (purchased and captive only if the fuels are not included above)	126,028	130,506	122,614
	Electricity	105,854	108,541	107,228
	Long-distance heating	15,795	16,469	14,989
	Steam	4,379	5,495	397
	Energy sold	194	70	118
GHG Emissions:	Indirect Greenhouse Gas Emissions (Scope 3)			
Scope 3	Business travel in CO ₂ e	13,057	13,084	14,845
	Rail in %	< 1	< 1	< 1
	Car (not belonging to the Voith fleet, e.g. rental cars) in %	8	6	6
	Flight (short-distance) in %	4	2	3
	Flight (long-distance) in %	89	92	91
	Logistics (upstream and downstream) in t CO ₂ e	33,512	32,697	28,755
	Rail in %	< 1	< 1	< 1
	Truck in %	15	16	13
	Ship in %	6	6	4
	Flight in %	79	78	83
	Comment: Only the stated uses of energy and greenhouse gas emissions have as yet been able to be recorded with reference to Scope 3. We are working to include other significant uses of energy and sources of emissions in our calculations.			

¹⁾ Company cars do not include: Taxis, employees' personal cars, rental cars.

GHG Emissions: Location-based vs. Market-based	We calculate both location-based and market-based emissions. By considering market-based factors, we can additionally check the location-based factors. In the reporting year the difference between our location-based factors and the IEA [International Energy Agency] market-based factors was 3,396 t CO ₂ e. The GHG factors for electricity determined by our locations are, on average, slightly higher than the market-based factors (IEA 2016). The biggest difference is in China, where our locations are registering significantly worse emission factors than the IEA factors owing to the high proportion of hard coal. The difference in the reporting year is 10,942 t CO ₂ e. By contrast, the electricity factor at our main facility in Heidenheim is much better than the German average thanks to the high proportion of natural gas and renewable energies. The difference in the reporting year was 7,367 t CO ₂ e.			
GHG Emissions: Specific (Scope 1 and 2)	Specific Production-related Greenhouse Gas Emissions (Scope 1 and 2) in t CO ₂ e/€ millions revenues	FY 2017/18	FY 2016/17	FY 2015/16
	Specific greenhouse gas emissions (Scope 1 and 2)	36.4	37.6	36.0
GHG Emission Reduction Measures	Reduction in Energy Consumption as a Direct Consequence of Conservation and Efficiency Drives			
	Reduction in GHG emissions in t CO ₂ e	7,367	7,456	10,238
	Reduction in Production-related CO₂e-Emissions			
	Reduction in production-related CO ₂ e emissions versus previous year in %	-3.4	1.9	-4.1
	Reduction in direct CO ₂ e emissions in %	-6.7	-13.5	-6.6
	Reduction in indirect CO ₂ e emissions in %	-3.4	5.7	-3.5
	See energy consumption reduction measures			
Transport Emissions	Business trips			
	Wherever possible we avoid taking unnecessary business trips, which is why we are increasingly using video and telephone conferencing in our global organization to save on travel expenses and allow speedy coordination.			
	Furthermore, every quote provided by our travel agency partner automatically shows the CO ₂ e emissions generated by a particular means of transport, providing transparency to Voith travelers when choosing their means of transport in terms of CO ₂ e emissions.			
	In addition we predominantly lease the vehicles in our vehicle fleet, and we replace them every three years with the next generation of lower-emission vehicles.			
	In the reporting period we reduced long-haul flights by 14.5% to 77.2 million km (previous year: 90.2 million km). There was no significant year-on-year change in the volume of business travel by rail and road.			
	Logistics			
	Our transport-related CO ₂ e emissions – caused mainly by our external logistics service providers – rose year on year by 2.5% to 33,512 t (previous year: 32,697 t). This increase was due mainly to the significantly higher transport volumes, especially by ship; however, we reduced the share of emissions from air freight. This means that the share in terms of sea freight increased from 54% in the previous year to 64% in the reporting year. In terms of air freight, we achieved huge CO ₂ savings in the reporting year by reducing its share from 17% in the previous year to 12% in the reporting year.			
	As part of our Group-wide program to improve operational excellence, we are also working on shortening delivery times and optimizing delivery costs.			
Emissions Trading	Voith does not participate in the European emissions trading scheme.			

Air Pollutants	Air Pollutants ¹⁾ A384 in t	FY 2017/18	FY 2016/17	FY 2015/16
	Chlorofluorocarbons (CFCs) ²⁾	< 1	< 1	< 1
	Hydrochlorofluorocarbons (HCFCs) ²⁾	< 1	< 1	< 1
	Halon ²⁾	n.s.	n.s.	n.s.
	Methyl bromide ²⁾ (CH ₃ Br)	n.s.	n.s.	n.s.
	Volatile organic compounds (VOC)	730	689	671
	Non-methane volatile organic compounds (NMVOCs)	162	135	149
	Persistent organic pollutants (POPs)	n.s.	n.s.	n.s.
	Hazardous air pollutants (HAPs)	26	27	26
	Dust emissions	200	197	171
	Respirable fraction	154	151	128
	Heavy metals	3	3	2
	Nitrogen oxides (NO _x)	640	592	551
	Sulfur oxides (SO _x)	521	490	449
	Sulfur hexafluoride (SF ₆)	< 1	< 1	< 1

The indicators of other air pollutants are calculated using LCI-based conversion factors from the reported energy consumption, logistics, and business travel data. In addition, we also measure emissions of refrigerants, solvents, heavy metals, and dust from non-energy based manufacturing processes.

In principle, other air pollutants from energy consumption are the dominant factor.

Regarding VOCs, significant contributors include the transport of goods at 117 t (previous year: 85 t) and business travel at 89 t (previous year: 99 t). In terms of NMVOCs, significant contributors include production-related VOC emissions of 70 t (previous year: 50 t). For the latter, coating processes (resins for generator production and roll coating), lacquering processes, and cleaning processes (particularly surface cleaning) account for around a third each. The increase in VOC emissions can be explained by the improved order book at Voith Paper and Voith Turbo, which also resulted in an increase in the use of solvents for lacquering and cleaning.

Regarding dust emissions, our foundry in São Paulo, Brazil, is a significant individual emitter, generating 19 t (previous year: 19 t). Dust emissions originate mainly from steel reconversion, which is unaffected by declines in local production.

2.2.2 Material Efficiency and Waste

Materials Used	Materials Used by Weight in t			
	Total materials/raw materials used	215,003	220,001	186,000
	Raw material	60,892	57,305	55,256
	Semifinished products	133,020	143,147	109,647
	Packaging	16,521	14,437	16,155
	Auxiliaries	4,570	5,111	4,941
	Renewable materials in %	8	6	9
	Secondary Raw Materials in %	38	38	41

Voith employs country-specific recycling factors to calculate the proportion of secondary raw materials in terms of the overall amount of materials used. The lower share compared to the previous year of secondary raw materials in terms of the overall amount of materials used is due to regional changes in materials procurement, whereby the recycling factors used have changed.

¹⁾ Production-related and product-related energy consumption was recorded as well as air pollutants from the transport of goods and business travel.

²⁾ Ozone-degradable substances in t CFC-11e.

Volume of Waste	Waste by Region in %	FY 2017/18	FY 2016/17	FY 2015/16
	Germany	38	39	37
	Europe excluding Germany	7	7	7
	Americas	31	32	35
	Asia	24	23	20
	Other	< 1	< 1	< 1
	Reclaimed and Removed Waste by Method in t			
	Reclaimed waste	22,120	20,819	24,951
	Reused	227	122	213
	Recycled	17,310	15,761	18,824
	Composted	207	185	176
	Recovered	3,980	4,230	4,927
	Other reclamation ¹⁾	396	521	810
	Removed waste	10,947	9,896	12,038
	Incinerated	3,347	2,885	2,467
	Dumped at an external site ¹⁾	7,601	7,011	9,571
	Dumped at a company site	0	0	0
	Other removal	0	0	0
	Total waste	33,068	30,715	36,989
	Comment: Alongside the type of waste, the locations also enter the manner of disposal in our database.			
Waste-saving Measures and Further Potentials	Reduction in Specific Waste Quantities			
	Reduction in specific waste quantities in %	11.6	-16.2	-12.2
	Specific Waste Weight			
	Specific waste weight in t/€ millions revenues	8.1	7.3	8.7
	Individual locations are constantly developing specific solutions to meet local waste challenges. Among them, in some countries pallet pooling solutions are unattractive owing to low order volumes, so reusable or repairable pallets are returned, where possible, to local processors for high-grade use of the materials. At other locations cardboard boxes are processed into packaging materials on site for the safe and secure transportation of their own products to customers.			
	The most significant achievements made by individual locations in the reporting period included the reduction of 1,920 t of waste through the optimization of the casting molds in São Paulo, Brazil; a reduction in hazardous waste of 180 t through improved coolant lubricant management in Wimpassing, Austria, and Crailsheim, Germany; and a 90 t drop in waste at our location in Heidenheim, Germany, by avoiding the use of cleaning sprays.			
	Material Efficiency Potential in t			
	Efficiency potential since FY 2011/12	9,021	6,044	5,975
	of which achieved in the FY	4,174	640	2,383
	savings already achieved since FY 2011/12	8,596	4,423	3,782

¹⁾ Data provided for the 2016/17 fiscal year were corrected retrospectively.

Hazardous Waste	Hazardous and Non-hazardous Waste in t	FY 2017/18	FY 2016/17	FY 2015/16
	Hazardous waste	6,111	5,816	6,898
	transported hazardous waste	6,111	5,816	6,898
	imported hazardous waste	-	-	-
	exported hazardous waste	-	-	-
	waste transported nationally and internationally between Voith locations	-	-	-
	Non-hazardous waste	28,151	24,970	30,091
	Total waste	34,261	30,786	36,989
Waste Disposal	The collection of hazardous waste at Voith is governed by internal regulations. Only qualified specialist waste disposal companies that adhere strictly to our regulations are permitted to dispose of our waste. Any violations are rigorously pursued and lead to termination of the business relationship. To check this, we regularly audit the waste disposal companies we use. The scope of these audits includes inspections of the waste disposal companies' sites and related plants, as well as the collection and documentation of proof of disposal.			
2.2.3 Water				
Water Consumption	Water Consumption by Source in m ³			
	Total water withdrawal	1,033,843	1,040,967	1,086,912
	Freshwater (≤ 1,000 mg/L total dissolved solids) ¹⁾	1,033,843	1,040,967	1,086,912
	Surface water	64,544	67,507	79,932
	Groundwater ¹⁾	470,508	442,722	527,675
	of which public as well as private water treatment plants	498,791	530,738	479,306
	other water (> 1,000 mg/L total dissolved solids)	-	-	-
	Data-gathering: Categories are gathered centrally each quarter by means of a data-gathering process at the locations.			
	Water Consumption by Region in %	FY 2017/18	FY 2016/17	FY 2015/16²⁾
	Germany	43	40	44
	Europe excluding Germany	10	11	12
	Americas	16	20	21
	Asia	30	29	23
	Other	1	< 1	< 1
	Percentage and Total Volume of Reused Water			
	Reused water in m ³	44.5	104.2	116.1
	Reused water in % of total water withdrawal	< 1	< 1	< 1
	Data-gathering: Categories are gathered centrally by means of a data-gathering process at the locations.			

¹⁾ In contrast to the procedure applied in compiling the Annual Report, in the Sustainability Report workforce figures are stated as headcount instead of FTEs. For FY 2017/18 consolidated companies are in the scope of reporting, just as they are for the Annual Report; however, employee-level figures in the workforce master data for the FlowLink and Ray Sono participations will only be available from FY 2018/19 onward.

²⁾ Data provided for the 2015/16 fiscal year were corrected retrospectively.

Freshwater Savings Measures and Further Potentials	Specific Freshwater Consumption in m ³ /€1,000 revenues	FY 2017/18	FY 2016/17	FY 2015/16
Specific freshwater consumption		0.25	0.25	0.25
Among other achievements, the following savings were realized in the reporting year:				
<ul style="list-style-type: none"> • Around 22,000 m³ less freshwater withdrawn each year by closing the water cycles of monofilament production quench baths in Summerville, USA. • Around 6,000 m³ less freshwater withdrawn by closing the water cycles of sealing water for vacuum pumps in Kunshan, China. • Around 1,500 m³ less freshwater withdrawn each year by optimizing washing processes in Appleton, USA. • Around 400 m³ less freshwater withdrawn each year by using rainwater at test stands and fields in Crailsheim as well as through the introduction of a closed water cycle at Heidenheim, Germany. 				
Freshwater Efficiency Potential in 1,000 m ³				
Efficiency potential in planning since FY 2011/12		815	817	743
of which additionally achieved in the FY		< 1	83	78
savings already achieved since FY 2011/12		789	789	706
Comment: The savings achieved so far since FY 2011/12 are already above the volume of savings which Voith anticipates it needs to make to achieve its reduction goal in FY 2017/18.				
Wastewater: By Method of Discharge	Wastewater by Method of Discharge			
Total wastewater in m ³		837,656	860,395	985,881
Discharged into the public sewage system in %		62	63	48.7
Discharged into surface water in %		25	27	38.6
Discharged into groundwater in %		13	10	12.7
Reused at another company in %		< 1	< 1	< 1
Total treated wastewater in m ³		160,957	156,192	116,342
Discharged into the public sewage system in %		68	69	59
Discharged into surface water in %		31	29.7	37
Discharged into groundwater in %		1	1.3	4
Reused at another company in %		0	0	0
Total untreated wastewater¹⁾ in m ³		676,699	704,203	869,539
Discharged into the public sewage system ¹⁾ in %		61	62	47
Discharged into surface water in %		23	26	39
Discharged into groundwater in %		16	12	14
Reused at another company in %		< 1	< 1	0

¹⁾ Data provided for the 2016/17 fiscal year were corrected retrospectively.

Wastewater: Quality	Wastewater Quality¹⁾ in t	FY 2017/18	FY 2016/17²⁾	FY 2015/16
	Biological oxygen demand (BOD)	7.9	9.3	25.0
	Chemical oxygen demand (COD)	27.9	27.7	37.0
	Total suspended matter content	8.1	8.0	6.0
	Heavy metals	< 1	< 1	< 1
	Nitrogen	1.0	2.0	< 1
	Phosphorus	< 1	< 1	< 1
	Comment: Due in part to very long measurement intervals, there are significant fluctuations in the total footprint over the years. There were no notifiable limit violations in the reporting year.			
Water and Neighboring Habitat Protection	Significant³⁾ Direct Wastewater Discharge in 2017/18 in %	Location	Destination	Protection Status
	31% of wastewater is returned to the natural water cycle. The water was previously used for cooling purposes. The discharged water is subject to strict observation, as the location is in a water protection zone.	Heidenheim	River Brenz	Water protection area acc. to WRRL. WHG (§§ 50–53). Zone III/IIIA (Zone II/IIA TB Mergelstetten. not yet final)
	9% of wastewater is returned to the natural water cycle.	Garching	Groundwater	–
	93% of wastewater is returned to the natural water cycle. The water was previously used for cooling purposes.	Högsjö (Sweden)	Lake Högsjö	–
	100% of wastewater is returned to the natural water cycle.	Noida (India)	Yamuna River	–
	100% of wastewater is returned to the natural water cycle. We have purification equipment locally with which the water is treated for discharge. The location is adjacent to a water protection zone.	São Paulo (Brazil)	Perus River	Permanent Protection Area (APP). national law (Brazil)
51% of cooling water is returned to the Schwarza.	Wimpassing (Austria)	River Schwarza	–	
Sealing of Soil Surfaces	To counter the progressive sealing of soil surfaces we pay particular attention to this development in our sphere of influence.			
	Annual reporting from location through to Group level on sealed soil surfaces vs. overall surface area showed no change in the reporting year at approximately 50% (based on the total area of Voith locations).			
Environmental Incidents	Environmental Incidents (Pollution of Soil, Water, etc.) Number	FY 2017/18	FY 2016/17	FY 2015/16
	Product and warehousing incidents	45	38	40
	Transport accidents: road, rail, inland waterway, sea	n.s.	n.s.	n.s.

¹⁾ The emissions in wastewater are based on the volume of wastewater streams from Voith locations subject to monitoring and the respective average of the measured concentrations

²⁾ Data provided for the 2016/17 fiscal year were corrected retrospectively

³⁾ "Significant" is considered to be wastewater discharged to surface water and to groundwater that exceeds 5% of the total wastewater volume of the observed unit.

3 Employees

3.1 Employees – Our Aspiration, Our Responsibility

		FY 2017/18 ¹⁾	FY 2016/17	FY 2015/16
Workforce Structure	Consolidation Scope for Employee Numbers¹⁾ Number			
	Employees Group-wide in FTE	19,535	19,045	19,098
	Employees Group-wide as a headcount	19,027	19,267	19,494
	Employees included in data analysis	19,027	19,267	19,494
	Employees by Gender, Age Group, and Region²⁾ Number	FY 2017/18	FY 2016/17	FY 2015/16
	Voith Group	19,027	19,267	19,494
	Gender			
	Women	3,477	3,415	3,388
	Men	15,550	15,852	16,106
	Age			
	< 30 years	2,435	2,517	2,689
	30–50 years	10,450	10,714	10,948
	> 50 years	6,142	6,036	5,857
	Origin			
	German	7,539	7,306	7,240
	non-German	11,488	11,961	12,254
	Regions			
Germany	7,950	7,669	7,563	
Europe excluding Germany	2,858	2,879	2,921	
Americas	4,133	4,748	5,050	
Asia	3,380	3,286	3,269	
Other	706	685	691	
Workforce by Employment Type	Full-time and Part-time Employees by Age and Gender Number			
	Full-time	18,007	18,323	18,330
	Women	2,766	2,748	2,686
	Men	15,241	15,575	15,644
	< 30 years	2,325	2,456	2,580
	30–50 years	9,953	10,199	10,279
	> 50 years	5,729	5,668	5,471

¹⁾ In contrast to the procedure applied in compiling the Annual Report, in the Sustainability Report workforce figures are stated as headcount instead of FTEs. For FY 2017/18 consolidated companies are in the scope of reporting, just as they are for the Annual Report; however, employee-level figures in the workforce master data for the FlowLink and Ray Sono participations will only be available from FY 2018/19 onward.

²⁾ Due to part-time work the regional distribution in headcount and FTE (full time equivalents) is different to that shown in the Annual Report.

Workforce by Employment Type
(cont.)

	FY 2017/18	FY 2016/17	FY 2015/16
Part-time	1,020	944	1,164
Women	711	667	702
Men	309	277	462
< 30 years	110	61	109
30–50 years	497	515	669
> 50 years	413	368	386
Employees with Temporary and Permanent Employment Contracts by Gender Number			
Permanent employment contract	17,032	17,360	17,507
Women	3,033	2,977	2,963
Men	13,999	14,383	14,544
Temporary employment contract	1,995	1,907	1,987
Women	444	438	425
Men	1,551	1,469	1,562
Temporary employees	1,239	949	847
Women	250	176	157
Men	989	773	690
Total Workforce by Employees and Supervised Workers by Gender Number			
Employees/workers	19,027	19,267	19,494
Women	3,477	3,415	3,388
Men	15,550	15,852	16,106
Supervised workers	1,239	949	847
Women	250	176	157
Men	989	773	690

To respond quickly and flexibly in markets that can be very volatile, we also utilize fixed-term or temporary employment contracts. In the reporting year we employed 1,249 staff (previous year: 949) through recruitment agencies. The number of fixed-term employment contracts increased by 5% to 1,999 (previous year: 1,907) in the reporting year.

Temporary employment is a standard market instrument that gives us flexibility to meet temporary order peaks. Our increased use of temporary employment compared to the previous year is thus due to challenging economic conditions in the reporting period.

3.2 Highly Attractive Employer

		FY 2017/18	FY 2016/17	FY 2015/16												
Rankings and Ratings	<p>In the reporting period Voith performed impressively in the DEUTSCHLAND TEST, Trendence, and Potentialpark studies as an employer that offers outstanding career opportunities.</p> <ul style="list-style-type: none"> • DEUTSCHLAND TEST (2018): In its study of around 10,000 of the largest companies by headcount based in Germany, we received the Top Career Opportunities award in the Mechanical Engineering category. With a score of 94.5 out of 100, Voith takes the third-highest place in the industry ranking. • Trendence Institute (2018): In the Trendence Graduate Barometer 2018 study, engineering students ranked us among the top 100 most popular and attractive employers. Thanks to this, we received the Most Attractive Employer for Graduates 2018 (Engineering) seal. 55,000 students of Economics, Engineering, Computer Science, Natural Sciences, and Law were surveyed. • Potentialpark (2018): As part of the Talent Communication Strategy, which examines the extent to which employers meet applicants' needs in terms of the online application process, we secured two top positions in an international comparison: 46th in the Benchmark ranking and 76th in the Potentialpark ranking over the past 4 years. 415 representative employers from 30 countries were evaluated as part of the study on the basis of 317 criteria. This involved a survey of 37,722 applicants and a data analysis of 4,242 career portals. 															
Expenditures for Employees	<p>Employee Wages and Benefits in € millions</p> <table border="1"> <tbody> <tr> <td>Wages and salaries</td> <td>1,194.0</td> <td>1,165.0</td> <td>1,154.0</td> </tr> <tr> <td>Social security contributions, retirement pensions, and benefits</td> <td>253.1</td> <td>250.6</td> <td>246.8</td> </tr> <tr> <td>Remuneration of the Corporate Board of Management</td> <td>n.d.</td> <td>n.d.</td> <td>n.d.</td> </tr> </tbody> </table> <p>Comment: Please see the chapter "Remuneration of governing bodies" in our latest Annual Report for information on the compensation of our Corporate Board of Management.</p>	Wages and salaries	1,194.0	1,165.0	1,154.0	Social security contributions, retirement pensions, and benefits	253.1	250.6	246.8	Remuneration of the Corporate Board of Management	n.d.	n.d.	n.d.			
Wages and salaries	1,194.0	1,165.0	1,154.0													
Social security contributions, retirement pensions, and benefits	253.1	250.6	246.8													
Remuneration of the Corporate Board of Management	n.d.	n.d.	n.d.													
Collective Bargaining Agreements	<p>Collective Bargaining Agreements in %</p> <table border="1"> <tbody> <tr> <td>Number of employees covered by collective bargaining agreements</td> <td>81</td> <td>77</td> <td>77</td> </tr> <tr> <td> In Germany</td> <td>100</td> <td>100</td> <td>100</td> </tr> </tbody> </table>	Number of employees covered by collective bargaining agreements	81	77	77	In Germany	100	100	100							
Number of employees covered by collective bargaining agreements	81	77	77													
In Germany	100	100	100													
Details on Upholding Employee Rights	<p>Close involvement of employee representatives</p> <p>We view trusting collaboration with employee representatives as a central prerequisite for our company's long-term success. As such, we always involve employee representatives in discussions between the Group management, local HR departments, and employees. Within the individual countries, labor relationships are structured in accordance with national laws, collective wage agreements, and company agreements. Our compliance processes ensure that agreements are also upheld (see the section Strategy and Integrity). Our Corporate Board of Management or the local management team communicate fundamental changes to employees at all our sites in a timely manner and as early as possible. To do this, we employ a range of communication channels, particularly our intranet, video and telephone conferencing facilities, as well as our employee magazines.</p> <p>In Germany, the decision-making process is subject to co-determination if fundamental changes are made in respect to the company. Implementation of the measures that have been taken is supported by the respective locations' Works Councils.</p>															
Employment Ratio of People with Disabilities	<p>Employment Ratio of People with Disabilities in %</p> <table border="1"> <tbody> <tr> <td>Employment ratio of people with disabilities</td> <td>3.4</td> <td>3.4</td> <td>3.3</td> </tr> </tbody> </table>	Employment ratio of people with disabilities	3.4	3.4	3.3											
Employment ratio of people with disabilities	3.4	3.4	3.3													

Diversity in the Management Team and in the Workforce	Diversity in Senior Management Circle Number	FY 2017/18	FY 2016/17	FY 2015/16
	Senior Management Circle ¹⁾	74	77	76
	Proportion of women in %	6.8	5.2	6.6
	Non-German members in %	31.1	35.1	35.5
	Distribution of Women and Men at Management Levels Number			
	Corporate Board of Management, Executive Team, Senior Management Circle¹⁾	80	84	82
	Proportion of women in %	6.3	4.8	6.1
	Non-German members in %	30.0	33.3	34.1
	Regional directors/chairpersons, Management Board of operating units, heads of product groups, managers in Group management functions²⁾	379	367	361
	Proportion of women in %	8.2	7.6	8.9
	Non-German members in %	49.1	50.7	51.8
	Mid- and lower-level management³⁾	688	715	711
	Proportion of women in %	11.8	10.6	10.1
	Non-German members in %	61.5	60.1	60.1
	Total (across all management levels)	1,147	1,166	1,154
	Proportion of women in %	10.2	9.3	9.4
	Non-German members in %	55.2	55.2	55.6
	Various nationalities Number	91	88	91
Flexible Working Time Models	Availability of Flexible Working Time Models Number			
	Definition/Explanation: Share of employees to whom variable working time models are available (e.g. flextime, accrued overtime, sabbatical)			
	Voith Group	7,950	7,669	7,563
	Women	1,510	1,383	1,326
	Men	6,440	6,286	6,237
	< 30 years	1,027	916	888
	30–50 years	3,910	3,909	3,918
	> 50 years	3,013	2,844	2,757
	Data relates to Germany; generally, at Voith personal working time models can be agreed in consultation with the supervisor. This also applies to sabbaticals.			

¹⁾ Management level 1 + 2

²⁾ Management level 3 + 4

³⁾ Management level 5

Parental Leave	Parental Leave Number	FY 2017/18	FY 2016/17	FY 2015/16
	Employees Entitled to Parental Leave			
	Voith Group	18,867	19,074	19,184
	Women	3,452	3,390	3,312
	Men	15,415	15,684	15,872
	Total Parental Leave Take-up			
	Voith Group	461	668	731
	Women	186	139	151
	Men	275	529	580
	Germany	384	436	429
	Europe excluding Germany	53	39	52
	Americas ¹⁾	21	190	247
	Asia	3	3	1
	Other	0	0	2
	Employees Who Returned to Voith After Parental Leave			
	Voith Group	366	578	565
	of which women	83	112	91
	of which men	283	466	474
	Employees Who Returned to Voith After Parental Leave Who Are Still at Voith 12 Months After Returning			
	Voith Group	345	351	396
	of which women	43	63	77
	of which men	302	288	319
	Return-to-work Rate in %			
	Voith Group	79.4	79.1	77.3
	Women	44.6	74.2	60.3
	Men	82.9	80.3	81.7
	Retention Rate Among Employees Who Took Parental Leave in %			
	Voith Group	94.3	62.1	70.1
	Women	51.8	69.2	84.6
	Men	100.0	60.8	67.3

¹⁾ Until FY 2017/18, besides parental leave other inactive employment contracts were also included. The change versus previous years is due to our inclusion of parental leave exclusively since FY 2017/18 also for the Americas region.

Employment Length	Average Employment Length by Region in years	FY 2017/18	FY 2016/17	FY 2015/16
	Voith Group	12.61	12.39	12.18
	Germany	16.12	16.19	16.22
	Europe excluding Germany	12.62	12.41	11.96
	Americas	10.73	10.35	10.15
	Asia	7.57	7.27	6.93
	Other	8.31	8.33	8.58
	New Employee Hires Who Left Voith within Twelve Months by Gender, Age Group, and Region Number			
	Voith Group	356	305	326
	Women	73	57	72
	Men	283	248	254
	< 30 years	144	120	132
	30–50 years	153	147	152
	> 50 years	59	38	42
	Germany	83	36	71
	Europe excluding Germany	26	36	43
	Americas	161	165	142
	Asia	73	61	66
	Other	13	7	4

Employee Turnover

Employees Who Left the Company by Gender, Age Group, and Region (Workforce Fluctuation) Number	FY 2017/18	FY 2016/17	FY 2015/16
Voith Group	1,983	2,127	2,665
Women	341	324	524
Men	1,642	1,803	2,141
< 30 years	433	454	504
30–50 years	981	1,051	1,233
> 50 years	569	622	928
Germany	359	393	933
Europe excluding Germany	268	250	433
Americas	979	1,079	784
Asia	309	328	446
Other	68	77	69
Employees Who Left the Company by Gender, Age Group, and Region (Workforce Fluctuation) in %			
Voith Group	10.3	11.0	13.2
Women	9.8	9.5	14.9
Men	10.4	11.4	12.9
< 30 years	17.4	17.7	17.3
30–50 years	9.3	9.7	11.0
> 50 years	9.3	10.5	15.4
Germany	4.6	5.2	11.9
Europe excluding Germany	9.3	8.6	14.3
Americas	21.8	22.4	15.0
Asia	9.3	10.0	13.3
Other	9.7	11.3	9.9
Employees who Left the Company on Own Initiative in %			
Voith Group	10.3	11.0	13.2
At the employee's initiative	4.3	3.7	3.5
At the employer's initiative	5.1	6.3	7.2
Other	1.0	1.1	2.5

3.3 Attracting and Promoting Talent

		FY 2017/18	FY 2016/17	FY 2015/16
New Hirings	New Employee Hires by Gender, Age Group, and Region Number			
	Voith Group	2,151	1,603	1,287
	Women	408	283	264
	Men	1,743	1,320	1,023
	< 30 years	918	537	481
	30–50 years	970	813	650
	> 50 years	263	253	156
	Germany	675	283	166
	Europe excluding Germany	264	174	175
	Americas	704	758	657
	Asia	409	324	226
	Other	99	64	63
	New Employee Hires by Gender, Age Group, and Region in %			
	Voith Group	11.3	8.3	6.6
	Women	11.7	8.3	7.8
	Men	11.2	8.3	6.4
	< 30 years	37.7	21.3	17.9
	30–50 years	9.3	7.6	5.9
	> 50 years	4.3	4.2	2.7
	Germany	8.5	3.7	2.2
	Europe excluding Germany	9.2	6.0	6.0
	Americas	17.0	16.0	13.0
	Asia	12.1	9.9	6.9
	Other	14.0	9.3	9.1
Apprenticeships and Opportunities	Vocational Training Number			
	Apprentices and students at cooperative universities	801	959	1,012
	in Germany	519	599	606
	at our Heidenheim location	302	360	358

Training and Education &
Career Development

Training and Education Expenditure Number	FY 2017/18	FY 2016/17	FY 2015/16
Training and Further Education Hours	266,959	320,324	244,604
Women	52,261	63,150	41,243
Men	214,697	257,174	203,361
< 30 years	36,769	48,296	61,118
30–50 years	164,251	206,913	154,598
> 50 years	65,939	65,115	28,888
The Corporate Board of Management, Executive Team, Senior Management Circle; Regional Directors/Chairpersons, Board of Management of operating units, heads of product groups, managers in Group management functions	14,467	14,335	11,326
Mid- and lower-level management	19,893	34,107	18,720
All other employees	232,599	271,882	214,557
Hours of Further Education by employee			
Voith Group	14.0	16.6	12.5
Women	15.0	18.5	12.2
Men	13.8	16.2	12.6
< 30 years	15.1	19.7	23.7
30–50 years	15.7	20.3	15.0
> 50 years	10.7	11.5	5.3
Corporate Board of Management, Executive Team, Senior Management Circle; Regional Directors/Chairpersons, Board of Management of operating units, heads of product groups, managers in Group management functions	31.5	31.8	25.6
Mid- and lower-level management	28.9	47.7	26.3
All other employees	12.9	15.0	11.7
Number of Employees Who Underwent Further Training Number			
Voith Group	16,594	15,645	15,829
Total Expenditure in €			
Voith Group	3,680,130	5,723,508	4,413,721
Employees Who Received Performance and Career Development Reviews in %			
Voith Group	91.4	82.7	86.9
Women	88.8	83.1	83.9
Men	92.0	82.6	87.6
The Corporate Board of Management, Executive Team, Senior Management Circle; Regional Directors/Chairpersons, Board of Management of operating units, heads of product groups, managers in Group management functions	86.3	84.5	83.5
Mid- and lower-level management	93.9	87.7	86.2
All other employees	91.4	82.4	87.2

3.4 Occupational Health and Safety

Approach to Preventing or Dealing With Negative Health and Safety Impacts

Voith's business activities can have a negative impact on the health and safety of employees, customers, and business partners: We always avoid this wherever possible as a matter of course. However, if health or safety are impacted negatively, this must be met with an adequate response. Our approach to preventing and dealing with negative health and safety impacts can be categorized by our own locations, construction sites, and products:

1. At our own locations, we employ our existing and proven system of regional support on an ongoing basis, and are expanding it progressively to continuously improve the quality and effectiveness of the system.
2. At our construction sites and during on-site activities with our customers, we perform risk assessments in advance. These are updated on a regular basis and involve a careful examination of many aspects, including how the various industrial technicians are coordinated in relation to safety aspects.
3. For our products and their use, we focus right from the product development stage on achieving strict compliance with regulatory requirements. In addition, our products undergo a range of test and inspection stages. We incorporate the findings from these processes, together with information from market and product monitoring, systematically into the development and enhancement of our products.

To identify and analyze work-related hazards and risks in connection with occupational safety, we have implemented a comprehensive audit system in addition to our overarching risk management process.

As part of this, a measure is created in hse+ for all identified work-related hazards or risks. The fact that the implementation status can be verified centrally via the system ensures timely implementation by the manager responsible.

In the 2017/18 fiscal year we identified crane operation and heavy-load handling as the greatest HSE risk. In response to this we launched a central campaign involving a series of posters to raise awareness. In addition, we are currently preparing a training initiative that we will offer for the first time in the 2018/19 fiscal year. The aim of this initiative, which will focus on executives and employees alike, is to further strengthen the embedding of the topic of occupational safety in the safety culture we practice.

Employee Representation in Committees

Total Number of Employees¹⁾ Represented on Health and Safety Management Worker Committees in %

	FY 2017/18	FY 2016/17	FY 2015/16
Voith Group	80	75	75

Occupational Accidents

Occupational Accidents – Employees Number

	FY 2017/18	FY 2016/17	FY 2015/16
Total Occupational Accidents	54	50	57
of which fatal	2	0	0
of which severe	5	n.s.	n.s.

Definition: Data on all accidents subject to compulsory reporting were gathered. One occupational accident led to an employee being unfit for work over the transition from FY 2016/17 to FY 2017/18. The accident was included in reporting for FY 2017/18.

Frequency Rates – Employees Number

Definition/Explanation: Number of occupational accidents resulting in downtime (1 day or more) per 1 million working hours.

	FY 2017/18	FY 2016/17	FY 2015/16
Occupational accidents per million hours worked	1.5	1.4	1.8
of which fatal	0.06	0	0
of which severe	0.14	n.s.	n.s.

¹⁾ Based on headcount.

Occupational Accidents
(cont.)

Occupational accidents – Personnel Working for Voith but Who Are Not Voith Employees Number	FY 2017/18	FY 2016/17	FY 2015/16
Total occupational accidents	48	n.s.	n.s.
Comment: Since October 2017 Voith has gathered third-party occupational accident data centrally. Each incident is documented in an Incident Report and followed up. For these incidents Voith's Reporting Organization does not currently distinguish between degrees of accident severity, or working hours lost. Due to the differing data-gathering methods these values are not comparable with the data provided on Voith's own employees.			
Occupational Accidents by Region Number			
Voith Group	54	50	57
Germany	30	37	37
Europe excluding Germany	10	6	12
Americas	10	7	1
Asia	4	0	6
Other	0	0	1
Severity Rate			
Definition/Explanation: Hours lost per 1 million working hours			
Voith Group	342.2	271.2	282.4
Germany	303.4	306.3	349.1
Europe excluding Germany	535.5	217.0	479.2
Americas	286.3	159.5	0.8
Asia	364.7	391.9	396.7
Other	0	0	42.1
Absence Rate in %			
Definition/Explanation: Refers to the actual days of employee absence, expressed as a percentage of the overall scheduled working days for the workforce over the same period.			
Voith Group	2.6	2.5	3.1
Germany	3.7	3.8	4.9
Europe excluding Germany	3.4	3.2	3.1
Americas	1.7	1.6	2.2
Asia	1.0	1.1	1.2
Other	1.2	1.2	1.6

Occupational Accidents (cont.)	Lost Day Rate in %	FY 2017/18	FY 2016/17	FY 2015/16
	Definition/Explanation:			
	LDR: The impact of occupational accidents, which can be measured against the time the affected employee failed to appear for work. The rate is calculated by comparing the total number of lost days with the total number of hours which the workforce ought to have worked in the reporting period.			
	Working Days Lost: Working days which could not be worked on (and so are "lost") as one or more employees was/were unable to perform his/her/their usual work owing to an occupational accident. These days do not count as working days lost if an employee returns for a limited number of hours or for a different activity.			
	Voith Group	8.4	7.7	7.1
	Germany	8.1	8.2	9.3
	Europe excluding Germany	13.4	5.4	12.0
	Americas	6.7	3.7	0.0
	Asia	8.2	8.8	9.0
	Other	0.0	0.0	1.1
Occupational Safety Training	Training Courses in Occupational Safety in %			
	Operations managers	approx. 100	approx. 100	approx. 100
	Administrative managers	80	80	80
	Trained service providers	n.s.	n.s.	n.s.

4 Products and Supply Chain

4.1 Product Responsibility

4.1.1 Management Approach

Research and Development

Research & Development Expenditure	Research and Development in € millions			
	R&D Expenditure	225	217	210
	Percentage of Revenues Dedicated to R&D in %	5.4	5.1	4.9

Voith Hydro
Collaboration Projects

In the previous fiscal year Voith Hydro continued its numerous activities with university research facilities.

- As part of the long-standing successful collaboration with the University of Stuttgart, a highly precise, scale-adaptive simulation of the transient flow of a complete Kaplan turbine was set up.
- In addition, highly advanced methods to detect cavitation type, location, and intensity in hydropower machinery were further developed.
- In collaboration with Technische Universität Dresden, in the 2017/18 fiscal year studies were conducted on a model test stand to determine heat-transfer coefficients in generator cooling ducts.

Customer Dialog Voith Paper	<p>Voith Paper employs the Net Promoter Score (NPS) methodology to measure customer satisfaction. Customer feedback is gathered at various times during the course of project implementation, whereby specific questions are asked about the phases of development; these take into account both emotive and rational evaluation criteria. Measures to improve internal procedures are then derived from this customer feedback.</p> <p>Voith Paper continues to work on VR applications for customer training and support. In the reporting year three customer-training modules were developed and are currently being trialed. The first phase of the project is scheduled for completion in January 2019.</p>
Customer Dialog Voith Hydro	<p>To ensure our customers enjoy a maximum level of safety, all safety information on Voith Hydro products is documented in the respective operating manual. If previously unknown safety risks occur, customers are of course informed immediately and always in full compliance with legal requirements.</p> <p>In addition, we offer our customers the following safety training courses through the Voith HydroSchool:</p> <ul style="list-style-type: none"> • Safety-by-design Principles and Case Studies: In this one-day seminar we train customers on the fundamental safety requirements of hydropower plants and discuss combined case studies on damage and accidents. • Application and Fulfillment of EU Directives on Machine and Plant Safety: In this seminar, we share our expertise and provide practical examples to prepare our customers for the complex process of CE marking.
Customer Dialog Voith Turbo	<p>Voith Turbo offers its customers a wealth of information and training courses to additionally and especially optimize safety in the use and operation of our products:</p> <ul style="list-style-type: none"> • Voith Turbo product documentation (operating instructions) includes all the product safety information required for operators of our products. If required, our products are additionally labeled. In the event of safety incidents or changes to the safety information, these are communicated proactively to the vehicle manufacturers concerned and the relevant manuals are updated. • Voith Turbo offers customers product training as well as full support with commissioning. Even if courses do not focus specifically on safety training, the courses aim to instruct customers on all relevant safety aspects. In product and maintenance training courses, customers are informed about possible dangers, for instance if products are operated incorrectly.
Responsible Marketing	<p>Corporate Marketing and our Code of Conduct, which every Voith employee abides by, ensure Voith products are presented to customers truthfully and transparently. The actions of each and every Voith employee are bound by the unwavering principle that information should be presented fairly and truthfully. We provide regular instruction on the scope of our Code of Conduct through online training sessions (including compliance training sessions) and in employee appraisals.</p> <p>Moreover, Voith Paper's marketing approach ensures that technically complex solutions are presented by selected experts from our technology centers, and discussed with customers. If necessary, the marketing activity is supported by the Group Division's or even the holding's top management team. Internal coordination meetings ensure that global knowledge is bundled in relevant projects.</p>
4.1.2 Reliable and Safe Products	
TRQM	<p>Our TRQM system also defines how to fulfill the respective statutory product documentation requirements, and how products are to be labeled. Besides internal technical documentation, operating instructions provide information on the intended use of our products as well as on how to handle them in a technically and environmentally safe way. Our TRQM system also outlines procedures for decisions that entail risks.</p>

Quality Management in Our Group Divisions

As part of Voith 150+ Next Level, Voith is in the process of setting Group-wide KPIs to enable the various Group Divisions to be benchmarked against each other as well as within their respective industrial sectors. As part of the Sales Excellence initiative, uniform Group-wide sales benchmarks have already been approved and integrated into existing systems.

In the reporting year we made the following progress in defining Group-wide quality management KPIs:

- Quality costs are now recorded in all Group Divisions according to Group-wide rules and regularly reported on, allowing a cross-Group comparison to be made.
- Production quality is now recorded and measured in accordance with the first pass yield KPI. The KPI is defined by the OPEX team and also allows a cross-Group comparison to be made.
- Planning accuracy is now recorded and measured in accordance with the delivery punctuality KPI. This KPI is also defined by the OPEX team, meaning it also allows a cross-Group comparison to be made.

Voith Hydro

Voith Hydro ensures that quality standards and certificates are uniform for all units globally through its internal management system. All of Voith Hydro's locations are certified according to the ISO 9001 international quality management standard. Regardless of the operating location, European standards, such as the Machinery Directive, apply at all times as the minimum standard for machine and plant safety – globally and independently of the market area. Through active product monitoring of the installed machines, Voith Hydro also ensures that new findings gained from operation are incorporated into machine optimization.

With its EPEX (Excellence in Project Execution) project, since the 2014/15 fiscal year Voith Hydro has aimed to achieve excellence in executing projects. EPEX focuses on process and product standardization as well as on strengthening customer focus.

The Connect program, through which Voith Hydro aims to reduce project times and improve project execution stability, is a major milestone. In the reporting period the program concept was developed and its effectiveness was demonstrated in a test project. The program, including the methodology used, has already been approved by the Chief Operating Officers (COOs) of all Operating Units (OUs) with medium to very large-scale hydropower projects.

For many years now we have been working on the development of extremely powerful turbines and generators. Suitable stator bars are essential in the development of powerful 1,000 MVA-class generators. In the reporting year we completed the development of a new end-winding corona protection design for stator bars. The new design has increased the robustness of the bars in operation, leading to much higher product reliability.

Voith Paper

Voith Paper sees quality as a key differentiator that distinguishes it from the competition, and has anchored the subject at the top management level. The bases of the Voith Paper quality management system are set out in Group Directives, process descriptions, and work instructions. Necessary reviews and corresponding documentation are controlled mainly via the internal ERP (enterprise resource planning) systems. Potential health, safety, and environment impacts are taken fully into consideration. To continuously improve the processes, Voith Paper uses various tools such as Ishikawa, FMEA (failure mode effect analysis), and 8D reports.

To continuously improve product quality, Voith Paper considers the experiences to be applied and actively incorporates them into projects right from the product development phase. The Concept Freeze Report documents the corresponding decisions and findings, and is a binding guideline for everyone regarding which products and solutions we offer.

Furthermore, Voith Paper is working to establish a uniform level of quality where the same third-party components are sourced from different suppliers to fully leverage a flexible dual or even multi-sourcing approach. This is the only way to ensure the purchased parts can be further processed in a standardized, problem-free way.

In addition, in the reporting period Voith Paper installed an intelligent quality-monitoring system to increase process reliability in the production of hole-screen baskets. The implemented process combines a tactile measuring head and a video scan. Instead of checking laser-cut profile gaps using the previous manual procedure that relied on experience, and a process of comparing them with good parts based on comparatively small sets of samples, an automated physical scan is now carried out on the profile bars and a video check is performed on the profile contours. The increased process reliability is having a positive impact on manufacturing costs and production lead times.

Quality Management
in Our Group Divisions
(cont.)

Voith Turbo

Voith Turbo also operates a uniform, integrated quality management system which is ISO 9001-certified, and where required is also certified to IATF 16949 and ISO/TS 22163. All employees are trained on quality issues and rigorously enforce the topic. Currently, several quality programs are running at Voith Turbo to increase product and service reliability even further throughout the lifecycle. At the same time, Voith Turbo seeks a close relationship with customers to allow experiences from daily system operation to be incorporated into its product development activities.

One of these quality programs is the Voith Turbo Quality Excellence program. With this program, we aim to further reduce quality costs while increasing product quality and raising customer satisfaction in the process. In the reporting period, goal achievement was further advanced by the successful conclusion of sub-projects. We will implement the results successively, and review and improve their effectiveness continuously.

September 2018 was the global deadline for transitioning all quality management systems to the new ISO 9001:2015, IATF 16949:2016, and ISO/TS 22163:2017 (IRIS Certification 3.0) standards. In the reporting year Voith Turbo therefore brought together all quality management systems globally, and migrated and certified them to meet the new standards. As a result, Voith Turbo processes and quality management systems are now even better networked with each other and standardized. Thanks to the transition, standard analyses can be used to better address our stakeholders' and customers' requirements. One of these is the responsible handling of risks: We are meeting this requirement by analyzing risks systematically and across all business processes and projects. Where necessary we take appropriate action.

Voith Turbo products meet all applicable technological regulations as well as statutory and regulatory standards and requirements relating to health and safety. Where necessary, our products' safety is also certified, and employees who perform work on safety-related components also receive special training.

Voith Turbo inspects all products with regard to health and safety considerations. We consider a large number of criteria and topics in our safety tests and evaluations, including:

- Functional safety
- Reliability, availability, maintainability, and product safety
- Special characteristics
- Safety requirements (e.g. performance data)
- Special processes (welding, gluing, screwing, crimping, etc.)
- Material testing
- Labeling
- Indicative safety
- Covers
- Surfaces
- Fire protection
- Explosion protection
- Electrical safety
- Electromagnetic compatibility
- Soundproofing
- Hazardous materials (e.g. REACH)
- Product certification (only where required, e.g. EBA, KBA, TSI, etc.)
- Health, safety, and environmental protection.

To embed our own quality standards in our value chain, our Supplier Quality Development and Supplier Quality Assurance Departments both support our suppliers in complying with our quality and safety standards, and investigate any deviations. If deliveries are faulty, these are documented so we can then work with the supplier towards achieving a lasting improvement. In the reporting year our comprehensive quality assurance measures once again proved successful. We are pleased to report that following the significant decline in the year before, customer complaints fell again slightly.

Quality Management
in Our Group Divisions
(cont.)

Voith Digital Ventures

At Voith Digital Ventures, managers are responsible for quality assurance with the support of the Quality organization. Our ISO 9001-certified quality management systems ensure that all relevant laws, standards, and regulations – including our own product requirements – are implemented effectively and reviewed continuously.

Our Quality organization focuses on ensuring product quality through the use of efficient and effective prevention and improvement methods. Another critical consideration is to minimize quality costs for our customers to safeguard our competitiveness.

Safety information is part of every product manual and a requirement for product approval. Service and commissioning employees receive regular safety training, such as on the handling of radioactive materials and substances; all relevant employees are trained on this every two years. In addition, customer training – with safety as a central topic – is part of every commissioning process.

Voith Digital Ventures delivers training on the topic of supplier quality based on the regulations stipulated by Central Purchasing. When procuring safety or function-related components, those accountable perform a detailed inspection of the initial sample batch and issue special supplier approval in the early stages of product development.

Voith HydroSchool

Voith Hydro offers training courses on all hydropower topics and products. In the reporting year Voith Hydro was particularly active in Africa and Asia with the aim of training local employees and providing them with professional training in their specialist field within the hydropower industry. Various projects bear out the success of these measures:

- In 2016 Voith was commissioned by the South African state energy company Eskom to provide operation and maintenance training to the employees at its Ingula pumped storage power plant. Around 70 employees have so far been trained by Voith since training began in 2017.
- In October 2017 Voith took part in the German Hydro Development Days in Tanzania, where Voith trained attendees on planning and constructing small-scale hydropower plants.
- In July 2018 Voith began training ten trainers in Heidenheim for the Mangla Hydropower Training Institute in Pakistan. In addition, the company is developing training modules that will later be offered in Mangla for the on-site training of over 500 participants annually.

Progress on Social and
Environmental Impacts –
Voith Hydro

One of Voith Hydro's main focus areas is the material efficiency of our products. This is essential in order for us to maintain our competitiveness and is therefore also set as a material objective in line with Voith's sustainability goals. The same applies to energy efficiency: Our objective is to offer our customers increasingly more energy-efficient systems. This is because our systems' efficiency is the dominant criterion in our customers' evaluation process. By contrast, recycling is not a material topic at Voith Hydro due to our products' extremely long service life. In addition, a comparatively low number of different materials are used in our systems, a high percentage of which are very easy to recycle as they comprise mainly steel and copper.

We use Life Cycle Assessments (LCAs) to analyze and optimize our products' environmental impacts. To produce LCAs, Voith Hydro uses the GaBi database and software that in principle allows us to factor in water consumption, waste volume and hazardous materials, alongside energy consumption and CO₂ emissions. As water consumption is not a material topic for Voith Hydro, it is currently not assessed.

In addition to our activities in this field, we published our study entitled "Li-Ion Battery versus Pumped Storage – A Comparison of Raw Material and Investment Costs including CO₂ Footprints" in the reporting period.

Back in the 2016/17 fiscal year Voith Hydro began the development, planning, and construction work to modernize the pumped storage power plant in Ffestiniog, North Wales. Once completed at the start of 2020, the complex will be able to respond more quickly to power grid demands and operate across a greater range. In addition, as the initial machine units are being refurbished mid-life this will extend their operational lifespan for at least a further 20 years. Ffestiniog's four generating units will achieve a combined output of 360 MWh of electricity – enough to cover all of North Wales' electricity needs for several hours. In the reporting year a runner was manufactured successfully as part of this project.

Progress on Social and Environmental Impacts – Voith Hydro (cont.)	<p>Another example of modernization work performed by Voith Hydro is the expansion of the Tarbela IV hydropower plant in northern Pakistan, built in 1974. This project involves equipping the power plant with three new generators, high-voltage power lines, and a state-of-the-art automation system, which will increase the plant's capacity by around 40% to around 4,888 MW once the project is completed. In the reporting year the Voith Asset Management solution OnCare was integrated as part of power-plant automation. The system will be used to plan all maintenance processes at the plant by comparing performance indicator readouts with stored data and responding automatically to deviations. This will enable the customer to identify optimization potentials and plan preventative maintenance measures that can significantly reduce downtime and greatly increase plant availability.</p> <p>In Sweden too, Voith Hydro set an example in environmental protection in the reporting period. Following the successful modernization of two 100-year-old power plants, Semla 3 and Graninge, their efficiency and electricity output increased significantly. At the same time, the plants have also been upgraded considerably in terms of their environmental performance and now meet the latest environmental standards.</p> <p>To further advance noise emission reductions, Voith Hydro included these emissions in the projects' risk analysis. Furthermore, project-specific KPIs are being set to allow noise emissions to be controlled efficiently. Intelligent Voith OnCare.Acoustic technology is also being used to cut noise by detecting fluctuations in turbine noise emissions, enabling appropriate action to be taken. Currently, Voith Hydro is working on a further noise-emissions reduction project.</p>
Fact base Social and Environmental Impacts – Voith Paper	<p>In the reporting year an integrated asset management system for screen baskets was developed as part of Papermaking 4.0. This was the first time a lifecycle tracking tool had been introduced at the level of a performance-enhancing component. The new RFID-based technology allows customers to identify, maintain, or replace critical wearing parts effectively and reliably. An app displays pending maintenance work or the end of a product's service life automatically to the customer – they can then also purchase a new screen basket directly and easily via the Voith online shop integrated into the app.</p> <p>In addition, Voith Paper is working tirelessly to make its products more resource-efficient – on the one hand to minimize its products' environmental impact, and on the other hand to fulfill our customers' demands for efficient and therefore cost-effective products.</p> <p>This duality is illustrated perfectly by the example of its FlowJec dosing system. Conventionally, large amounts of freshwater and energy are used to heat the water for chemical dilution. FlowJec eliminates the need for freshwater in the dilution stages, saving freshwater and reducing energy consumption. Furthermore, less wastewater is generated that requires after-treatment. The system's eco-friendly features also bring business advantages, as the reduced consumption levels automatically have a positive impact on the customer's cost structures.</p> <p>Significant effort, particularly in China, is going into improving the cleaning of wastewater from paper factories. Together with the Voith subsidiary Meri Environmental Solutions, Voith has won multiple orders for water treatment plants in China, enabling it to successfully provide Smart Loop technology to treat water and considerably increase its overall market share in that country.</p>
Recycling in Detail Voith Paper	<p>The loss of large amounts of graphic paper such as newspapers and magazines means that fewer fibers that are often only used once are introduced into the recycling loop. In turn, this reduces the strength potential of the used-paper mix. This relationship represents a specific challenge for Voith Paper, so it is working on new solutions to improve the strength potential of fibers before further processing. This is an important contribution to maintaining the recycling loop.</p>
Progress on Social and Environmental Impacts – Voith Turbo	<p>Energy represents the main operating cost of Voith Turbo products, which is why continually increasing our products' energy efficiency is our top priority in almost every area. Furthermore, we work tirelessly to optimize our products' material efficiency. Among our activities in this field, as part of our Voith Turbo Engineering Excellence project we are currently investing a great deal of effort in the topic of material costs, and thus also in cutting the quantities we use. In addition, we are measuring and optimizing waste volumes by working to reduce the use of materials where they are not required for product functionality. Besides our products' material efficiency, their ability to be recycled is also taken into account right from the early stages of development as part of our updated product development process.</p> <p>Voith Turbo also works continuously to reduce our products' noise emissions. An example of this is a new railcar transmission test stand that allows Voith Turbo to conduct detailed noise measurements for the first time, advancing the optimization of railcar-transmission noise emissions. It also developed an approach to reduce the noise generated by railcar transmissions.</p>

Challenge: Long Service Life	In the reporting period Voith Turbo developed an obsolescence management system, which identifies, manages, and controls the natural and artificial aging or non-availability of a product, not least from an innovation viewpoint. To give an example, Voith Turbo offers a system for use in buses that allows driveline monitoring over the entire lifecycle. The bus operator is informed automatically of any impending malfunctions, which in turn improves operational reliability and almost completely rules out spontaneous vehicle failures.
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4.2 Responsibility in the Supply Chain

		FY 2017/18	FY 2016/17	FY 2015/16
Procurement Markets	Procurement Markets in %			
	Europe	56	56	61
	Americas	27	23	23
	Asia	16	20	15
	Other	1	1	1
Country-specific GPTs	Country-specific GPTs in %			
	Country-specific GPTs	29	26	21
	of which new	3	5	none
	of which updated	none	all	none
Scope of Training	Training of Purchasing employees globally Number			
	Hours of training of Purchasing employees (Purchasing Training Program)	1,514	3,629	5,128
	Hours of training of Purchasing employees	10,832	12,022	n.d.
Supplier Self-assessment	Suppliers Who Have Filled Out a Self-assessment¹⁾ Number	FY 2017/18¹⁾	FY 2016/17²⁾	FY 2015/16
	Compliance & Sustainability Check of initial self-assessment	3,584	2,547	n.d.
	Initial self-assessment	n.d.	n.d.	2,430
	Share of the invoice volume obtained from suppliers for whom there is a valid Compliance & Sustainability Check of the initial self-assessment in %	68.0	55.0	n.d.
	Supplier Self-assessment ratio (share of the invoice volume obtained from suppliers for whom there is a valid self-assessment) in %	n.d.	n.d.	59.2
Evaluations of Suppliers	Evaluations of Existing Suppliers	FY 2017/18¹⁾	FY 2016/17³⁾	FY 2015/16
	Evaluations (individual processes) Number	1,115	710	2,441
	Suppliers evaluated Number	916	566	1,956
	Sustainability ratio in %	87.4	89.7	85.4
	Share of invoice volume placed with evaluated suppliers in %	49.0	36.0	68.0
	Volume of invoices with suppliers for whom an up-to-date, approved supplier evaluation was available in € millions	928	705	1,274
Supplier Compliance	Supplier Compliance Number	FY 2017/18	FY 2016/17⁴⁾	FY 2015/16
	Blocked suppliers	13	13	10

¹⁾ Data-gathering status November 2018

²⁾ Owing to the system migration, in FY 2016/17 no new assessments were able to be gathered for 6 months. In addition, questions regarding compliance and sustainability were removed from the initial Supplier Self-assessment and incorporated into a Compliance & Sustainability Check, which can now be requested from and confirmed by suppliers as an individual questionnaire.

³⁾ Due to a system migration, systematic Supplier Self-assessments and supplier evaluations were suspended for six months during the reporting period.

⁴⁾ Only includes blocks due to violations of compliance and/or sustainability guidelines; excludes blocks owing to bankruptcy or technical quality issues.

The Report

Voith has published a Sustainability Report every year since 2009. This report describes the progress we made in the 2017/18 fiscal year, i.e. from October 1, 2017 to September 30, 2018. This report is supplemented by an online Fact base.

In producing our report we followed the internationally recognized guidelines of the Global Reporting Initiative (GRI). Our report was not audited externally. In our assessment, the scope of our report meets the requirements of the Core option of the GRI Standards. In 2018 we held an exhaustive stakeholder survey to identify the material sustainability issues and enhance our materiality analysis. We are currently evaluating the results and will incorporate them in our Sustainability Report 2019. This report continues to refer to the results of our 2016 materiality analysis.

There were two far-reaching changes in the reporting period. First, our Group Division Voith Digital Solutions was renamed and has operated since October 2018 as Voith Digital Ventures. Second, the scope of consolidation was expanded due to the increase from 50% to 80% in April 2018 in our participation in FlowLink Systems Private Ltd.

Unless stated otherwise, the facts, figures and information provided in this report apply to the global Voith Group Divisions: Voith Hydro, Voith Paper, Voith Turbo, and Voith Digital Ventures. Please refer to the Voith Annual Report for details of the Group companies involved. The degree of consolidation comprises at least 80% of the Voith Group by revenue and headcount, and includes all of our Group's major locations. While we report the number of employees in terms of headcount in this report, in our Annual Report we report this figure mainly in terms of FTEs (full-time equivalents); this may lead to discrepancies between the figures. Furthermore, whereas the scope

of consolidation in our Annual Report regarding the number of employees includes our holdings in Ray Sono AG and FlowLink Systems Private Ltd., they have not been consolidated in this Sustainability Report 2018. However, the total headcount indicator is an exception as it forms the basis for the scope of consolidation of the Annual Report.

The information was requested electronically in writing, and the data was gathered using mainly division-specific software. In individual cases it is not currently possible to derive a three-year trend; however, this is our objective for future reports. In a few cases, certain facts already reported and affecting previous periods have been corrected. We have marked this in the report at the appropriate points. Rounding differences may occur owing to the addition of data.

All forward-looking statements in this report are based on reasonable assumptions as at the deadline for content submission. Due to unknown risks, uncertainties, and other factors, the actual results, developments or performance of our company may deviate from our forecasts, estimations, and statements. For further information please see our Annual Report.

For improved readability we refrain from referring specifically to both genders in this report. This is not a value judgment, and all forms are to be understood as gender-neutral.

Further and more extensive information is provided at www.voith.com and in our Annual Report. We currently expect to publish our next Sustainability Report in early 2020.

Imprint and Contacts

Project Management and Point of Contact for Content-related Questions

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Further Information

The Sustainability Report is also available in German.

The German and English editions are available online at:

<http://voith.com/corp-de/ueber-voith/nachhaltigkeit.html>

<http://voith.com/corp-en/about-us/sustainability.html>

In addition to the Sustainability Report, Voith also publishes a comprehensive Annual Report at the end of the fiscal year.

It is available online at:

www.voith.com

Consulting

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Carlsberg & Richter GmbH & Co. KG

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