



# Sustainability Report

## MTU Aero Engines AG





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# Foreword by the Chief Executive Officer

Dear readers,

For us, “Clean Air” is more than just a slogan. As we shape the future of aviation, we see it as our core responsibility to work with our partners to develop and to bring fuel-efficient, low-emission, quiet engines to market. We already brought you up to speed on this and other select issues in our first non-financial statement in the 2017 Annual Report. However, this new legal reporting obligation is not the reason sustainability is important to us. For years now, we have been in dialog with our stakeholders and have produced an annual sustainability report outlining our far-reaching sustainability strategy and the progress we have made with it. We plan to intensify our efforts in this regard.



With our Clean Air Engine program, we aim to play a key role in the sustainable development of the environment and society in the years up through 2050. Our objective is to cut CO<sub>2</sub> emissions from aircraft engines by up to 40 percent, and their noise emissions by as much as 65 percent. And we are confident that we will succeed: the new PW1000G Geared Turbofan™ engine family signals the start of our journey towards an innovative and sustainable future for aviation. It already reduces CO<sub>2</sub> emissions by 16 percent, lowers noise by 40 percent, and has entered regular service with some 20 customers. We achieved important goals this financial year as we drove our eco-efficient technology forward: further engine designs for new aircraft models have either been certified or flown for the first time. And in keeping with our Clean Air Engine Agenda, we have applied additional innovations to make the geared turbofan even better. All this is quite simply part and parcel of our responsibility as Germany's leading engine manufacturer and globally active partner.

With our Clean Air Industrial Site program, we plan to lower CO<sub>2</sub> emissions at our Munich location by 25 percent. After all, we are tackling the challenges of climate change and resource scarcity not only in our product responsibility, but along the entire value chain. Our manufacturing facilities employ energy-efficient, low-emission processes that we continuously strive to improve, and with our state-of-the-art co-generation plant, we are producing more of our own carbon-neutral energy than ever before.

We also have our eye on the supply chain: Our mandatory social and environmental standards place important sustainability demands on our suppliers.

Digitalization and technological transformation are increasingly shaping working life at MTU, and so we are also training our employees to be equipped for their long-term effects. We secure the employability of our workforce primarily through high-quality and comprehensive training, and create an attractive and safe working environment based on important social standards. We value a corporate culture that promotes innovation. Clear and reliable leadership plays a key role in this, as does diversity and equal opportunity. After all, we rely on each and every one of our 10,000 employees around the world. Their ideas, their skills and their commitment are the decisive foundation for our success.

Thank you for your interest in our sustainability activities and strategies. In this report, you will learn what we have achieved on our path towards a more sustainable world and what we have planned for the future.

We hope you will join us on this journey!

A handwritten signature in blue ink, reading "Reiner Winkler".

Reiner Winkler

Chief Executive Officer  
MTU Aero Engines AG



# About this report

## MTU Aero Engines AG 2017 Sustainability Report

MTU Aero Engines AG has compiled this sustainability report to inform its stakeholders about corporate responsibility (CR) within the company. The report provides information about the company's CR strategy, objectives and performance and describes the priorities and progress for the various spheres of CR activity in 2017. It builds on the previous report and supplements our first non-financial statement in the 2017 Annual Report.

The Sustainability Report is available on our website for download as a PDF in both German and English.

>MTU Sustainability Report (German)  
>MTU Sustainability Report (English)

Readers can address questions about the report to [corporateresponsibility@mtu.de](mailto:corporateresponsibility@mtu.de)

## Reporting in accordance with GRI

The 2017 Sustainability Report was drawn up in compliance with the Global Reporting Initiative (GRI) guidelines and meets the GRI G4 standard ("Core" option). Accordingly, we report on all required standard disclosures as well as on management approaches for key aspects and on selected indicators for each aspect. The GRI Index at the end of the report indicates how the contents are mapped to the GRI requirements. Tables, graphics and text passages with statements relevant to GRI have been appropriately marked (for example, GRI G4-EN1). A materiality matrix in Chapter 1.1, Sustainability strategy and organization, presents the sustainability topics that are relevant for the MTU Group and shows how they are weighted from an internal (x-axis) and external (y-axis) perspective. It serves as the basis for selecting the key aspects and performance indicators for this report.

## Communication on Progress for UN Global Compact

This Sustainability Report also provides information on progress made in accordance with the ten principles of the UN Global Compact. Cross-references to those principles can be found in the GRI Index at the end of the report.

## Reporting period and scope of validity

The reporting period covers financial year 2017 (January 1 to December 31, 2017). To better organize how information is presented and provide explanatory context for readers, activities from outside the reporting period are also cited in some cases. The report covers all of the MTU Group sites that are treated as fully consolidated in the company's financial reporting. This includes:

- MTU Aero Engines AG, Munich, Germany (headquarters, OEM business)
- MTU Maintenance Hannover, Germany (MRO business)
- MTU Maintenance Berlin-Brandenburg, Ludwigsfelde, Germany (MRO business)
- MTU Aero Engines Polska, Rzeszów, Poland (OEM business)
- MTU Maintenance Lease Services B.V., Amsterdam, Netherlands (MRO business)
- MTU Maintenance Canada, Vancouver, Canada (MRO business)
- MTU Aero Engines North America, Rocky Hill, USA (OEM business)
- Vericor Power Systems, Alpharetta, USA (OEM business)

Overview of MTU sites: [www.mtu.de](http://www.mtu.de)

The 2017 information and key performance indicators in the report refer to the above group reporting entity, if not otherwise indicated. There were no significant year-on-year changes in the company's supply chains in 2017.

## Key performance indicators (KPIs)

All data and information for the reporting period was collected by the relevant departments using representative methods. Environmental KPIs are collected via the environmental management systems at the individual sites and then consolidated centrally in the CR database according to agreed criteria. The HR KPIs are collected and evaluated centrally at the headquarters in Munich for Germany, and using an electronic HR management system for all non-German sites. Once the data is evaluated, it is sent to the CR database. All other data is requested from the CR coordinators in the relevant departments and compiled centrally in the CR database. Financial KPIs are collected and published in accordance with the International Financial Reporting Standards (IFRS).

## Forward-looking statements

This report contains forward-looking statements. These statements reflect the current understanding, expectations and assumptions of MTU Aero Engines and are based on the information available to management at the present time. Forward-looking statements provide no guarantee that certain results and developments will actually occur in the future, and they entail risk and uncertainty. Consequently, for a variety of reasons, the actual future results of MTU Aero Engines may deviate substantially from the expectations and assumptions expressed here. MTU Aero Engines assumes no obligation to update the statements contained in this communication.

The next Sustainability Report is expected to be published in summer 2019, and the next non-financial statement will be issued in the 2018 Annual Report in accordance with the German CSR Directive Implementation Act.

## External validation of the report

The CR reporting for this sustainability report is not subject to external auditing or validation. The majority of corporate processes that underlie data collection for CR reporting are certified.

### More information:

MTU's certifications [www.mtu.de](http://www.mtu.de)

## Further information

You can find supplementary information, more detailed analyses and older publications online:

- MTU's non-financial statement for financial year 2017
- Corporate responsibility at MTU
- Compliance at MTU
- MTU annual reports

In addition, we regularly report on important sustainability topics in central MTU publications and through various communication channels.



# MTU Aero Engines AG



In the aviation industry, three simple letters stand for top-notch engine technology: MTU. With a workforce of about 10,000 people (including Asia) Germany's leading engine manufacturer has been providing propulsion systems to power aircraft for more than 80 years now, having become an established global player. The company engages in the development, manufacture, marketing and support of commercial and military aircraft engines and industrial gas turbines.

## MTU Aero Engines in figures

- 1934 launched in Munich
- approx. 10,000 employees (including Asia)
- 14 company locations around the world
- around 5.0 billion euros in sales in fiscal year 2017

As part of its commercial activities, MTU Aero Engines designs, develops and manufactures engine modules and components. Its technological expertise in the field of low-pressure turbines, high-pressure compressors and turbine center frames as well as manufacturing processes and repair techniques have made MTU a leading manufacturer of subsystems and components in the global engine business.

## The engine programs of MTU that currently yield the highest sales

- V2500 for the A320 family of aircraft
- GP7000 for the A380
- for Boeing 787 and 747-8
- PW2000 and CF6-80 for medium- and long-haul aircraft

## Commercial engine business

With its products, MTU has content on engines in all thrust and power categories, from powerplants for small business jets to the world's most powerful jetliners. The company is a risk-and-revenue-sharing partner in the major commercial engine programs. Under the partnership arrangements, MTU assumes full development and production responsibility for the components and modules forming part of its work share. Its cooperation partners are the world's big-league players in the engine industry—Pratt & Whitney, GE Aviation, and Rolls-Royce.

## MTU program work shares depending on the valuation of the module

- up to 20 %

To gird for the future, MTU has taken stakes in a number of significant engine programs and is well positioned in the marketplace. Among the programs are the GP7000 for the Airbus A380, the GEnx engine to power the Boeing 787 Dreamliner and Boeing 747-8 long-range widebody airliner and the GE9X for Boeing's 777X. The advanced geared turbofan™ technology is applied in Pratt & Whitney's PurePower® engine family. To date, five major aircraft manufacturers have selected the PW1000G models to power their latest aircraft. Airbus is offering the PW1100G-JM for the A320neo. Bombardier has chosen the propulsion system as the sole engine choice for its C Series, as has Mitsubishi for its MRJ regional jet. Irkut will equip its MS-21 with the engine. Last, but not least, Embraer has opted for the PW1000G family as the exclusive powerplant for its second-generation E-Jets. To date, over 80 airlines world-wide have ordered more than 8,000 geared turbofan engines.

In the military arena, the company is the German Armed Forces' major industrial partner for practically all engine types flown by them. MTU provides a full range of services, from maturing enabling technologies through developing and manufacturing engines and engine components, to providing maintenance and comprehensive customer support services.

## Commercial engine maintenance

MTU Maintenance, a division of MTU Aero Engines, is one of the top five providers of maintenance services for aircraft engines and industrial gas turbines. With more than 30 engine types, it boasts one of the largest portfolios worldwide, including the bestsellers V2500 and CFM56, and the world's largest engine, the GE90-110/-115B. New engine programs are continuously added to offer customers the most popular variants and to secure the company's position in the aftermarket for next generation engines.

## MTU Maintenance in figures

- approx. 4,500 employees
- over 18,000 Shop Visits
- 36 years of company history

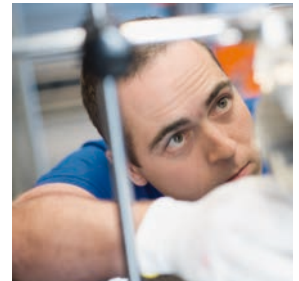
Apart from its outstanding technical and engineering know-how, customer proximity is one of MTU's greatest strengths. A network of locations in Europe, Asia and North America as well as representative offices, IGT service centers and joint ventures around the globe ensure that its customers' expectations are fulfilled timely and with the same high standard of quality. These include dedicated centers of excellence, e.g. for parts and accessory repairs. In addition, on-site teams are able to carry out repair jobs at every corner of the world at short notice.

## The Munich headquarters

Munich is home to MTU Aero Engines' corporate headquarters. This is from where the group's subsidiaries and most of its research and development activities are controlled and where military and commercial engine components are produced in various shops. With its stake in Pratt & Whitney's geared turbofan engines, MTU's production volumes are growing rapidly: Whereas the company manufactured around 600 blisks a year so far—for various engine programs—the total number produced will exceed 5,000 blisks annually from 2020 on. To cover the demand for titanium compressor blisks, MTU has built a blisk center of excellence that boasts a high degree of automation and an intelligent control and logistics system. The shop on the company's premises in Munich accommodates the most advanced production system of its kind worldwide.

## The Munich site in figures

- approx. 500,000 square meters area
- approx. 5,000 employees



# 1 Sustainable governance

We manage MTU's business in a responsible and forward-looking manner. Our efforts are supported by our sustainability strategy and the embedding of that strategy in our organizational structures. Ethics, integrity and respect for human rights provide the necessary foundation.



## 1.1 Sustainability strategy and organization

Sustainability is the overarching principle in the MTU Group, firmly embedded in its organizational structures and implemented in corporate processes. We aim to continuously improve in all key corporate responsibility topics and also further develop our sustainability management concept.

We are committed to adding value in a responsible and sustainable way. As the executive body of MTU, the Executive Board acts at its own discretion to pursue this goal in the company's interests while taking into account the interests of its stakeholders. In consultation with the Supervisory Board, the Executive Board decides on the company's strategic direction, sees that this is implemented, and ensures that the company has appropriate risk management and control systems in place. The Executive Board is also responsible for ensuring compliance with statutory requirements and the company's own guidelines. It works as a team, with all members holding joint responsibility. The Supervisory Board advises and monitors the Executive Board's management of MTU's business. The MTU-wide code of conduct, which the Executive Board and the group works council agreed on and rolled out together, forms an important basis for the compliance of all employees and managers with legal and ethical principles.

We see sustainability as part of our corporate social responsibility to ensure long-term business success. In the process, we consider not only economic but also ecological and social aspects, and we promote dialog with our stakeholders as a way for us to keep informed about society's key demands and expectations. Sustainability is enshrined in our annual corporate objectives as a strategic goal.

Our sustainability strategy covers every area of MTU's business. It focuses on key topics that we identify and evaluate using a materiality analysis. We weight each topic according to its importance to MTU and our stakeholders, and we take a holistic perspective along the entire value chain including the supply chain and the use of our products and services. Our sustainability strategy addresses the global challenges and trends that MTU's business faces. Climate change, mobility and resource scarcity are important drivers of that business. We create products and inno-

ventions that contribute to the sustainable development of society and the environment. These support airlines in improving their energy footprint and in reducing emissions and aircraft noise. That is why product responsibility is at the heart of our sustainability strategy, which addresses the topics of product quality and flight safety, fuel efficiency, CO<sub>2</sub> emissions and noise emissions. Other topics that are highly relevant to MTU and its stakeholders include innovations, a steady increase in shareholder value, and anti-corruption/bribery. Compliance and respect for human rights are the basis for our conduct.

We see the ten principles of the UN Global Compact, which we joined in 2011, as a guide to responsible corporate governance. As a signatory, we are committed to respecting human rights, ensuring fair working conditions, protecting the environment, preventing corruption and continuously improving the way in which we implement it across the company. This report also serves as our annual UNGC Communication on Progress. The International Labour Organization's (ILO) core labor standards serve as another point of reference for us. Furthermore, in 2018 we will take a closer look at the United Nations' Sustainable Development Goals (SDGs), which were set in 2015 under the title "Transforming our World: the 2030 Agenda for Sustainable Development." We will analyze which of the 17 SDGs are most relevant to MTU's sustainability strategy and how we can support this global agenda.

### More information:

Working procedures of the MTU Executive Board and Supervisory Board: 2017 Annual Report, Corporate Governance Report, page 22ff.  
MTU code of conduct: Chapter 1.2 Compliance and respecting human rights  
Sustainability topics along the entire value chain: Materiality principle according to GRI, page 88  
Product responsibility as a focus of CR: Chapter 2.2 Eco-efficient engines  
UN Global Compact: [www.unglobalcompact.org](http://www.unglobalcompact.org)



< With our engine products, we help airlines improve their energy footprint, reduce CO<sub>2</sub> emissions and aircraft noise. That is why product responsibility is at the heart of our sustainability strategy.



### Materiality analysis

When it comes to sustainability, we focus on key topics that are relevant to MTU's business success and have an impact on society and the environment, which makes them of particular interest to our stakeholders. We identify these important topics using a materiality analysis that we conduct every year. The materiality analysis covers all our key business areas and fully consolidated locations as well as the experience and insights gathered from our dialog with stakeholders. We insert the relevant aspects into a materiality matrix, which weights the topics according to their importance from an in-house perspective (X-axis) and from the point of view of our most important stakeholders (Y-axis). In the materiality analysis, we also take up new topics and review them to see how they fit with our CR strategy. Through direct contact with key stakeholder groups, we determine their expectations and demands (e.g. at recruiting and customer fairs, employee and customer questionnaires, Annual General Meeting). We also have a survey on the MTU website that addresses all CR topics.

The materiality analysis is conducted by the corporate responsibility (CR) coordinators in the relevant departments, in collaboration with the CR steering committee as the central body. For the first non-financial statement required by the new European guideline as implemented in Germany (CSR-RUG), which we published in spring 2018 as part of our management report, MTU reevaluated all topics in the financial year using uniform criteria according to CSR-RUG's updated definition of materiality. In addition to shareholder expectations, the analysis also looked at social, ecological and economic impact to calculate a position for the Y-axis. When evaluating a topic for relevance to the company (X-axis), the first aspect considered is its economic impact on MTU—measured by its effect on the balance sheet or the company's reputation—using a pre-determined scale. As a result, the materiality matrix produced new positions for the focus topics of MTU's CR strategy in financial year 2017.

The materiality analysis rated product-related topics (quality, safety and eco-efficiency) as very highly relevant. We recategorized "Product quality and product safety" as "Product quality and flight safety," and also split our focus topic of eco-efficient engines into "Fuel efficiency/CO<sub>2</sub> emissions" and "Noise emissions of our products," since fuel consumption is directly proportional to CO<sub>2</sub> emissions. Other emissions of aircraft

engines, such as nitrogen oxide, are not within MTU's sphere of influence, since the company does not develop combustors. Therefore, exhaust emissions are less significant for our sustainability strategy.

One topic of particular importance is compliance. To examine it more closely, we broke it down into individual issues so that we could weight them more carefully. One example here is IT security and data protection, which is becoming more relevant due to current developments such as the Euro-pean Data Protection Regulation. Other key compliance issues for MTU include: anti-corruption/bribery, trade compliance (export regulations and customs law), and environmental and occupational safety as required by law. All compliance topics are highly or very highly relevant to MTU and its stakeholders.

The supply chains for MTU's business segments—OEM (new and spare parts) and MRO (commercial maintenance, repair and overhaul)—each have their own organizational units at the company and are subject to various general and market conditions. In general, public interest in the sustainability aspects of supply chains and regulations is on the rise. To better take these requirements into account, we have evaluated responsible sourcing separately for the OEM and MRO segments.

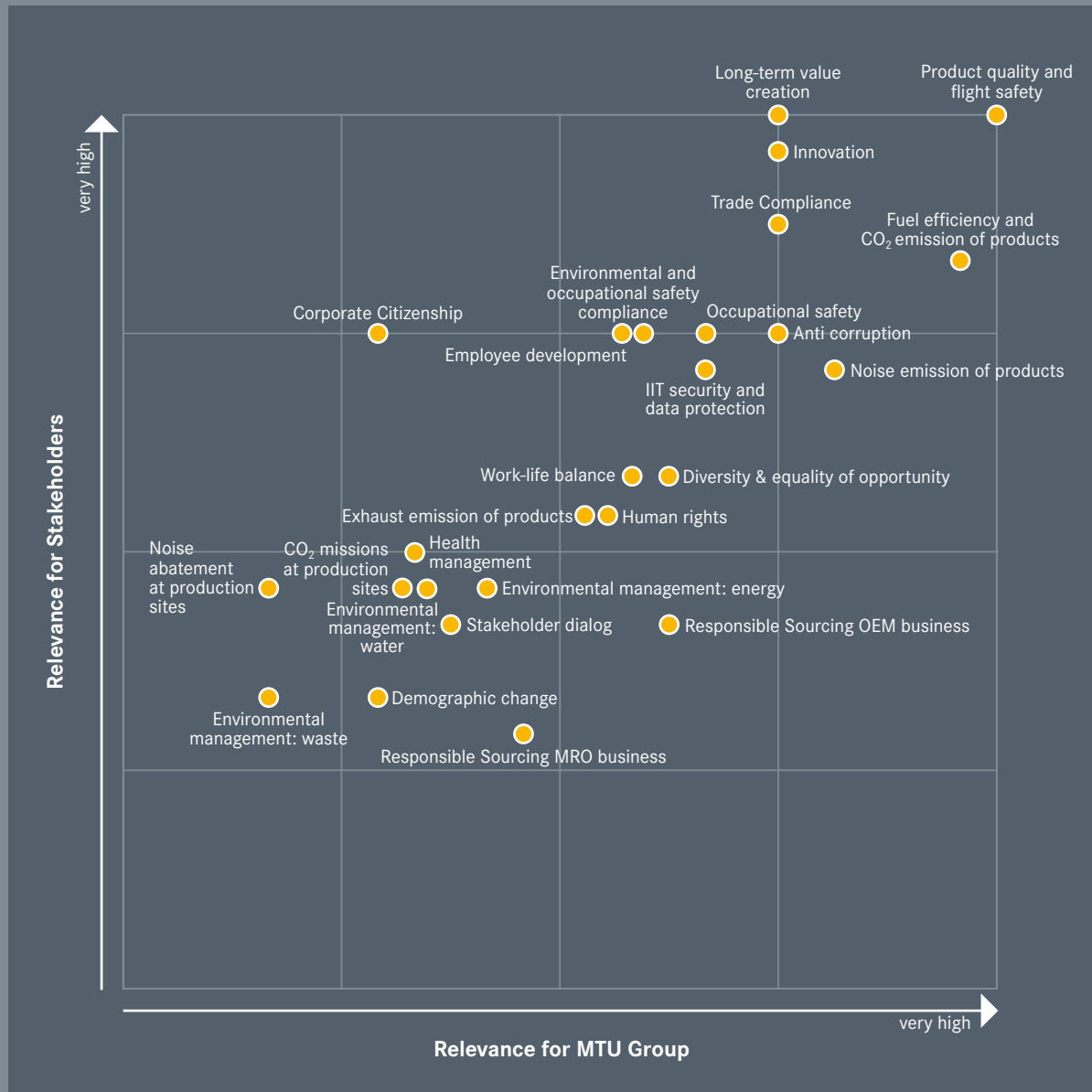
Our matrix breaks down the focus topic of "Environmental protection in production" (previously known as "Environmental management/performance") into individual categories such as energy, emissions, waste and water so as to conduct a more nuanced assessment. These topics are less relevant for us as we have a much greater impact on the environment through our products.

As for social issues, occupational safety and employee development rank as the most important. Diversity & equality of opportunity have become more important for MTU, as it is a high-profile issue in the United States and can have an impact on MTU's business. In assessing our sustainability strategy with regard to relevance to business and impact on third parties, we also reexamined human rights. For MTU, these apply to all stakeholder groups equally, but we pay special attention to our employees, suppliers and business partners.

MTU's report on donations/sponsoring can now be found under "Corporate citizenship."

## Materiality matrix: Important sustainability topics for MTU

>GRI G4-19



Evaluation of topics for the financial year 2017 adopts the new materiality concept in accordance with the legal guidelines for CSR in Germany (CSR-RUG)

### CR management

We have integrated sustainability into organizational structures throughout the entire MTU Group. Through our CR management system, we monitor our sustainability strategy, performance and goals. The supervising body is a CR Steering Committee whose members consist of the tier-1 senior management team. It submits multiple reports during the financial year to the Executive Board, which sets the direction of the sustainability strategy. As the highest decision-making body, the Executive Board holds overall responsibility for sustainability at MTU. A central CR coordination team manages implementation of the sustainability strategy in the Group, communication with stakeholders, and reporting on CR topics.



An important role in the operational implementation of the strategy is played by the CR Divisional Coordinators: they develop goals and measures in their divisions, implement them, and take responsibility for monitoring progress. In collaboration with the managers and experts in their technical areas, the coordinators are heavily involved in shaping the strategic focus of their CR goals and developing these goals over time.

Every year, they report validated KPIs and information on sustainability activities and progress to the CR coordination team by means of an integrated database. They also meet regularly over the course of the year to exchange information, coordinate measures and approve sustainability goals. In one project, we are reviewing our current sustainability organization and processes for transparency, completeness and efficiency. The overall goal is to improve our CR management. For example, we are planning to expand the CR Steering Committee into a CR Board and involve other key management functions so that we can better address the scope of sustainability issues.

### Stakeholder dialog

>GRI G4-24-27

We strive to conduct a proactive and mutually supportive dialog with all our stakeholders in which we communicate about sustainability topics openly and transparently. By so doing, we aim to achieve broad acceptance among the general public. This dialog gives us the opportunity to respond to suggestions, expectations and feedback and act on new topics and challenges in a timely manner. Stakeholders are individuals, groups or organizations that have a regular relationship with MTU. Our key stakeholders are employees, customers, business



**Eckhard Zanger**  
Senior Vice President  
Corporate Communications  
and Public Affairs  
MTU Aero Engines AG

*“Sustainability is part of our corporate identity. Our responsibility to the environment and to society has been integrated into our decision-making processes. Because we aim to continuously make progress in this area, we are further expanding our sustainability management system.”*

partners, suppliers and shareholders. We are also in dialog with scientists, researchers, analysts, journalists, politicians, associations, NGOs, employee representatives, neighbors and communities.









To involve our stakeholders and gather feedback, we use a variety of communication channels and platforms that are tailored to the target group in question. For instance, in 2017 we began holding a Sustainability Day for our employees. We also use an online survey to invite all stakeholders to evaluate and discuss our sustainability strategy.

We pick up and act on topics that come to our attention through the stakeholder dialog. Our stakeholders are interested primarily in eco-efficient engines, product responsibility, compliance, MTU as an attractive employer, human rights and the regional responsibility of MTU's sites. We have taken up data security as an important new topic in our stakeholder dialog. We wish to intensify our dialog on CR topics in particular. Preparations for interviews with selected representatives of key stakeholder groups as well as for an evaluation of our first non-financial statement in the annual report are under way.

### Political dialog

>GRI G4-SO6

As a matter of principle, MTU takes no political position. The company purposely cultivates relationships with parties and factions on certain topics, as aviation is affected to no small degree by political decision-making, especially at the national and European levels. Key points of contact for the company include elected representatives and decision-makers from ministries at the state, federal and EU levels as well as from subordinate authorities and the German Armed

Stakeholder dialog			>GRI G4-24, 26
Stakeholder	Topics	Forms of dialog	
<b>Employees</b> 	<ul style="list-style-type: none"> <li>• Health and safety</li> <li>• Career and advanced training opportunities</li> <li>• Compensation and Benefits</li> <li>• Work-Life-Balance</li> <li>• Diversity &amp; Equality of opportunities</li> <li>• Co-determination</li> </ul>	<ul style="list-style-type: none"> <li>• Internal media</li> <li>• Employee surveys</li> <li>• HR services</li> <li>• Dialog and information events</li> <li>• Company suggestion scheme</li> </ul>	
<b>Business partners and customers</b> 	<ul style="list-style-type: none"> <li>• Product quality and safety</li> <li>• Sustainable technologies</li> <li>• Product fuel efficiency</li> <li>• Human Rights</li> <li>• Compliance</li> </ul>	<ul style="list-style-type: none"> <li>• Voice of the customer</li> <li>• Trade fairs</li> <li>• Corporate communications media channels</li> </ul>	
<b>Suppliers</b> 	<ul style="list-style-type: none"> <li>• Product quality and safety</li> <li>• Environmental Protection</li> <li>• Responsible Sourcing</li> <li>• Compliance with MTU standards</li> </ul>	<ul style="list-style-type: none"> <li>• Supplier Collaboration Center</li> <li>• Audits</li> <li>• Supplier surveys</li> <li>• Supplier Days</li> </ul>	
<b>Capital market</b> 	<ul style="list-style-type: none"> <li>• Product innovation/eco-efficiency</li> <li>• Responsible corporate governance</li> <li>• Human rights</li> <li>• Compliance</li> <li>• Environmental protection</li> <li>• Risk management</li> <li>• Supplier management</li> </ul>	<ul style="list-style-type: none"> <li>• Annual General Meeting</li> <li>• Conferences and roadshows</li> <li>• Investor discussions</li> <li>• Trade fairs</li> <li>• Ratings</li> <li>• Financial communications</li> </ul>	
<b>Science and research</b> 	<ul style="list-style-type: none"> <li>• Developing new technologies</li> <li>• Promoting research and teaching</li> <li>• Networking between industry and research</li> <li>• Study of engineering and scientific disciplines</li> <li>• Recruiting</li> </ul>	<ul style="list-style-type: none"> <li>• Joint research projects</li> <li>• Work in MTU centers of excellence</li> <li>• Trade fairs</li> <li>• Visits from university student groups</li> <li>• Presentations/discussions at universities</li> </ul>	
<b>Media</b> 	<ul style="list-style-type: none"> <li>• Innovation and technologies</li> <li>• Aviation sector/eco-efficiency</li> <li>• MTU as employer</li> <li>• Financial issues</li> <li>• Site development</li> <li>• Compliance</li> </ul>	<ul style="list-style-type: none"> <li>• Press releases</li> <li>• Press conferences and briefings</li> <li>• Plant tours</li> <li>• Internet/Social Media</li> <li>• Trade fairs</li> </ul>	
<b>Region</b> 	<ul style="list-style-type: none"> <li>• Social commitment</li> <li>• Environmental protection</li> <li>• MTU as employer</li> <li>• Site development</li> <li>• Compliance</li> </ul>	<ul style="list-style-type: none"> <li>• Museum open house days</li> <li>• Community partnerships</li> <li>• Internet/Social media</li> <li>• Plant tours</li> </ul>	
<b>Politics, public agencies</b> 	<ul style="list-style-type: none"> <li>• Developing and promoting technology</li> <li>• Environmental protection, eco-efficiency</li> <li>• Political frameworks and regulations</li> <li>• Mobility concepts</li> <li>• Site development</li> <li>• Demographic change</li> <li>• Globalization</li> <li>• Compliance</li> </ul>	<ul style="list-style-type: none"> <li>• Parliamentary evening</li> <li>• Plant visits</li> <li>• Trade fairs</li> <li>• Political discussions</li> <li>• Background talks</li> <li>• Visits by political delegations</li> </ul>	
<b>Associations and organizations</b> 	<ul style="list-style-type: none"> <li>• Eco-efficiency</li> <li>• Promoting innovation and technology</li> <li>• Economic and labor policies</li> </ul>	<ul style="list-style-type: none"> <li>• Meetings and committees</li> <li>• Participation in forums and events</li> </ul>	



Forces. To ensure transparency and adherence to external and internal regulations, MTU manages its political dialog centrally through the Corporate Communications and Public Affairs department. Topics of discussion with political decision-makers include innovation, technology development and funding, environmental protection and noise reduction, the relevance of air traffic to society, site development, economic and labor market policy, and support for exports. MTU pursues its industry-specific interests through memberships in various professional associations.

MTU does not make any financial or in-kind donations to political parties. All transactions are carried out in compliance with the applicable legal and regulatory requirements and with MTU's Code of Conduct, and must be granted central clearance. Mandatory requirements are stipulated in the MTU compliance management system and Code of Conduct, including those relating to donations, sponsorship, customer events, in-house events, hospitality and corporate gifts. Compliance with these rules and regulations is the responsibility of the relevant manager in each case and is safeguarded by an internal control system.

#### More information:

MTU memberships: GRI index in annex

#### Managing sustainability risks

We integrate sustainability risks into our internal control system, and map and evaluate them using defined processes. MTU has established a group-wide integrated risk management and control system, based on the leading international COSO II ERM Framework standard, with which it manages risks and opportunities for its business. The system also takes into account non-financial risks. For the topic of compliance, MTU has established a separate risk assessment and a separate reporting line, which the Compliance Board coordinates.

The top issues for financial year 2017 identified in the materiality process have been reviewed by the departments and the CR Steering Committee for potential risks that may arise from MTU business activities and impact the environment, society and the company's workforce. Building on the existing risk management system, the risk assessment was carried out in a similar fashion on a scale referencing the likelihood of occurrence and the impact of the risk. The analysis identified no significant risks that had a high probability of severe negative impact. Based on this, in 2018



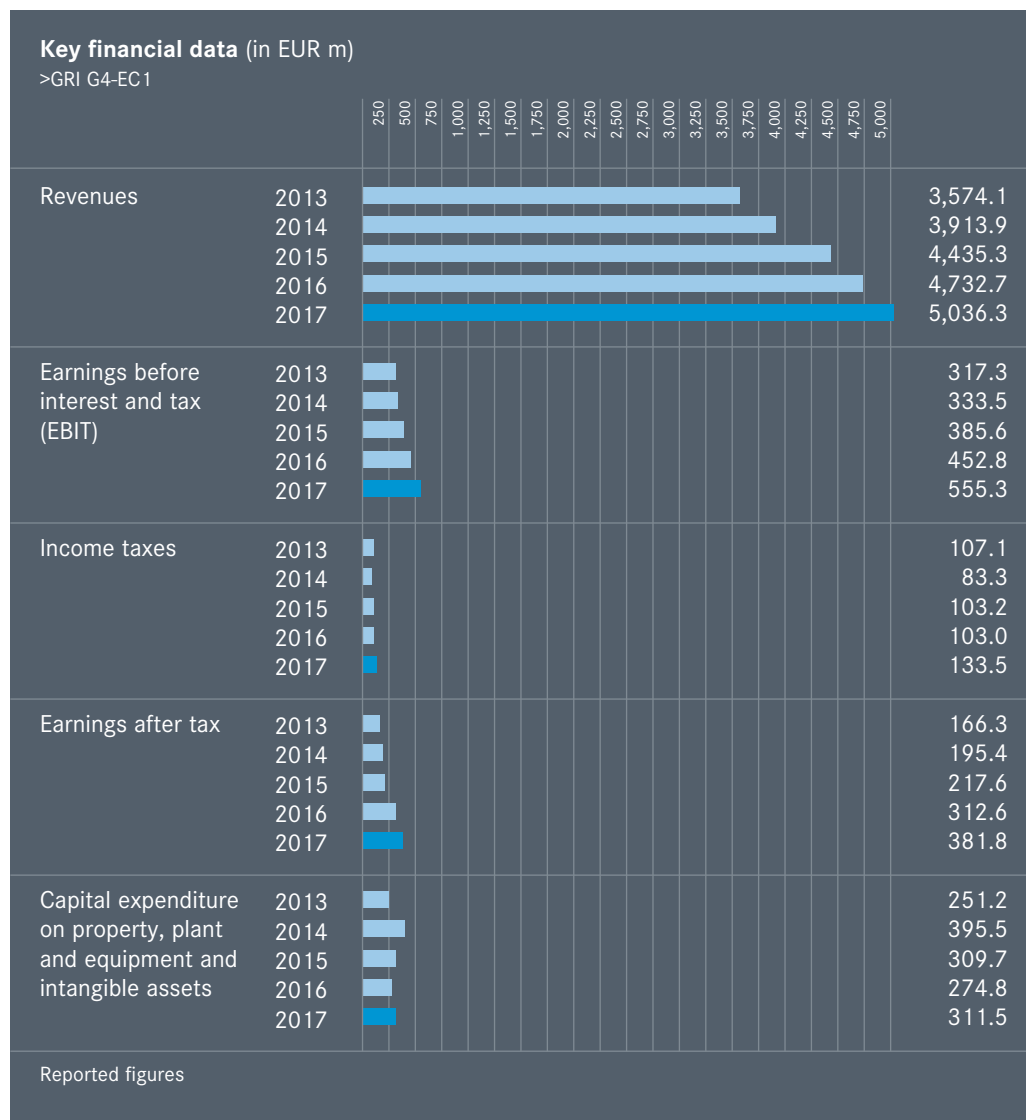
**Peter Kameritsch**  
Chief Financial Officer and  
Chief Information Officer  
MTU Aero Engines AG

*"2017 was another record-breaking year for MTU. This means we were able to continue writing our success story of sustained value creation. Our commercial success has a positive impact on MTU as an employer and as a client, and makes our stocks an attractive capital investment. It also allows us to invest heavily in expanding our locations."*

we launched a quarterly risk survey of the most important sustainability topics at the behest of the CR control board. Department managers conduct the survey. The results are reported regularly to the CR Steering Committee. If necessary, the Steering Committee passes the report to the risk management team and, if appropriate, to the Executive Board.

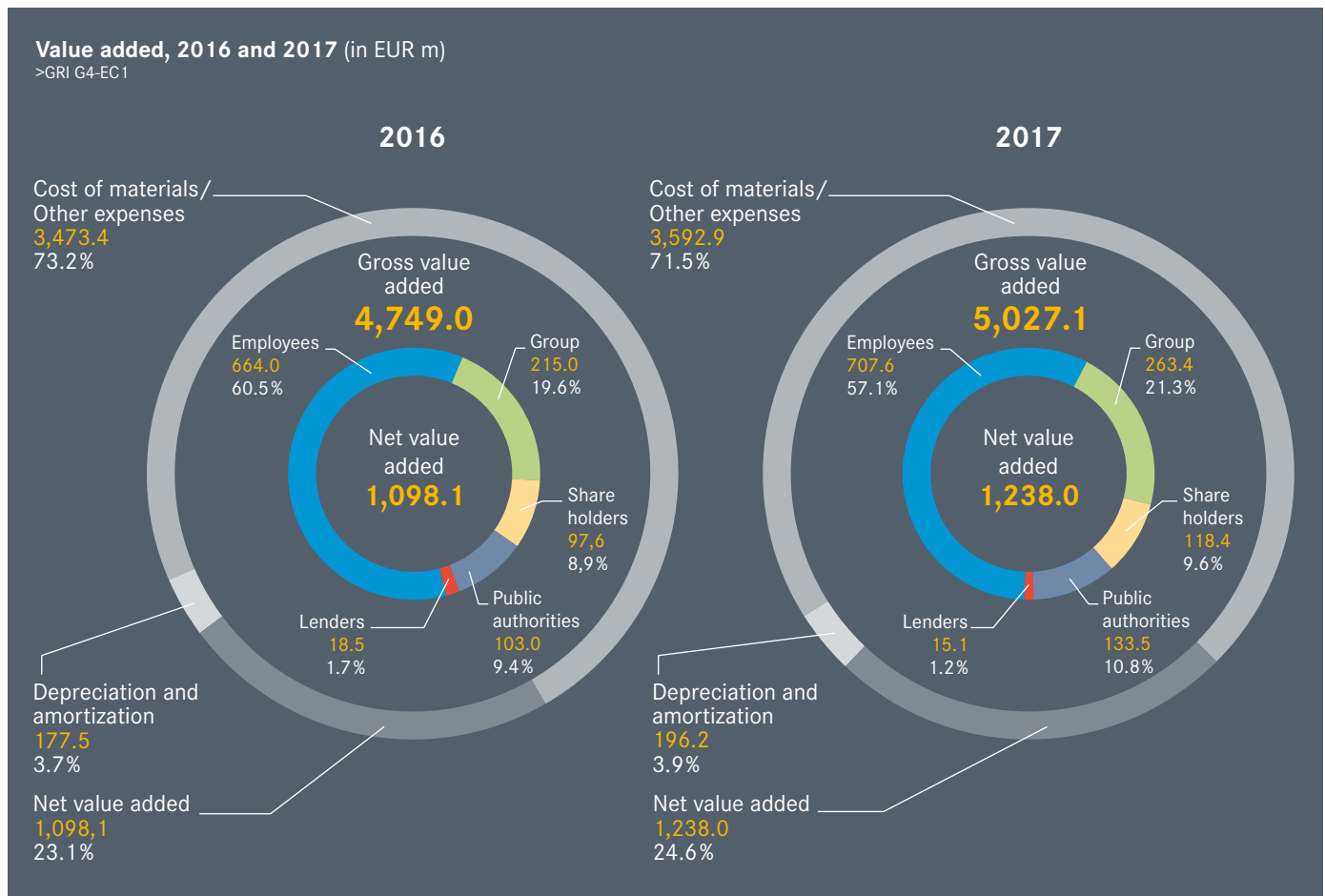
#### Adding value by steadily increasing shareholder value

We take a long-term approach to our company's success, aiming to steadily increase shareholder value with a view to profitable growth. Our commercial success generates added value for our stakeholders and contributes to society's prosperity and the economic development of the communities where our business activities are located. We create attractive jobs in a high-tech industry and offer professional training as part of Germany's dual-track system. At present, the MTU Group employs 8,846 people at fully consolidated locations around the world, with 287 young apprentices training in Germany. We are a major employer at all major international locations, offering an appropriate return for shareholders and competitive salaries for our employees. We also contribute to society through the tax we pay on our profits. As a local investor and patron, we promote education and the academic landscape, for example by maintaining close ties to local universities. We invest in our locations and are in the process of expanding our plants in Rzeszów, Munich and Berlin. Through our innovative capabilities, we create upstream value chains and jobs in the supply chain.



All that we contribute is based on a sound financial foundation: in 2017, we continued on our growth trajectory and set new records. MTU Maintenance (MRO business) had its best year in its more than 36 years of history. The MTU Group as a whole reported a record adjusted EBIT of 555.3 million euros, and earnings after tax (adjusted) reached 381.8 million euros for the first time. The company's order backlog ran to 13.2 billion euros in 2017, which in purely numerical terms translates to production capacity utilization of up to three years. In addition to the V2500, the most important engine programs in the order backlog are the PW1000G Geared Turbofan™ family, which serves as the basis for reducing aircraft noise and CO<sub>2</sub> emissions as

part of our Clean Air Engine Agenda and climate strategy. We expect a moderate increase in both adjusted EBIT and earnings after tax for 2018.



Consistent with our goal of steadily increasing shareholder value, we continued our pattern of previous years with positive development this year. Net value added has remained at a consistently high level over several years, and rose to 1.2 billion euros in 2017. Most of that (57.1 percent) went to our employees in the form of wages, salaries and other benefits, while the Group retained 21.3 percent to make forward-looking investments. The proportion allocated to pay taxes levied by public authorities accounted for 10.8 percent; at 133.5 million euros it was above the previous year's value. Shareholders participated in 2017's success with dividends totaling 118.4 million euros (9.6 percent of net value added).

#### More information:

MTU as a local player: Chapter 4.5 Corporate Social Responsibility

#### Ratings & rankings

MTU's performance with regard to non-financial indicators is also regularly assessed by capital-market analysts and independent experts. The company is currently listed in the following sustainability indexes and rankings:

- oekom prime Status
- CDP
- STOXX ESG Leadership
- Transparency International

#### More information:

Ratings & Rankings: [www.mtu.de](http://www.mtu.de)

> MTU locations are the company's face around the world. Their common goal: to shape the future of aviation also in the spirit of increased sustainability.





## 1.2 Compliance and human rights

Our long-term commercial success is founded on responsible actions carried out in full compliance with all applicable laws. This includes our commitment to respecting human rights, which is firmly embedded in our corporate culture.

### Management approach

MTU acts as a fair employer, business partner and customer, and advocates transparent competition where all parties are on an equal footing. Integrity and responsible conduct are core values of our corporate culture and are embedded in our code of conduct, which is binding for all employees, managers and members of the Executive Board. Key parts of the MTU code of conduct are:

- Safeguarding human rights
- Observing labor laws
- Maintaining fair working conditions and business relationships
- Occupational health and safety for all employees
- Refraining from corruption, bribery and accepting undue advantages
- Providing employee training

In addition, each employee is to be familiar with the legal requirements relating to their role and observe both the terms of their employment contract and company regulations. Managers have a particular responsibility to uphold these requirements and regulations and to act as role models. Acting with integrity is a fundamental part of our working and business relationships. Compliance strengthens the trust our stakeholders place in our company and bolsters MTU's good international reputation. We also expect our business partners to fully comply with all applicable laws.

"We shape the future of aviation" is the title of the MTU Principles. As an integral part of our corporate culture, they help MTU to act in a consistent and reliable manner. The MTU Principles define the company's future orientation and its basic goals and values, and provide for the observance of MTU's code of conduct and ethical principles. They are based on five pillars:

- Products, technology and growth
- Cooperation and conduct
- Employees and management
- Partners, customers and shareholders
- Environment and society

The MTU Principles are regularly updated to reflect new developments and challenges.



**Reiner Winkler**  
Chief Executive Officer  
MTU Aero Engines AG

*"The only way we can be successful over the long term is if we conduct our business responsibly. This includes complying with all laws as well as our own principles and guidelines in all units of the MTU Group. Compliance is a key pillar of our corporate culture. Our aim goes beyond preventing corruption and bribery and ensuring fair competition; we also want to respect fundamental values such as human rights within MTU and along the supply chain."*

As a signatory to the UN Global Compact (UNGC), we are committed to protecting human rights (UNGC Principles 1 and 2) and preventing corruption within our company (UNGC Principle 10). In the interests of maintaining sustainable corporate leadership, we take our lead from the German Corporate Governance Code and international compliance standards (set by the Institute of Public Auditors in Germany (IDW Auditing Standards) and the guidelines issued by the Organization for Economic Cooperation and Development, or OECD (Good Practice Guidance on Internal Controls, Ethics, and Compliance)). MTU also participates in the anti-corruption initiatives of the Aerospace and Defense Industries Association of Europe and of TRACE International.

### More information:

MTU code of conduct: [www.mtu.de](http://www.mtu.de)

Declaration of conformity with the German Corporate Governance Code: MTU Annual Report 2017, page 22

UN Global Compact: [unglobalcompact.org](http://unglobalcompact.org)

TRACE International: [traceinternational.org](http://traceinternational.org)

### Anti-corruption

One focus of our compliance activities is the prevention of corruption and bribery. MTU condemns corruption of any kind, including bribery and all other forms of white-collar crime. The long-term success of any business is founded on compliance with applicable laws and regulations and the company's own internal guidelines. In addition to obligations to act responsibly and with integrity, the group-wide framework of compliance rules obliges the adherence to statutory requirements and internal regulations. MTU guidelines also provide clear rules for day-to-day dealings with officials and when it is appropriate to accept gifts. Further internal regulations concerning the prevention of corruption relate to invitations, hospitality, customer events, donations, sponsoring and the approval process for sales consultants.

### Trade compliance

MTU acts in accordance with all customs laws and export regulations our products are subject to and has implemented standardized processes throughout the company to ensure this. These processes include the review of all data and parts prior to shipping to make sure they are in line with export control regulations. MTU's own export controls include checks for any existing and/or required authorization requirements. Before deliveries are dispatched, MTU performs an additional system check using SAP. Compliance with customs laws and export regulations is explicitly laid out in the code of conduct.

### Compliance organization

MTU has established a compliance system for the entire company. As the final decision-making authority, the CEO is responsible for the company's business ethics and anti-corruption policy. The key tool for ensuring the ethical conduct of business activities is a group-wide Compliance Board comprising members on the management level. The Compliance Board holds both regular and ad hoc meetings and provides quarterly updates on its activities to the Executive Board and the Supervisory Board's Audit Committee, which for its part informs the plenary meetings of the Supervisory Board. The Audit Committee oversees the Executive Board's compliance activities. Employee representatives make up half of the members of the Supervisory Board's Audit Committee and of the full Supervisory Board.

The company has instituted a global whistleblower system that allows employees and external stakeholders to report suspected cases of corruption or bribery, or any general suspected cases of non-compliance with the MTU code of conduct, internal guidelines or applicable laws, to an ombudsman ([ombudsmann@mtu.de](mailto:ombudsmann@mtu.de)). MTU does not tolerate any kind of conduct that violates laws or regulations. Any detected violations will be punished. In such cases, MTU applies a principle of zero tolerance. Should there be clear grounds for suspecting a violation, the Compliance Board will take appropriate action.

In the reporting year, no suspected or confirmed cases of corruption were identified. In addition, as in previous years, no violations of the code of conduct were reported by employees or external stakeholders in the reporting period. No significant fines were levied against the company for breaches of applicable laws. MTU also faced no legal action due to anti-competitive, antitrust or monopoly practices. In 2017, no reportable incidents of data protection breaches occurred within the MTU Group. >GRI G4-SO5, 7-8, PR8

The ways of reporting non-compliance are communicated to employees through internal media channels and explained to external stakeholders in writing or on our website. The identity of the whistleblower and the information he or she imparts are treated as strictly confidential—even if the suspicion turns out to be unfounded. It goes without saying that whistleblowers acting in good faith shall not be penalized or disadvantaged by the company in any way. In addition, employees can confide in their superiors, the legal department or HR.

**Training employees on compliance**

&gt;GRI G4-SO04

MTU puts a high priority on preventing possible forms of misconduct and raising awareness of compliance issues among employees. When new employees are taken on, they are informed about the code of conduct and sign a declaration to uphold it. We also present and discuss the code of conduct during the induction event for new employees at all our locations.

Furthermore, we run regular training sessions on the code of conduct for selected business units as part of our regular compliance activities. Raising awareness of compliance issues is done first and foremost by organizing mandatory anti-corruption and compliance training courses for managers and employees who hold positions of trust. In the reporting year, we trained 190 employees on antitrust law. We also trained various employee groups plus a further 165 employees on compliance issues through an e-learning course. The training methods are monitored by the Compliance Board.

**Addressing risks of non-compliance**

To ensure sound and reliable business relationships, the Compliance Board inspects sales support consulting contracts for possible corruption risks before they are placed or renewed. The potential consultants are also reviewed by an independent provider of due diligence services. The corporate audit department conducts regular compliance audits in which it checks business processes and procedures for conformity to legal requirements and adherence to internal guidelines. The Supervisory Board's Audit Committee reviews the framework of compliance rules and deliberates on the measures and employee training recommended by the Compliance Board.

Moreover, MTU is regularly evaluated by Transparency International, a non-governmental organization dedicated to fighting corruption. MTU achieved an overall rating of B (Good Evidence), which means that the company has provided good evidence that it has established an anti-corruption and ethics program.

**Monitoring and improvement**

MTU wants to continuously improve its compliance system and so underwent a review in 2017. Recommended measures, such as a new compliance reporting system, enhancement of the whistleblower system and organizational changes in the structure of compliance responsibilities, are being successively implemented.

**Respecting human rights**

MTU respects the internationally proclaimed human rights set out in the United Nations' Universal Declaration of Human Rights and enforces and protects these rights within the company. MTU pursues the goal of preventing human rights violations occurring in its own business activities (zero-tolerance principle) and has also implemented measures for upholding human rights for the upstream supply chain. In the case of investment agreements with suppliers, the suppliers must follow the MTU code of conduct, which is laid out in the purchasing agreement and requires the adherence to human rights. >GRI G4-HR1

MTU is committed to respecting the individuality and dignity of all, maintaining equality of opportunity in the workplace and preventing discrimination. The protection of human rights, the right to appropriate remuneration, and recognition of regulations governing employee and union representation under labor and works constitution law as well as constructive collaboration with employee representatives and labor unions are implemented group-wide through the code of conduct. As an employer, we want to create fair working conditions based on legally binding employment contracts with appropriate remuneration. This includes the right to unionize and to adopt collective agreements. Compliance with the code of conduct and ethical principles is enshrined in the MTU Principles, and our commitment to respecting human rights is reinforced by our status as a signatory to the UN Global Compact since 2011. In addition, we respect the United Nations' Universal Declaration of Human Rights and the principles set out in the International Labor Organization's (ILO) core labor standards. The adherence to and protection of human rights is also covered under national legislation. In Germany, MTU is bound by the General Act on Equal Treatment (AGG), which prohibits discrimination against employees and job applicants. For employees in Germany, there are also internal guidelines on fair and cooperative conduct that are designed to prevent bullying, sexual harassment and discrimination.

MTU has established points of contact within the company for reports or complaints of human rights violations. It is ensured that the company investigates all claims. Reports can be directed to the ombudsman. In line with the provisions of the General Act on Equal Treatment (AGG), every site in Germany has an appropriately trained contact to whom employees can address any complaints of discrimination. Employees can

also report complaints to managers, the works council or the head of human resources. The Executive Board is informed about infringements depending on the severity of their impacts.

When they join the company, new employees are informed about the regulations laid down in the code of conduct and—in Germany—in the General Act on Equal Treatment (AGG), and they undertake to comply with these requirements. In addition, MTU provides regular training on the code of conduct at all the company's sites and across all hierarchical levels. At our locations in Germany in 2017, we trained a total of 4,431 participants on legal issues for 1,064 training days. Employees at all fully consolidated locations within the MTU Group were given training on the MTU code of conduct.

There was one well-founded complaint under the German General Act on Equal Treatment (AGG) in 2017. This complaint was followed up and appropriate action taken. Other than this, there were no substantiated breaches of the code of conduct within the MTU Group. >GRI G4-HR3, 12

MTU considers the risk of human rights violations among its employees to be low at all its locations, as these activities are governed by the relevant national legislation that upholds human rights. The company thus puts its focus in the area on the supply chain. We have taken steps here to ensure the protection of human rights, for example to increase transparency in the procurement of certain raw materials classified as conflict minerals, which we therefore procure only from secure and trusted sources. In 2017, we launched a due diligence process to assess risks to human rights in the supply chain to prevent human rights violations. Our approach is laid out in detail in Chapter 2.3 "Responsibility for the supply chain." >GRI G4-HR4-6, 9



MTU is committed to respecting human rights in its own workforce, along the supply chain and in its collaboration with business partners.



## 2 Responsibility for products and for the supply chain

We pursue product responsibility over the entire product lifecycle of an engine. Our priority are the safety, quality and eco-efficiency of our products, above all in their use, and we take this into account starting in the product development stage. We include the supply chain in a sustainable process of adding value.



## 2.1 Product quality and flight safety

Every day, some 100,000 aircraft around the world take off and land safely back on the ground. Our part in this is the safety and quality of our engine products. Safety first—this is our maxim, too.

### Management approach

Safety plays a special role in aviation. Legal requirements concerning the safe operation of flights are closely monitored by the aviation authorities. This is mirrored in the high importance MTU places on product quality and flight safety. The company must comply with the legal requirements imposed upon it as a development, manufacturing and maintenance organization in the aviation industry. These include the requisite aviation-authority licenses, approvals and certifications as well as safety and environmental requirements as legally mandated by regulatory authorities. Through stringent quality standards, we ensure that these are implemented across the Group and at all levels of the value chain in accordance with the law, thus adding value for our customers and partners.

A group-wide integrated management system (IMS) ensures compliance with laws and internal regulations and clear assignment of responsibilities within the company. One principle of the IMS policy is that “safety takes priority in what we do.” The quality framework is enshrined in a management manual that is binding for all employees and managers across the Group. Corporate Quality is a separate department directly subordinate to the Chief Operating Officer (COO) and reports quarterly to the Executive Board on quality aspects and flight-related incidents. MTU Safety Management in accordance with the International Civil Aviation Organization (ICAO) standard is part of the IMS and defines how to handle safety-related air-traffic events. Appropriate organizational structures and responsibilities, such as a Flight Safety Board and a flight safety manager, have also been established. High quality standards together with product safety and reliability are enshrined in the MTU Principles as an important corporate objective. The effectiveness of MTU’s IMS is certified by independent and accredited external auditors.



**Martin Schäffner**  
Senior Vice President  
Corporate Quality  
MTU Aero Engines AG

*“We strive for nothing less than first-class performance. The MTU name stands for high-quality and reliable aviation products around the world. Our extensive quality management guarantees that our exacting quality standards for products and processes will be upheld. Safety is our number one priority.”*

Quality control and its standards are undergoing continuous development. Impetus for this comes, for example, from collaboration in the Aero Engine Supplier Quality Group or from regular meetings of the quality managers. The framework of rules, too, is continuously reviewed and amended as needed.



< As an engine manufacturer, we are working hard to minimize the fuel consumption, carbon footprint and noise of aircraft engines. We have achieved particular success here with the new PW1100G-JM Geared Turbofan™.

MTU at its best: Our key components for the PW1100G-JM powering the A320neo are innovative and of premium quality.

We include our employees in our high quality standards and provide basic information with our group-wide Q.net quality network. Furthermore, the company publishes its quality information, Q-Info, group-wide on the intranet several times a year, with the aim of raising awareness among employees. At MTU's principal maintenance site in Hannover, this is supplemented by the local QM-Info. We provide training on quality issues for managers and employees at the individual sites. Shopfloor/office management in Germany and Poland, where employees and managers exchange views on quality and other issues several times a week and initiate short-term measures if problems arise, also supports continuous improvement. Shopfloor/office management was also rolled out at MTU's Vancouver location in Canada in 2017, with more locations to be included in the future.

**More information:**  
IMS policy: [www.mtu.de](http://www.mtu.de)  
Certifications: [www.mtu.de](http://www.mtu.de)

**Sustainable product lifecycle**  
>GRI G4-PR1-4, 9

We examine our engine modules for their impact on the environment, health and safety throughout their development, production and operation lifecycles. Accordingly, we cover all major stages of a product's service life completely. The key to our continuous progress is development. Our mission in any collaboration is to design every new engine so that it is more fuel-efficient, with less emissions, and quieter than its predecessor.

We take into account all safety and environmental requirements of regulatory authorities in the early stages of planning new engines for later



For our technically demanding designs, we use highly precise measuring technology—here is a contourograph in use.

use, and compliance must be documented as part of the certification process. We employ a comprehensive testing program involving test builds and series tests to validate the safe flight operation of our products. This includes being able to ensure safe operation during a bird strike, bird ingestion event or hailstorm and complying with strict limits on pollutants and noise emissions. MTU components frequently exceed aviation authority requirements. Our customers demand high standards when it comes to fail-safe operation and eco-efficiency. In addition, the manufacture of engine parts and modules our production shops meets all required standards concerning occupational safety and environmental protection.

Sustainability over the entire product lifecycle	
Phase	Measures
Development	<ul style="list-style-type: none"><li>• Clean Air Engine agenda (Claire)</li><li>• New technologies for a longer service life of life-limited parts</li></ul>
Production	<ul style="list-style-type: none"><li>• Environmental management (mostly compliant with EMAS and/or ISO 14001)</li><li>• Production processes that conserve resources, such as additive manufacturing</li><li>• Sustainability standards for suppliers</li></ul>
Service life	<ul style="list-style-type: none"><li>• MTU<sup>Plus</sup> Engine Trend Monitoring</li><li>• MTU repairs, such as MTU<sup>Plus</sup> ERcoat<sup>eco</sup> (patented erosion protection for compressor blades)</li></ul>
Recycling*	<ul style="list-style-type: none"><li>• For older engines, we offer tailored solutions such as MTU<sup>Plus</sup> Mature Engine Solutions for disassembling and recycling components</li></ul>
*Due to their highly valuable materials (titanium, nickel and alloying elements such as platinum and rhenium), aircraft engines have very high recycling rates. As a vendor, MTU has no direct influence over the scrapping of engines, which is carried out by specialist companies.	



We use only fault-free and clearly identifiable components that have been approved by the appropriate aviation authority, are based on approved development documentation and have been produced or repaired in compliance with aviation regulatory processes by a certified company.

The aviation sector has strict rules governing documentation in order to verify the airworthiness of components and engines. There must be no gaps in documentation for the entire product lifecycle. MTU holds its suppliers to the same standards. To ensure compliance with quality and safety requirements, the company has implemented comprehensive monitoring and testing processes throughout the entire value chain. Safety-critical components (engine components are categorized into various safety classes) are subjected to very rigorous testing to verify their technical quality. Strict requirements also apply to materials. Fail-safe materials are a basic prerequisite for aviation safety, and all engine components, including all materials we use, must be approved by the aviation authorities.

In 2017, we once again fulfilled all our product compliance requirements. In the previous financial year, once again no breaches of statutory regulations were observed in connection with the purchase or operation of our products, nor were any fines imposed on MTU. Neither were there any incidents or breaches of statutory regulations or internal guidelines in relation to the effect on health or safety of our products and services.

#### **More information:**

Clean Air Engine agenda: 2.2 Eco-efficient engines

Environmental protection in production: Chapter 3 of this report

MTU maintenance technologies: [www.mtu.de](http://www.mtu.de)

#### **Harmless materials**

>GRI G4-PR3

Wherever possible, we avoid using dangerous and environmentally hazardous materials in our manufacturing processes and products. According to the European REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) regulation, certain substances of very high concern (SVHCs) containing chromium<sub>6+</sub> have been subject to authorization since September 2017. MTU uses chromium trioxide in its production processes and the European Chemicals Agency (ECHA) has authorized continued use until 2029. In a project to implement the REACH regulation, we are pushing ahead with the long-term elimination of SVHCs that require authorization, insofar as possible, either by replacing them or by rejecting new authorizations. We obtain further REACH substances necessary for our processes exclusively from authorized suppliers, and communicate the REACH requirements to the suppliers of our various sites in our General Terms and Conditions of Purchase. MTU is duly implementing all provisions of the EU regulation for protecting employees and the environment.



We have established comprehensive monitoring and testing processes in our component production operations.



### Focus on customer satisfaction

>GRI G4-PR5

A high level of product quality and safety is crucial for customer satisfaction. Corporate objectives for 2017 were to deliver products and services in the required quality and increase customer satisfaction. Our certified quality management system serves to ensure customer satisfaction, process orientation and continuous improvement in all phases of development, production and maintenance. We are also setting “on-time delivery and quality at a high level” as a core objective for 2018.

One way in which we continually monitor quality is by sending monthly reports on quality KPIs to executive managers or shopfloor/office management, so that they can take the necessary steps to achieve sustainable improvement. Providing customers and partners with safe, top-quality products and services helps to keep MTU's business competitive. In 2017, the goal was to lower or at least keep the number of customer complaints stable at all locations. To ensure uniformly high standards and compliance with legal requirements, MTU routinely conducts internal and external audits. These audits are managed locally by the respective sites. A defined process ensures that all customer complaints relating to substandard quality of delivered MTU products are followed up and analyzed, and appropriate measures are defined and implemented so as to eliminate the cause of the defects. In maintenance operations, too, a procedure is in place for examining customer complaints using quality methods in order to eliminate the root causes permanently. We closely monitor the progress of those measures. A cross-divisional CI project (CI = Continuous Improvement) carried out at the Munich location in 2017 systematically analyzed complaints by key accounts from the two previous years for causes of failure, and initiated appropriate measures to eliminate them. We processed individual cases using problem-solving methods that have proven their effectiveness at MTU.

Customer complaints are evaluated at the individual MTU sites, and for the majority of locations, these declined compared with 2016. In the reporting period, 410 internal audits including certification audits and 96 external quality audits by customers or aviation authorities were conducted. MTU was able to improve its ranking by customers in 2017 as well.



Michael Schreyögg  
Chief Program Officer  
MTU Aero Engines AG

*“Thirty percent of commercial aircraft are equipped with our technology. We are the partner of choice for high-pressure compressors, low-pressure turbines and turbine center frames, and we are the maintenance sector's number one independent service provider. MTU has made a name for itself based on premium quality, on-time delivery and competitive pricing, and customer satisfaction is something we take very seriously.”*

MTU Maintenance offers repair and additional services for aircraft engines and industrial gas turbines, and is thus active in the end-customer business. Direct interaction with customers, specifically airlines, leasing companies, and energy producers, forms the basis of customer care. For this purpose, customer advisers use a customer relationship management tool containing a “voice of the customer” module to regularly measure current satisfaction levels. The survey takes place once a quarter for all major sites, including Hannover, Ludwigsfelde and Vancouver, and for all main products. Each customer has the option of providing feedback about product quality, service, logistics and commercial terms. We actively use this feedback in order to identify areas for improvement and initiate measures accordingly. Doing so allows us to improve our performance and continuously increase customer satisfaction as means of staying competitive. In addition, MTU Maintenance Lease Services runs its own measurement system in the area of engine leasing and asset management.

## 2.2 Eco-efficient engines

Last year, 4.1 billion passengers boarded a plane—giving the aviation industry another record-breaking year. This growth presents us with new challenges and new tasks. Joint efforts in the sector are focusing on innovative and sustainable mobility concepts. As an engine manufacturer, we are working hard to minimize the fuel consumption, carbon footprint and noise of aircraft engines.

### Management approach

MTU is working on solutions to make flying more environmentally friendly, with a focus on reducing fuel consumption, CO<sub>2</sub> emissions and noise emissions of engines—factors it can directly influence with its high-pressure compressors and low-pressure turbines. This commitment is contained in the MTU Principles under the maxim of sustainable product development with reduced fuel consumption and noise emissions. There is a direct link between fuel consumption and CO<sub>2</sub> emissions. Because CO<sub>2</sub> emissions are a contributing factor to climate change caused by aviation, MTU is working on solutions to make engines more fuel-efficient. The MTU code of conduct also contains guidelines on product development according to environmental criteria. MTU also contributes to the European industry and research sector's Strategic Research and Innovation Agenda (SRIA) and supports its targets to reduce its impact on the environment. With our own long-term Clean Air Engine agenda (Claire), we are implementing concepts for developing innovative and sustainable products by 2050. And thanks to the technology roadmap embedded in that agenda, we are concentrating on future-oriented products and promising key technologies for the next generation of engines in 2030 and beyond. The development of innovative, sustainable products and processes is firmly anchored in our organizational structures and established by means of a company-wide process.

MTU is committed to the principle of integrated environmental protection, which takes a precautionary approach to how the company's products impact the environment and integrates insights from this into entrepreneurial decisions. MTU's technology and innovation process incorporates environmental and societal driving forces for aviation and takes them into account when defining its own concepts and targets. The company identifies negative impacts of air traffic on the environment and on society for instance by

- Participating in various discussion forums, for example run by the German Aviation Association (BDL), Friends of the Earth Germany (BUND), Greenpeace, Munich Airport
- Giving consideration to new scientific insights, for example research findings of the Intergovernmental Panel on Climate Change concerning the impact of aviation on climate change
- Working on committees such as the German Aerospace Industries Association (BDLI) or the Advisory Council for Aviation Research in Europe

### More information:

MTU Code of Conduct: [www.mtu.de](http://www.mtu.de)

SRIA: <http://www.acare4europe.org/sria>



Certified in 2017: the PW1900G for the new generation of E-Jets from Embraer. Thanks to the Geared Turbofan™, the E190-E2 consumes 17 percent less fuel and thus produces 17 percent less CO<sub>2</sub>.

### Research and development

Innovation and research are cornerstones of the company and part of our strategy. Leading technology is one of three pillars that help the company achieve profitable growth. Further expanding MTU's leading technological position is a continuous corporate goal, and one key topic is digitalization of the entire value chain. To that end, MTU launched the group-wide MTU 4.0 initiative in order to utilize that potential for all areas of the company. The initiative takes into account the entire product lifecycle, from development to production to maintenance. One focus in 2017 was the greater use of simulation techniques in development and manufacturing—a corporate goal in technology. In 2018, we plan to continue driving our digitalization strategy forward, and have enshrined the virtual engine in our targets as a key technology of the future.

An Innovation Board regularly discusses all topics related to technology and innovation and initiates technology projects and studies. The Technology steering committee, of which the Chief Operating and Chief Program Officers are members, approves MTU's technology roadmap and regularly receives progress reports. MTU maintains a central department for the development of future technologies, which in turn works hand in hand with in-house product development.

MTU manages its short- to long-term product development in a multi-level technology and innovation process. Short-term product development is oriented toward concrete customer specifications on the basis of existing technologies; in the medium term (up to 15 years), advanced product designs are created from which technology requirements are derived; and long term (up to 2050), a technology radar is used to develop pilot concepts and initiate enabling technologies. Product and technology development is concentrated at the Munich location, with some activities being carried out at the Hannover, Ludwigsfelde and Rzeszów sites.

In 2017, 199.7 million euros (2016: 208.6 million euros) were spent on research and development. R&D as a proportion of revenues was 4 percent, slightly below the previous year's level of 4.4 percent. A large portion of research and development spending goes toward improving the environmental sustainability of aircraft engines (lower fuel consumption, weight reduction, lower CO<sub>2</sub> emissions, noise reduction).

We are currently working on about 150 technology projects from all departments, which we systematically align to our corporate objectives. Our system of intellectual property management ensures that we protect our technological expertise. On average, MTU employees file 400 patents and make about 200 invention disclosure reports each year. At the end of 2017, MTU's patent portfolio encompassed 3,510 property rights, primarily in the technology areas of manufacturing, compressors and turbines.

To sustain MTU's technological expertise, it is important to be adequately plugged into the research landscape. The company is involved in all major national and European research programs. In addition, MTU cooperates with numerous universities and research institutions in Germany and maintains centers of excellence devoted to specific priority research topics at selected universities.

In financial year 2017, MTU launched an ideation challenge intended to intensify the use of its employees' knowledge and creativity and thus grow its capacity for innovation. The ideation challenge kicked off with a pilot project on additive manufacturing and bionic designs. Over the next few years, innovation management will become more of a focus than in the past; it is firmly enshrined in the corporate strategy and, for the first time as of 2018, in the corporate objectives. We are currently developing a concept for an interdisciplinary, future-oriented innovation management system.

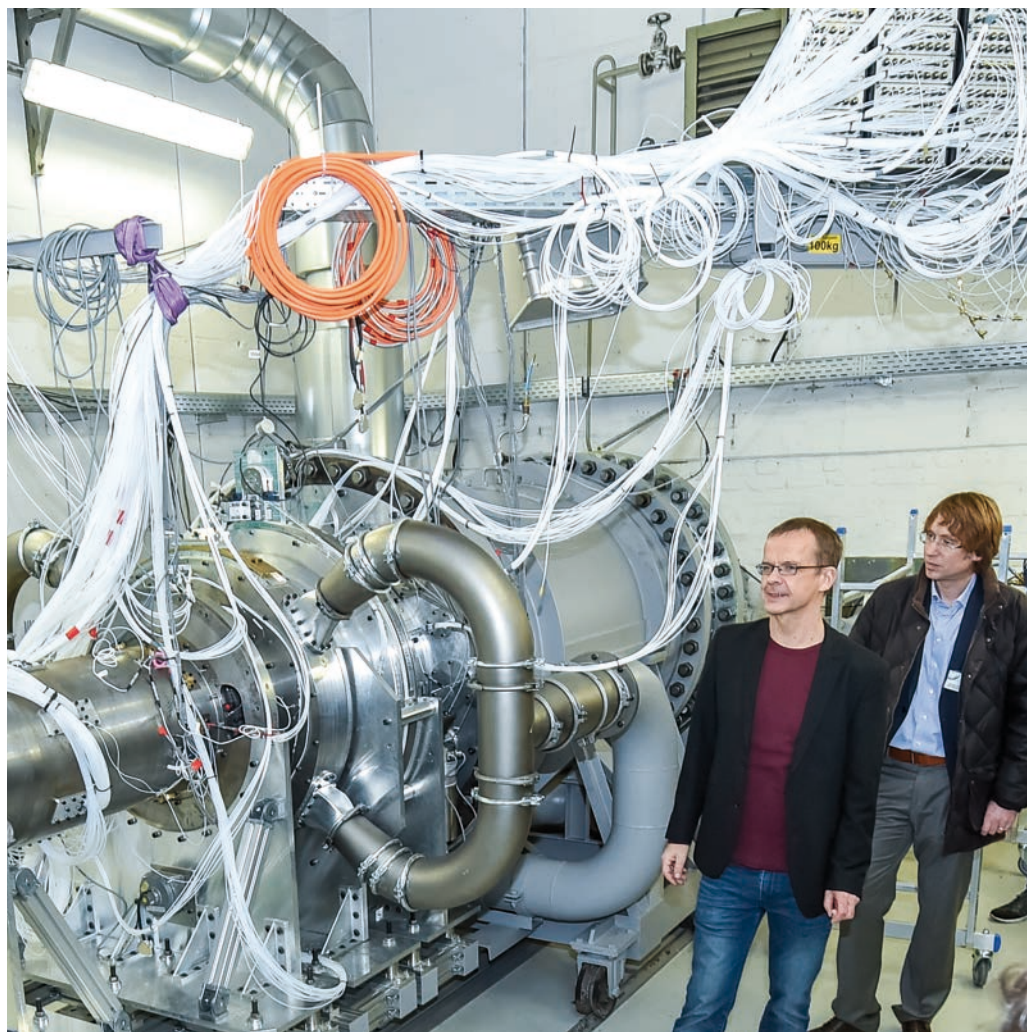
#### More information:

Technology and EU research programs:

[www.mtu.de](http://www.mtu.de)

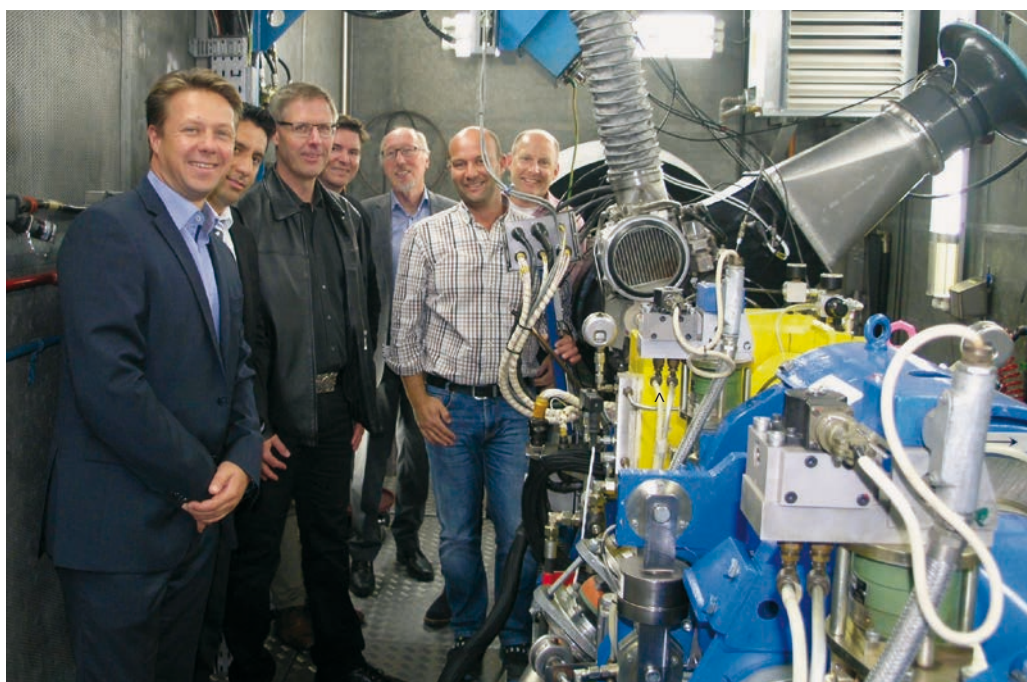
MTU Centers of Competence: [www.mtu.de](http://www.mtu.de)





### New aircraft engines of the future: MTU research for Clean Sky 2

Clean Sky 2 is an important European research program in which MTU is involved as lead partner. Launched in 2014, Clean Sky 2 aims to make aviation even cleaner and more efficient. MTU is working on the next generation of Geared Turbofans™, designed to be more fuel-efficient, cleaner and quieter—thanks to new technologies for the low-pressure turbine and high-pressure compressor components, which MTU develops and validates. To this end, MTU experts are building an experimental apparatus for low-pressure turbines and a demonstrator for the compressor system at the German Aerospace Center (DLR) in Cologne. The DLR is where the test campaign kicked off at the end of 2017 (see image left). And by 2020, a demonstrator for the new inner workings of the low-pressure turbine (image below) will be built and tested. The focus is on new, lighter materials that are more temperature-resistant.





### MTU's Clean Air Engine Agenda

>GRI G4-EN7, 27

The aviation industry is characterized by long product cycles, with aircraft engines as a rule spending 30 years in service before they are decommissioned. Goals to produce more eco-efficient engines therefore have a long-term perspective and are established in memoranda of understanding by the aviation stakeholders (airlines, aviation industry, research, aviation authorities). In Europe, goals aimed at cutting fuel consumption as well as CO<sub>2</sub> and noise emissions are defined in the SRIA, which forms the basis for all national and European technology programs as well as for the MTU Clean Air Engine Agenda (Claire). The International Air Transport Association (IATA) has set similarly ambitious goals.

Our Clean Air Engine Agenda sets our own eco-efficiency targets, derived from the SRIA, through to 2050 (change compared with an engine from the year 2000, per passenger kilometer). These targets concern fuel consumption, CO<sub>2</sub> emissions and noise emissions. The next MTU goal is set for 2030 and intends to reduce the fuel consumption and carbon footprint of future engines by 25 percent and cut noise by 50 percent. By 2050, the company aims to cut fuel consumption and carbon footprint by 40 percent, and noise by 65 percent.

Implementation of the Clean Air Engine Agenda 2030 is based on the Geared Turbofan™, a new type of engine co-developed by MTU in collaboration with Pratt & Whitney. In the next generation, this engine will be refined into an ultra-high bypass engine with higher bypass ratios, pressure ratios and temperatures, with the aim to lower CO<sub>2</sub> and noise emissions. MTU is already working on the preliminary design of this engine.

MTU develops the requisite technologies for this generation of engines, such as integrated compression and expansion systems or high-temperature lightweight materials, within the German national aviation research program LuFo and European technology programs. These technologies are being further developed in collaboration with partners in initiatives such as the Clean Sky technology program, until they are mature enough to be applied in product development.

In the next stage, which runs until 2050, entirely new concepts will be put into practice, such as integrated and distributed fans to increase thrust efficiency or highly efficient heat engines.

Due to the long-term approach to improving the aviation industry's environmental performance, no annual targets are set for eco-efficient engines or corresponding performance indicators collected. Several European technology programs in which MTU was involved—Clean Sky 1, E-BREAK

Clean Air Engine (Claire)				
>GRI G4-EN27				
	Entry into Service	Propulsion component	Core engine	<div> <div></div> CO<sub>2</sub> emissions           <div></div> Noise         </div>
<b>Stage 1</b> Geared Turbofan	✓	Geared turbofan bypass ratio ~ 12	Gas turbine overall pressure ratio ~ 50	<div> <div></div> -15 %           <div></div> -40 %         </div>
<b>Stage 2</b> Ultra-High Bypass Ratio Engine	2030	Geared turbofan bypass ratio 15-20	Gas turbine overall pressure ratio up to 70	<div> <div></div> -25 %           <div></div> -50 %         </div>
<b>Stage 3</b> Integrated Ultra Efficient Engine	2050	Integrated engine low specific thrust	Highly efficient heat exchanger	<div> <div></div> -40 %           <div></div> -65 %         </div>

**Climate goals\* Strategic Research and Innovation Agenda (SRIA)**

	ACARE 2020**	SRIA 2020	SRIA 2035	SRIA 2050
CO <sub>2</sub> emissions, aviation	-50%	-43%	-60%	-75%
CO <sub>2</sub> emissions, engine	-20%	-20%	-30%	-43%***
NO <sub>x</sub> emissions, mainly engine	-80%	—	-84%	-90%

\* Changes compared to year 2000, per passenger kilometer

\*\* By way of comparison: original ACARE 2020 targets (ACARE=Advisory Council for Aviation Research and Innovation in Europe)

\*\*\* Based on same improvement of aircraft and engine

and LEMCOTEC—were completed at the end of 2017. With the new technologies derived from LEMCOTEC, E-BREAK and ENOVAL, the European engine industry has achieved the SRIA target for 2020 with respect to fuel and CO<sub>2</sub> reduction. The SRIA goal for 2020 for cutting flight noise has not yet been achieved. Some milestones that we have reached in connection with our Clean Air Engine Agenda 2017 are described in detail in the 2017 Annual Report's non-financial statement on page 100 and in the objectives in the annex to this report.

**Upgrade for existing products**

>GRI G4-EN7

Besides developing new engine models, engine manufacturers are also introducing upgrades for existing products to improve their energy and carbon footprint and increase their service lives—even though every change subsequent to type approval has to be recertified for safety reasons. Examples from the MTU product portfolio include the V2500 SelectOne (1% reduction in fuel consumption/approx. 20% increase in service life) and the V2500 SelectTwo (1.5% reduction in fuel consumption/approx. 20% increase in service life). The fuel efficiency of the GEnx-2B was improved by 1.6 percent as part of a Performance Improvement Package, and a further upgrade extending its service life is planned for mid-2018. Saving fuel not only minimizes resource consumption and environmental impact, but also reduces airlines' operating costs, of which the fuel kerosene accounts for about 30 percent.

**MTU's climate strategy**

>GRI G4-EN27

Climate change is one of the greatest global challenges of our time. It is generally accepted that CO<sub>2</sub> emissions caused by human activity are largely responsible for global warming, and that the increasing mobility of the human population is a contributing factor. According to the International Energy Agency, global air traffic is responsible for some 2.4 percent of CO<sub>2</sub> emissions around the world (data from 2011). MTU has committed to environmental protection and pursues specific goals as part of its climate strategy, particularly for products, as the vast majority of CO<sub>2</sub> emissions are caused during the products' service life.



Winding up Clean Sky 1: the European technology program finished at the end of 2017. MTU was in charge of testing an engine demonstrator on its test rig.

The UN Intergovernmental Panel on Climate Change (IPCC) reports that the climate impact of air traffic is due mainly to CO<sub>2</sub> emissions, ozone production as a consequence of NO<sub>x</sub> (nitrogen oxide) emissions, and the formation of contrails and cirrus clouds. CO<sub>2</sub> emissions have the greatest impact on climate. For MTU, the greatest potential lies in reducing greenhouse gases by developing engines that are more energy efficient. New combustor concepts can significantly reduce NO<sub>x</sub> emissions, but as combustors are not a core MTU component, the company cannot directly affect in-flight NO<sub>x</sub> production. However, we can have an indirect impact by making efficiency improvements. With the new heat-exchanger concept, we are developing an engine that produces considerably lower NO<sub>x</sub> emissions due to the lower pressures involved. Depending on the weather conditions, contrails and cirrus clouds are generated at higher flight altitudes and can be mitigated by means of different flight paths or flying at lower altitude.



Lars Wagner  
Chief Operating Officer  
MTU Aero Engines AG

*"We are systematically reducing noise and CO<sub>2</sub> emissions and are fully committed to the aviation industry's overarching climate goals. We have enshrined climate and resource protection in our MTU Principles—these Principles apply to our products and our production process in equal measure."*

As air traffic continues to see strong growth, eco-efficiency is a key topic for the future of the aviation industry. Forecasts by aircraft manufacturers Airbus and Boeing indicate that global air traffic will double every 15 to 20 years. The number of airline passengers was a record-breaking 4.1 billion in 2017. By 2036, IATA predicts this number will grow to 7.8 billion. Ambitious climate targets such as the SRIA agenda, the IATA targets, or the 2016 climate agreement on offsetting CO<sub>2</sub> emissions reached by the UN civil aviation organization ICAO are intended to make air flight more sustainable.

With the climate strategy enshrined in the overarching Clean Air Engine Agenda (Claire), we are pursuing a multi-stage plan for reducing CO<sub>2</sub> emissions by 25 percent by 2030 and 40 percent by 2050. This will also let us secure a decisive competitive edge in the market, since engines with improved carbon footprints consume less fuel, which translates into lower operating costs for the customer. The ICAO is successively tightening its environmental regulations for aviation, and further limits, such as for non-volatile particulate matter, are to be expected.

As an integral part of our research activities, we regularly compile interim reports in which we compare our progress to our objectives and measure our goal attainment. All points of the Clean Air Engine Agenda concerning CO<sub>2</sub> emissions are proceeding on schedule. The milestones achieved in reporting year 2017 are listed on page 77 of this report and are also described in detail in the Annual Report's non-financial statement on page 100.

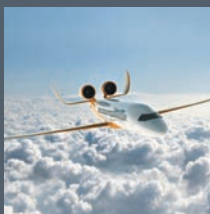
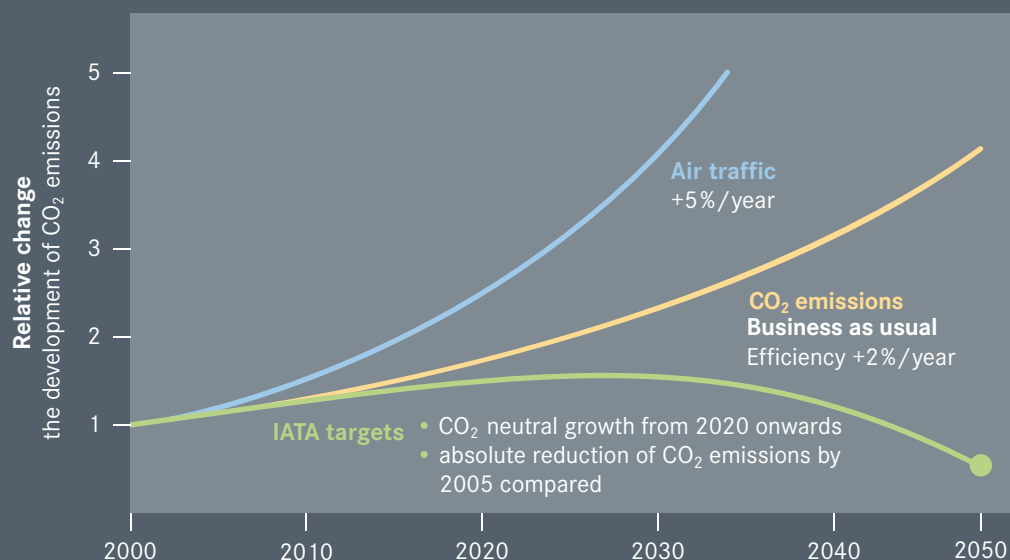
Furthermore, MTU actively promotes efforts to spread the use of sustainable fuels with low carbon content through aireg e.V. (Aviation Initiative for Renewable Energy in Germany). The company co-founded the initiative with airlines, manufacturers and research institutes and heads the working group on fuel utilization. In addition to increasing the energy efficiency of engines, using alternative fuels is also an important approach for reducing the CO<sub>2</sub> emissions produced by aviation. By 2025, aireg aims to have Germany using 10 percent biokerosene. MTU supports this undertaking as an active member of the organization.

## Challenges & trends

### >GRI G4-EC2

A much-discussed topic concerning the future of aviation is electric flying. MTU is also looking at this issue, collaborating with research partners to conduct studies on all conceivable concepts in order to be prepared. The key findings are that current technology is still several decades away from electric-powered passenger aircraft the size of an A320. If development of battery storage capacity continues to advance (at 5 percent annually), electric-powered regional aircraft might be possible in 30 years. Initial concepts have been drawn up for batteries with the necessary capacity to power short- and medium-haul aircraft, but implementation in practice will require a few more decades of development. At present

### MTU helps reduce CO<sub>2</sub> in aviation with new technologies and new engine concepts.



New aircraft concepts



New engines/  
propulsion concepts



Air traffic management



Alternative fuels

The aviation industry has committed itself to ambitious climate targets: starting in 2020, all growth is to be carbon-neutral (goal of the trade association for the world's airlines, IATA). There are four pillars to the implementation plan.

there are no known battery concepts that would provide the capacity sufficient for long-haul aircraft.

Hybrid drive concepts that combine electric motors, generators, gas turbines and batteries are opening up completely new possibilities in aircraft design and propulsion technology. They will continue to use kerosene, a fuel with high energy density for greater range. MTU is already testing these drive concepts as part of stage 3 of its Clean Air Engine Agenda.

#### More information:

SRIA: [www.acare4europe.org/sria](http://www.acare4europe.org/sria)

IATA goals: [www.iata.org/policy/environment/climate-change](http://www.iata.org/policy/environment/climate-change)

ICAO climate agreement: [www.icao.int](http://www.icao.int)

aireg e.V.: [www.aireg.de](http://www.aireg.de)

Alternative fuels: [www.mtu.de](http://www.mtu.de)



## 2.3 Responsibility for the supply chain

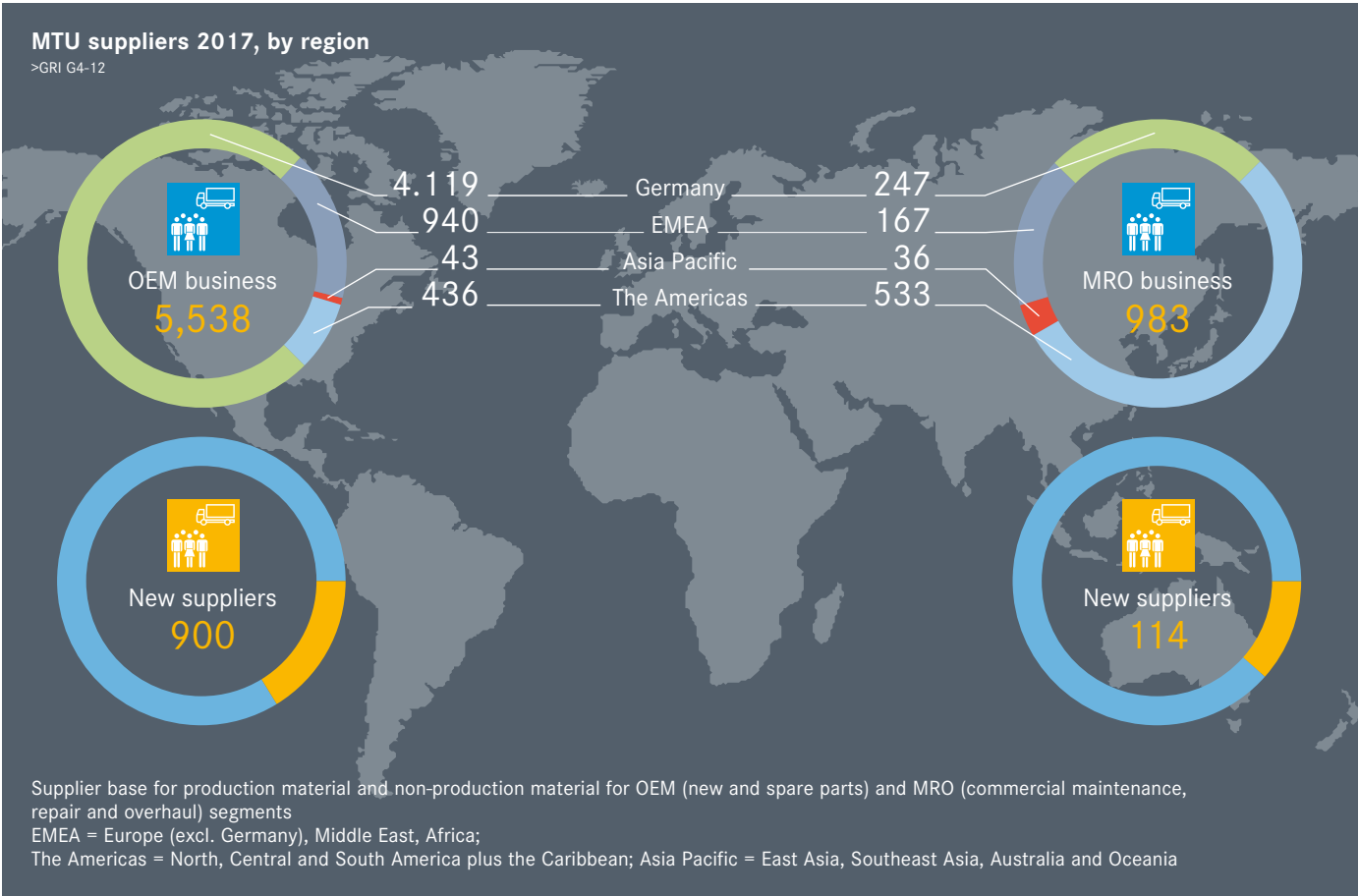
We work with suppliers around the globe, whose services and products are a key part of the value that our plants add. This is why we value sustainable sourcing that complies with ecological and social criteria and upholds human rights within our sphere of influence.

### Management approach

The value created by an MTU product contains important pre-production stages at external suppliers. In keeping with our claim of sustainable value creation and the expectations of our stakeholders, we uphold certain standards in purchasing. “Responsible sourcing” for us encompasses environmental and social aspects as well as transparency in the supply chain. We have enshrined the essential requirements for sustainability in a code of conduct for suppliers, with which we apply the same standards to our supply chain that we do to our own business activities. MTU requires every supplier to comply with this code of conduct and communicate the requirements on to its subcontractors. Moreover, MTU’s General Terms and Conditions of Purchase also contain

environmental, social and compliance requirements. To a large extent, the same standards apply to both of MTU’s business segments: new and spare parts (OEM) and commercial maintenance, repair and overhaul (MRO). However, they each have their own organizational units for sourcing production material.

Because today’s supply chains are so global, extensive and complex, we concentrate our efforts regarding sustainability aspects on the supply step immediately upstream (tier 1). However, our direct suppliers are contractually obliged to ensure that their subcontractors also abide by our defined standards. In 2017, the MTU Group purchased goods and services from 6,521 suppliers around the world (up from 6,249 the year

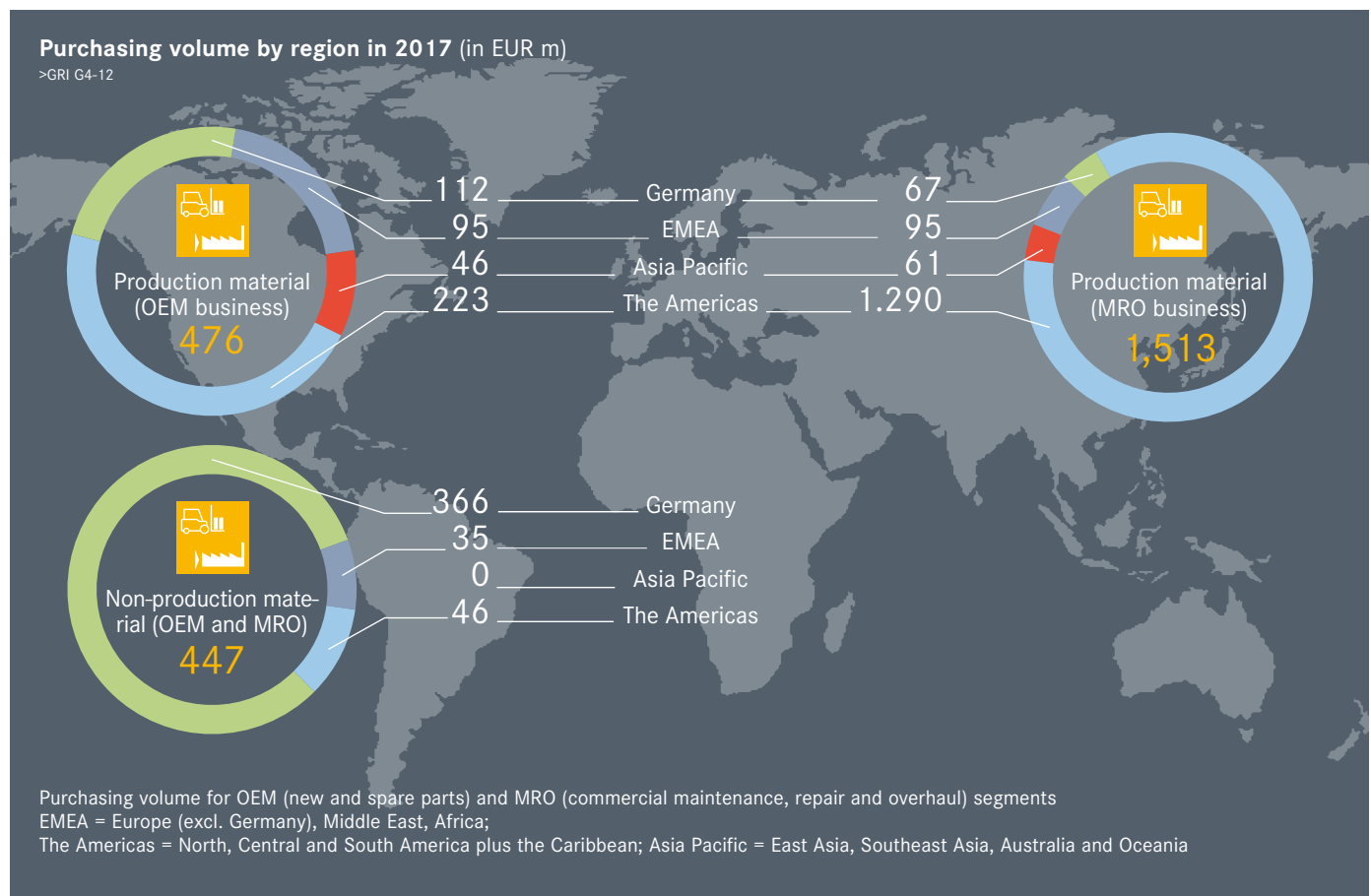


before), of which 67 percent were from Germany alone, and 83.9 percent from Europe. The purchasing volume was about 476 million euros for the OEM business, 1.5 billion euros for MRO (in each case, production material only) and a total of 447 million euros for non-production material.

Measured in procurement volume, the Western Europe and North American markets, which are so important generally for the aviation industry, account for the lion's share of MTU's procurement. Suppliers in the Americas (primarily the United States) deliver 46.8 percent of OEM purchasing volume and 85.3 percent of MRO purchasing volume (production material only). Germany accounts for 23.5 percent of OEM purchasing volume (production material only). In the business for new and spare parts, we procure across the entire breadth of the supply chain, from blanks to finished parts. We always source castings and forgings externally, and the same goes for special materials for which MTU has not built up manufacturing expertise, such as electronic control systems. If possible, we source our supplies directly from manufacturers of blanks or finished

parts. MTU procures only a small proportion of its raw materials directly. For commercial engine modules, the average proportion of sourced parts lies between 51 and 74 percent. We were able to freely source 96.3 percent of the total OEM purchasing volume and 100 percent of non-production material. By contrast, MRO purchasing volume is subject to strict requirements imposed by the relevant original equipment manufacturers (OEMs). As a result, MTU Maintenance has less room for maneuver in selecting suppliers.

Local value creation is particularly important when purchasing non-production material and services, as is the wide variety of goods and services. We procure non-production materials predominantly in the regions in which we operate. The local proportion of the purchasing budget (production and non-production material) was 23.3 percent in Germany, 7.8 percent in Poland, and 9.5 percent in Canada. Overall, MTU sourced 21.9 percent of its entire purchasing volume from local suppliers.



### Setting sustainable standards in purchasing

>GRI G4-EN33, LA15, HR1, HR5-6, HR11, SO9-10

We have established a binding code of conduct for suppliers that is a fixed component of the contract. The code is informed by the ten principles of the UN Global Compact and contains the following social and environmental standards: respecting internationally recognized human rights, observing the International Labour Organization's (ILO's) core labor standards, protecting the environment and combating corruption. Each contract signed by a supplier includes the commitment to abide by these principles and to communicate them to subcontractors. The code of conduct applies to suppliers of the European manufacturing sites and of MTU Maintenance Canada and MTU Aero Engines North America, and therefore to 75 percent of the group reporting entity. In our General Terms and Conditions of Purchase for our European sites, we also insist on compliance with the EU's REACH chemicals regulation.

Suspicious that the code of conduct for suppliers may have been breached can be reported to MTU's ombudsman ([ombudsmann@mtu.de](mailto:ombudsmann@mtu.de)). Should a supplier be implicated in charges of corruption, extortion, embezzlement or the utilization of child labor in the execution of a contract for MTU, the collaboration agreement will be terminated without notice. If other principles of the code are violated, the supplier must demonstrate that suitable corrective measures have been initiated and implemented and must guarantee this in writing. No accusations of possible breaches of the code of conduct were reported during the period under review. Neither were there any complaints about suppliers. MTU reserves the right to carry out on-the-spot audits to verify compliance with the code of conduct.

#### More information:

Code of conduct for suppliers: [www.mtu.de](http://www.mtu.de)

#### Risk management and assessment

We seek out long-term relationships with suppliers. In the OEM business unit for aircraft engines, for example, a large proportion of the materials and services is based on contracts with a typical term of two or more years. Contractually agreed buffer inventories allow us to respond quickly to fluctuations in demand. In the reporting year, the MTU Group worked together with 1,014 new suppliers, or 15.5 percent of the total. All suppliers are vetted before being accepted into MTU's supply chain. This process includes a binding supplier disclosure and contractual undertaking to comply with the code of conduct. MTU Main-



We have established a code of conduct for our own workforce and one for suppliers as a way to secure our business activities.

tenance Lease Services in Amsterdam for engine leasing has its own separate but similar process. To cover environmental aspects, we demand proof of certification to standards such as ISO 14001. We have revised our guidelines on the approval of suppliers in order to take greater account of environmental aspects, such as hazardous materials. Using periodic evaluations, we regularly review existing suppliers, including with respect to their ISO 14001 certification. In 2017, we carried out a total of 403 audits on all major suppliers, which included on-site inspections and interviews. Once approved, suppliers of production material must regularly demonstrate their ISO 9001 compliance for quality management via re-certifications.

To raise awareness of sustainability standards in the supply chain, we regularly provide purchasers with training on professional compliance behavior and on the MTU code of conduct, which applies to all the company's employees and prohibits corruption, bribery, the granting of undue advantage, and anti-competitive behavior. MTU purchasers are also trained on the code of conduct for suppliers. In addition, we offer special corporate responsibility trainings, including some specifically for MTU purchasers.



We conducted the first risk analysis of our key suppliers in 2017.

### Focus on human rights

>GRI G4-HR6-7

In procurement, we take various steps to safeguard the respect of human rights in the supply chain. The issue of human rights plays a particularly significant role in the sourcing of certain raw materials, specifically “conflict minerals” like tantalum, tin, gold and tungsten, which can be found in certain components of engines manufactured by MTU. These minerals can cause problems in procurement because they are sometimes mined in Central African countries, where the profits are used to finance armed conflicts in which human rights are not respected. MTU’s commitment to sustainability includes a transparent value chain that excludes the use of conflict minerals. We never deliberately purchase conflict minerals, but they can find their way into our production or pre-production at the various levels of our global supply chain. According to the provisions of the Dodd-Frank Act applicable to companies listed on stock exchanges in the United States, MTU’s American partners and customers require that MTU disclose the origin of minerals used and limit its sources to certified mining companies and primary-alloy producers (Compliant Smelter List).

In turn, MTU demands that its relevant suppliers should specify the origin of such minerals, in order to ensure that the value chain contains only conflict-free raw materials. MTU’s procurement guidelines require suppliers to provide information about the source of minerals in accordance with the EICC/GeSi Conflict Minerals Reporting Standard. To date, no infractions have come to the knowledge of MTU that infringe on the principles of the Dodd-Frank Act. The code of conduct

for suppliers moreover prohibits the use of child labor. MTU reserves the right to terminate any contract with a supplier using child labor to manufacture products supplied to MTU, without prior notice. We are closely following developments in the EU vis-à-vis new regulations on the use of conflict minerals, which will go into effect in 2021, so that we can implement the provisions in good time and as required.

Moreover, during the reporting period a risk analysis was conducted for the first time for suppliers of sites in Germany, Poland and Canada. The analysis looked at the individual countries as well as sourced products and services (for A and B suppliers, corresponding to about 95 percent of total purchasing volume). The risk analysis by country was based on the annual Global Slavery Index compiled by the Walk Free Foundation, which assesses countries according to standardized criteria on forced and child labor and legal frameworks. MTU’s risk matrix was established in the OEM segment at the management level and then adopted by MRO. This assessment found no MTU suppliers in countries that represent a risk according to these criteria. In addition, MRO conducts a supplier evaluation twice a year for suppliers of the German sites. The evaluation covers sustainability aspects as well as a review to check suitability for ISO 14001 certification. In the future, we aim to incorporate information on critical minerals into the overall supplier evaluation with a view to creating a parts-based lifecycle assessment.

Throughout MTU in 2017, no cooperation was terminated because of sustainability deficiencies or other complaints, nor did we discover any risk of compulsory, forced or child labor at any of our suppliers.

### More information

Compliant Smelter List:

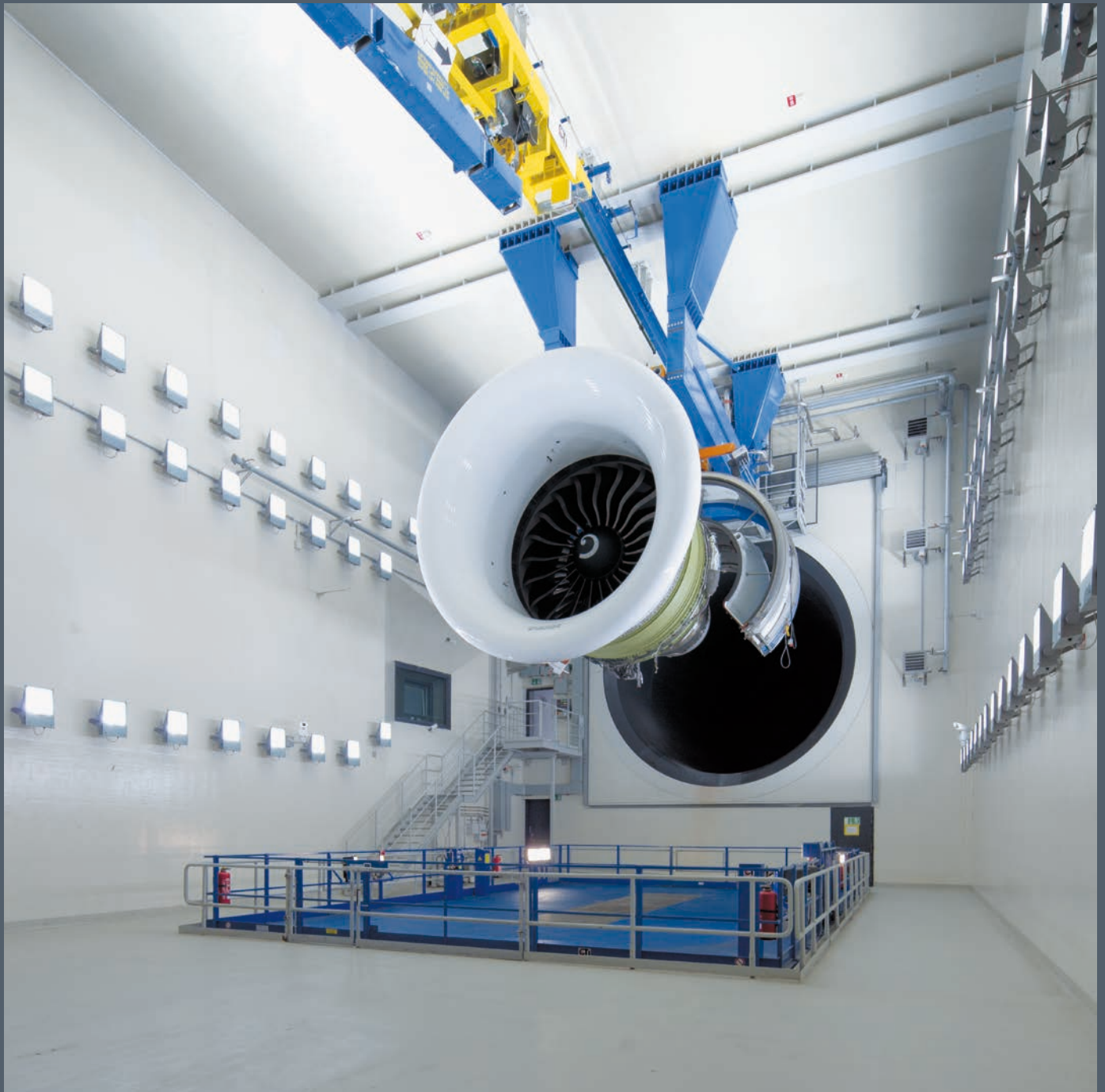
[www.conflictreesourcing.org](http://www.conflictreesourcing.org)

Global Slavery Index: [www.globalslaveryindex.org](http://www.globalslaveryindex.org)



### 3 Environmental protection in production

Climate change and the scarcity of resources are global challenges of our time that are also relevant for our company. MTU develops, manufactures and maintains engines and modules in a way that is as energy-efficient as possible and minimizes emissions and raw material consumption. We view environmental protection as our corporate responsibility for our products and our manufacturing operations.



### 3.1 Operational environmental protection

Environmental protection is an important maxim guiding how we do business. At all our sites around the globe, we aim to be efficient in our use of energy and resources, limit our emissions and avoid environmental risks. We strive for continuous improvement in all these areas.

#### Management approach

Environmental protection is an important principle guiding our corporate behavior and is implemented in our business processes. It is also enshrined in the global code of conduct for all employees, where we express our commitment to a policy of integrated environmental protection that starts at the causes of pollution and evaluates in advance the environmental impact of our production processes and products. We apply the precautionary principle so as to keep negative environmental impact to a minimum, and integrate insights from this into entrepreneurial decisions. The most significant way we can help protect the environment is by means of ecologically efficient products, as the environmental impact (energy consumption, CO<sub>2</sub> emissions, noise) of our products is greatest during their use.

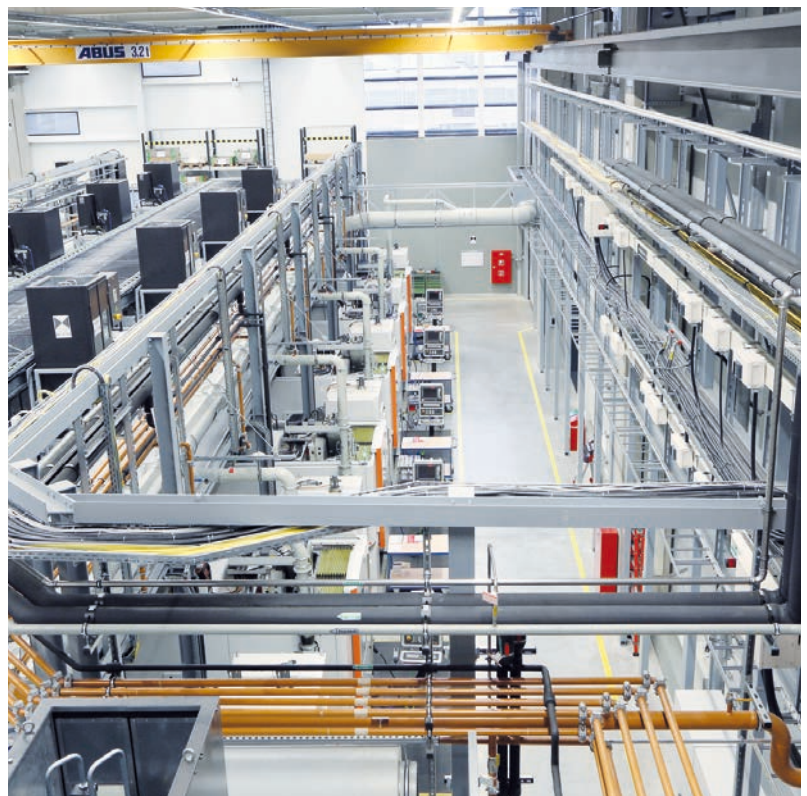
Integrated environmental protection covers:

- Making continuous improvements
- Taking a precautionary approach
- Involving employees
- Limiting environmental impact
- Carefully complying with statutory limits and requirements
- Using resources and energy sparingly

Furthermore, we have embedded our environmental responsibility in the MTU Principles in the section entitled “Environment and society,” and our annual corporate objectives hold us to high standards of environmental protection. To this end, we take various steps at our locations.

Responsibility for company-wide environmental protection is assumed by the Executive Board. Uniform high standards are applied across the MTU Group at the site level through an environmental management system that defines processes, responsibilities and targets. Environmental protection is part of our integrated management system (IMS). Internal standards are binding for MTU’s sites and, in some cases, exceed the legal requirements. The stringent environmental criteria apply to all divisions and processes and

are laid down in documented process flows and special standards. Minimum operating standards for our machines and facilities, such as engine test cells, are stipulated by national legislation and local specifications. For machines and facilities with environmental implications, this body of rules and regulations is supplemented by approvals from the authorities. We conduct measurements, tests and inspections at regular intervals to ensure our machines and facilities are operating invariably in accordance with these rules and regulations.



When building the blisk production center at our Munich location, we paid careful attention to the energy efficiency of the structure. It uses waste heat from compressed air generation and well water for cooling.

< A GE90 on a test rig at MTU Maintenance Hannover.  
We seek to conserve resources and protect the climate, not only in our products, but in our manufacturing and maintenance operations, too.

<b>Investment and expenditure for environmental protection 2017 (Euro)</b>		
>GRI G4-EN31		
	<b>Ongoing expenses</b>	<b>Investments</b>
Waste management	1,310,000	597,000
Water protection	1,624,000	822,000
Noise and vibration abatement	32,000	2,000
Air pollution control	667,000	285,000
Protection of biodiversity and landscape	164,000	—
Remediation of soil, groundwater and surface water	31,000	—
Climate protection	2,545,000	3.240,000
Use of renewable energy	—	2.383,000
Energy efficiency/conservation	—	858,000
<b>Total</b>	<b>6,373,000</b>	<b>8,187,000</b>
Production sites only; no previous-year data for comparison, as this is the first time group-level consolidation was possible.		

Environmental management is handled locally; all of MTU's production sites have a dedicated environmental department in charge of implementation. The Executive Board receives a quarterly report on the consumption of energy (Scope 2) and potable water at all the Group's production sites. Individual managers are directly responsible for environmental protection. They are advised and supported in their environmental protection efforts by the relevant technical departments at their site. The environmental departments regularly share their innovations and best practices across all sites. Employees are trained regularly on matters relevant to the environment, such as the safe handling of hazardous goods or chemicals.

Some of the sites are certified to ISO 14001, the international standard for environmental management systems, or are validated according to the EU Eco-Management and Audit Scheme (EMAS).

Through our environmental management system, we continually improve energy and resource efficiency and minimize emissions of CO<sub>2</sub> and pollutants in production and maintenance. In this way, we meet the expectations of our stakeholders. We use various measures to achieve improvements in our energy and carbon footprints. In 2017, we spent some 14.6 million euros in total on investments and ongoing expenses in a bid to increase our environmental compatibility. The lion's share of that went to climate protection.

#### **More information:**

Environmental protection in product responsibility: Chapter 2.2 Eco-efficient engines  
MTU's IMS policy: Chapter 2.1 Product quality and flight safety  
Site certifications: [www.mtu.de](http://www.mtu.de)

#### **Monitoring and assessments**

>GRI G4-EN29, 34

Our goal is to constantly develop and refine our operational environmental protection measures. Independent external auditors and environmental consultants conduct annual reviews to confirm implementation of and adherence to the applicable environmental protection management requirements, and provide recommendations for improvement. MTU usually passes these reviews with flying colors, as it did in financial year 2017. This monitoring is supplemented by internal inspections and audits. MTU's management conducts reviews to monitor and steer environmental management in the company and to influence its further development.

All production and repair facilities are state of the art and are also subject to regular internal and external monitoring and reviews. Emergency management plans have been prepared to deal with interruptions to operations with a negative environmental impact. This includes regular staff drills and instruction on what to do in the event of an emergency. Furthermore, we inform employees, external staff and visitors to the premises of the Munich site as well as neighboring buildings about the effects of potential malfunctions, as required by Germany's Hazardous Incident Ordinance. MTU has comprehensive fire protection measures in place that comply with legal directives.

In 2017, there were once again no incidents at the production sites with a negative environmental impact, nor were any fines levied against the company for breaches of statutory requirements relating to the environment.



### Environmental protection in dialog with stakeholders

>GRI G4-EN34

We are in a dialog with our stakeholder groups about MTU's environmental impacts. Stakeholders can direct complaints and report abuses to us and we will follow up; this applies to employees, suppliers, residents and other stakeholders. In the reporting year, MTU's production sites received no substantiated complaints about negative environmental impacts caused by our operating activities.

We inform the public annually about our environmental impacts and environmental management through statements issued by MTU for its sites in Munich, Hannover and Berlin. We promote greater environmental protection in industry and business through the following global and local initiatives:

- UN Global Compact
- German Environmental Management Association (B.A.U.M.)
- Bavarian Environmental Pact (Umweltpakt Bayern)
- Energy Efficiency Network for Munich and Upper Bavaria
- Munich Business Climate Pact (Klimapakt Münchner Wirtschaft)
- YVR Airport Authority's environmental initiative

We involve our employees in active environmental protection endeavors and promote environmentally conscious behavior through awareness

events, information campaigns and training courses at all our locations. These form part of our code of conduct on environmental protection. We launched our "mission zero" campaign in Munich. With the projects in this campaign, we aim to reduce resource consumption and emissions and encourage employees to take the initiative. An employee program for saving energy is planned as part of the "mission zero" campaign for 2018.

All fully consolidated production sites of the MTU Group worldwide are included in our environmental reporting (Munich, Germany; Hannover, Germany; Berlin, Germany; Rzeszów, Poland; and Vancouver, Canada). Smaller office sites are not relevant for our environmental impacts and are therefore not included.



#### Umwelterklärung 2018

Aktualisierte Fassung über das Berichtsjahr 2017  
für den Standort München der MTU Aero Engines AG



#### Umwelterklärung 2018

der MTU Maintenance Hannover GmbH  
(Daten und Zahlen 2017, aktualisierte Fassung)



#### Umwelterklärung 2017

Neufassung über das Berichtsjahr 2016  
der MTU Maintenance Berlin-Brandenburg GmbH





## 3.2 Energy and emissions

When producing engine modules or engines in our plants, or when maintaining them in our maintenance shops, we aim to conserve resources as far as possible. Energy-efficient processes require less energy and produce fewer emissions. In this way, we are able to contribute to resource conservation and climate protection.

### Management approach

With the help of our environmental management system, we aim to drive our resource-conserving production forward, and gradually improve energy efficiency in the manufacture of our products and the maintenance of engines and modules. Our goal is highly efficient production and maintenance with minimal emissions of greenhouse gases and airborne pollutants. We use raw materials and energy sparingly. This maxim is expressed to employees as a requirement via the code of conduct and the MTU Principles. In this way, we also create added financial value for the company through lower energy costs. The use of resources depends on batch sizes in production and maintenance. Given the current phase of increasing capacity utilization in manufacturing and maintenance, reducing the consumption of resources and energy presents a particularly tough challenge.

MTU relies on a mix of renewable and non-renewable energy sources and chooses energy resources based on security of supply, cost effectiveness and environmental sustainability. As non-renewable primary energy, we use natural gas, the aviation fuel kerosene, diesel and a very small amount of heating oil. In Munich, we have been operating a cogeneration plant (BHKW)

since 2006 with renewable energy, generating carbon-neutral heat and electricity. We procure the renewable vegetable oil on which it runs from certified sources. We began modernizing the BHKW in 2017, and it will be operated using bi-methane starting at spring 2018. The Hannover facility uses solar energy with the aid of a solar thermal power plant. We also achieve greater energy efficiency through having the sites use waste heat from compressed air generation as thermal energy (combination principle).

### Measures for energy-efficient production/maintenance

>GRI G4-EN6

- Using well water for cooling purposes
- Modernizing the district heating network
- Improving thermal insulation
- Using building automation systems
- Using heat recovery systems
- Using renewable energy
- Using energy-efficient compressed air supply
- Using energy-efficient lighting systems
- Using waste heat from compressed air generation
- Using electric transport in the plants
- Shutting down machines during disruptions of production to reduce the base load



MTU's upgraded BHKW 2.0 runs on biomethane and, compared to conventional co-generation plants, generates power much more efficiently and cleanly.

Energy sources used in 2017, Scope 1 and 2 (consumption in MWh and as a % share) >GRI G4-EN3			
Scope 1: Fossil fuels		MWh	%
Natural gas	Total	91,872	32.7
	Production related	91,841	
	Development	31	
Kerosene	All test facilities	56,689	20.2
	Production related	56,590	
	Development	99	
Diesel	Plant filling station, emergency power, BHKW	586	0.2
Scope 1: Non-fossil fuels			
Vegetable oil		0	
Scope 1: Total		149,147	53.1
Scope 2: Purchased energy			
Electricity	Production/development	121,935	43.4
District heating	Heating	9,683	3.4
Scope 2: Total		131,618	46.9
Energy consumption			
Total		280,765	
Production related		280,635	
Production sites only; the vegetable-oil-powered BHKW was decommissioned in 2017 and a new facility went live at the end of 2017.			

We used less energy in 2017 than in the previous year. Overall demand for Scope 1 and 2 was 280,765 megawatt hours (MWh) (2016: 299,158 MWh). The decline is due to lower consumption of kerosene for test runs in development. With our energy management system, we manage primarily the consumption of our main energy sources electricity and natural gas and implement improvements. Together, these energy sources supplied about three-quarters (76.1 percent) of the required energy in 2017. Only a very small amount (<1 percent) of energy demand was not related to production. Kerosene is used as fuel for testing engines on the test cell, so consumption depends on how extensive the tests are and on engine size. As the Munich site conducted no comprehensive development tests, the amount of fuel used in 2017 dropped by some 23 percent. MTU has no influence on the type and duration of test runs. Our digitalization campaign is making strides toward increasing the use of simulations in development and manufacturing; the hope is that the latest computer-assisted simulation processes will reduce the amount of development tests for new engines. In MRO and for newly manufactured engines, all engines must complete a test run prior to delivery for safety reasons and to demonstrate their performance.

Because BHKW 1.0 was decommissioned, the use of certified palm oil as a renewable energy source in the reporting year was zero. BHKW 2.0, which we inaugurated at the end of 2017, is even more efficient and runs on biomethane since spring 2018. Compared to conventional power plants, cogeneration plants produce energy much more efficiently and emit less pollution. In the reporting year, we invested some 2.4 million euros in upgrading and modernizing our facilities to expand our use of renewable energy.

In 2017, we procured a total of 131,618 MWh of external energy (Scope 2), somewhat more than in the previous year (129,254 MWh). Purchased energy is mainly electricity (92.6 percent of the total energy in Scope 2). Our use of green electricity is determined by the extent to which our suppliers feed it into the grid. In the reporting year, the proportion of green electricity at the European production sites ranged from 13.5 percent (Rzeszów) to 59.7 percent (Hannover). MTU Maintenance Canada gets all its electricity from hydroelectric power stations and therefore 100 percent from renewable resources.



We aim to continuously improve our energy management, and last year we invested some 860,000 euros in actions designed to increase energy efficiency and savings.

#### Progress in energy management in 2017 (selection)

>GRI G4-EN6

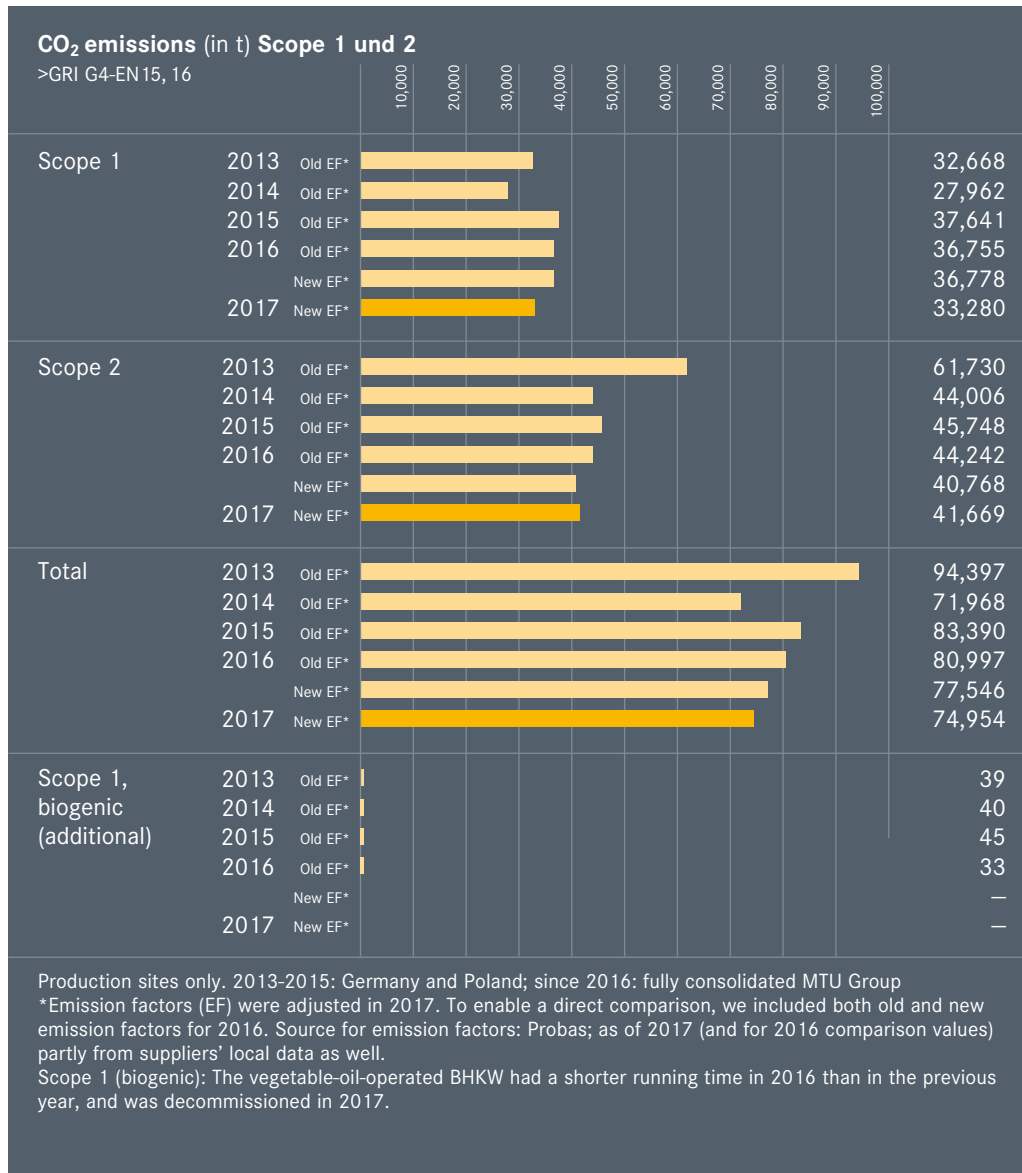
- Turning machines off instead of putting them on standby (Munich, Hannover)
- Connecting more machines to the well-water cooling facility (Munich)
- Fixing compressed air leaks (Munich)
- Using waste heat from compressed air generation to heat a warehouse (Hannover)
- Renovating the roof to increase heating efficiency (Hannover)
- Moving a server room to an outer location to allow for more effective cooling via outside air (Hannover)
- Reducing compressed air leaks through use of ultrasound technology (Hannover)
- Switching to LED lighting (Hannover, Berlin, Vancouver)

#### Emissions

>GRI G4-EN15-17, 19, 21

The use of energy for manufacturing and maintenance in our plants results in emissions of greenhouse gases and airborne pollutants. We continuously assess these emissions according to the international Greenhouse Gas (GHG) Protocol in order to permanently reduce them. Of all the greenhouse gases that the Kyoto Protocol lists as having an impact on the climate—such as carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFC), perfluorocarbons (PFC) and sulfur hexafluoride (SF<sub>6</sub>)—only the CO<sub>2</sub> emissions are relevant for MTU. Our carbon footprint is made up of direct greenhouse gas emissions (Scope 1) from sources owned by the company and of indirect greenhouse gas emissions (Scope 2) that come from the consumption of bought-in electricity and district heating. CO<sub>2</sub> emissions from business trips and transports in the logistics chain fall under Scope 3.

In the reporting year, MTU emitted a total of 74,954 tons (2016: 77,546 tons) of CO<sub>2</sub>. Natural gas accounted for the lion's share of Scope 1 CO<sub>2</sub> emissions at 24.6 percent, and aircraft fuel kerosene accounted for 19.5 percent of all CO<sub>2</sub> emissions. The main source of energy, electricity (Scope 2/external), caused the most greenhouse



gases: 55.8 percent. Demand for electricity and natural gas is dependent on production volume; the amount of kerosene, on the type and duration of test runs.

for two weeks over New Year's 2016-2017, we were able to save some 800 tons of CO<sub>2</sub>. This is roughly equivalent to the annual emissions attributable to 80 average German consumers.

In 2017, capital expenditure on property, plant and equipment and intangible assets amounted to a total of 3.2 million euros. The goal of this investment is to reduce emissions caused by our operating activities. The Clean Air Industrial Site (CLAIR-IS) program operates at MTU's headquarters in Munich. With the help of this program, we are engaged in reducing the CO<sub>2</sub> emissions at the company's largest plant by 25 percent by 2020 (baseline year: 1990). In total, we have already saved roughly 395,000 tons of CO<sub>2</sub>. Simply by shutting down our production machines



**Examples of annual CO<sub>2</sub> savings**

&gt;GRI G4-EN19

- Use of well water for cooling purposes: roughly 2,600 tons
- Turning machines off instead of putting them on standby: 340 tons
- BHKW 2.0: 520 tons (Full load only from 2018)

As a member of the Munich Business Climate Pact, MTU launched solutions in 2017 to make its machinery more energy efficient. It also upgraded its BHKW to produce more electricity on site. The carbon-neutral BHKW will be powered by biomethane; this should reduce annual CO<sub>2</sub> emissions by 7,500 tons versus the previous facility. The 15 major Munich companies in the Climate Pact have committed to reducing CO<sub>2</sub> by a total of 40,000 tons during the Pact's three-year term. MTU committed to a target of 5,500 tons, but was able to achieve a total of 7,000 tons by the end of 2017. In addition, the "mission zero" campaign has launched various actions to minimize consumption and emissions.

To make our company's environmental impact still more transparent, we take part in the annual assessment by the international non-profit organization CDP.

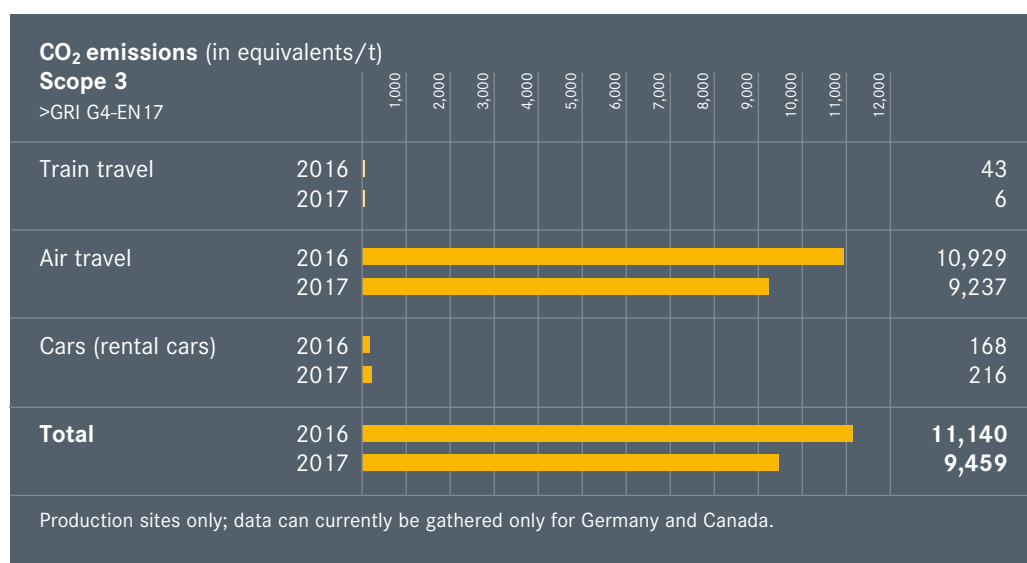
**Transport and logistics**

&gt;GRI G4-EN17

We also involve our transport and logistics chain in climate protection. Measures include optimizing routes for in-plant transport and using vehicles with better environmental performance or electric motors to reduce fleet consumption. In Munich, for example, we are reducing the company fleet's CO<sub>2</sub> emissions by setting a new emissions limit and using two electric cars for the internal mail system and site security. MTU's principal maintenance site in Hannover has also added two electric cars to its fleet. Other measures are currently in the planning stage.

Furthermore, MTU promotes sustainable commuting practices among its workforce, for example through a special discounted "job ticket" for the local public transportation network.

Emissions from the transport and logistics chain (excluding owned company vehicles) fall under Scope 3, for which we do not have comprehensive data.



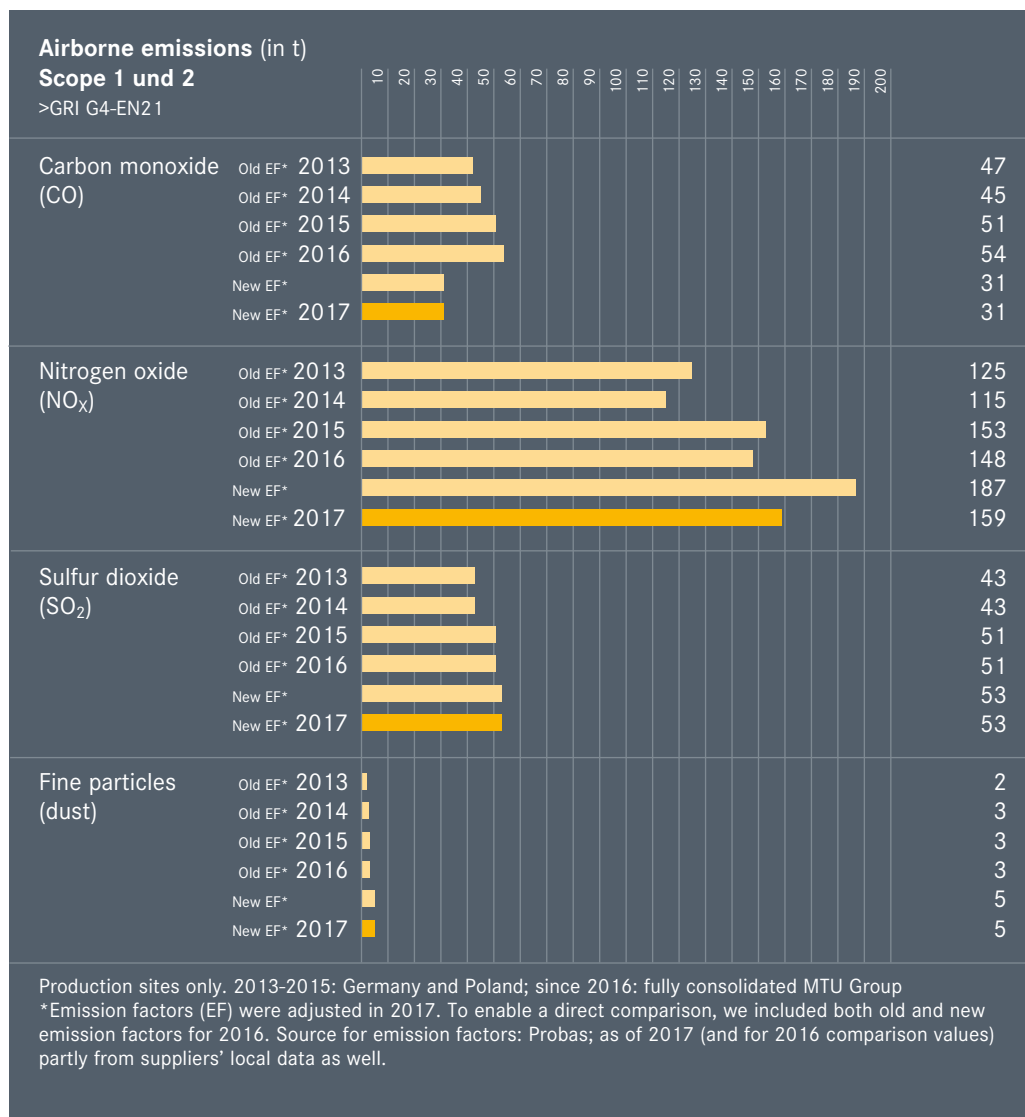
### Airborne emissions

>GRI G4-EN21

The energy sources we use generate other airborne emissions aside from CO<sub>2</sub> emissions. The use of kerosene, natural gas, electricity and district heating from fossil fuels causes the emission of carbon monoxide, nitrogen oxides, sulfur dioxide and dust, which we also determine. In 2017, absolute emissions of air pollutants in the atmosphere totaled 248 tons. This is roughly on par with the previous year (269 tons). At 159 tons, nitrogen oxides made up the majority. We aim to reduce these emissions, too. For example, generation of electricity and heat in the new BHKW 2.0 cuts emissions of nitrogen oxides by 80 percent and of carbon monoxide by 66 percent compared to its predecessor.



New in the MTU fleet: MTU Maintenance Hannover acquired an E-Golf and an electric van in 2017.



### 3.3 Water

Water is a vital natural resource for industry and society in general. Accordingly, we protect water sources and use water efficiently in the manufacture and repair of our products. We aim to use as little potable water as possible.

#### Management approach

We use valuable resources such as water sparingly. We have effective water management systems in place at all production sites. Our water use also depends on production capacity. In keeping with the precautionary principle, we treat wastewater properly and in accordance with the applicable legal requirements. We spent some 2.4 million euros on water protection in 2017. The “mission zero” campaign we launched at headquarters also aims to decrease water consumption overall (absolute reduction) or, when production increases, to keep the increase in water consumption at a lower rate than in the past (relative reduction). The production sites in Europe and Canada are not located in water-stressed regions, which are regions in which water is a scarce resource.

#### Water use

>GRI G4-EN8, 10, 22

We use drinking water for production and maintenance processes, in sanitary facilities and in the cafeteria. We use well water for cooling processes. In 2017, the production sites of the MTU Group required a total of just under 7 million cubic meters of water (2016: 7.1), with 2.5 percent potable water vs. 97.5 percent groundwater. MTU increasingly uses Quaternary groundwater extracted from its own on-site wells in Munich. Increased consumption of potable water, having gone up to 19,531 cubic meters (+12.7 percent), is part of a multiyear trend and corresponds to increases in production and the number of employees. We use recirculated water as much as possible in chemical process baths for applying protective coatings to blades and also for the process water in installations for testing component damage. This means we are able to reuse large volumes of water and have to treat only a small amount of waste water before discharging it into the municipal sewers. As a result, we saved some 600,000 cubic meters of water in 2017. Our sustainable water management also includes a systematic inspection and renovation of the well water and sewer canal networks. At the Rzeszów site in Poland, for instance, we were able to optimize use of cooling water.

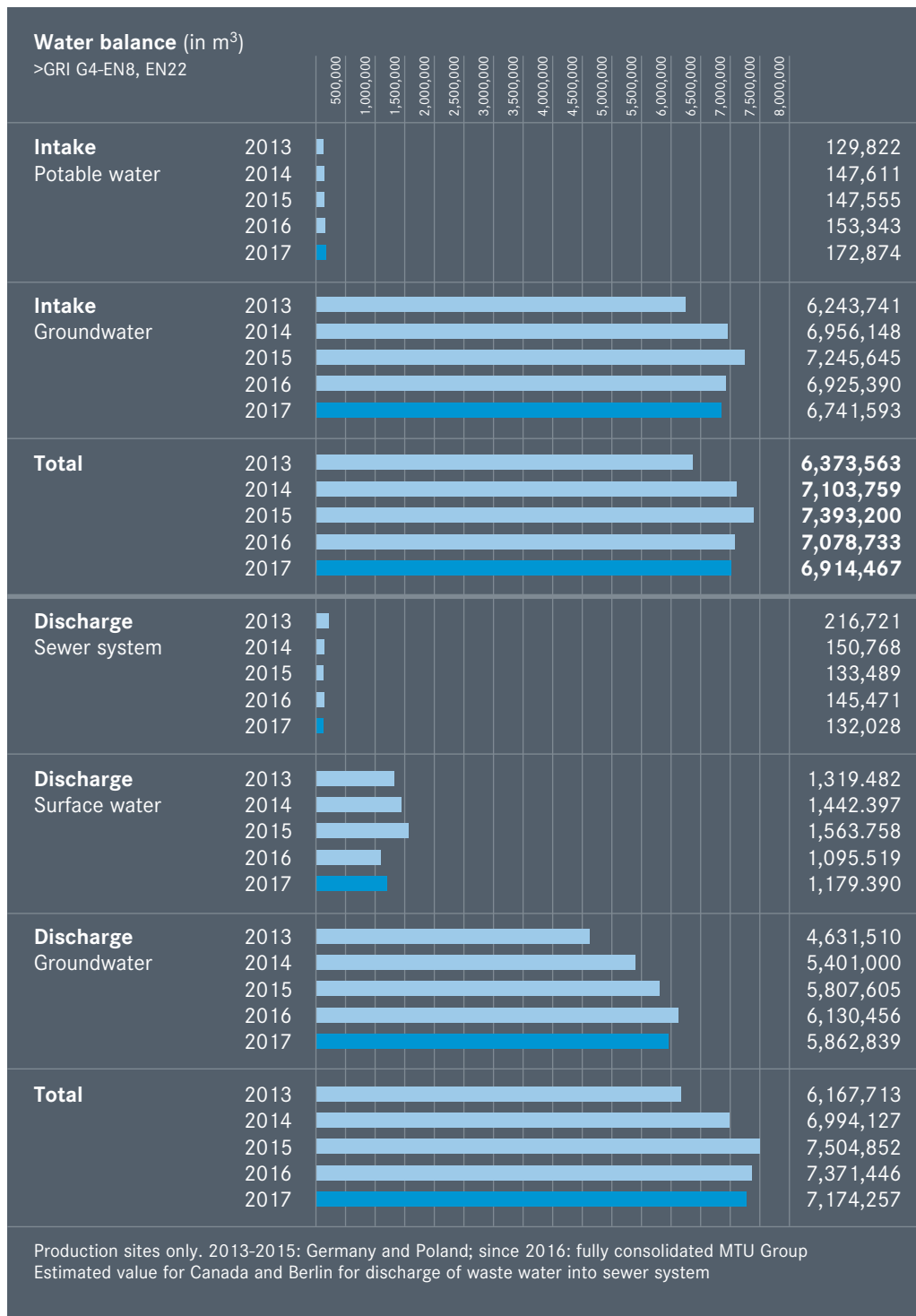
#### Water quality

>GRI G4-EN9, 24

MTU treats waste water in suitable sewage systems according to the type and extent of pollution. The quality of the discharged waste water complies with the official requirements issued for the respective location. Strict monitoring at the sites ensures that legal limits are observed. Neither water sources nor water surfaces have been negatively impacted or polluted by our operating activities. This also applies to our site in Canada, which is located directly on Sea Island in the Fraser River estuary in Richmond, British Columbia. The surrounding nature conservation areas are crucial for salmon migration and the Pacific route of migratory birds.



In its production processes that use water, such as the PECM process shown here, MTU is careful to ensure efficient consumption.





## 3.4 Material efficiency and waste

MTU seeks to ensure that its activities are environmentally friendly and uses raw materials and other materials sparingly in production and maintenance. We conserve resources throughout the material cycle and see to it that we have safe and proper waste streams with high rates of recycling.

### Management approach

The long service life of our products and the continuous improvement of our maintenance processes reduce our demand for raw materials. In all of our methods, we pay attention to efficiency and seek to avoid waste. MTU develops its own production and repair methods that are characterized by their high material efficiency. With its “repair beats replacement” philosophy, MTU Maintenance achieves a truly impressive depth in aircraft engine repair. Using special techniques the company has developed in-house, we repair engine components that in other maintenance shops would have to be replaced with new parts. For example, we manage to give around 70 percent of all engine blades a second, third or even fourth lease on life. We are gradually expanding this product recycling approach to include new processes with an eye to achieving even longer service lives and thus greater material efficiency. For instance, in the case of life-limited parts, we have succeeded in repairing integrally manufactured engine blades and disks, known as “blisks.” These used to have to be replaced with new ones when overhauling an engine.

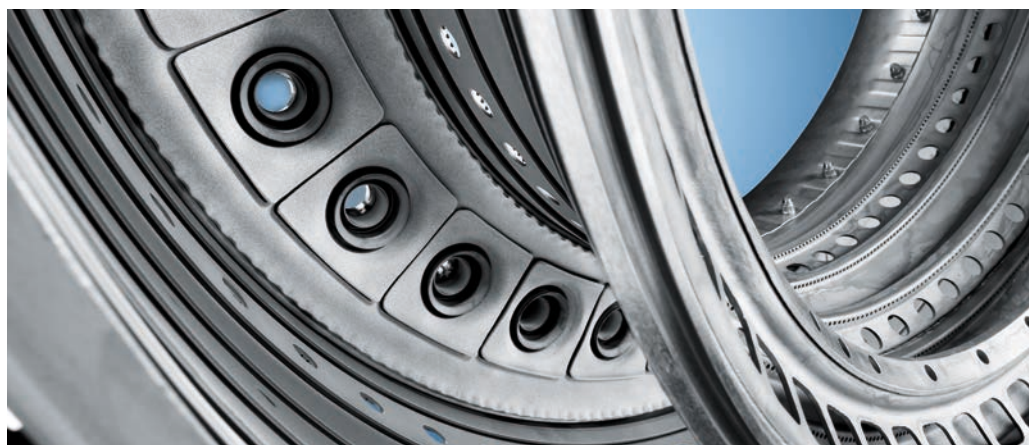
A key new field is that of additive manufacturing (similar to 3D printing), which MTU has tapped

into in a way that holds great promise for engine construction. Additive manufacturing enables the quick 3D production of highly complex components and allows for more freedom in designing them. Components are laser-melted directly from a powder bed according to CAD data—with no excess material. This significantly reduces the amount of resources used. MTU is already producing its first production components using additive methods and is gradually expanding the range of components as part of its digitalization strategy. Preparations are currently under way for manufacturing highly complex parts such as seal carriers.

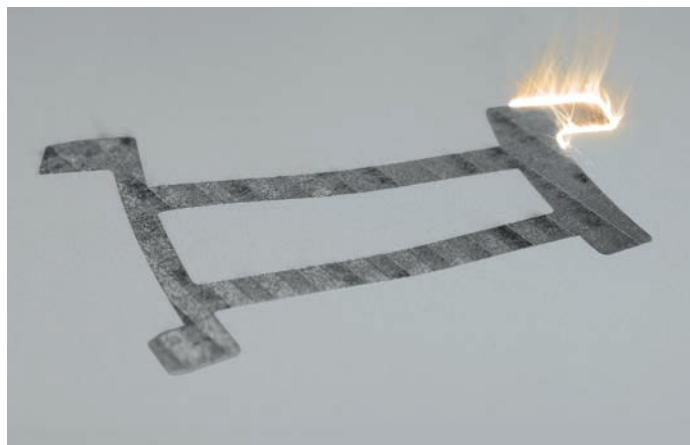
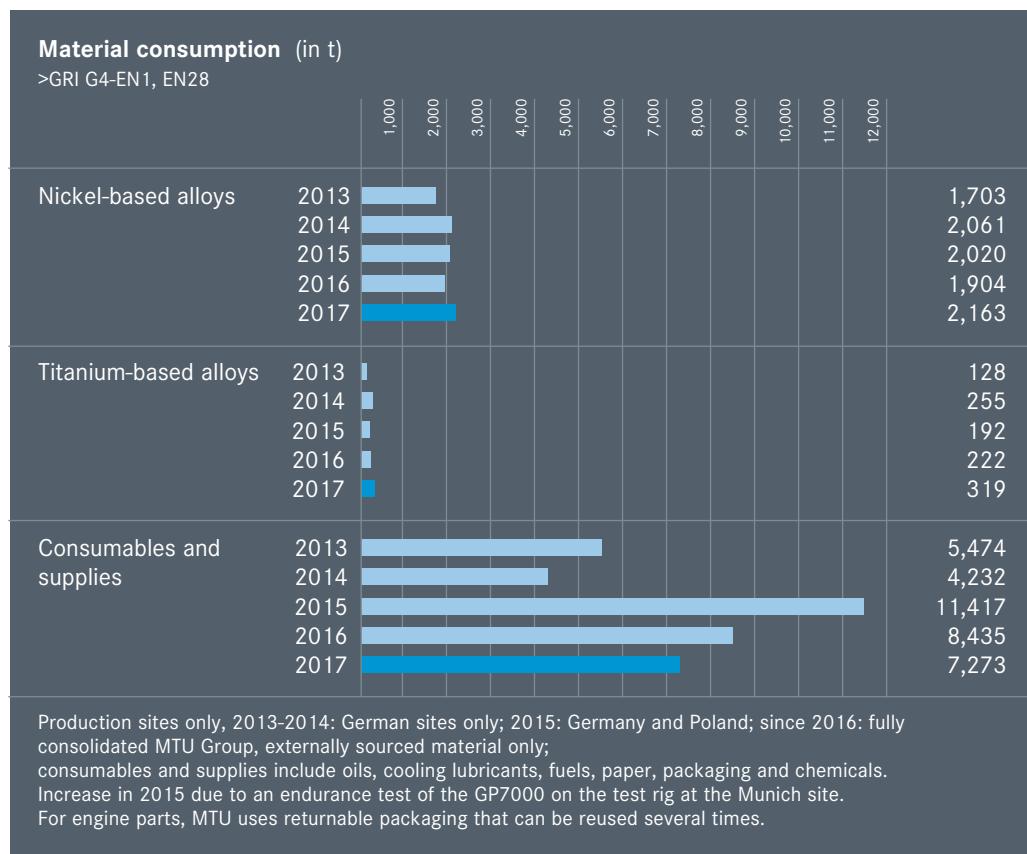
Material consumption of alloys sourced for processing new parts and of consumables and supplies was 9,755 tons in 2017, or about the same level as the previous year (10,561 t). In our push to establish a “green office,” we have already decreased the amount of paper used in our printers, but we want to go a step further and increase our use of office supplies from sustainable sources.

### More information:

Product recycling: Chapter 2.1 Product quality and flight safety



A combustor after being fitted with a new insulation layer: with in-depth repairs, MTU Maintenance aims to ensure that components enjoy a long service life



Experts estimate that by 2030, at least 30 percent of an aircraft will consist of additively manufactured parts. 3D printing with a computer goes a long way toward conserving resources, and MTU already manufactures several components using this new technique.

### Waste management

>GRI G4-EN23-24

MTU practices sustainable waste management with the safe disposal of waste sorted according to waste type and recycling process. Our chief priority is to try to avoid waste in the first place. Leftover materials are reused, while waste is used either for its materials or as energy; if recycling is not possible, waste is disposed of properly. In this way, we seek to minimize material consumption and waste disposal volumes. As a result, we achieve high rates of recycling.

For the reporting period, we introduced international reports based on uniform waste categories. These indicated that total waste produced came to 7,103 tons. Measured against that total, the MTU Group achieved an overall recycling rate of 87.5 percent; just 12.5 percent was disposed of. The amount of waste produced and recycling routes are dependent on production capacity utilization and on building activities. The share of hazardous waste in the reporting period was 42.3 percent. 73.5 percent of that was able to be reused after proper processing. Construction

waste amounted to 596 tons and is due to construction activities at the Munich site and renovations in Hannover.

In 2017, no soil contamination was found at MTU sites that resulted from hazardous materials or pollutants.



With sustainable waste management, MTU is able to achieve high rates of recycling: in 2017, the rate was about 88 percent.





## 4. Employees and society

Our employees are essential for MTU's success. We create secure, attractive jobs in a future-oriented environment, and our corporate culture enables our employees to make the most of their potential. The company promotes cultural and personal diversity, flexible working arrangements and high-quality training and development opportunities. Science and research are the cornerstones of our corporate social responsibility.



## 4.1 Occupational health and safety

We design MTU sites to be safe places to work, and our workplace health management (BGM) system helps keep our employees healthy and productive over the long term. In this way, we are laying the foundation for a competitive workforce.

### Management approach

MTU places a great deal of importance on the safety of its employees. Occupational safety and employee health are enshrined as one of the key principles of corporate social responsibility in MTU's code of conduct. Compliance with national statutory regulations on occupational safety is embedded in the code of conduct as a mandatory minimum standard for all international MTU subsidiaries. In addition, we have set up internal standards that lay down generally valid parameters, rules and KPI definitions. A group report is submitted to the Executive Board each quarter. Occupational safety is organized and implemented at the operational level within MTU at the individual locations: occupational safety is the responsibility of the site managers and occupational safety officers are appointed at the management level at each of the company's production sites. Local technical departments take action on occupational safety issues on site and report regularly to the site management. The workforce at the company's production sites in Germany, Poland and Canada is represented in locally organized occupational safety committees, the composition of which includes members of the works council. >GRI G4-LA 5

Occupational safety forms part of MTU's IMS policy (integrated management system for quality, industrial health & safety and environmental protection). The occupational safety systems are regularly reviewed and improved. At each of the European production sites, workplace regulations that are mandatory for all employees contain important safety rules pertaining to accident prevention, fire protection and what to do in the event of workplace or commuting accidents. The occupational safety systems in place at the German production sites are certified externally in accordance with the international Occupational Health and Safety Assessment Series (OHSAS) 18001 standard, which covers 84.8 percent of all MTU jobs.

We strive to minimize health and safety risks to our employees and third parties as far as possible, while also seeking to make continuous improvements. Workplaces are regularly assessed for any risks and hazards they present for employees so that appropriate measures can be implemented where necessary. With the aim of permanently reducing the number of accidents and reaching a level of safety that aspires to prevent any accidents whatsoever, the local occupational safety officers record all accidents according to uniform criteria and investigate them together with the affected employees and their managers. Where the analysis reveals notable accident hotspots, the causes are investigated and appropriate steps taken to prevent a recurrence. In addition, the company has a system in place to record and evaluate near-misses at all production sites. All employees across the group's production sites receive regular safety training, and first-responders trained by charities are appointed for all areas. Every two years, first-responders are obligated to attend a refresher course. The local technical departments are continually carrying out prevention work at the company's sites through training sessions and information on occupational safety issues.

### More information:

Overview of certified MTU locations:

[www.mtu.de](http://www.mtu.de)

IMS policy: Chapter 2.1 Product quality and flight safety



Occupational safety is a top priority for us—group-wide standards, such as wearing protective gear, are in place.

< Some 10,000 people work for MTU around the world. We offer them long-term career prospects and nurture individuals with talent and potential, so they can keep taking us forward tomorrow, too.

**Clear objectives for occupational safety**

&gt;GRI G4-LA6

High standards in occupational safety across the group are one of the company's annual corporate objectives. For each location, we define annual tolerance thresholds for category 4 reportable workplace accidents (accidents that entail more than three days lost). MTU's comprehensive occupational safety systems reach a level of safety that produced a group-wide accident rate for 2017 of 3.7 reportable workplace accidents per 1,000 employees. This is significantly below the average for the German metalworking industry (Wood and Metal Trade Association—BG Holz und Metall) of 37 accidents per 1,000 employees. Our actual objective is zero accidents, but we use the tolerance thresholds mentioned above because experience tells us that at this extremely low level, there is no certainty that a lasting annual reduction towards zero can be achieved.

MTU's accident statistics for 2017 showed a positive trend, with a decrease in accident numbers at almost all locations. For the group as a whole, the number of reportable workplace accidents entailing more than three days lost was 33 in 2017, down from 43 in 2016—a reduction of 25 percent. The number of days lost following reportable accidents is falling overall (2017: 486, 2016: 606). This drop is accounted for primarily by the German locations; other regions unfortu-

nately saw an increase compared to last year. The accident rate per 1,000 employees is lower this year than last in both Germany and North America; the rate for Europe (excluding Germany) is higher as a result of two accidents at the MTU Aero Engines Polska plant, but still low overall.

Occupational safety takes account of the conditions prevailing at the individual business locations. We develop proactive measures based on regularly updated risk assessments, routine inspections and audits. At the end of 2017, the "mission zero" campaign was launched at our headquarters in Munich with the aim of minimizing the number and severity of workplace accidents. A local occupational safety initiative has also been launched at MTU's principal maintenance site in Hannover. This and other site-specific measures across the MTU Group for 2017 are described in detail in the non-financial statement in the 2017 Annual Report, page 103.

<b>Occupational safety</b> >GRI G4-LA6	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Reportable workplace accidents</b> (entailing more than three days lost)					
Germany	13	26	31	35	27
Rest of Europe*	0	1	1	1	2
North America	-	-	-	7	4
<b>Fatal industrial accidents per location</b>	0	0	0	0	0
<b>Days lost as a result of reportable accident</b>					
Germany	273	542	551	550	355
Rest of Europe*	0	21	22	18	52
North America	-	-	-	38	79
<b>Accident rate per 1,000 employees</b>					
Germany	1.9	2.1	5.0	5.6	3.6
Rest of Europe*	0	2.0	1.8	1.8	2.7
North America	-	-	-	12.2	6.6
*2013-2015 Poland location only, as data collection was not yet fully consolidated The accident statistics relate to the total workforce including apprentices, interns, pupils and students, and employees on fixed-term contracts, excluding temporary agency workers and employees from external companies. Workplace accidents do not include any commuting accidents. The day of the accident does not count as a day lost. Accidents involving temporary agency workers in 2017: 14					



## Health management

Health is a key success factor when it comes to meeting entrepreneurial challenges. The only way for MTU to stay in the lead is with healthy—and hence motivated and high-performing—employees. We also want to integrate health more strongly into our processes and structures than before, especially considering demographic change at MTU's German locations. That is why we have a project to further develop the existing company health promotion campaign at the three German locations into a sustainable and effective workplace health management (BGM) system.

In 2016, we joined with the University of Heidelberg in identifying eight strategic spheres of activity for our two largest locations, Munich and Hannover. These spheres will serve as a basis for a successful BGM system, which we will systematically improve in this reporting year and beyond. As part of this initiative, in 2017 we prepared an information and awareness campaign on the BGM offerings in Munich, Hannover and Ludwigsfelde, and launched it at the start of 2018. After a successful pilot project on systemic ergonomics management (SEM) at our headquarters in Munich, we expanded SEM to all German locations in this reporting year. We also draw up an ergonomics map as the basis for measures and standards. Our next step is to develop a concept that focuses on age-appropriate workstations in a time of demographic change in Germany.

### Key BGM measures that were developed, expanded or rolled out in 2017

- Manager qualification: Health-Oriented Leadership
- Further development of offerings designed to promote health in the workplace
- Risk assessments of psychological stress
- Workplace reintegration management
- Systematic ergonomics management
- Offering screenings for early diagnosis

We systematically promote the health of our workforce with a clear emphasis on prevention. Our goal is to motivate our employees to adopt healthy lifestyles and take more responsibility for their choices. Health services at the German sites cover occupational and emergency medicine as well as general preventive medicine, while counseling services offer employees support with performance and work-related issues as well as mental health issues. Additional benefits offered by MTU include fitness centers at our German



When it comes to promoting the health of our employees, we place special emphasis on prevention— here, a campaign at the Rzeszów location in Poland.

sites, which are run either in-house or by external partners, as well as physiotherapy, ergonomics training and on-site vibration training. All our German locations provide employees and managers with access to occupational health professionals (in-house or external) as well as social counselors and supplementary in-house and external services. Starting in June 2017, we launched Active Days at our Munich location, a health management training initiative designed to raise awareness of our diverse range of offerings. In Germany, the health rate for the reporting period held constant at 94.6 percent (compared to 94.4 percent last year; this rate is determined only for Germany).

Our sites outside of Germany offer a range of health-related services. For example, employees in Vancouver, Canada and Rocky Hill, USA, have access to a free Employee Assistance Program. It offers a wide variety of health and counselling options on topics such as financial planning, mental health, and personal or family counselling, as well as advice on equipping workplaces in a way that promotes good health. At our location in Rzeszów, Poland, the basic medical services for employees include a doctor who is on-site once a week, psychological support as needed, and flu shots. In addition, in 2017 the location ran campaigns for cancer screenings and prevention of cardiological conditions.



## 4.2 Responsible and attractive employer

As an employer, we offer an attractive working environment that is marked by a sense of social responsibility. This should enable employees to develop themselves over the long term and contribute in their own personal way to the success of MTU. For us, this is also the basis for finding the right talent for our future projects and activities.

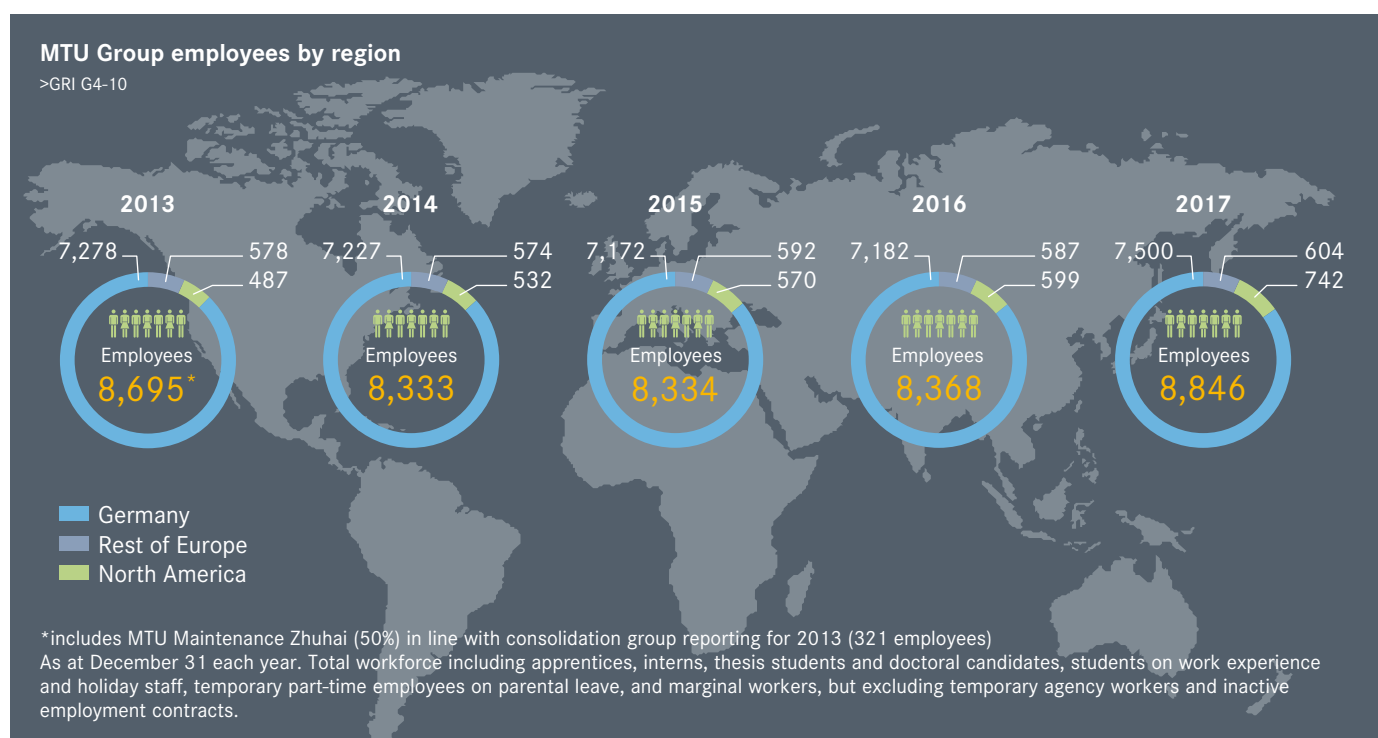
### Management approach

We are an important driver of technology in the high-tech sector of aviation. Being perceived as an attractive employer by existing and potential employees is one of the key ways in which MTU bolsters its innovative capabilities and competitiveness. In addition, we are competing with other companies for the best people in Germany and at our international locations in Canada and the United States. We want to expand our location in Rzeszów, Poland, adding some 200 new jobs at MTU Aero Engines Polska by 2020, predominantly in the areas of new technologies and projects. In Germany, we are currently looking for several hundred specialist staff. Being perceived as an attractive and future-oriented employer is therefore important for all international MTU subsidiaries. We support a wide range of initiatives to give our employees more options and enable them to take more responsibility. More flexible working arrangements make it easier to achieve a better work-life balance. Our reputation as an

attractive employer also helps us in our efforts to promote diversity in the workforce.

As an employer, we not only want to be seen as attractive, we also want to demonstrate responsibility towards our employees. We create long-term, secure employment based on key principles of corporate social responsibility. These social and labor standards are defined in a group-wide code of conduct and incorporate:

- Observance of human rights
- Equal opportunities in the workplace
- Dealings with suppliers, customers and business partners in industrial relations
- Cooperation with employees, employee representatives and labor unions
- Entitlement to appropriate remuneration
- Occupational health and safety
- Employee training and development



<b>Employee structure by region</b> >GRI G4-10, LA 12					
	2013	2014	2015	2016	2017
<b>Blue collar workers</b>					
Germany	48.5%	49.4%	49.7%	49.2%	50.0%
Rest of Europe	51.8%	51.4%	49.9%	46.5%	49.7%
North America	—	—	—	52.5%	47.9%
<b>White collar workers</b>					
Germany	51.5%	50.6%	50.3%	50.8%	50.0%
Rest of Europe	48.2%	48.6%	50.1%	53.5%	50.3%
North America	—	—	—	47.5%	52.1%
<b>Employees on temporary contracts</b>					
Germany	249	198	164	177	346
<b>Apprentices</b>					
Germany	343	381	345	311	287
<b>Supervised workers</b>					
Germany	—	—	332	395	539
Rest of Europe	—	—	0	7	40
North America	—	—	—	0	0
Information on the proportion of women by employment type and employment contract is treated as confidential at MTU. We have been collecting data on supervised workers since 2015. 2013-2015: Germany and Poland / since 2016: fully consolidated MTU Group					

Reporting procedures for suspected breaches of the code of conduct, statutory requirements and internal company guidelines, and our principle of zero tolerance are described in detail in Chapters 1.2 Compliance and human rights and 4.4 Diversity and equal opportunities.

As a signatory to the UN Global Compact, we are committed to observing its principles of respect for human rights and the implementation of fair working conditions in accordance with the International Labour Organization's (ILO's) core labor standards.

We are committed to respecting employees' rights and safeguarding their freedom of association through the code of conduct. When drafting employment contracts, we observe national statutory requirements as well as internal company agreements and notice periods as laid down by law. It is the duty of managers to ensure that company agreements are properly observed on a day-to-day basis in their areas of responsibility. In 2017, 98 percent of the people employed by the company in Germany were covered by collective agreements, a figure that stood at 86.6 percent worldwide in the same year.



**Hans-Peter Kleitsch**  
Senior Vice President,  
Human Resources  
MTU Aero Engines AG

*"We have highly motivated and skilled employees and we are looking for new talent to help us master tomorrow's challenges. We offer a wide range of services and benefits that make working at MTU an appealing prospect. These include flexible working arrangements for achieving a better work-life balance, attractive remuneration, a wide variety of options for personal and career development, a holistic corporate health management system, and promoting diversity. At MTU, the way we work is based on mutual respect and appreciation and promotes fair and cooperative conduct."*

Responsibility for employment issues lies with the Executive Board. The CEO is also the Director of Labor Relations. MTU's human resources center sets policy in line with the annual and long-term growth targets laid down in our corporate strategy. It also assists in efforts to achieve these targets. All members of the Executive Board receive regular reports on human resources policy. Responsibility for successful implementation lies with local human resources departments and the respective technical departments and managers.

We adapt our human resources policy to take account of changes relevant to us and reflect these in the measures and initiatives derived from this policy. In times of digitalization and technological change, we face new challenges. We are fully engaged with the key topics of digitalization, leadership and health. Digitalization was one of our corporate objectives for 2017; we provide training in future-oriented skills and platforms, and are bringing virtual technologies into everyday working for all MTU employees. In addition, and with a view to the successful progress of the MTU Group, we promote key aspects of an innovative corporate culture, a creative environment in which motivated employees can play their part in maintaining the company's leading position.

### Dialog with our employees

For us, employment is a question of consistently fostering an atmosphere of trust and respectful collaboration in which we take our employees' concerns into account. In accordance with the German Works Constitution Act (Betriebsverfassungsgesetz), MTU's sites in Germany have works councils that maintain regular, open and trust-based dialog with management. The German sites have a group works council that handles group-related issues. At the company's international sites in Poland and Canada, elected employee representatives support the interests of the workforce in dealings with management. In addition, the interests of employees are represented on the supervisory board, where seats are filled on the basis of parity.

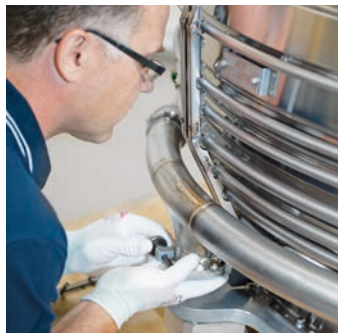
We carry out an employee survey at regular intervals to provide important impetus for the company's ongoing development. This enables employees and managers to identify potential for improvements and ways to tap that potential. Surveys of this kind are regularly conducted at our German sites, in Poland, in Canada and in the US (MTU Aero Engines North America). In financial year 2017, we implemented measures from the previous survey in Germany, introducing what is known as silent working for uninterrupted working in various areas. We will be surveying our employees in Germany again in 2018; once more, we will be collecting data for the High Performance Organization Index, which measures an organization's performance in terms of commitment, leadership, goals/strategy and processes/structures, and for the MTU Work Ability Index, which gives an indication of whether a team's working environment is conducive to good health. We will also conduct an employee survey in Poland in 2018.



MTU Maintenance Canada is the North American mainstay of the maintenance business segment.



MTU subsidiary Vericor Power Systems specializes in gas turbines for marine and industrial applications.



Since 2009, MTU Aero Engines Polska has been responsible for the Group's development and production activities.



In Munich, a number of halls house manufacturing of various engine parts.

Employees can also make use of other well-established forums, such as information events for managers and for employees not covered by collective agreements, as well as employee meetings in Germany, quarterly meetings with the General Manager in Poland and town hall sessions with employees in the US. Additional channels for feedback include instruments such as leadership feedback and the Team Barometer, which gauges the mood within a team and helps to develop the way teams and managers work together. Finally, our ideas management system takes up suggestions for improvement made by the workforce and coordinates the evaluation and implementation of these suggestions.

### The outside view of MTU

Alongside internal employee surveys and feedback channels, external rankings offer valuable pointers as to whether our recruiting and HR processes are heading in the right direction. In comparative analyses with other companies, MTU has received consistently positive ratings. This is especially underscored by the fact that MTU regularly receives awards ranking it as a top employer in Germany, Poland and British Columbia (Canada). In the latest ranking, MTU once again scored well in all three countries.

### Certifications and rankings in 2017

- TOP Employer Germany
- TOP Employer Poland
- TOP Employer British Columbia (Canada)
- trendence Graduate Barometer Engineering
- Universum Ranking
- Top Company and Open Company on Kununu
- Women's Career Index

Staff turnover >GRI G4-LA1	2016	2017
<b>No. of employees that left the company</b>		
Germany	253	186
Rest of Europe	18	39
North America	48	56
<b>Turnover rate (%)*</b>		
Germany	4.1	2.9
Rest of Europe	3.2	14.5
North America	8.4	9.9
*as a proportion of core workforce, annual average, data collected since 2016		

We also regard our low staff turnover rate of just 3.8 percent in this reporting year as yet another sign of high employee satisfaction across the MTU Group (previous year: 4.3%).



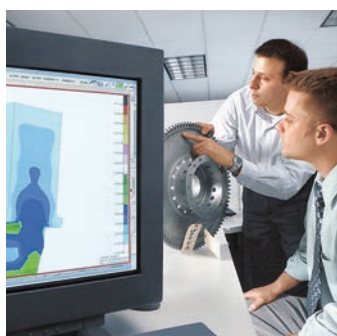
Selected four times as one of Poland's top employers: MTU Aero Engines Polska.



The core of the MTU Maintenance Group is the MTU site in Hannover, right next to the airport.



MTU Maintenance Berlin-Brandenburg is the center of excellence for maintenance of industrial gas turbines.



MTU Aero Engines North America is MTU's engineering location in the U.S., with some 180 employees.



MTU Maintenance Lease Services in Amsterdam specializes in engine leasing.



### Remuneration and additional benefits

>GRI G4—LA2, 11, 13

The right to appropriate remuneration is one of the pillars of MTU's code of conduct. A standardized, transparent compensation structure ensures that employees receive competitive remuneration that reflects their performance. The remuneration of pay-scale employees in Germany is based on collective bargaining agreements. Compensation for senior managers is tied to the company's long-term performance.

MTU applies a consistent methodology for evaluating performance at all levels of the hierarchy, from senior managers to employees included in collective bargaining agreements. The performance criteria are based on corporate, center or departmental objectives and are designed to measure how employees and managers contribute to reaching these objectives. Goal attainment is discussed during the year (milestone meeting) and at year-end (goal attainment meeting). All managers undergo performance reviews to evaluate achievement of their personal targets, and 96.5 percent of MTU employees worldwide regularly receive an evaluation of their performance (at least once a year).

MTU offers a broad range of additional perquisites. One example is the range of social benefits the company offers in Germany in addition to its statutory obligations. These include accident insurance, profit-sharing, family-related and mobility benefits, a healthcare service and disability coverage. The company has a pension scheme for all its employees. At our international locations we offer a range of additional benefits such as private life insurance, health insurance and retirement planning support. In financial year 2017, the company made social contributions totaling 114 million euros (2016: 102.6 million euros).

MTU enables its employees to share in the company's success. In Germany, this profit-sharing scheme is made available to the entire workforce and defined in special rules for each employ-

ment group. We also offer an employee stock option program. Some of our international locations offer their own long-term bonus schemes (Rzeszów, Poland) or year-end and leaving bonuses (Vancouver, Canada).

### Achieving a better work-life balance

>GRI G4-10, LA3

MTU promotes initiatives to improve employees' work-life balance and is placing an increasing emphasis on responding to their specific needs and various life phases. This is recognized in the form of top marks in the Secondary Benefits and Work-Life Balance categories of national employer rankings covering all the company's major sites in Germany, Poland and Canada.

Our initiatives include:

- Flexible working hours and flextime accounts
- A wide variety of part-time working arrangements
- Educational leave
- Teleworking
- Sabbaticals
- Part-time work for older employees
- Parental leave
- Job sharing
- Services to assist families (e.g. childcare, nursing services)
- Mobile working

We are continuously improving these initiatives to give people more job flexibility and meet the expectations of our employees and job applicants. Since 2017, employees at our headquarters in Munich have had the option of mobile working thanks to a new works agreement. In this way, we have laid solid foundations for greater autonomy and personal responsibility among MTU employees. Part-time working and parental leave are core initiatives that employees avail themselves of. Part-time work accounted for 6.6 percent of employment (data collected only in Germany).

Alternative working arrangements (Germany) >GRI G4-10, LA3	2013	2014	2015	2016*	2017
Part-time employees (in %)	6.1	6.8	7.5	6.4	6.6
Employees on parental leave	—	—	251	281	261
<p>*Not comparable with previous year's figures due to changes in workforce reference values The right to parental leave applies to the entire workforce in Germany and is governed by the German Parental Allowances and Parental Leave Act. This stipulates that anyone employed in Germany has a right to time off regardless of their gender. We have been collecting these figures since 2015; given discrepancies between national legal considerations, we do not consider it useful to consolidate them at the Group level.</p>					

## 4.3 Employee development

The expertise of our employees is one of our most important success factors; that's why we offer a wide range of opportunities and avenues for personal development. We promote lifelong learning to ensure the best possible employee training, which makes jobs at MTU an attractive long-term proposition.

### Management approach

Qualified and motivated employees are indispensable for driving innovation and ensuring competitiveness in the technically demanding aviation industry. In many areas in which we are active, aviation authorities prescribe additional qualification measures, such as mandatory training for employees with certification authorizations under aviation legislation. In addition to industry-specific vocational training and dual courses of study aimed at building up knowledge over the long term, MTU supports and promotes employee training—this is a key principle of corporate social responsibility as defined in the company's code of conduct. Promoting vocational training opportunities and avenues for personal development for employees and managers is also enshrined in the MTU Principles and group-wide HR strategy. The head of human resources is responsible for the training and development of employees

group-wide. The Executive Board is kept informed about training indicators through the annual education and training report, and occasionally discusses important training initiatives.

The great importance placed on training and development is reflected in a group-wide works agreement in Germany that guarantees access to training for all employees and requires management to conduct an interview with each employee once a year to discuss their training and development. This applies to 84.8 percent of the workforce. At MTU's three sites in Germany, the works council is also involved in employee training in accordance with the German Works Constitution Act (*Betriebsverfassungsgesetz*) and has a say in the annual training and development program.



We move with the times: starting last year, our employees have been able to take advantage of an e-learning portal.

<b>Employee training</b> >GRI G4-LA9	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Training days (total)	21,507	20,012	18,889	22,324	21,971
Training days per employee	2.7	2.5	2.3	2.7	2.3
Proportion of women in training courses*			15 %	15 %	13.6 %
Investment in training (EUR million)	3.3	2.4	2.8	3.7	3.9

2013-2015: Only Germany and Poland/as of 2016: fully consolidated MTU Group/2017: without Vericor, USA, as insignificant for group-level consolidation; investment in training without MTU Maintenance Canada, as data is not collected locally.  
Investment in training without travel costs; MTU assumes the costs of training and development programs.  
\*Employees who participated in training courses (includes multiple counts), compiled starting in 2015 using the sustainability database for Germany, as of 2017 fully consolidated MTU Group

### Lifelong learning

>GRI G4-LA10

Employee development and lifelong learning are designed to hone and develop employees' skills. Our employees should enjoy opportunities for professional and personal development throughout their careers. We systematically review employees' training requirements on an annual basis as part of a standard process, either in a direct conversation (training interview) or in divisional / company-level interviews. Training courses are evaluated in a personal meeting between the employee and their superior, or in some cases via a feedback form. All completed training

and development courses are documented for each employee in a training history. Training officers at MTU Group sites can be consulted at any time for advice on needs-focused training.

To put employee development on a more future-oriented footing, we have set up an e-learning portal for all employees in Germany that makes access to training more mobile and more readily available. This gives 7,500 employees the opportunity to actively help shape their own development, and managers receive improved training reporting for their area of responsibility. Since the end of 2017, employees have been able to use new electronic learning programs wherever and whenever they want. By connecting digital learning content with face-to-face training—an approach known as blended learning—we have expanded the variety of training options to put MTU at the forefront of learning methods. At this time of digital change, we are giving our employees the chance to improve their future-oriented skills. Against this backdrop, high-quality employee development plays an important part in helping MTU make the most of the opportunities that digitalization presents to secure its long-term position as a technology leader in the aviation industry.

We invested 3.9 million euros in training schemes group-wide in the 2017 reporting year, roughly the same amount as in the previous year. On average, each employee attended 2.3 days of training, or a total of 21,971 training days. This is less than in the previous year (22,324) because of the large number of short-term courses. Women made up 13.6 percent of participants in training courses, which is in line with the group-wide proportion of women in the workforce of 14.1 percent.



MTU supports and promotes employee training, and has enshrined this idea in its social responsibility policy.

### Strengthening leadership

MTU attaches great importance to furthering the personal and professional skills of all employees on an ongoing basis. Key areas of focus in 2017 were consolidating leadership responsibility and promoting internationalization and diversity in the workforce. This was also one of MTU's corporate objectives in 2017. Through effective leadership, managers help to empower employees and also contribute to the successful management of the company. We want to support managers in their important role through targeted measures.

With this in mind, MTU has continued with its Business Challenge qualification initiative for managers. Its objective is to promote a culture of communication and encourage a holistic and sustainable change in corporate thinking across all levels of management and all locations. Business Challenge II places the emphasis on leadership, with the aim of promoting consistent leadership practices and a culture of feedback and dialog, as well as making leadership more efficient. In the 2017 reporting year, we gave an additional series of presentations in Munich under the heading "Business Challenge to go". The talks, which covered current topics such as the design thinking method, were attended by managers from all levels. At the Hannover location, for example, leadership skills are strengthened in the context of the leadership initiative. Events were held for all levels (including foremen) in 2017 covering topics such as "Top performance and motivation" or "Management and leadership". In 2018 Business Challenge III will be launched with new emphases. The main aim is to make management even more effective through clearly formulated expectations, open feedback and responsible decisions, contributing to an innovative corporate culture.

The International Leadership Program (ILP) has been established group-wide and is intended to promote networking between managers across all sites as the basis for a common understanding of leadership in a global business environment. Program participants are drawn from members of the extended management with potential for the next management level. With events held at the sites in Vancouver, Canada, Rzeszów, Poland and Munich, Germany in 2017, the ILP program helped to promote an exchange across multiple countries and locations. Managers from seven locations took part.

In addition, individual MTU locations have launched leadership initiatives tailored to their specific on-site requirements.

### Management training

(cross-site and local)

- Management transition coaching
- Business Challenge
- Building on Talent
- International Building on Talent
- International Leadership Program
- Future Dialog discussions as part of the RESPONSE program (Hannover, Germany)
- Management development program (Ludwigsfelde, Germany)
- Management Growth (Rzeszów, Poland)

### Talent management

Given the aging society in Germany, it is important for MTU to prepare to fill a large number of skilled and managerial positions over the coming decade. To this end, we have developed a talent management process for identifying people with the potential to assume key roles and supporting them through personalized development programs. Our primary focus is on succession planning for those positions that are critical to our company's success. There is a special trainee program for particularly promising graduates in areas for which too few potential managers have been identified. At MTU Aero Engines North America, our U.S. engineering facility, we have a program for entry-level engineering graduates that rotates them through a variety of departments focusing on different areas of aerospace engineering. We also face



Managers play a key role in the company, and we support them in that with various programs and initiatives.





the challenge here of determining how to retain talented employees and help them grow.

The following initiatives are aimed at helping the company preserve valuable expertise and experience (examples):

- A know-how buddy system
- Exchange of expertise with the aid of knowledge maps
- Wikis

#### **Training and apprenticeships**

We offer young people in Germany a solid grounding in various trades, pursuing a holistic approach that also covers social and ecological topics, for instance through health and environment days or through corporate social responsibility in local communities. Apprentices have made up a constant proportion of MTU's workforce for many years; in the reporting period they accounted for 4.1 percent of the total workforce (4.8 percent in the previous year). MTU employed 287 apprentices on average in 2017. In addition, we offer practical courses of study in collaboration with selected vocational academies.

We take part in selected local educational projects and initiatives in an effort to attract potential recruits early on:

- Training Night
- IdeenExpo science exhibition in Hannover
- Nature and Technology Days
- Teachers in Industry
- Girls' Day
- Research Camp for Girls
- EUROTEC

The next generation is particularly important to us: besides apprenticeships, we also offer trainee programs and development programs for high-potential employees.

## 4.4 Diversity and equal opportunities

Successful collaboration among employees of different cultures, generations and genders makes us more innovative and competitive. This is why we promote diversity and equal opportunities within MTU.

### Management approach

MTU is actively committed to equal opportunities and equal treatment of all employees and takes a clear stand against discrimination in the workplace. These are the principles that underpin MTU's corporate behavior and are set out in its code of conduct. We assign employees to positions in accordance with their skills, abilities and performance. Everyone has the same opportunities regardless of their gender, ethnic origin, age, religion, disability or sexual orientation. Promoting diversity is a key component of the corporate culture and business success that is enshrined in the MTU Principles. We firmly believe that a diverse workforce bolsters a company's innovative capabilities and competitiveness. For us, diversity means having an intercultural and mixed-age workforce with equal opportunities for different genders. An important prerequisite for this is for all employees to enjoy fair opportunities and full integration into working life and company life. Promoting a diverse and international workforce has been one of our annual corporate objectives since 2016, with the aim of helping to create an innovative corporate culture.

MTU views fostering female talent and equal participation of women in management as its greatest innovation potential. We see broad scope for action here, especially in Germany. The Executive Board is kept regularly informed about the diversity concept with respect to the promotion of women and related measures. Furthermore, the Executive Board presents a report on equality at the works meeting once a year. In Germany, the works council is involved in decisions subject to co-determination, such as flexible working time rules.

MTU commits to diversity and equality of opportunity in the following external initiatives:

- Charter of Diversity
- UN Global Compact
- Munich Memorandum for Women in Management

To ensure diversity and equal opportunity within the company as well as to prevent discrimination, MTU embraces a corporate culture based on respect and appreciation that promotes fair and cooperative conduct. Managers have a key role

to play in recognizing the value of diversity and incorporating it into everyday working life at MTU. We help them strengthen diversity in their own sphere of responsibility and exploit its benefits to the full. For us, promoting equal opportunities is less a question of introducing new initiatives and more a question of promoting the acceptance of existing ones and offering new ways of working such as mobile working. This is why over the next few years, MTU wants to do even more to heighten managers' awareness of their responsibility to promote equal opportunities, particularly work-life balance.

We also want to ensure diversity and equal opportunities by putting in place clear grievance mechanisms. Processes have been set up to allow reporting of breaches of the code of conduct or of internal guidelines. Employees across the Group who suspect breaches of the code of conduct can contact an ombudsman confidentially. Managers, the works council and members of the human resources department are also designated as persons of trust in this context.



The company fosters talented women with the goal of placing more women in management positions.

### Women in management

We attach particular importance in this context to gender diversity in order to make better use of talent potential in the face of demographic change and better position the company for the future. One important goal is to increase the proportion of women in management positions at the German sites—we aim to achieve 13 percent by 2022 for all management levels except the Executive Board level. At the end of 2017, this proportion was 9.7 percent. The principal focus of the initiatives worldwide and especially in Germany is to secure more female talent for the company and offer female employees greater support throughout their careers. We elaborate these initiatives at the individual locations and implement them locally. Our Development Centers in Germany and Poland help female talent draw up a personal development plan to assume a management function in the short term. Since 2003, we have participated in the Cross-Mentoring program organized by the City of Munich, in which high-potential female employees are supported for a year by a mentor from another company, and MTU managers also become involved as mentors.

The proportion of women in management positions was 10.3 percent group-wide, compared to 10.7 percent in the previous year; at the German locations it was 9.7 percent (2016: 10.1 percent). Despite this slight drop, we are well on the way to achieving our goal of 13 percent. An analysis of this can be found in the non-financial statement in the 2017 Annual Report, page 106. More

information on quotas for women and target agreements for the Executive Board and Supervisory Board can also be found in our 2017 annual report, p. 34f.

In 2017, MTU was recognized by the Women's Career Index, taking third place in the "Newcomer of the Year" category. The Women's Career Index is an external tool for evaluating career opportunities for women in business enterprises.

### Programs and initiatives

- Munich Memorandum for Women in Management
- Cross-Mentoring Munich (a program organized by the City of Munich)
- Talent management
- Development center
- Part-time management
- The MTU "Studienstiftung" foundation for female students in scientific and technical fields
- Girls' Day
- Research Camp for Girls
- The Lower Saxony Technical Internship ("Niedersachsen Technikum")

We also support gender equality by promoting initiatives to improve employees' work-life balance, including flexible working hours, services to assist families and mobile working.

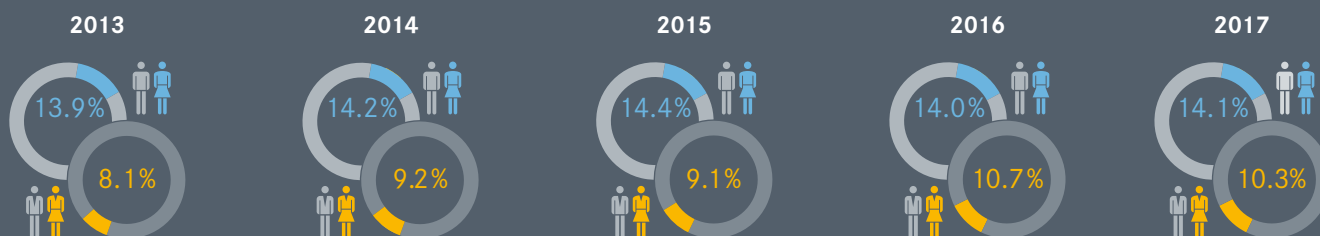
### More information

Work-life balance: Chapter 4.2 Responsible and attractive employer

### Proportion of women (in %)

>GRI G4-10, LA 12

Workforce ■ Managers ■



Figures recorded at the end of each year. No figures are available on the number of women in specific employee groups.

2013-2015: Germany and Poland / as of 2016: fully consolidated MTU Group and changed reference values (active workforce) mean figures are not comparable with previous years.

Active workforce: employees with permanent or fixed-term contracts, excluding students, interns, trainees/apprentices, short-term holiday workers, temporary agency workers and employees from external companies.

### Generational diversity

We believe in good relations between young and old, and we take age diversity into consideration in our company. An aging workforce in Germany also presents us with new health challenges. In addition, the length of time people spend working from career entry to retirement is growing. This is why we are expanding our company health promotion campaign into a sustainable and effective workplace health management system. Our aim is to keep our employees healthy and productive over the long term. Employees in every age group have equal access to training and development. We offer a range of measures for younger generations: apprenticeships, trainee programs, development programs for high-potential employees (for example, Building on Talent), etc.

For us, it is each individual's employability that counts, and this extends to the integration of employees with disabilities. In 2017, disabled employees represented an average of 5.7 percent (2016: 5.6 percent) of the workforce at MTU's German locations, which are subject to statutory requirements.

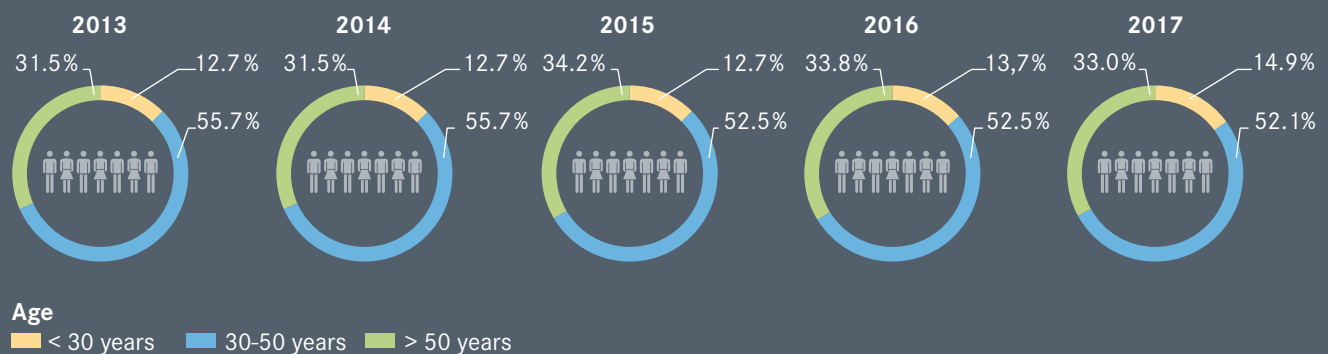
### Cultural diversity

As a globally active company, we consider internationalization to be a key indicator of diversity. Our engine business has a global outlook, and having an intercultural workforce helps us to be successful in different markets. As a long-established player in the industry, we have strong roots in Germany, but our character draws on a variety of cultural backgrounds. We bring together employees from 50 countries. In line with our corporate objective, we are taking various steps to enhance the international nature of our business (International Leadership Program, International Building on Talent).

We encourage new recruits to spend time working abroad even before they finish their apprenticeship, traineeship or dual vocational training program. They are given the opportunity to take part in international exchange programs with our partners or work on international project assignments within the MTU Group. As part of the management transition coaching program, we provide support to managers moving to a new position whether in country or abroad.

#### Age groups (in %)

>GRI G4-LA12



2013-2015: Germany and Poland / as of 2016: fully consolidated MTU Group and changed reference values (active workforce) mean figures are not comparable with previous years.

Active workforce: employees with permanent or fixed-term contracts, excluding students, interns, trainees/apprentices, short-term holiday workers, temporary agency workers and employees from external companies.



## 4.5 Corporate Social Responsibility

In all that we do to contribute to social development, our focus is on research and education. As we drive aviation technology forward, we ourselves rely on a new generation of well-trained employees and an innovation-friendly business environment. In addition, we support social projects that have a local impact close to our business locations.

### Management approach

Corporate social responsibility is an integral part of the MTU Principles, which state: “MTU takes a proactive approach to its responsibility toward society.” Particularly in the case of its sites in Germany and Poland, the company is a major regional employer offering a wide variety of jobs in an attractive, high-tech environment. This has a positive effect on the region in which the sites are located, including in less economically successful regions such as Brandenburg, Germany. We also offer apprenticeships in various trades in Germany. We offer all employees long-term perspectives for their employment at MTU. In addition to training and developing our employees, we invest in the ongoing development of our plants, as we are currently doing in Munich, Germany and Rzeszów, Poland. In this way we contribute to social development at our locations. We also strive to strengthen MTU’s image as a responsible corporate citizen.

We are well aware of our corporate social responsibility to the communities around our business locations; our focus is on education, science and research and we support local and regional projects near our sites as a promoter, sponsor and network participant.

### Corporate citizenship

As a research-focused company, our concept of corporate citizenship revolves around science and engineering initiatives. We seek out interaction and collaboration with the world of science and research and foster dialog with young people and new talent.

We offer young people a solid grounding in various trades, and employed and trained 287 apprentices on average in 2017. In addition, MTU collaborates with German vocational academies in Stuttgart, Ravensburg and Berlin as well as with Baden-Wuerttemberg Cooperative State University to offer practical courses of study in business administration, information technology, mechanical engineering and business engineering. We provide training where it is needed most, pursuing a holistic approach comprising the acquisition of professional qualifications as well as methodological competence and social skills. We involve our apprentices in all aspects of company life, including health, environmental protection, social values and our no-blame culture as well as organizing special open-door and awareness events. In addition, MTU participates in numerous educational projects and initiatives for children and young people as it strives to enhance people’s understanding of technology and sustainability in society as a whole.



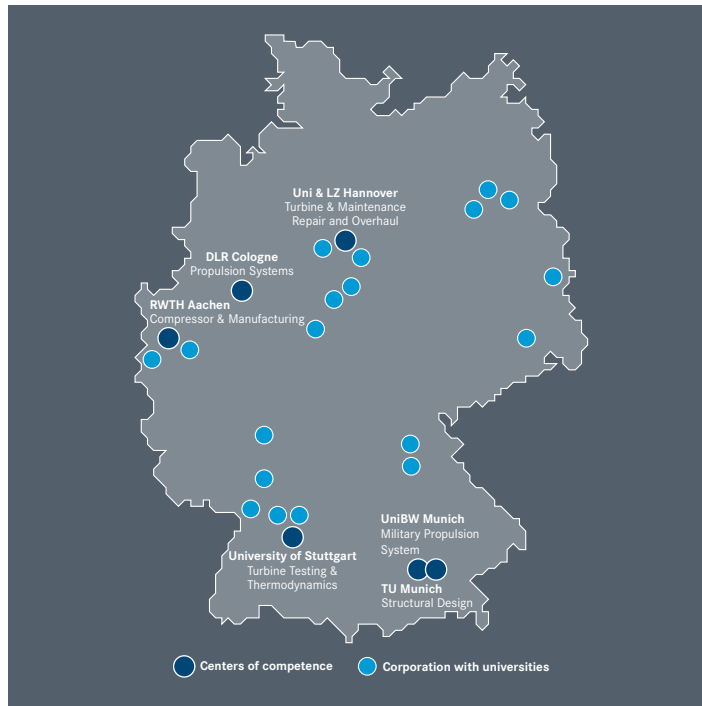
We are committed to nurturing young talent, and every year we train young people for a range of careers.

## Research alliances

Collaborating with universities and research institutes is a mainstay of our research and development work and a key part of fulfilling our responsibility to society. We have built strategic alliances with research partners to foster links between universities and industry and safeguard MTU's capacity for innovation. MTU runs six centers of competence in collaboration with universities across Germany, each with its own research focus. In 2005, MTU and its partners founded Bauhaus Luftfahrt e.V., an interdisciplinary aerospace research institute. We run a series of sponsorship schemes at the University of Stuttgart and the German Aerospace Center that support young researchers for a number of years after they finish their degrees, and we provide financial backing for a Deutschlandstipendium, or "Germany Scholarship", at the Leibniz University of Hannover and the Technische Universität Braunschweig. We have expanded our cooperation with the Fraunhofer Institute for Production Technology: Technikum Blisk commenced operations there in 2017, and from now on, it will produce prototype blisks for MTU. At MTU Maintenance Brandenburg in Berlin, we have launched a 4.0 project to apply new virtual technologies in the field of maintenance. This project is supported by Brandenburg University of Technology Cottbus-Senftenberg. Our international locations also work together with selected universities and colleges in their communities. For instance, MTU Aero Engines Polska has established an alliance with the Lezajsk Technical School. MTU Aero Engines North America has entered into a partnership with the CREC Aerospace Academy.

We run a company-affiliated foundation to support highly talented young women studying scientific and technical disciplines. As well as providing financial grants, the MTU "Studien-Stiftung" offers personal advice and mentoring to help students get started on their careers.

MTU research experts give regular presentations and guest lectures at universities, and we provide a significant proportion of the lectures for the engine technology course at Cottbus. MTU has endowed a chair for aircraft engine structural mechanics at the University of Stuttgart. We also give national and international university groups an insight into how an industrial company works. Students can write dissertations at MTU as well as bachelor's, master's and doctoral theses. They can also work at the company in a parttime or intern role during their studies. At the end of 2017, there were 435 students working at the company as part of their undergraduate or post-



MTU promotes technology development and supports the next generation of scientists—one way is through its six centers of excellence.

graduate program, on work experience or as holiday staff.

Each year, the company confers the Wolfgang Heilmann Science Award for outstanding achievements by talented young students performing research in the field of aircraft engines at the Karlsruhe Institute of Technology. We are also an industry sponsor of a prestigious German award for aerospace journalism that is awarded annually to non-specialist journalists for outstanding articles on aerospace trends and issues.

### Charitable commitment

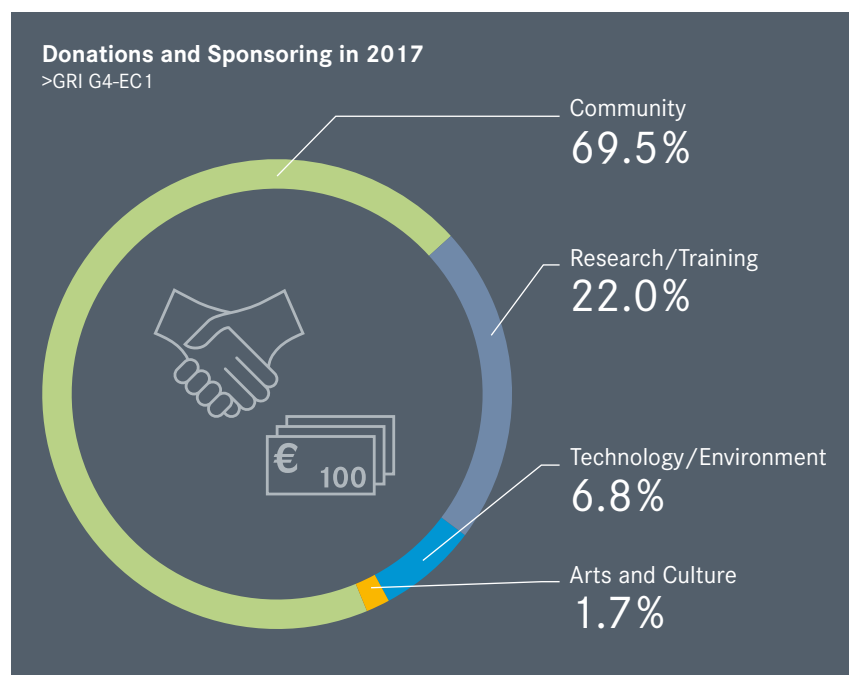
MTU supports various social institutions. These are generally charitable organizations, preferably with a social focus, to which we provide assistance in the form of financial or in-kind donations. A key factor in selecting recipients is a local/regional connection or a thematic link to our business. We prioritize support specific projects over general institutional funding, which are selected and implemented independently by the MTU subsidiaries concerned on the basis of careful research. The granting of donations and sponsorship is governed by internal guidelines. A centrally managed clearance and approval process ensures that the rules are adhered to.

In 2017 we dedicated resources to almost 50 projects and institutions in communities close to our locations. For instance, managers from Operations spent a day at the Montessori School in Dachau near Munich, where they built a wooden outdoor seating area. They also answered questions about MTU, jobs and apprenticeships in discussions with teachers and students. We regularly support various projects run by the Wings of Help charity, such as financing an electricity generator in Puerto Rico in 2017.

### Examples of our social projects in 2017

- Funding of the parent-run daycare initiative TurBienchen e.V., Munich
- Sponsorship of childcare during school vacations
- Off-site deployment of MTU's company fire department and doctor, Munich
- Children's Table Dachau
- Wings of Help charity
- Montessori School in Dachau near Munich
- "Die Arche" (The Ark) – a project devoted to improving the lives of children in Potsdam, near Berlin
- Cystic fibrosis charity run, Berlin
- "Healthy children" networking run, Berlin
- Irene children's home, Hannover
- Hospital No. 2 Christmas Charity Action, Rzeszów
- "MTUlandia" children's playground, Rzeszów
- Hands on Hartford

We welcome efforts on the part of our employees to take part in voluntary social events such as charity runs and to support the preservation or improvement of social institutions. This is covered by an internal company agreement. In addition, MTU allows staff to undertake projects with the German Federal Agency for Technical Relief during their paid working day, and offers the services of lay justices for labor tribunals and social justice courts and of examiners for the Chambers of Industry and Commerce. Employees at MTU Aero Engines Polska worked together to set up a public children's playground (MTUlandia) in the city.







Employees have set up a public playground in downtown Rzeszów, with plans to expand it in the future.



Each month, employees at MTU Aero Engines North America cook a community meal for people in need in and around East Hartford in support of the Hands on Hartford agency.



Change of workplace: Lars Wagner, MTU's COO since January 2018 (right), and managers from his Operations division spent a day building an outdoor seating area for a local school.



# Goals set and achieved in 2017

(relating to the reporting period)

## Sustainable Governance

	Goal	Status/ Deadline	Comments
<b>Compliance</b>	→ Carry out review of compliance system	Achieved	Recommended measures are currently being implemented.
	→ Conduct regular compliance audits to ensure business processes comply with statutory requirements and guidelines	Ongoing	
	→ Carry out employee training	Ongoing	In 2017, we conducted training courses on compliance issues, including on antitrust law.
<b>Dialog with Stakeholders</b>	→ Boost dialog with employees about sustainability	Achieved	Sustainability action day at the Munich site in 2017, articles in employee media
	→ Prepare non-financial reporting in accordance with the German CSR Directive Implementation Act	Annual	MTU published its first non-financial statement in the 2017 Annual Report. The sustainability report has been adjusted to reflect the materiality concept from the CSR directive (see Materiality analysis and -matrix in this report, Chapter 1.1 Sustainability strategy and organization).
	→ Direct contact by email for questions on sustainability	Ongoing	
	→ Conduct stakeholder survey on relevant topics and on MTU's achievements and communication strategies in regard to sustainability	Ongoing	Rework the ongoing online survey; interviews with selected representatives of important stakeholder groups are being prepared.
	→ Reinforce sustainability aspects of stakeholder dialogs on established platforms	Ongoing	
	→ Exchange more information with partners on sustainability issues	Ongoing	
<b>Sustainability management</b>	→ Launch CR training for employees	Achieved	Training is to be continued as part of the Campus training program.
	→ Consolidate sustainability topics in the risk management process	Achieved	A quarterly survey on the key sustainability topics was launched in 2018.
	→ Conduct materiality analysis to determine the most important sustainability topics	Annual	
	→ Participate in sustainability ratings	Ongoing	MTU's participation in ratings is currently being reviewed.
	→ Expand regional knowledge sharing	Ongoing	UN Global Compact conferences, round table discussions, Munich Business Climate Pact
	→ Review CR management processes	2018	An improvement project is currently optimizing all standard CR processes (e.g. database, documentation).
	→ Expand CR Steering Committee	2018	The CR Steering Committee will be expanded to integrate important departments more closely.
	→ Change GRI standard	Summer 2018	Introduce new GRI standard.
	→ Expand CR team	Summer 2018	Establish CR reporting function.

## Product Responsibility function.

	Goal	Status/ Deadline	Comments
<b>Product quality and flight safety</b>	→ Lower or at least keep the number of customer complaints stable at all locations	Goal partly achieved	Achieved in 2017 at the majority of locations
	→ Implement the EU REACH regulation	Achieved	The European Chemicals Agency ECHA has authorized continued use of the relevant substances until 2029.
	→ Conduct monitoring and recertification audits for quality management systems	Ongoing	
	→ Launch improvement project for analyzing errors in handling customer complaints	2018	
<b>Climate strategy</b>	→ Achieve a 15%* reduction in CO <sub>2</sub> emissions with the first-generation Geared Turbofan™	2020	Stage 1 of our climate strategy concluded with the entry into service of the first generation of the Geared Turbofan™ engine family (Claire 1). All models in the family will be rolled out into large-scale production by 2020. Necessary certifications for PW1900G models (Embraer E190-E2 and E195-E2) and PW1227G for the Mitsubishi MRJ regional jet were obtained in financial year 2017.
	→ Achieve a 25%* reduction in CO <sub>2</sub> emissions with the second-generation Geared Turbofan™	2030	Implementation of the second stage (Claire 2) Key milestones reached in 2017: initial test of a demo engine for high-temperature materials; foundation laid for a new MTU test center for critical components featuring a high-performance spin test bench.
	→ Achieve a 40%* reduction in CO <sub>2</sub> emissions with an integrated ultra-efficient engine concept	2050	Implementation of the third stage (Claire 3)
	→ Support the rollout of sustainable fuels with MTU engine expertise	Ongoing	e.g. by participating in research projects, studies and practical tests
<b>Aircraft noise</b>	→ Achieve a 20-decibel** reduction (cumulative) in noise emissions relative to ICAO Stage 4 with the first-generation Geared Turbofan™	2020	All models in the PW1000G GTF engine family will be rolled out into large-scale production by 2020. Necessary certifications for PW1900G models (Embraer E190-E2 and E195-E2) and PW1227G for the Mitsubishi MRJ regional jet were obtained in financial year 2017.
	→ Achieve an 11-decibel** reduction in noise emissions (per aircraft movement, corresponds to -55%) with the second-generation Geared Turbofan™	2030	As per requirements stipulated in the European Strategic Research and Innovation Agenda (SRIA). Key milestones were reached in financial year 2017, such as the incorporation of a new turbine exhaust case with integrated acoustic linings into the low-pressure turbine and testing in TU Stuttgart's altitude wind tunnel.
	→ Achieve a 15-decibel** reduction in noise emissions (per aircraft movement, corresponds to -65%) with the third-generation Geared Turbofan™	2050	As per requirements stipulated in the European Strategic Research and Innovation Agenda (SRIA)

\* compared to an engine from the year 2000, per passenger kilometer

\*\* compared to an engine from the year 2000

## Supply Chain

	Ziel	Status/ Deadline	Comments
Supplier management	→ Place greater emphasis on environmental aspects in supplier approval process	Achieved	
	→ Conduct annual survey of all relevant suppliers on compliance with the Dodd-Frank Act concerning conflict minerals	Ongoing	For 75% of the consolidated group
	→ Require new suppliers to commit to the code of conduct	Ongoing	For 75% of the consolidated group
	→ Conduct standardized assessment of risks in the supply chain	Ongoing	Risk analysis by country and product group launched
	→ Revise the supplier evaluation process to include sustainability aspects	2018	For MRO business

## Environmental Protection in Production

	Goal	Status/ Deadline	Comments
Reduced consumption of energy and resources	→ Participate in the Munich Business Climate Pact for reduction of CO <sub>2</sub> emissions	Achieved	MTU took various measures to reduce CO <sub>2</sub> emissions together with other large companies in Munich and beat its own target by achieving a total reduction in CO <sub>2</sub> of 7,000 metric tons.
	→ Participate in the Munich Business Climate Pact for reduction of energy consumption	Achieved	An employee initiative was prepared with the aim of raising awareness of personal energy and resource consumption.
	→ Launch zero campaign (zero emissions, zero consumption) in Munich	Achieved	
	→ Reduce CO <sub>2</sub> emissions by 25% at the Munich site as part of Clean Air-Industrial Site (benchmark year: 1990)	2020	Reduction by the end of 2017: 21,2%
	→ Promote sustainable mobility	Ongoing	
	→ Carry out employee training courses on sustainable resource consumption and the company's environmental activities	Ongoing	
	→ Reduce the environmental footprint and CO <sub>2</sub> emissions of business travel by making increased use of modern communication technologies such as phone and video conferencing	Ongoing	
Measures to save energy	→ Launch campaign for Munich employees to save energy as part of Zero	2018	
	→ Reduce the amount of energy required to power buildings	Ongoing	
	→ Upgrade to LED lighting	Ongoing	
	→ Switch off machines and systems during extended interruptions to operations	Ongoing	
	→ Improve the efficiency of compressing air	Ongoing	
	→ Use groundwater for cooling	Ongoing	New machinery connected to well-water cooling
Material efficiency	→ Sustainable manufacturing concepts: Apply new laser-based additive manufacturing techniques to build production parts straight from the powder bed based on CAD data	Ongoing	The range of parts is continuously being expanded. Production parts are already being manufactured, with complex components in preparation.
	→ Material development: Improve materials by making them lighter and more resistant to extreme temperatures, resulting in lower fuel consumption and pollutant emissions	Ongoing	Laying of the foundation stone for a new test center for critical components with high-performance spin test stand in Munich in 2017

## Environmental Protection in Production

	Goal	Status/ Deadline	Comments
<b>Environmental certification</b>	→ Get certified to ISO 14001 and validated under the Eco-Management and Audit Scheme (EMAS)	Ongoing	Hannover and Berlin sites are certified to ISO 14001; Munich, Hannover and Berlin sites are validated under EMAS.
	→ Issue annual environmental statements for the German sites to document compliance with EMAS requirements in accordance with Regulation (EC) No. 1221/2009 of the European Parliament.	Ongoing	

## Employees

	Goal	Status/ Deadline	Comments
<b>Occupational safety</b>	→ Limit reportable workplace accidents to a maximum of 22 within the MTU Group (production sites)	Not Achieved	Annual tolerance threshold for 2017 exceeded, but actual number of accidents lower than previous year
	→ Run surveillance and recertification audits in the MTU Group in accordance with OHSAS 18001 for sites that are already certified	Annual	
	→ Run a safety at work campaign with key topics	Ongoing	Local measures were implemented at production sites in 2017 (see page 58 of this report).
<b>Health protection</b>	→ Continue developing workplace reintegration management (BEM) at German sites	Achieved	
	→ Replace health days with the new active days concept as a health management training initiative	Achieved	
	→ Renovate and reopen the company health studio in Munich	Achieved	
	→ Promote a healthy diet	Ongoing	
	→ Introduce systemic ergonomics management	Ongoing	
<b>Attractiveness as an employer</b>	→ Strengthen international focus of employer branding	Ongoing	Prepare an employer value proposition (EVP) concept with the aim of group-wide applicability. EVP contains measures and offerings that make an employer attractive.
	→ Continue developing offers to improve people's work-life balance	Ongoing	e.g. mobile working possible in Munich since 2017
	→ Achieve "top employer" status in Germany, Poland and British Columbia, Canada	Annual	
	→ Support initiatives for company-sponsored childcare during summer vacation	Ongoing	Munich, Hannover
	→ Provide independent advice and facilitation services for family-related matters	Ongoing	The services offered are reviewed and enhanced on a regular basis, e.g. childcare network.
	→ Develop new offers to promote employee mobility	Ongoing	Consider a car sharing provider



## Employees

	Goal	Status/ Deadline	Comments
<b>Diversity &amp; Equality of opportunity</b>	→ Increase percentage of women in management positions to 13 percent; achieve 25 percent share of women on Executive Board	By 2022	Target agreement on women in management for Germany
	→ Heighten managers' awareness of their responsibility to promote equal opportunities, particularly work-life balance	Ongoing	Employee-focused issues such as health or work-life balance are fundamentally issues for management and enshrined in various measures (e.g. health coaching).
	→ Participate in initiatives designed to promote young female talent, such as Girls' Day and the Research Camp for Girls	Ongoing	
<b>Training and development</b>	→ Introduce a new online learning portal for employees to make it easier for staff to update their knowledge in line with their individual learning requirements	Achieved	Expansion in e-learning opportunities planned for German locations
	→ Offer new training opportunities to promote greater internationalization	Achieved	The International Leadership Program (ILP) has been established group-wide, with events held in Vancouver, Rzeszów and Munich in 2017.
	→ Continue with Business Challenge training and qualification program	2018	Launch of MTU Business Challenge III
	→ Provide management transition coaching	Ongoing	The program was implemented in 2017 to provide managers with guidance and support on management topics when transitioning to a more senior position.
<b>Employer/employee dialog</b>	→ Implement measures based on feedback from the employee survey at the end of 2015	Achieved	Implementation concluded in 2017
	→ Conduct employee survey on a regular basis	2018	For locations in Germany and Poland
	→ Continue company suggestion scheme for putting employees' ideas for improvement into practice	Ongoing	
	→ Confer MTU Award to honor outstanding performance	Every two years	Awarded to 22 employees in 2017

## Society

	Goal	Status/ Deadline	Comments
<b>Corporate Volunteering</b>	→ Support employee volunteer work	Ongoing	Support for building a children's playground in Rzeszów, Social Day for managers in Munich, corporate volunteering in schools and the community in Rocky Hill
<b>Investing in young talent</b>	→ Set up sponsorship schemes for the further training of young scientists after they finish university	By 2018	MTU has signed three sponsorship agreements with the University of Stuttgart and the German Aerospace Center.
	→ Support the Endowed Chair in Structural Mechanics of Aircraft Engines at the University of Stuttgart's Institute of Aircraft Propulsion Systems	Ongoing	
	→ Provide financial backing for "Germany Scholarships"	Annual	Leibniz University of Hannover, Technische Universität Braunschweig
	→ Run MTU foundation with the goal of actively supporting development of female students in STEM disciplines	Ongoing	
	→ Award Wolfgang Heilmann Prize for young scientists	Annual	
<b>Promote science journalism</b>	→ Sponsor the German award for aerospace journalism	Annual	

# GRI-Index – General Standard Disclosures

## Strategy and Analysis

GRI	UNGC- Principle	Reference/Comment
G4-1	<b>Statement from the Board of Management</b>	Foreword by the Chief Executive Officer P. 5

## Organizational Profile

GRI	UNGC- Principle	Reference/Comment
G4-3	Name of the organization	MTU Aero Engines P. 8-9
G4-4	Primary brands, products, and services	MTU Aero Engines P. 8-9
G4-5	Organization's headquarters	MTU Aero Engines P. 9
G4-6	Countries where the organization operates	Annual Report 2017 P. 61
G4-7	Nature of ownership and legal form	MTU Aero Engines P. 14
G4-8	Markets served	Annual Report 2017 P. 164
G4-9	Scale of organization	MTU Aero Engines P. 8-9
G4-10	6	Total workforce 4.2. Responsible and attractive employer P. 60, 61, 64
G4-11	3	Percentage of total employees covered by collective bargaining agreements 4.2. Responsible and attractive employer P. 61
G4-12	Description of supply chain	2.3 Responsibility for supply chains 36-37
G4-13	7	Significant changes regarding size, structure, ownership none
G4-14	Precautionary approach	3.1. Operational environmental protection P. 20
G4-15	External charters, principles, or other initiatives	1.2 Compliance and human rights P. 29, 2.2 Eco-efficient engines 33, 35 3.1 Operational environmental protection P. 43 4.3 Employee development P. 68 4.4 Diversity and equal opportunities P. 70 4.5 Corporate Social Responsibility P. 73-74
G4-16	Memberships	Selection <ul style="list-style-type: none"> <li>• Association of German Engineers (VDI)</li> <li>• Aviation Initiative for Renewable Energy in Germany e.V.(aireg)</li> <li>• Bauhaus Luftfahrt e.V.</li> <li>• bavAIRia e.V.</li> <li>• Chamber of Commerce and Industry for Munich and Upper Bavaria (IHK)</li> <li>• Deutsches Verkehrsforum e.V. (industry association for all modes of transport)</li> <li>• Employers' Associations for the Bavarian Metal-working and Electrical Industries (bayme and vbm)</li> <li>• Enterprise for Health</li> <li>• European Aerospace Quality Group</li> <li>• Federation of German Security &amp; Defence Industries (BDSV)</li> <li>• Forum Luft- and Raumfahrt e.V. (forum for the aerospace industry)</li> <li>• Friends and Sponsors of the Deutsches Museum</li> <li>• German Aerospace Center (DLR)</li> <li>• German Aerospace Industries Association (BDLI)</li> <li>• German Association of Environmental Management e.V.</li> <li>• German Society for Aeronautics and Astronautics (DGLR)</li> <li>• IATA Strategic Partnerships</li> <li>• Münchener Bildungsforum gem. n.e.V. (Munich-based network for employee training and HR development)</li> <li>• Stifterverband für die Deutsche Wissenschaft (sponsors' association for German science)</li> <li>• Trace International, Inc.</li> <li>• UN Global Compact</li> <li>• Vereinigung der Bayerischen Wirtschaft e.V. (Bavarian business association)</li> </ul>

## Material Aspects and Boundaries

GRI	UNGC- Principle		Reference/Comment
G4-17	Basis of consolidation	About this report	P. 6
G4-18	Process for defining report content	1.1 Sustainability strategy and organization	P. 12-13
G4-19	Material aspects identified	1.1 Sustainability strategy and organization	P. 12-13
G4-20	Material aspects within the organization	Materiality principle <i>MTU determines the relevance of the major topics along the entire value chain as follows: the relevance of upstream and downstream activities is based on information supplied to MTU by business contacts. We deem any topic to be relevant that plays a significant role in the industry and that has a bearing on MTU's business activities.</i>	P. 88
G4-21	Material aspects outside the organization	Materiality principle	P. 88
G4-22	Re-statements of information	About this report	P. 6-7
G4-23	Changes from previous reports	About this report	P. 6-7

## Stakeholder Engagement

GRI	UNGC- Prinzip		Reference/Comment
G4-24	Stakeholder groups engaged	1.1 Sustainability strategy and organization, Stakeholder dialog	P. 14-16
G4-25	Basis for selection of stakeholders	1.1 Sustainability strategy and organization, Stakeholder dialog	P. 14-16
G4-26	Approaches to stakeholder engagement	1.1 Sustainability strategy and organization, Stakeholder dialog	P. 14-16
G4-27	Key topics and concerns raised through stakeholder engagement	1.1 Sustainability strategy and organization, Stakeholder dialog	P. 14-16

## Reporting Profile

GRI	UNGC- Principle		Reference/Comment
G4-28	Reporting period	About this report	P. 6-7
G4-29	Date of previous report	About this report	P. 6-7
G4-30	Reporting cycle	About this report	P. 6-7
G4-31	Contact point for questions regarding the report	About this report	P. 6-7
G4-32	GRI Content Index and chosen option	About this report	P. 6-7
G4-33	External assurance	About this report	P. 6-7

## Governance

GRI	UNGC- Principle		Reference/Comment
G4-34	<b>Governance structure</b>	Annual Report 2017	P. 6, 52-53

## Ethics und Integrity

GRI	UNGC- Principle		Reference/Comment
G4-56	Values, principles, codes of conduct	1.2 Compliance and human rights 4.2. Responsible and attractive employer	P. 20 P. 60-61

# GRI-Index - Specific Standard Disclosures

## Economic Performance

GRI	UNGC- Principle	Reference/Comment		
		<b>Economic Performance</b>		
		Management approach	1.1 Sustainability strategy and organization 4.5 Corporate Social Responsibility	P. 16-17 P. 72
G4-EC1		Economic value generated	1.1 Sustainability strategy and organization 4.5 Corporate Social Responsibility <i>Indicator is not reported by market or region.</i>	P. 18 P. 74
G4-EC2	7	Financial implications of climate change	2.2 Eco-efficient engines, Challenges & trends	P. 34-35
		<b>Procurement Practices</b>		
		Management approach	2.3 Responsibility for the supply chain	P. 36-39
G4-EC9		Proportion on spending on local suppliers	2.3 Responsibility for the supply chain	P. 37

## Environment

GRI	UNGC- Principle	Reference/Comment	
		<b>Materials</b>	
		Management approach	3.4. Material efficiency and waste P. 52
G4-EN1	7, 8	Materials used by weight or volume	3.4. Material efficiency and waste P. 53
		<b>Energy</b>	
		Management approach	3.2 Energy and emissions P. 44
G4-EN3	7, 8	Energy consumption within the organization	3.2 Energy and emissions P. 45-46
G4-EN6	8, 9	Reduction of energy consumption	3.2 Energy and emissions P. 44, 46
G4-EN7	8, 9	Reductions in energy requirements of products and services	2.2 Eco-efficient engines P. 32-35
		<b>Water</b>	
		Management approach	3.3 Water P. 50
G4-EN8	7, 8	Total water withdrawal by source	3.3 Water P. 51
G4-EN9		Water sources affected	3.3 Water P. 50
G4-EN10	7, 8	Water recycled and reused	3.3 Water P. 50
		<b>Emissions</b>	
		Management approach	3.2 Energy and emissions P. 44-46
G4-EN15	7, 8	Direct greenhouse gas emissions Scope 1	3.2 Energy and emissions P. 47
G4-EN16	7, 8	Indirect greenhouse gas emissions Scope 2	3.2 Energy and emissions P. 47, 48
G4-EN19	8, 9	Reduction of greenhouse gas emissions	3.2 Energy and emissions P. 49
G4-EN21	7, 8	Significant air emissions	3.2 Energy and emissions P. 49
		<b>Effluents and waste</b>	
		Management approach	3.3 Water P. 50
			3.4. Material efficiency and waste P. 52, 54
G4-EN22	8	Total water discharge	3.3. Water P. 51
G4-EN23	8	Total weight of waste by type and disposal method	3.4. Material efficiency and waste P. 55
G4-EN24	8	Significant spills	3.3 Water P. 50
			3.4. Material efficiency and waste P. 54
		<b>Products and services</b>	
		Management approach	2.2 Eco-efficient engines P. 29-30
G4-EN27	7-9	Extent of impact mitigation of environmental impact of product and services	2.2 Eco-efficient engines P. 32-34
GE-EN28	8	Reclaimed products sold and their packaging material	3.4. Material efficiency and waste P. 53
		<b>Compliance</b>	
		Management approach	3.1 Operational environmental protection P. 41-43
G4-EN29	8	Monetary value or non-monetary sanctions for non-compliance with environmental laws and regulations	3.1 Operational environmental protection P. 43
		<b>Transport</b>	
		Management approach	3.2 Energy and emissions P. 48
G4-EN30	8	Environmental impacts of transporting products and other goods and materials	3.2 Energy and emissions P. 48



## Environment

GRI	UNGC- Principle		Reference/Comment
<b>Overall</b>			
		Management approach	3.1 Operational environmental protection P. 41-43
G4-EN31	7-9	Total environmental protection expenditures and investments	3.1 Operational environmental protection P. 42
<b>Supplier environmental assessment</b>			
		Management approach	2.3 Responsibility for the supply chain P. 36, 38
G4-EN33	8	Negative environmental impact in the supply chain	2.3 Responsibility for the supply chain P. 36, 38
<b>Environmental grievance mechanism</b>			
		Management approach	3.1 Operational environmental protection P. 42
G4-EN34	8	Number of grievances about environmental impacts	3.1 Operational environmental protection P. 43

## Labor practices and decent work

GRI	UNGC- Principle		Reference/Comment
<b>Employments</b>			
		Management approach	4.2. Responsible and attractive employer P. 60-64
G4-LA1	6	Staff turnover	4.2. Responsible and attractive employer P. 63
G4-LA2		Benefits provided to full-time employees	4.2. Responsible and attractive employer P. 64
G4-LA3	6	Return to work after parental leave	4.2. Responsible and attractive employer P. 64
<b>Labor/Management relations</b>			
		Management approach	4.2. Responsible and attractive employer P. 60-64
G4-LA4	4	Minimum notice periods	<i>Agreements made between the employer and the works council that are governed by collective agreements can be terminated with three months' notice under Section 77 of the German Works Council Constitution Act (Betriebsverfassungsgesetz). This is generally also the case for the collective agreements. In cases in which the arbitration body's decision overrules an agreement between the works council and employer, the regulations regarding notice remain valid until replaced with others. Notice periods for the assertion of claims by employers or the employer are also firmly laid down in collective agreements. In accordance with Polish law, in Poland this period is two weeks for temporary contracts and one to three months for permanent contracts, dependent on the length of the term of employment. Canada: 60 days; U.S. according to WARN Act.</i>
<b>Occupational health and safety</b>			
		Management approach	4.1 Occupational health and safety P. 57, 59
G4-LA5		Percentage of total workforce represented in formal joint management-worker health and safety committees	4.1 Occupational health and safety P. 57 <i>The entire workforce of all our production sites is fully represented at the locally organized occupational safety committees, the composition of which reflects the legal requirements in the respective countries.</i>
G4-LA6		Injuries, occupational diseases, lost days and work-related fatalities	4.1 Occupational health and safety P.58
<b>Training and education</b>			
		Management approach	4.3 Employee development P. 65-68
G4-LA9	6	Average hours of training per employee	4.3 Employee development P. 66
G4-LA10		Programs for lifelong learning	4.3 Employee development P. 66
G4-LA11	6	Percentage of employees receiving regular performance and career development reviews	4.2 Responsible and attractive employer, Remuneration and additional benefits P. 64

## Labor practices and decent work

GRI	UNGC- Principle	Reference/Comment
<b>Diversity and equal opportunity</b>		
	Management approach	4.4 Diversity and equal opportunities P. 69-71
G4-LA12	6	Composition of governance bodies and employees 4.4 Diversity and equal opportunities P. 70-71
<b>Equal remuneration for women and men</b>		
	Management approach	4.2 Responsible and attractive employer, Remuneration and additional benefits P. 64
G4-LA13		Ratio of basic salary and remuneration of women to men 4.2 Responsible and attractive employer, Remuneration and additional benefits P. 64
<b>Supplier assessment for labor practices</b>		
	Management approach	2.3 Responsibility for the supply chain P. 38-39
G4-LA15		Negative impacts for labor practices in the supply chain 2.3 Responsibility for the supply chain P. 38-39
<b>Labor practices grievance mechanism</b>		
	Management approach	1.2 Compliance and human rights P. 23
G4-LA16		Number of grievances about labor practices 1.2 Compliance and human rights P. 23

## Human Rights

GRI	UNGC- Principle	Reference/Comment
<b>Investment</b>		
	Management approach	2.3 Responsibility for the supply chain P. 36-39
G4-HR1	2	Significant investment agreements and contracts including human right clauses 2.3 Responsibility for the supply chain P. 38-39
<b>Non-discrimination</b>		
	Management approach	4.5 Compliance and human rights P. 20, 22
G4-HR3	6	Total number of incidents of discrimination 4.4 Diversity and equal opportunities P. 69 1.2 Compliance and human rights P. 23
<b>Freedom of association and collective bargaining</b>		
	Management approach	1.1 Compliance and human rights P. 22-23 2.3 Responsibility for the supply chain P. 36, 38
G4-HR4	3	Operations and suppliers identified 1.2 Compliance and human rights P. 23 2.3 Responsibility for the supply chain P. 38-39
<b>Child labor</b>		
	Management approach	1.2 Compliance and human rights P. 22-23 2.3 Responsibility for the supply chain P. 38-39
G4-HR5	5	Operations and suppliers with significant risk for incidents of child labor 1.2 Compliance and human rights P. 22-23 2.3 Responsibility for the supply chain P. 38-39
<b>Forced and compulsory labor</b>		
	Management approach	1.2 Compliance and human rights P. 22-23
G4-HR6	4	Operations and suppliers with significant risk for incidents of forced and compulsory labor 1.2 Compliance and human rights P. 22-23 2.3 Responsibility for the supply chain P. 38-39
<b>Assessment</b>		
	Management approach	1.2 Compliance and human rights P. 22-23 2.3 Responsibility for the supply chain P. 38-39
G4-HR9	1	Operations that have been subject to human rights reviews 1.2 Compliance and human rights P. 22-23 2.3 Responsibility for the supply chain P. 38-39
<b>Supplier human rights assessment</b>		
	Management approach	2.3 Responsibility for the supply chain P. 38-39
G4-HR10	2	Percentage of new suppliers that were screened using human rights criteria 2.3 Responsibility for the supply chain P. 38-39 <i>All new suppliers are contractually obligated to uphold MTU's Code of Conduct, which makes protection of human rights compulsory.</i>
<b>Human rights grievance mechanisms</b>		
	Management approach	1.2 Compliance and human rights P. 22-23 2.3 Responsibility for the supply chain P. 38-39
G4-HR12	1	Number of grievance about human rights 1.2 Compliance and human rights P. 22-23 2.3 Responsibility for the supply chain P. 38-39

GRI	UNGC- Principle	Reference/Comment	
		<b>Anti-corruption</b>	
		Management approach	1.2 Compliance and human rights P. 20-21
G4-SO3	10	Operations assessed for risks related to corruption	1.2 Compliance and human rights P. 22
G4-SO4	10	Information and training on anti-corruption	1.2 Compliance and human rights P. 22
G4-SO5	10	Confirmed incidents of corruption and corrective actions taken	1.2 Compliance and human rights P. 21
		<b>Public policy</b>	
		Management approach	1.1 Sustainability strategy and organization, Political dialog P. 14-16
G4-SO6	10	Total value of political contribution	1.1 Sustainability strategy and organization, Political dialog P. 16
		<b>Anti-competitive behaviour</b>	
		Management approach	1.2 Compliance and human rights P. 20-22
G4-SO7		Legal actions for anti-competitive behaviour and anti-trust and monopoly practices	1.2 Compliance and human rights P. 21
		<b>Compliance</b>	
		Management approach	1.2 Compliance and human rights P. 20-22
G4-SO8		Monetary values of significant fines and non-monetary sanctions for non-compliance with laws	1.2 Compliance and human rights P. 21
		<b>Supplier assessment for impacts on society</b>	
		Management approach	2.3 Responsibility for the supply chain P. 38-39
G4-SO9		Percentage of new suppliers that were screened using criteria for impacts on society	2.3 Responsibility for the supply chain P. 38-39 <i>All new suppliers are contractually bound to comply with MTU's Code of Conduct, which is informed by the ten principles of the UN Global Compact.</i>
G4-SO10		Negative impacts on society in the supply chain	2.3 Responsibility for the supply chain P. 38-39
		<b>Grievance mechanisms for impacts on society</b>	
		Management approach	2.3 Responsibility for the supply chain P. 38-39
G4-SO11		Number of grievances about impacts on society	2.3 Responsibility for the supply chain P. 38-39 3.1 Operational environmental protection P. 43

# Product Responsibility

GRI	UNGC- Principle	Reference/Comment	
	<b>Customer health and safety</b>		
	Management approach	2.1 Product quality and flight safety	P. 25-27
G4-PR1	Products and services for which health and safety impacts are assessed	2.1 Product quality and flight safety	P. 25-27
G4-PR2	Number of incidents of non-compliance with regulations concerning health and safety impacts	2.1 Product quality and flight safety	P. 27
	<b>Products and service labeling</b>		
	Management approach	2.1 Product quality and flight safety	P. 25-27
G4-PR3	Product and service information required by procedures	2.1 Product quality and flight safety	P. 25-27
G4-PR5	Results of surveys measuring customer satisfaction	2.1 Product quality and flight safety <i>There are no violations of rules and regulations. in the reporting period under review.</i>	P. 27
	<b>Customer Privacy</b>		
	Management approach	1.2 Compliance and human rights	P. 21
G4-PR8	Total number of substantiated Complaint regarding customer privacy and customer data	1.2 Compliance and human rights	P. 21
	<b>Compliance</b>		
	Management approach	2.1 Product quality and flight safety	P. 25-27
G4-PR9	Monetary value of significant fines for non-compliance with laws concerning the use of products and services	2.1 Product quality and flight safety	P. 27



# Materiality principle

GRI G4-20-21

## Material Topics

## Relevance for MTU along the value chain

	Upstream activities (e.g. supply chain)	Activities within the MTU Group	Downstream activ-ities (e.g. flights operated by air-lines)
Long-term value creation	significant	significant	significant
Anti corruption	significant	significant	significant
Stakeholder dialog		significant	significant
Product quality and flight safety	significant	significant	significant
Trade Compliance	significant	significant	significant
IT security and data protection	significant	significant	significant
Fuel efficiency and CO <sub>2</sub> -emission of products		significant	significant
Environmental and occupational safety compliance	significant	significant	significant
Exhaust emission of products		significant	significant
Noise emission of products		significant	significant
Innovation	significant	significant	significant
Responsible Sourcing OEM	significant	significant	significant
Responsible Sourcing MRO	significant	significant	significant
Environmental management: Energy		significant	
Environmental management: Waste		significant	
CO <sub>2</sub> emissions at production sites		significant	
Environmental management: Water		significant	
Noise abatement at production sites		significant	
Human rights	significant	significant	significant
Occupational safety	significant	significant	significant
Employee development		significant	significant
Health management		significant	
Diversity & equality of opportunity		significant	
Work-life balance		significant	
Demographic change		significant	
Corporate Citizenship		significant	

\*material topic for commercial aircraft engines due to inclusion in certification specifications

