



2018 SUSTAINABILITY REPORT
PROSPECTS

What MTU is doing to build a better future.

2018



MTU's sustainability strategy is based on a holistic, integrated approach comprising environmental, economic and social aspects. This opens up excellent prospects for the company and its operating environment.

40%

lower CO₂ emissions



This is the climate target for aviation engines from our ambitious Clean Air Engine Agenda, which we want to achieve by 2050.

65%

lower aircraft noise



This is how much we want to reduce aircraft noise by 2050 with the help of our Clean Air Engine Agenda.



Reiner Winkler
Chief Executive Officer
MTU Aero Engines AG

“Climate protection is a much-discussed topic in our society. The question of what we can do for the climate is now more pressing than ever. MTU has been working on solutions for the aviation industry for many years now, and we believe that 2018 was another year of great progress on our journey to sustainable aviation.”

Gain an insight into MTU's sustainability activities

Product stewardship is our main focus, but sustainability at MTU goes far beyond climate protection and safe flight operations. It encompasses resource-conserving and environment-friendly production and maintenance as well as fair and safe working conditions, equal opportunities for all employees and high-quality training and development. Compliance forms a key part of our corporate culture; when it comes to sustainable innovation, the digital transformation of MTU plays a role. Sustainability does not end at the gates of our plants: we involve the supply chain in our activities, too.



- Foreword by the Chief Executive Officer
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2018 Sustainability Report

Foreword by the Chief Executive Officer



Reiner Winkler
Chief Executive Officer
MTU Aero Engines AG

Dear readers,

Climate protection is a much-discussed topic in our society. The question of what we can do for the climate is now more pressing than ever. MTU has been working on solutions for the aviation industry for many years now, and we believe that 2018 was another year of great progress on our journey to sustainable aviation.

Take our Clean Air Engine Agenda as an example, where we're working to reduce aircraft engine CO₂ emissions by 40% and noise emissions by as much as 65% by the year 2050. We completed the first stage of this ambitious project with the launch of geared turbofans, which fly with MTU technology on board. And we're already hard at work on the second generation of these propulsion systems, making them even quieter, more efficient and more environmentally friendly. Concluding the ENOVAL program in 2018, for which we had joined forces with a number of partners to conduct important technology research, was another major step. The results were promising and we were able to demonstrate the operational feasibility of numerous new technologies. At MTU, our aim is to improve the environmental performance of aircraft engines, but our highest priority is still on product quality and flight safety.

Our focus on product stewardship notwithstanding, sustainability at MTU goes beyond climate protection and safe flight operations. As signatories to the UN Global Compact, we are committed to upholding its ten principles. The compact presents sustainability as an extremely multifaceted concept, covering such topics as conserving resources in industry, offering fair working conditions and equal opportunities for all employees, upholding principles of compliance in business activities, and taking responsibility for the products that a company brings to market.

We conduct our business in a sustainable manner and support the Sustainable Development Goals of the UN's 2030 Agenda. From the 17 Sustainable Development Goals, we have opted to pursue the eight to which MTU can contribute, including Quality education, Climate action and Responsible consumption and production. In this sustainability report, we provide information about the specific actions we take to support each of our chosen Sustainable Development Goals.

Conserving resources is one of our basic production principles. With additive manufacturing, a method comparable to 3D printing, we are currently establishing a new, tool-free production process for metallic components. Given its potential to supplement and perhaps eventually even replace conventional energy- and material-intensive manufacturing processes, we plan to continue to expand our use of additive manufacturing over the coming years. Over and above such lighthouse projects, we ensure that our production shops employ efficient processes that are as eco-friendly as possible.

We understand that sustainability encompasses the entire value chain and for this reason, we also hold our suppliers accountable. We expect them to comply with the social and environmental standards defined in our Code of Conduct, which is informed by the ten principles of the UN Global Compact. We have further strengthened MTU's internal compliance organization and created a new Compliance Officer function for the company. Responsible international trade is an important compliance issue for us, which is why we have established an organizational unit specifically for this purpose. With the meticulous inspection obligations we have instituted, we aim to ensure we observe all the applicable legal requirements for the national and international movement of goods.

Alongside climate change, a second great challenge we face in this day and age is digitalization. We recognize the opportunities that digital transformation presents and we are actively pursuing them in more than 300 digitalization projects across MTU. Leading a company into the digital future has economic advantages and provides an opportunity to make processes and technologies more sustainable.

Against this backdrop, the training and development of our employees also plays an important role. To establish a more innovative working environment and promote employee development, this year we defined and introduced a set of explicit MTU leadership values for the first time. "We transform, we empower, we create trust" are the guidelines that underpin our management culture—the culture with which we want to lead MTU successfully into the future.

In this report, we provide you with an in-depth look at MTU's sustainability activities. I hope it makes for a stimulating read!

Yours sincerely,



Reiner Winkler
Chief Executive Officer
MTU Aero Engines AG



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2018 Sustainability Report

The enterprise MTU

In the aviation industry, three simple letters stand for top-notch engine technology: MTU. The MTU Group offers solutions for the entire engine lifecycle—from development to production to maintenance.



MTU, a long-standing aviation company with strong roots in Germany, has established itself as an indispensable partner to all major players in the global engine industry.

85
years



of MTU; its predecessor BMW Flugmotoren GmbH was founded in Munich in 1934.

9,731
employees



were working at MTU's fully consolidated sites around the world at the end of 2018.

4.6

**billion
euros
in
revenue**

*was recorded by MTU for the
financial year 2018.*



15

**company
locations
around
the
world**

*give MTU a presence in
important markets and
regions.*



MTU Aero Engines is Germany's leading engine manufacturer and an established global player in the industry. The company engages in the design, development, manufacture, marketing and support of commercial and military aircraft engines in all thrust and power categories and stationary gas turbines. Operating affiliates all over the world, MTU has a local presence in major regions and markets.

In the commercial engine business, MTU has content in all thrust and power categories, from propulsion systems for business jets and engines for narrowbody aircraft with geared turbofan technology to the world's most powerful engines. The company is a valued and trusted partner to all of the big players in the industry: GE, Pratt & Whitney and Rolls-Royce.

In the maintenance business, MTU Maintenance is the world's largest independent provider of commercial engine MRO (maintenance, repair and overhaul) services in terms of sales. The primary focus is on providing support for engines in which MTU is a risk- and revenue-sharing partner. MTU is the leading global provider of maintenance and repair services for the V2500, the engine powering the current Airbus A320 family of aircraft. MTU Maintenance also offers repair solutions for a wide variety of different engine types.

In the military arena, MTU Aero Engines is Germany's industrial lead company for practically all engines flown by the country's military. The company delivers the enabling technologies, develops and manufactures engines and engine components, and provides logistics support.

In its commercial business, MTU develops and manufactures engine modules and components. Its technological dominance in low-pressure turbines, high-pressure compressors, turbine center frames—as well as in production and repair techniques—plays a major role in making the company one of the leading subsystem and component manufacturers in the global engine sector.

- [Our engine product portfolio](#)
- [MTU Maintenance](#)

MTU in 60 seconds

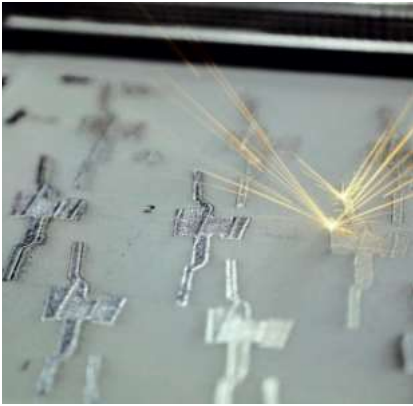


→ Find out more <https://www.youtube.com/embed/110YBnLDa-A>

Highlights from MTU's 2018 calendar



In March, the Brazilian aircraft manufacturer Embraer received type approval for its E-Jet E175-E2 from the European, US and Brazilian authorities; the highly eco-efficient PW1900G engine has MTU technology on board. In April, our cogeneration plant went into operation after being converted to biomethane and MTU officially decided to further expand its plant in Poland, where 25% more jobs will be created by 2020.



With additive manufacturing (AM), we are currently establishing a new, tool-free production process for metallic components that is much more energy- and material-efficient than conventional methods. We pooled our AM activities in 2018. In July, MTU laid the foundations for its new logistics center in Ludwigsfelde; MTU is investing EUR 11.5 million in the project. Sustainability aspects are incorporated into the building, which is set to open in 2019. In August, our site in Canada celebrated its 20th anniversary with a visit to the Abbotsford Airshow.

The financial year 2018

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 9,731 people at fully consolidated locations around the world, with 279 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 universities and colleges, especially in the regions where our sites are located. We invest in our locations and are in the process of expanding our plants in Munich, Hannover, Ludwigsfelde and Rzeszów. Through our innovative capabilities, we create upstream value chains and jobs in the supply chain.

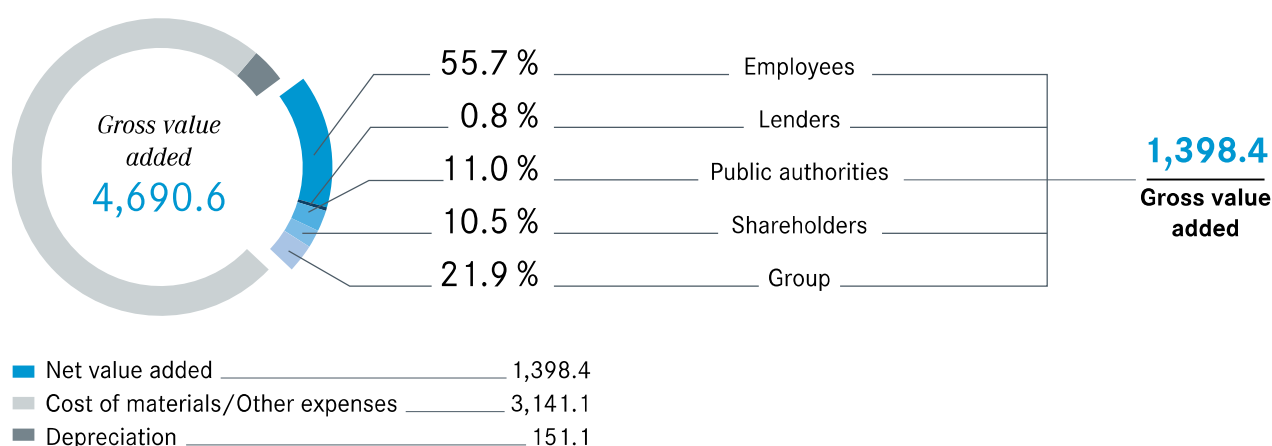
A solid financial basis is required for future-oriented investments: In 2018, we continued on our growth trajectory and set new records. At EUR 4.6 billion, we recorded a revenue record at 17% higher than the previous year's figure. Operating profit (EBIT adjusted) also rose by 17% to reach a new all-time high of EUR 671.4 million. Net income exceeded last year's record-breaking figure (EUR 404.9 million) by 18% to reach EUR 479.1 million. The company's order backlog ran to 17.6 billion euros in 2018—another new record—which in purely numerical terms translates to production capacity utilization of almost four years. In addition to the V2500, the most important engine programs in the order backlog are the geared turbofan engines, which serve as the basis for reducing aircraft noise and CO₂ emissions as part of our [Clean Air Engine Agenda and overarching climate strategy](#). The outlook for 2019 is also positive: We expect revenue of EUR 4.7 billion and growth in all business divisions.

Key financial data (in EUR m)
GRI 201-1

	2018	2017
Revenues	4,567.1	3,897.4
Earnings before interest and tax (EBIT, adjusted)	671.4	572.5
Income taxes	154.0	119.4
Earnings after tax (adjusted)	479.1	404.9
Capital expenditure on property, plant and equipment and intangible assets	272.8	242.6

Consistent with our goal of steadily increasing shareholder value, we continued our pattern of previous years with positive development again in 2018. Net value added has remained at a consistently high level over several years, and rose to EUR 1.4 billion in the year under review. Most of that (55.7%) went to our employees in the form of wages, salaries and other benefits, while the Group retained 21.9% to make forward-looking investments. The proportion allocated to pay taxes levied by public authorities accounted for 11%. At the Annual General Meeting in April 2019, the company resolved to pay a dividend of EUR 147.2 million (10.5% of net value added) to shareholders to enable them to share in the company's successful performance in 2018. We also offer our employees the opportunity to participate in MTU's success through an employee share program.

Value added, 2018 (in EUR m)
GRI 201-1



As of 2018, the cost of materials will be calculated based on cost of sales.

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:



- ISS-oeekom (prime status C+)
- CDP
- STOXX ESG Leader Indices
- MSCI ESG Research

More information about:

Ratings & rankings: www.mtu.de



102-1, 102-2, 102-3, 102-5, 102-7, 103-2, 103-3, 201-1

About this report

Each year, MTU Aero Engines AG compiles a 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 2018. It builds on the previous report and supplements the non-financial statement in our Annual Report.

Reporting period and cycle

The reporting period covers financial year 2018 (January 1 to December 31). 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 is published annually in German and English and will be available for the first time as an online report at → sustainability.mtu.de as of June 28, 2019. It is possible to obtain a → [PDF download](#) of the report.

Scope of validity

The report covers all of the MTU Group sites that are treated as fully consolidated in the company's financial reporting. The information and key performance indicators refer to the specified Group reporting entity, if not otherwise indicated.

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

Reporting standard and topics

The 2018 Sustainability Report was drawn up in compliance with the Global Reporting Initiative (GRI) and meets the GRI standards ("Core" option). Accordingly, we report on all required standard disclosures as well as on our management approaches for key topics and on selected indicators for each topic. We provide a [GRI index](#) for cross-referencing the report's contents with the GRI standards. Tables and graphics with statements relevant to GRI have been appropriately marked. The relevant GRI standards are listed at the end of each page.

A materiality matrix presents the sustainability topics that are significant 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 topics and performance indicators for this report. → [Material topics](#)

UN Global Compact and Sustainable Development Goals

The 2018 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](#). The relevant principles are also listed at the end of each page. As a signatory to the UN Global Compact, we support the Sustainable Development Goals and want to help achieve them. Our analysis and selection of SDGs are listed → [here](#).

Key figures and collection methods

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 locally 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).

Supplementary information and previous reports

MTU regularly informs its stakeholders about sustainability issues. You can find supplementary information, more detailed analyses and older publications online:

- [Corporate responsibility at MTU](#)
- [Compliance at MTU](#)
- [MTU annual reports](#)

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

External validation of the report

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

Contacts

Questions about the report can be addressed to corporateresponsibility@mtu.de.

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.



[102-45](#), [102-48](#), [102-49](#), [102-50](#), [102-51](#), [102-52](#), [102-53](#), [102-54](#), [102-56](#)



Sustainable governance

Accountability and integrity

We bear responsibility for our activities, not only in economic terms but also in environmental and social terms. That is why sustainability is our guiding principle. Our sustainability strategy and our sustainability management support us in this. Meanwhile, our comprehensive compliance system guarantees ethics and integrity in the company. Respect for human rights is fundamental to what we do.



- Sustainability strategy and organization
- Sustainable Development Goals
- Materiality analysis
- Stakeholder dialog
- Compliance
- Human rights

Sustainable governance

Sustainability strategy and organization

We have fleshed out a Group-wide sustainability strategy and integrated it into our corporate processes. This allows us to continuously drive forward progress on topics that are important to us. We have established a sustainability management system, which we recently improved after putting it through an internal review.



Powering the new generation of E-Jets from Embraer, the geared turbofan sets new standards for fuel burn, CO₂ emissions and noise. The engine has also been chosen for a number of other new aircraft models and is proving to be a major success. As of the end of 2018, firm orders and options for more than 10,000 units had been placed. MTU co-developed the new propulsion concept. Given that product stewardship lies at the heart of our sustainability strategy, further improvements in eco-efficiency are to follow.

We are obligated to maintain responsible corporate governance and we incorporate sustainability to ensure our long-term business success. In the process, we consider not only economic but also ecological and social aspects along the value chain, and maintain continuous dialog with our stakeholders. The Executive Board conducts MTU's business activities with responsibility toward its employees and toward society as well. To that end, sustainability is enshrined in our annual corporate objectives as a strategic goal. Our sustainability strategy addresses the global challenges and stakeholder requirements that MTU's business faces. Climate change, mobility, urbanization and resource scarcity are important drivers of our industry.

We create products, services and innovations that add value for our customers, keep us competitive and contribute to the sustainable development of society and the environment. With our propulsion solutions, we aim to make sustainable mobility concepts feasible. These support airlines in ensuring the high safety standards of aviation, improving their energy and emissions footprint and reducing aircraft noise.

With our engine products, we help airlines improve their energy footprint, CO₂ emissions and aircraft noise. That is why product stewardship is at the heart of our sustainability strategy.

That is why product stewardship is the cornerstone of our sustainability strategy, which addresses the topics of product quality, flight safety, fuel efficiency, CO₂ emissions, noise emissions and innovations. Another key element that is highly relevant to MTU and its stakeholders is a steady increase in shareholder value. This has positive effects on numerous sustainability topics. Some of those included in our comprehensive sustainability strategy are compliance, employee concerns, environmental protection, supply chain and corporate citizenship.

Our contribution to the SDGs

The UN's Sustainable Development Goals (SDGs) express a responsibility to the future that we as a company support. We are committed to the SDGs of the 2030 Agenda and want to support them. The Agenda aims to realize a total of 17 SDGs with 169 secondary objectives through partnerships in politics, industry and society. We have actively examined the SDGs and analyzed which of them we can contribute to with our business activities and actions. As a result, we have identified eight that are of particular importance to us and as a responsible company, we plan to work towards fulfilling them.

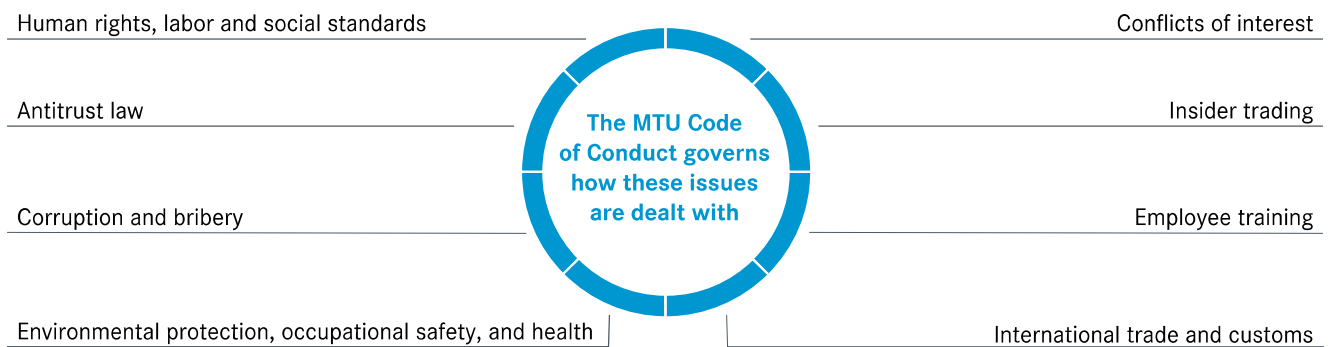


→ [Learn more about our contribution to the Sustainable Development Goals \(SDGs\)](#)

MTU Code of Conduct

Our company is steeped in tradition and has a strong foundation of values. One key tool for embedding sustainability across the organization is our Code of Conduct. It defines clear standards for behavior within the company as well as toward stakeholders such as customers, suppliers, authorities and business partners. Our Code of Conduct is binding for all employees, managers and members of the Executive Board. It was developed and rolled out jointly by the Executive Board and the Group works council.

Key topics of the Code of Conduct



[→ MTU Code of Conduct](#)

In addition, the MTU Principles outline the core values—such as fairness, respect and appreciation—that govern our actions. One of these Principles neatly summarizes our commitment: “MTU takes a proactive approach to its responsibility toward the environment and society.”



9,913
companies

from 159 countries have entered the UN Global Compact. One of them is MTU. They undertake to work continuously on improving the social and ecological impact of globalization.

Global standards

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 and preventing corruption. We strive to continuously improve the way in which we implement these principles across the company.

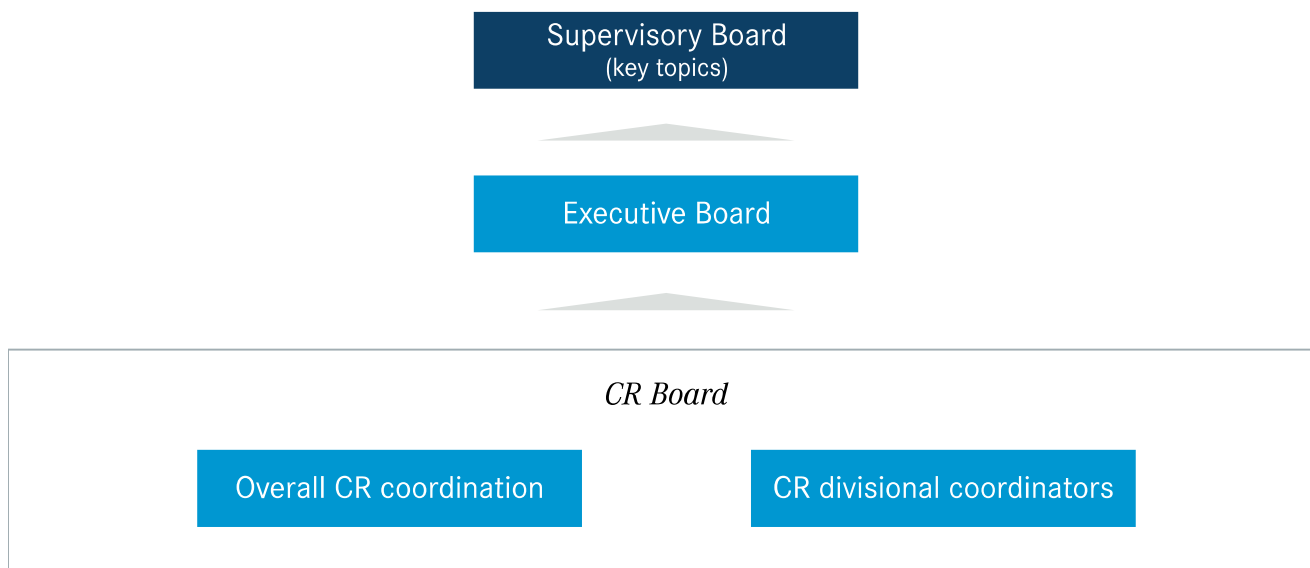
We take direction from the following global standards and guidelines on sustainability topics:

- UN 2030 Agenda and Sustainable Development Goals (SDGs)
- UN Universal Declaration of Human Rights
- Principles of the UN Global Compact
- Core labor standards of the International Labor Organization (ILO)
- German Corporate Governance Code

Sustainability management

We have integrated sustainability management into the organization across the entire MTU Group, and in 2018 we conducted an improvement project in which we reviewed its processes and responsibilities before updating our internal rules and regulations. In the spring, the Corporate Responsibility (CR) Steering Committee was replaced by the CR Board. This body is responsible for the operational implementation of CR management on behalf of the Executive Board. In a review planned for 2019, we will determine whether the changes have had the desired effect. Through the CR management system, we monitor our sustainability strategy, performance and goals. As the system's decision-making authority, the CR Board draws its members from the tier-1 senior management team. Key corporate functions of the company are represented on the Board, and we have also added operational [\[j1\]](#) functions to the previous makeup of the Steering Committee so that the CR Board may address sustainability topics within the company more effectively. The CR Board meets several times a year and is responsible for driving the topic of sustainability forward at MTU. In the financial year 2018, the CR Board met seven times. The CR Board is in charge of CR activities in the MTU Group and implements relevant actions and initiatives. It reports regularly to the Executive and Supervisory Boards. If needed, representatives from further operational functions are invited to the meetings. A central CR coordination team manages Group-wide sustainability activities, overall CR management, communication with stakeholders about sustainability topics, and reporting on CR issues. It also works with an interdisciplinary CR team to draw up decision papers for the CR Board.

CR management at MTU



We have a CR management system in place to steer our sustainability strategy. The CR Board makes the decisions, a central CR coordination team manages Group-wide sustainability activities and overall CR management, and the CR divisional coordinators work to develop and implement goals and measures in their disciplines.

An important role in the operational implementation of the strategy is played by the CR divisional coordinators: they work with experts in their disciplines to develop goals and measures, implement them, and take responsibility for monitoring their progress. In collaboration with the managers and experts in their business areas, the divisional coordinators are heavily involved in shaping the strategic focus of their respective CR goals and developing these goals over time. CR management officers at the sites support the CR divisional coordinators and the overall CR coordination team. By implementing this organizational structure, we ensure that sustainability is embedded throughout the entire company in all relevant topics (→ [Materiality analysis](#)).

Risk management

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 Officer coordinates.

Building on these processes, in 2018 MTU launched a quarterly risk survey based on Germany's requirements for implementation of CSR guidelines (CSR-RUG). The survey focuses on sustainability topics that have a very high priority for MTU and its stakeholders. CR divisional coordinators conduct the survey according to standardized criteria and use a scale similar to the one for risk management. The CR coordination team reports the results to the CR Board every quarter. If necessary, the Board passes the report on to the risk management team and, if appropriate, to the Executive Board. The risk assessment for financial year 2018 identified no significant risks as defined by CSR-RUG in relation to the top issues of our CR strategy. Material risks are those that are very likely and have a severe negative impact.

More information about:

[The UN's 2030 Agenda for Sustainable Development](#)

[UN Global Compact](#)

[Sustainable Development Goals](#)

[Core labor standards of the ILO](#)

[German Corporate Governance Code](#)



103-2, 103-3



7

Sustainable governance

Sustainable Development Goals

At a United Nations summit held in September 2015, the international community of states adopted the 2030 Agenda for Sustainable Development, thus making it clear that the current global challenges can be effectively addressed in a joint effort only. The agenda aims to make sure that economic progress goes hand in hand with social justice and ecological responsibility. At the core of the agenda are 17 goals for sustainable development, or SDGs for short. These goals embrace the three dimensions of sustainability—society, environment and economy—in equal measure. Industry is also called upon to do its bit and make contributions towards achieving the 2030 Agenda goals. MTU fully accepts this responsibility.



MTU's contribution towards achieving the Sustainable Development Goals

SDG 4: Quality education



MTU is committed to high-quality education and training, both at its various locations and within the framework of partnerships in the area of education. The company supports centers of competence in the aviation sector jointly set up with universities and research institutes, because our industry is in particular need of highly qualified and well-trained employees. We offer employees at our company locations a wide range of training and continued training programs, irrespective of gender, ethnic origin or other personal characteristics, to ensure a high level of education in the regions.

Furthermore, we provide vocational training for apprentices beyond our own manpower needs, thus laying an important foundation for their future professional success.

- [Employee development](#)
- [Corporate social responsibility](#)

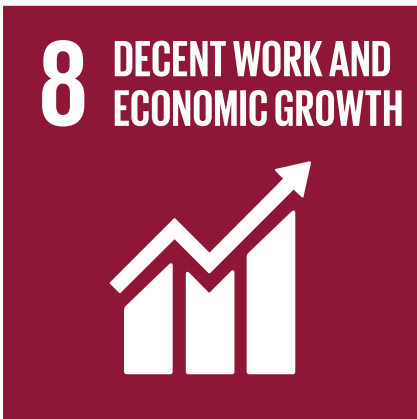
SDG 5: Gender equality



MTU advocates equal opportunity. Diversity is part of our human resources strategy. An important focus here is on the promotion of women, which is also anchored in the company's corporate objectives. What we consider particularly important is to promote female talent to get more women into management positions. In addition, we offer a variety of internship and job entry opportunities for women to encourage them to pursue technical professions.

- [Human rights](#)
- [Diversity & equal opportunity](#)
- [Corporate social responsibility](#)

SDG 8: Decent work and economic growth



Decent working conditions are a top priority at MTU. We do not tolerate forced or child labor and maintain high occupational health and safety standards in compliance with the applicable national regulations, which we consider to constitute the minimum requirements. At all of our locations, we offer our employees additional services under our company health management scheme. The principles of our social responsibility have been laid down in our Code of Conduct. In addition, a Supplier Code of Conduct has been developed that governs cooperation with our supplier base.

- [MTU as an employer](#)
- [Human rights](#)
- [Occupational safety](#)
- [Supplier management](#)

SDG 9: Industry, innovation and infrastructure



MTU makes major contributions to industry, innovation and infrastructure beyond national boundaries. Aviation is a mode of transportation that connects continents and nations. Through the continuous development of ever better technologies we help conserve resources and substantially improve the eco-efficiency of aircraft engines. We operate a global network of facilities, in particular with our joint venture partners, to be close to and optimally serve our customers worldwide. Thus, we improve the infrastructure in the respective countries and support sustainable industrialization.

- [Eco-efficient engines](#)
- [Environmental management](#)
- [Conservation of resources](#)

SDG 12: Responsible consumption and production



MTU stands for sustainable production and aims to maximize the eco-efficiency of its products. In the manufacture of our products, sustainability is our basic principle. In our maintenance shops, we rather repair parts than replace them with new ones. This saves on materials and conserves resources. With our environmental management system, we pursue an integrative approach, assessing the effects of our production processes and products already in our corporate decision-making. In product development, eco-efficiency is our primary aim.

- [Eco-efficient engines](#)
- [Environmental management](#)
- [Conservation of resources](#)

SDG 13: Climate action



MTU's product development efforts are aimed at reducing fuel burn and hence also CO₂ emissions. Our most significant contribution towards climate protection are sustainable engine technologies. For example, we are already working on hybrid propulsion system concepts and promote the use of alternative fuels in aviation. Protection of the climate is a top priority at all of our locations: we have put efficient heat recovery systems in place, use renewable energy sources and are looking into more sustainable in-house transportation options. In addition, we support regional climate protection initiatives.

- [Eco-efficient engines](#)
- [Environmental management](#)
- [Emissions](#)

SDG 16: Peace, justice and strong institutions



Through a well-founded compliance system in conjunction with a zero-tolerance approach, MTU actively fights corruption and bribery. Compliance with statutory provisions and internal regulations is an essential part of our corporate responsibility. In particular, we foster responsible international trade. With our Code of Conduct for Suppliers we make sure that our suppliers also abide by our high business ethics standards.

- [Compliance](#)
- [Supplier management](#)

SDG 17: Partnerships for the goals



MTU is convinced that the challenges the international community of states is currently facing can be addressed in partnerships only. This is why we rely on close cooperation with our joint venture and business partners. When it comes to the development of talent, we also collaborate with providers of education and research establishments. At our locations, we have entered into education partnerships to further develop the expertise and skills of our regional workforce. Participation in various research cooperations and technology networks are of tremendous importance for us to achieve our ambitious targets for eco-efficient air transport.

- [Eco-efficient engines](#)
- [Corporate social responsibility](#)

More information about: [Sustainable Development Goals](#)

SDG graph "17 goals to transform our world"
Source: UN communications materials

Sustainable governance

Materiality analysis

When it comes to sustainability, we concentrate on key issues that are of high importance for MTU and its stakeholders. We systematically analyze these issues, taking a holistic perspective along the entire value creation process including the supply chain and the use of our products.



Product stewardship is at the heart of our sustainability strategy. The key topics for us are product quality and flight safety, fuel efficiency, CO₂ and noise emissions, and innovation. Our comprehensive approach to sustainability also addresses additional economic, environmental and social topics.

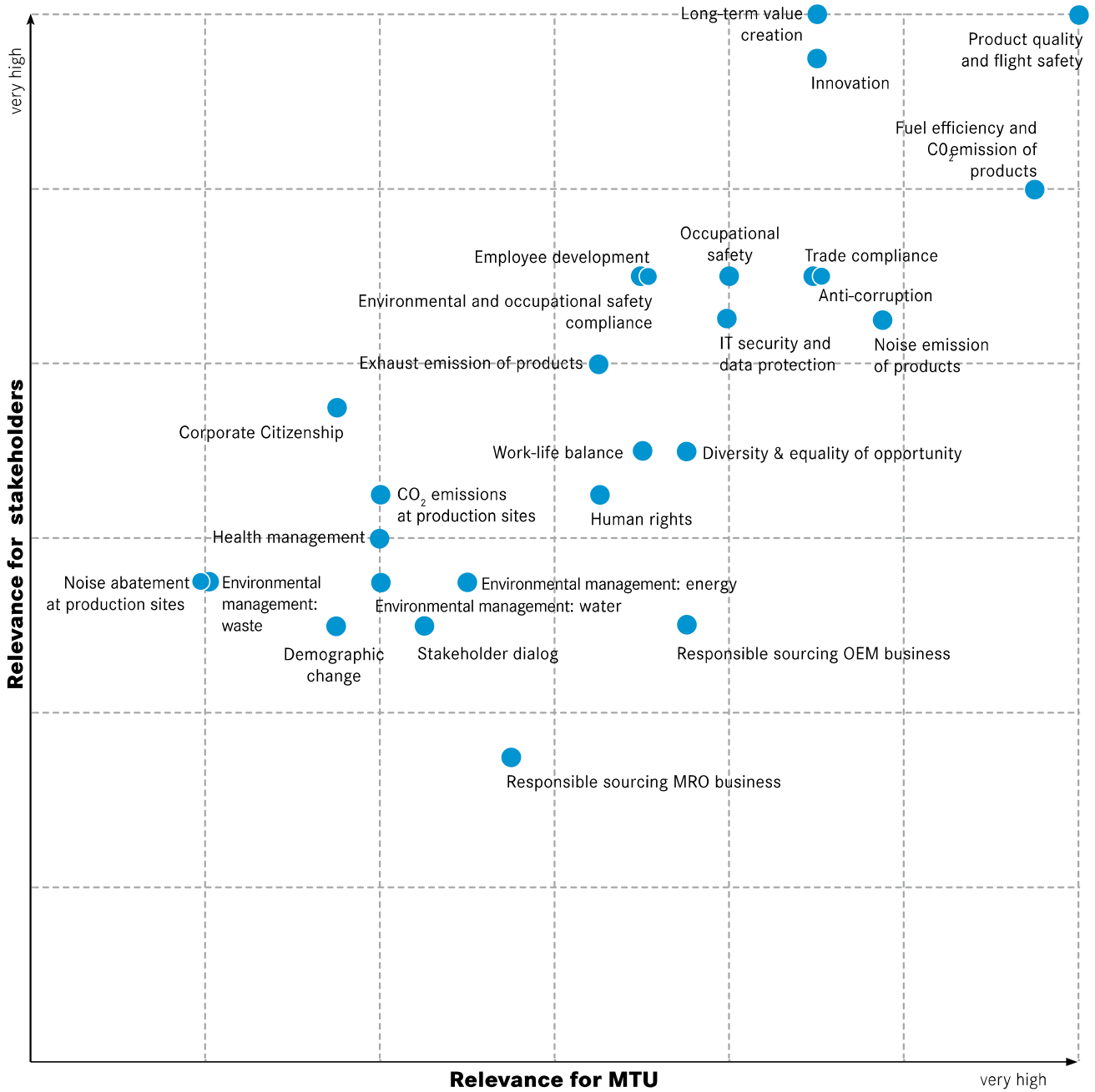
We determine whether or not key sustainability topics are relevant to MTU's business success, whether they have an impact on society and the environment, and whether that makes them of particular interest to our stakeholders. An annual materiality analysis with set criteria helps us identify these topics. The criteria measure a topic's business relevance as well as its impact on third parties, and is weighted appropriately in the assessment. 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 weight the relevant aspects in a materiality matrix, which organizes 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 business and our target groups.

Direct contact with key stakeholder groups informs us about their expectations and demands (e.g. at recruiting and customer fairs, employee and customer questionnaires, Annual General Meeting). We also have a → [Stakeholder survey](#) on the MTU website that addresses all corporate responsibility (CR) topics. In 2018, we held our first ever interviews with representatives of select stakeholder groups to talk to them about our sustainability strategy. Their comments and feedback are also represented on the Y-axis. Key stakeholder groups are detailed in the section on → [Stakeholder dialog](#).

Each CR coordinator conducts the materiality analysis for their department in collaboration with the central CR coordination team. Determining the topics and their positioning in the materiality matrix is discussed by the CR team and, as the ultimate decision-making body for sustainability, the CR Board evaluates and decides on their proposal.

For financial year 2018, we identified a total of 26 topics with a material economic, environmental or social impact. Changes from the previous year had to do with product emissions, waste and CO₂ emissions in production, and demographic change, all of which now hold somewhat more relevance for stakeholders than they did previously. In contrast, we have scaled back the relevance accorded to corporate citizenship and trade compliance to better reflect the weighting within one topic cluster and in cross-comparison relative to the entire set of topics. We have not incorporated any topics that are new this year.

Materiality matrix: Important sustainability topics for MTU



Evaluation of topics for the financial year 2018 adopts the materiality concept in accordance with the legal implementation of CSR guidelines in Germany (CSR-RUG).



102-46, 102-47, 103-3

Sustainable governance

Stakeholder dialog

We stay in touch with the company's key stakeholder groups. This dialog allows us to keep them abreast of our concepts and progress and to increase their confidence and trust in us. It also helps us address changes and challenges in due course and thus to refine our sustainability strategy.



We are in regular contact with our stakeholder groups on sustainability topics, which enables us to deal with stakeholder concerns.

We strive to conduct a proactive and mutually supportive dialog with stakeholders in which we communicate about sustainability topics openly and transparently. We pursue this dialog regularly, with the actual frequency determined by the need for communication and/or information. Our aim is to achieve wide acceptance for our business activities 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 partners, suppliers and shareholders. We are also in dialog with scientists, researchers, analysts, journalists, politicians, associations, NGOs, employee representatives, neighbors and communities.

Communication with our stakeholders takes place over various channels and platforms so we can incorporate their interests and feedback. This dialog is mostly tailored to the target group or a specific topic. We use an [online survey](#) to invite all stakeholders to discuss our sustainability strategy. In addition, we conducted telephone interviews with representatives of key stakeholder groups in 2018 to gain more detailed feedback. Our objective was to validate our sustainability strategy and its key topics as well as to possibly uncover new topics. With the revised online survey, we can review our strategy on a broader basis. As a result, our sustainability focuses were validated in 2018, and we adjusted the positioning of just a few individual topics in the materiality analysis → [Key topics](#). With the importance of sustainability increasing all around the globe, we are also working more and more closely with business partners and customers on CR.

Stakeholder dialog

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

Political dialog

MTU takes no party political position as a matter of principle. 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 Forces. To ensure transparency and adherence to external and internal regulations, MTU manages its political dialog centrally through the Group Representation Office of the Corporate Communications 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 export of goods. MTU pursues its industry-specific interests through memberships in various professional associations. → [Overview of our memberships](#)

MTU does not make any financial or in-kind donations to political parties. All interactions in the political arena are carried out in compliance with the applicable legal and regulatory requirements and with MTU's Code of Conduct, and must be granted central approval. 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 ensured by means of an internal monitoring system. → [More on donations & sponsorship](#)

More information about:

[MTU Code of Conduct](#)



102-40, 102-42, 102-43, 102-44, 103-2, 103-3, 415-1



10

Sustainable governance

Compliance

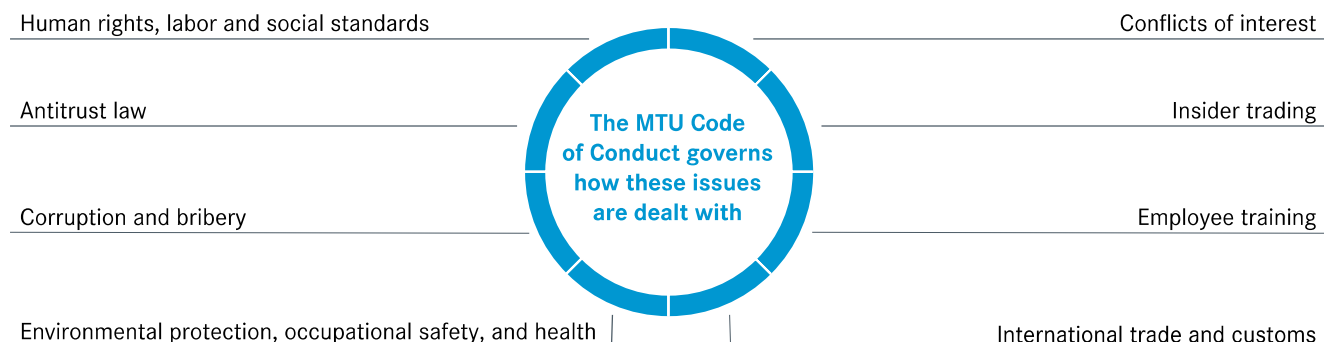
We act with integrity in our working and business relationships. The key basis for this is a Group-wide Code of Conduct that provides all of us with binding guidelines for our behavior in the company, toward our business partners, our customers, and in society. For us, compliance means adherence to these rules and other internal regulations as well as to the law. Our established compliance system still has room for improvement, and so we continuously work to refine it.



MTU's long-term commercial success is founded on responsible actions carried out in full compliance with all applicable laws. Our Code of Conduct and internal guidelines contain clear requirements for employees and serve as a point of orientation.

For the success of our company and for our collaboration with our stakeholders, compliance is essential. MTU conducts its business 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 the MTU Code of Conduct, which is binding for all employees, managers and members of the Executive Board. These Group-wide compliance rules include topics that are important to us, including key compliance issues such as corruption or antitrust law.

Key topics of the Code of Conduct



→ [More about the MTU Code of Conduct](#)

In addition, each employee must be familiar with and observe the legal requirements relating to their role, 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. We also expect our business partners to fully comply with all applicable laws. A separate Code of Conduct applies for suppliers. → [Code of Code of Conduct for Suppliers](#)

The MTU Principles (“We shape the future of aviation”) are an integral part of our corporate culture; they help MTU act in a consistent and reliable manner. As a signatory to the UN Global Compact (UNGC), we are committed to preventing corruption within our company. In the interests of maintaining sustainable corporate leadership, we take our lead from the German Corporate Governance Code and international compliance standards, such as the Good Practice Guidance on Internal Controls, Ethics, and Compliance issued by the Organization for Economic Cooperation and Development (OECD). Our commitment to fighting corruption extends beyond the company as well; besides our status as a UNGC signatory, we are also a member of the AeroSpace and Defence Industries Association of Europe and the TRACE International anti-corruption initiative.



Michael Schreyögg
 Chief Program Officer
 MTU Aero Engines AG

“MTU is a value-based company and has established a comprehensive compliance organization. This can be effective only if we observe the rules in our day-to-day interactions with customers and partners. We stand for top-quality products and these form the basis for sustainable business relationships. Only this way will be able to ensure our lasting success.”

Anti-corruption

One focus of our compliance activities is the prevention of corruption. MTU condemns corruption of any kind as well as all other forms of white-collar crime. Our long-term success is founded on compliance with legal requirements and our own internal guidelines. In addition to the Group-wide Code of Conduct, MTU guidelines clearly lay out the appropriate way to handle hospitality and gifts. Further internal regulations concerning the prevention of corruption address customer events, donations, sponsoring and the approval process for sales consultants.

Our contribution to the SDGs

“Peace, justice, and strong institutions” is one of the UN’s 17 Sustainable Development Goals (SDGs) for its 2030 Agenda. It calls for a significant decrease in all forms of corruption and bribery. The SDGs are also aimed at companies; with a comprehensive compliance system, we are actively taking steps to combat corruption and bribery, minimize the risk thereof and support fair competition. In this way, we are able to contribute to sustainable development that benefits society as a whole.

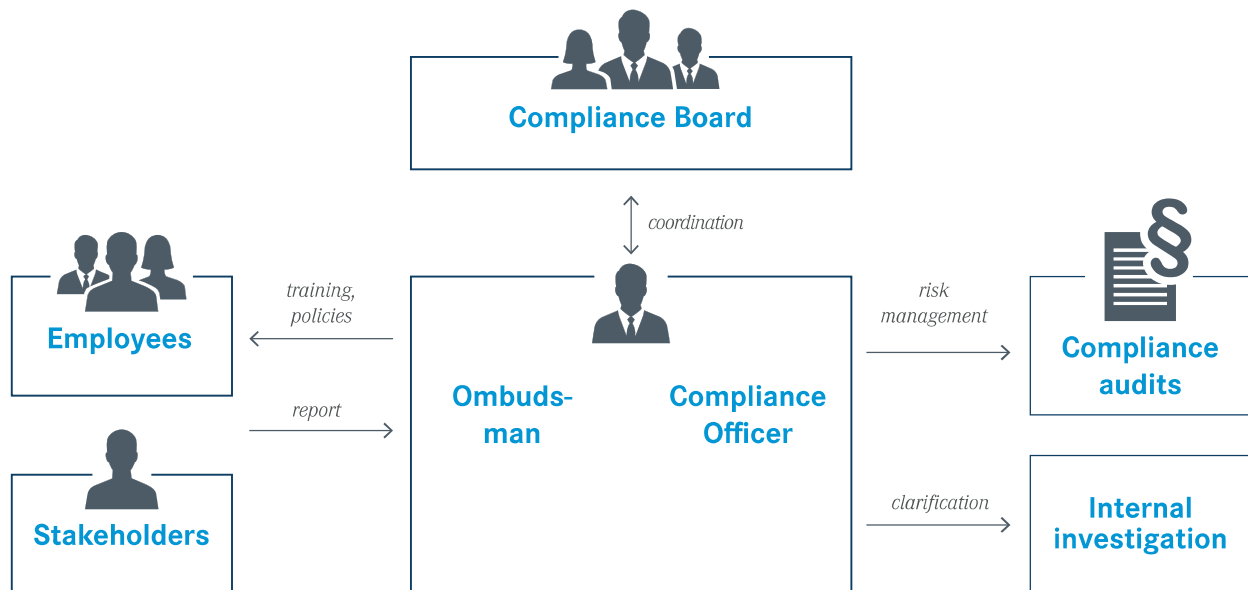


→ [Learn more about our contribution to the Sustainable Development Goals \(SDGs\)](#)

Embedding compliance in the organization

MTU has a compliance system for the entire company; it reorganized this system in 2018. As the final decision-making authority, the CEO is responsible for the company's business ethics and anti-corruption policy. The core functions responsible for ensuring ethical and correct conduct are the existing Compliance Board and a Compliance Officer, named in fall of 2018. New members have been appointed to the board, and together with the Compliance Officer, they will better address potential compliance risks. Both the Compliance Board, which is drawn from the top level of management level, and the Compliance Officer hold Group-wide responsibility. The Compliance Officer's duties include conducting preventive measures, investigating incidents of white-collar crime, and collaborating closely with the Compliance Board in further developing the compliance system. The Compliance Board holds regular and ad hoc meetings, the latter at the request of the Compliance Officer. The Compliance Officer provides quarterly updates to the Executive Board and the Supervisory Board's Audit Committee, which for its part informs the plenary meetings of the Supervisory Board. The Supervisory Board's Audit Committee oversees the Executive Board's compliance activities.

MTU's compliance organization



We have reorganized our compliance system and introduced the Compliance Officer function, which will replace the ombudsman as the point of contact for complaints and information from 2019.

Responsible international trade

Another key compliance topic is observance of international trade law, also known as trade compliance. MTU created a separate organizational unit to address it and instituted requirements for thorough audits. The regulations apply to all the company's divisions, affiliates and employees worldwide. Customs and export control laws govern which products, services and technical data MTU is permitted to sell, share or provide and to where, to whom and for what purpose. Compliance with the applicable international trade regulations is a binding requirement of the MTU Code of Conduct. To this end, the company has created a central international trade department and harmonized process standards throughout the company. These processes include the review of all documents, software and parts prior to shipping to make sure they are in line with export control regulations or existing authorization requirements. The international trade department has been granted cross-divisional authority to issue certain directions, which extends to the right to stop deliveries. The department head reports directly to the Chief Operating Officer in their capacity as the person in charge of MTU exports.

Data protection and IT security

In the current climate, for example due to the new European General Data Protection Regulation (GDPR), data protection is becoming increasingly important. In our business activities, we take care to provide comprehensive data protection and have established an appropriate management system. We expect all employees to comply with data protection regulations, a claim that is underpinned by our Code of Conduct. MTU has appointed data protection officers or coordinators in all of its Group companies, who are instructed in all relevant regulations. The aim is to achieve uniform data protection and data security standards for the handling of personal data throughout the Group that meet the requirements both of the GDPR and of the national legislation applicable at each location. Reports on data protection are submitted to the Executive Board every month.

MTU has an IT security management system in place and implements appropriate protective measures on a technical and organizational level to ensure its IT systems are stable and secure.

Objectives of the compliance management system

We want to prevent compliance violations and ensure that business decisions are made with integrity. MTU does not tolerate any kind of conduct that violates laws or regulations. Any detected violations will be subject to disciplinary action. In such cases, MTU applies a principle of zero tolerance. In the reporting year, we did not identify or confirm any suspected instances of corruption. And as in previous years, no violations of the Code of Conduct were reported by employees or external stakeholders. No significant fines were levied against the company for breaches of applicable laws, and MTU faced no legal action due to anti-competitive, antitrust or monopoly practices. In addition, no reportable incidents of data protection breaches occurred within the MTU Group in 2018.

Global reporting system

We have set up a global whistleblower system that allows employees and external stakeholders to confidentially report instances of unlawful conduct to an [ombudsman](#). If the report is found to be credible, the ombudsman initiates the investigative steps necessary. The ways we have established for 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 they impart are treated as strictly confidential—even if the suspicion turns out to be unfounded. We wish to make it clear 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. MTU did not receive any relevant reports in 2018.



400
employees

In the reporting year, we trained more than 400 employees on compliance matters using e-learning tools alone. Employees in Germany and Poland additionally received face-to-face training.

Training employees on compliance

To ensure a functional compliance culture, 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 at the introductory event for new employees at all our locations. Furthermore, we hold regular training sessions on the Code of Conduct for selected business units as part of our compliance activities. Raising awareness of compliance issues is done first and foremost by organizing mandatory anti-corruption and compliance training courses for managers at all hierarchical levels and for employees who hold certain positions, such as in sales. In the reporting year, we trained more than 400 employees using e-learning tools alone. Employees at our Hannover, Ludwigsfelde and Rzeszów sites additionally received face-to-face training. The training sessions focused primarily on anti-corruption, international trade and the Code of Conduct. In addition, we continuously inform employees about and raise their awareness of compliance issues, such as data protection, in a way suitable for each target group.

Maintaining compliance

We have put various control mechanisms in place to ensure compliance throughout the company and to minimize risk. The Compliance Officer inspects sales support consulting contracts for possible corruption risks before they are placed or renewed. Potential consultants are also subject to an assessment 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.

Outlook

We aim to continuously improve our compliance system and had it reviewed by external independent experts. We are successively implementing the recommended actions that resulted from this review and aligned the compliance system with them in the reporting year. As of 2019, the Compliance Officer will replace the ombudsman as the point of contact for complaints and information and has taken over continued development of the whistleblower system. Also in 2019, we will introduce a web-based reporting system and a standardized reporting system for all Group locations. We will continue to expand and standardize processes and procedures in the area of international trade law as well.

More information about:

[MTU in the UN Global Compact](#)

[AeroSpace and Defence Industries Association of Europe](#)

[TRACE](#)



102-12, 102-16, 103-2, 103-3, 205-1, 205-2, 205-3, 206-1, 412-2, 418-1, 419-1



1, 10

Sustainable governance

Human rights

We respect human rights and are committed to seeing that they are upheld within the Group and upstream along the value chain. Beyond this commitment, we aim to prevent the violation of human rights among our workforce and in the supply chain.



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 is guaranteed by the Code of Conduct for all employees.

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 its sphere of influence. We view the respecting of human rights as a Group-wide issue that involves many different areas, including social labor standards/law for employees and sustainable supplier management.

Society's expectations of companies regarding human rights are rising, as shown by legal regulation (e.g. the UK Modern Slavery Act) and political initiatives such as Germany's National Action Plan (NAP) for Business and Human Rights. We are conscious of our responsibility as a company with global operations, and aim to carry out our due diligence with regard to human rights as best we can. MTU pursues the goal of preventing human rights violations from occurring in its own business activities (zero-tolerance principle).

Our contribution to the SDGs

As a signatory to the UN Global Compact, we support this important international initiative that aims to uphold human rights. Human rights principles also feature in the Sustainable Development Goals (SDGs) of the UN's 2030 Agenda. We want to further these global development goals as a company by respecting and promoting human rights and preventing adverse effects. We support SDG 5 ("Gender equality") and SDG 8 ("Decent work and economic growth"), and see our role in achieving these SDGs primarily in enacting a responsible employment policy for our workforce.



→ [Learn more about our contribution to the Sustainable Development Goals \(SDGs\)](#)

Code of Conduct for Employees and Suppliers

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, as well as recognition of regulations governing employee and union representation under labor and works constitution law, 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. In addition, MTU is bound by legal obligations that may differ from location to location; in Germany, for example, MTU must honor the General Act on Equal Treatment (AGG), which prohibits discrimination against employees and job applicants. For employees in Germany, we have also introduced internal guidelines on fair and cooperative conduct that are designed to prevent bullying, sexual harassment and discrimination. → [More about MTU as an employer](#)

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. → [More about MTU's Code of Conduct and associated training](#)

The Code of Conduct for Suppliers applies to upstream value creation activities. MTU suppliers are obligated to uphold the Code of Conduct, which is informed by the ten principles of the UN Global Compact and the core labor standards of the International Labour Organisation (ILO). The Code requires suppliers to observe and uphold human rights and to ensure that they are not complicit in any human rights violations. In addition, it calls for compliance with labor standards regarding the freedom of association, the right to collective bargaining, the prohibition of forced and child labor, the equality of remuneration regardless of gender, and equal treatment of employees. And finally, MTU requires its suppliers to apply the Code to their subcontractors and reserves the right to terminate any contract with a supplier using child labor to manufacture products supplied to MTU, without prior notice. → [More about MTU's Code of Conduct for Suppliers](#)

Grievance mechanisms

Established reporting procedures are intended to ensure that MTU follows up on all complaints or reports of human rights infringements. Reports may be made by employees or external stakeholders to the Compliance Officer (or ombudsman) as a confidential contact point in the Group. Additional points of contact for employees have been set up at each location, about which we provide information on site. Employees can also report grievances to managers, the works council or the head of human resources. The Executive Board is informed about infringements committed by MTU depending on the severity of their impact.

Across the entire Group, one substantiated complaint was submitted in 2018, and that was at MTU Maintenance Canada in Vancouver regarding the anti-discrimination law (BC Human Rights Code) in effect there. 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. Similarly, no infraction of the Code of Conduct or violation of human rights was determined to have taken place among our suppliers.

Risk analysis

MTU considers the risk of human rights violations among its employees to be low at all its locations, as it is bound by the relevant national legislation that protects human rights and can play a direct role in upholding them. As for the supply chain, we conduct a risk analysis for suppliers of sites in Germany, Poland and Canada, looking at the individual countries as well as sourced products and services (for A and B suppliers). In this way we cover about 95% of our total procurement volume. The country risk analysis 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. The OEM and MRO segments are assessed separately, since each handles procurement through its own organizational units. This assessment found no MTU suppliers in countries that represent a risk according to these criteria. MRO also conducts a supplier evaluation twice a year for suppliers of the German sites. In the future, the evaluation will cover sustainability aspects as well.

Conflict minerals

In procurement, we take various steps to safeguard the respect of human rights in the supply chain. This applies especially to the procurement of certain raw materials known as conflict minerals: for example, 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 (list of compliant smelters).

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.

Outlook

We keep an eye on developments in human rights law in the supply chain, such as the EU's new regulation on conflict minerals for 2021 and NAP in Germany, so as to properly comply with relevant requirements in a timely fashion. → [More about sustainable supplier management](#)

More information about:

[Conformant smelters and refiners list](#)

[Global Slavery Index](#)

[National Action Plan for Business and Human Rights](#)



103-2, 103-3, 406-1, 407-1, 408-1, 409-1, 412-1, 412-3, 414-1, 414-2



1-6



Product stewardship & supply chain

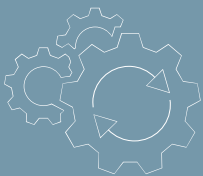
Sustainable value creation

The name MTU stands for quality and reliability. Ensuring safe flight operations is the top priority in aviation. We incorporate sustainability into our product stewardship and we attach great importance to the energy efficiency and environmental performance of our products. To this end, we have developed a roadmap leading up to the year 2050 with which we are pursuing ambitious targets in fuel consumption, CO₂ and noise emissions. We also keep a close eye on sustainability in our supply chain and ensure that our production network complies with social and environmental standards.



Lars Wagner
Chief Operating Officer
MTU Aero Engines AG

“We pursue product responsibility over the entire lifecycle of an engine. Right from the development phase, our priority is the safety, quality and eco-efficiency of our products—based on high standards and long-term objectives. We are always looking for innovative and sustainable solutions, and we expect our suppliers to uphold the same standards as we do.”



- Product quality and flight safety
- Eco-efficient engines
- Sustainable supplier management

Product stewardship & supply chain

Product quality and flight safety

Safety first: for us, safe flight operation is more than just a legal requirement. In aviation, it is fundamentally the highest priority. In our processes, we place high demands on quality and safety along the entire value chain. Not least because reliable and high-quality products are our trademark.



Every step must be perfectly executed: safety is the top priority in aviation. Our Group-wide integrated management system ensures uniformly high quality standards throughout the company.

Safety is imperative in aviation, and legal requirements concerning safety are subject to strict monitoring by the relevant authorities. This is why product quality and flight safety are just as important to MTU as well. The company must comply with the legal requirements imposed upon it as a development, manufacturing and maintenance organization in the aviation industry. These include 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. In addition, secure mobility solutions are an important global challenge for the future.

A Group-wide integrated management system (IMS) ensures compliance with laws and internal regulations and clearly assigns 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. The company’s dedicated quality department, Corporate Quality, is 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 important corporate objectives. Independent and accredited external auditors regularly validate and certify our IMS.

Flying is this safe

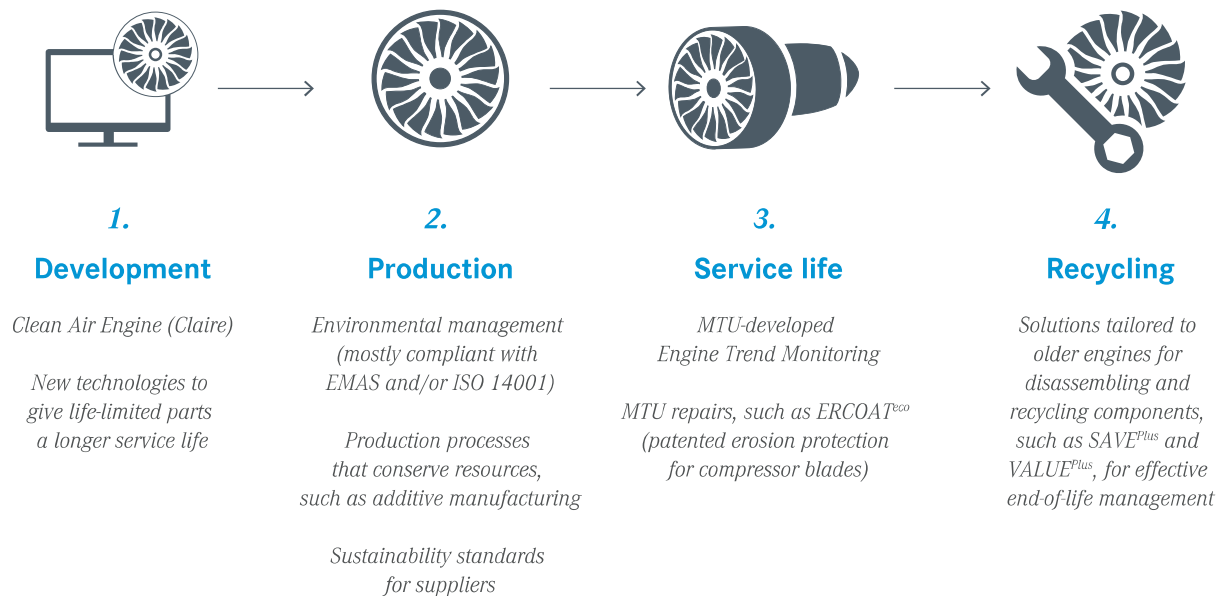
1.35 accidents per 1,000,000 flights

was the accident rate for global air traffic in 2018, according to the International Air Transport Association (IATA)

Sustainable product lifecycle

We take into account all safety and environmental requirements of regulatory authorities in the early stages of planning new engines for later use, and compliance must be documented as part of the certification process. We employ a comprehensive testing program involving test rigs and test series to validate the safe flight operation of our products. This includes being able to ensure safe operation during a hailstorm or a bird strike (following a bird ingestion event) and complying with strict limits on pollutants and noise emissions. MTU components frequently exceed aviation authority requirements, because our customers demand high standards when it comes to fail-safe operation and eco-efficiency. In addition, our manufacturing and maintenance of engine parts and modules meets all required occupational safety and environmental protection standards.

Sustainability over the entire lifecycle of an engine



Engine materials such as titanium, nickel and alloying elements such as platinum or rhenium are of high value, and this explains why 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 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. The key to our continuous progress is development. Our mission is to design every new engine we collaborate on so that it is greener, quieter and more fuel-efficient than its predecessor.

We use only fault-free and clearly identifiable components that have been approved by the appropriate aviation authority and are based on approved development documentation. They must also 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 and audits them to ensure compliance. To ensure compliance with quality and safety requirements, we have implemented comprehensive monitoring and testing processes along the entire value chain. Safety-critical components (engine components are categorized into various safety classes) are subjected to particularly rigorous testing to verify their technical quality. Strict requirements also apply to materials. Since fail-safe materials are a basic prerequisite for aviation safety, all engine components, including all materials we use, must be approved by the aviation authorities.



534
quality audits

In 2018, we successfully completed a total of 534 internal and external quality audits at eight sites.

In 2018, 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.

We employ regular internal and external audits of quality issues to ensure that the uniformly high standards within the company are adhered to and that they comply with the regulatory requirements. In the reporting period, we conducted 409 internal audits including certification audits and underwent 125 external audits by customers or aviation authorities, all of which we passed.

Strengthening knowledge of quality

MTU's quality system together with the relevant standards and regulations are undergoing continuous development. This involves applying the ideas that emerge, for example, from collaboration in the Aero Engine Supplier Quality Group or from regular discussions among our quality managers. In the reporting year, the focus was on strengthening the Group-wide exchange of lessons learned and best practice approaches. To this end, our quality managers have established an additional exchange of expertise that takes place regularly across the MTU Group.

We include all our employees in our high quality standards and provide basic information with our Group-wide Q.net quality network. In addition, several times a year we raise employees' awareness of quality issues across the Group by providing them with relevant information (Q Info). We provide training on quality issues for managers and employees at the individual sites.

Shopfloor/office management at all production sites also supports continuous improvement: employees and managers exchange views on quality and other issues several times a week and initiate short-term measures if problems arise. In 2018, we also launched a Group-wide quality initiative for the commercial MRO segment comprising four subprojects in which cross-site teams deal with different quality topics.

Focus on customer satisfaction

A high level of product quality and safety is crucial for customer satisfaction. “High customer satisfaction” was a core objective for MTU in 2018, and one of the secondary objectives on our roadmap was “on-time delivery and quality at a high level.” IMS, our certified quality management system, serves to ensure customer satisfaction, process orientation and continuous improvement in all phases of development, production and maintenance.

In 2018 as in 2017, the goal was also to lower or at least keep the number of customer complaints stable at all locations. Customer complaints are evaluated at the individual MTU sites, and for the majority of sites, these declined compared with the previous year. At the remaining, sites the level of complaints was either constant or elevated.

We follow up and analyze all customer complaints relating to MTU products delivered in substandard quality. Appropriate measures are then defined and implemented so as to permanently eliminate the cause of the defects. In addition, in 2017 and 2018 a cross-divisional improvement project team at the Munich site systematically analyzed complaints from key customers over a selected period for the causes of errors. They initiated measures for individual areas, the effectiveness of which we will review in 2019.

Dialog with our customers

MTU Maintenance offers maintenance 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. We use an IT-based “voice of the customer” module to regularly measure current customer satisfaction levels. The survey takes place once a quarter for our Hannover, Ludwigfelde and Vancouver sites and for all main products. Each customer has the option of providing feedback about product quality, service, logistics and contractual 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 increase customer satisfaction as a means of staying competitive. In addition, MTU Maintenance Lease Services runs its own system for measuring satisfaction in the engine leasing and asset management business.

More information about:

[IMS policy](#)

[Certifications](#)

[Clean Air Engine agenda: Eco-efficient engines](#)

[Environmental protection in production](#)

[MTU Maintenance technologies](#)



102-43, 103-2, 103-3, 416-1, 416-2, 417-1, 417-2

Product stewardship & supply chain

Eco-efficient engines

Airlines transported 4.3 billion passengers worldwide to their destinations in 2018—a new record year for aviation. This success calls on us to take responsibility. Sustained growth requires sustainable innovations, to which we want to make a decisive contribution. As an engine manufacturer, we are working hard to considerably reduce the fuel consumption, carbon footprint and noise of aircraft engines.



Particularly economical and quiet—the A320neo powered by the PW1100G-JM geared turbofan. Compared to the previous generation, this engine consumes 16% less fuel and emits 16% less CO₂. Noise propagation in the airport area is 75% lower during takeoff.

MTU is working on solutions to make flying more environmentally friendly, with a focus on reducing fuel consumption, CO₂ emissions and noise emissions of engines. These are factors it can directly influence with its high-pressure compressors and low-pressure turbines. Sustainable product development with reduced fuel consumption and lower noise emissions is contained in the MTU Principles. We have also formulated guidelines on product development according to environmental criteria in our MTU Code of Conduct. Fuel consumption is directly proportional to CO₂ emissions, and both contribute to climate change caused by aviation. Improving fuel efficiency is very important to us, as it reduces both resource consumption and the impact on the climate.

MTU also pursues the European industry and research sector's Strategic Research and Innovation Agenda (SRIA) and is committed to its climate and noise targets. In doing so, we support the ambitious global goals of the International Civil Aviation Organization (ICAO) to ensure carbon-neutral aviation growth starting in 2020 and a 50% reduction in CO₂ emissions by 2050 in comparison with 2005 levels.

We are 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. In the technology and innovation process, our experts investigate environmental and societal driving forces for aviation and take them into account when defining MTU concepts and targets. We receive input for our analyses and stakeholder expectations through various channels as part of our stakeholder dialog, which we conduct on an ongoing basis with all stakeholders. → [More about stakeholder dialog](#)

Our contribution to the SDGs

Our sustainable product solutions for aviation are a way for us to contribute to the Sustainable Development Goals (SDGs) of the UN's 2030 Agenda. MTU supports SDG 9 on "Industry, innovation and infrastructure," SDG 12 on "Responsible consumption and production" and SDG 13 on "Climate action." Moreover, a secondary objective of SDG 9 calls for research and development to be expanded by 2030. We conduct intensive research work with numerous specialists in the company and in cooperation with universities and research institutions.



→ [Learn more about our contribution to the Sustainable Development Goals \(SDGs\)](#)

Research and development

MTU is a major technology leader in the aviation industry, and so innovation and research are key cornerstones of our strategy. 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 also members, approves MTU's technology roadmap and is regularly updated on progress and the course of the projects. MTU manages its product development in a multilevel 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), we create advanced product designs and derive technology requirements from them. And over the long term (up to 2050), our engineers use a technology radar to develop pilot concepts and initiate the development of enabling technologies. The basis of this technology process is MTU's culture of innovation, which we cultivate with targeted initiatives. One of these is our Innovation Engine, a Group-wide innovation management concept that we launched in the reporting year. As part of our Innovation Engine initiative, we regularly hold events such as the Ideation Challenge through which we gather and evaluate ideas from employees, which are related to a specific field of innovation.

In 2018, we invested EUR 201.2 million (2017: EUR 199.7 million) in research research and development. R&D as a proportion of revenues was 4.4%. A large portion of research and development spending goes toward improving the environmental sustainability of aircraft engines (lower fuel consumption, weight reduction, lower CO₂ emissions, noise reduction). MTU employs some 1,100 engineering specialists around the world who work on the solutions of tomorrow.



150
technology
projects

Strong research pipeline: We are currently working on about 150 technology projects from all departments. These also address the environmental compatibility of engines.

Our system of intellectual property management ensures that we protect our extensive technological expertise. On average, MTU employees file 400 patents and make about 200 invention disclosure reports each year. At the end of 2018, MTU's patent portfolio encompassed 3,595 property rights, primarily in key areas such as manufacturing, compressors and turbines.

To sustain MTU's technological expertise, it is important to be adequately plugged into the research landscape. We maintain a network of some 100 universities, research institutes, and companies around the world. MTU is involved in all major national and European research programs that push the development of ecologically efficient engine technologies for aviation. These programs bring together researchers from a wide range of manufacturers and universities. In addition, MTU cooperates directly with numerous universities and research institutions and maintains several centers of competence at selected German universities, which are devoted to specific research topics. Our research map



Peter Kameritsch
CFO and CIO
MTU Aero Engines AG

“We’re leading MTU into the digital future. We want to harness digitalization to expand our leading technological position for products, services and processes. By using simulations, for example, we can reduce the number of test bench runs and the work involved in complex test campaigns. This, in turn, enables us to deploy sustainable innovations even faster.”

Key areas of research: Examples

Virtual engine & digital twin: Digitalization at MTU

We launched the Group-wide MTU 4.0 initiative in order to utilize the potential of digitalization for all areas of our work. With our Digital Transformation Program, we take into account the entire product lifecycle, from development to production to maintenance. The use of simulation tools in materials design and product manufacturing is one of the program’s focuses, but the digital twin is also taking initial shape in models.

→ [Learn more about our Digital Transformation Program](#)

Additive manufacturing: Engine parts out of the 3D printer

In 2018, MTU stepped up its commitment to additive manufacturing and established a separate department to pool all related activities, from design to industrial-scale production. This should allow us to increase our lead in this highly promising manufacturing technology. Experts predict that by 2030, no less than 15% of an engine will consist of additively manufactured parts. Besides opening up new possibilities in engine design, the processes require less material, thus conserving resources. We are currently one of the world’s top patent holders for additive manufacturing processes.

→ [Where we are already using additive processes and what we have planned next](#)

Taking off with new technologies: NextGen geared turbofan

For just under five years, MTU joined 34 partners in intensive research as part of ENOVAL, an EU technology program. The result was newly developed technologies for turbofan engines that cut CO₂ emissions by up to 5% and noise emissions by up to 1.3 decibels. When these figures are extrapolated to a medium-haul airliner such as the Airbus A320, the result is 1,200 metric tons less CO₂ per year—the same amount generated by the annual energy consumption of 325 average households. The new technologies are scheduled to take to the skies as early as 2025.

→ [More information about the ENOVAL program](#)

MTU's climate strategy: Environmental targets for the next few decades

Climate change is one of the greatest global challenges of our time. It is generally accepted that CO₂ emissions caused by human activity are largely responsible for global warming. According to the International Energy Agency, global air traffic is responsible for some 2.7% of CO₂ emissions around the world (data from 2015). MTU has made environmental protection a key focus of its sustainability efforts and pursues specific goals, particularly for products, as the vast majority of CO₂ emissions over a product's entire lifecycle occur during its service life.

The UN Intergovernmental Panel on Climate Change (IPCC) reports that the climate impact of air traffic is due mainly to CO₂ emissions, ozone production as a consequence of NO_x (nitrogen oxide) emissions, and the formation of contrails and cirrus clouds. Of these, the greatest impact on the climate comes from CO₂ emissions. 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_x emissions. Since the combustor is not one of MTU's commercial aviation components, we can make only an indirect contribution to avoiding nitrogen oxides by improving efficiency. Contrails and cirrus clouds have an impact on the climate; depending on the weather conditions, they are generated at higher flight altitudes. They can be mitigated by flying on different paths or at lower altitude—part of the responsibility of air traffic management. In the long term, new engine concepts can further reduce the climate impact. MTU is currently researching a new engine concept that significantly reduces both nitrogen oxide emissions and the formation of contrails.

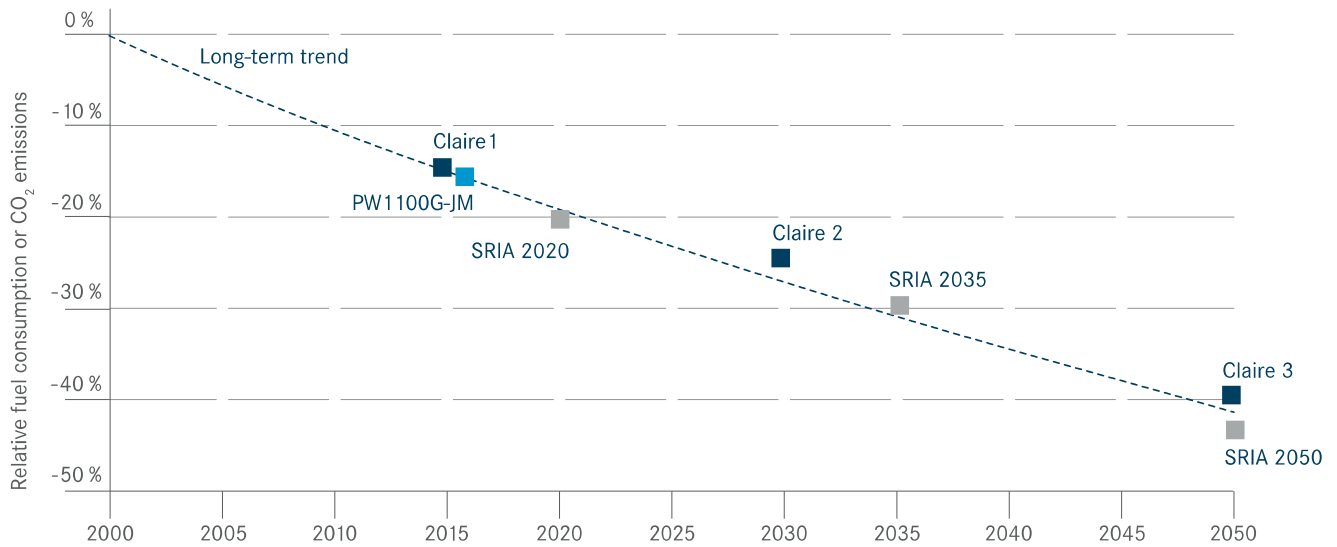
Rising passenger volumes, falling CO₂ emissions

As air traffic continues to see strong growth, eco-efficiency is a key topic for the future of the aviation industry. Ambitious climate targets such as the European SRIA agenda, the targets set by IATA (the trade association for the world's airlines), or the climate agreement on offsetting CO₂ emissions reached by the International Civil Aviation Organization (ICAO) are intended to reduce the climate impact of aviation in spite of rising passenger volumes. In 2018, there were 4.3 billion airline passengers; by 2036, IATA predicts this number will grow to 7.8 billion. Nevertheless, air traffic growth must be carbon neutral as of 2020.

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 CO₂ 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).

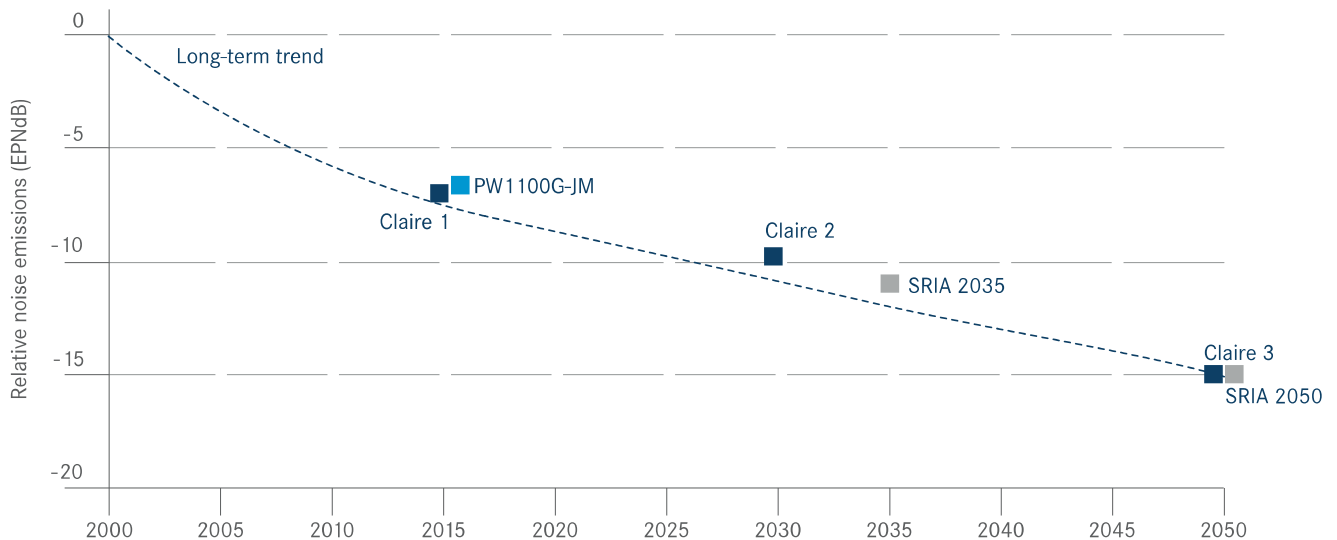
The Clean Air Engine Agenda, our in-house roadmap for the development of engine programs, sets our own eco-efficiency targets through to 2050. These targets are derived from the SRIA. Due to the long-term approach to improving the aviation industry's environmental performance, we set no annual targets for eco-efficient engines and collect no corresponding performance indicators.

SRIA and Claire agenda targets for reducing fuel consumption and CO₂ emissions



With the Claire agenda, we are pursuing a multi-stage plan for reducing fuel consumption and CO₂ emissions. With the new geared turbofan propulsion concept, which we are developing and manufacturing in cooperation with Pratt & Whitney and is intended for five aircraft types, we have achieved our first goals (Claire 1). All the targets presented relate to the engine's fuel consumption (kerosene) or CO₂ emissions per passenger kilometer; improvements are shown relative to an engine from the year 2000.

SRIA and Claire agenda targets for reducing noise emissions



In our Claire agenda, we have derived our own targets for aircraft noise from the SRIA roadmap for the European aviation industry and research sector. All the targets presented relate to an aircraft's noise emissions including engines; improvements are shown relative to an aircraft from the year 2000. The noise level is specified in effective perceived noise decibels (EPNdB) relative to the limits set by ICAO (Stage 4).

Next climate target 2030: Claire Stage 2

The next MTU goal is set for 2030 and intends to reduce the fuel consumption and CO₂ emissions of engines by 25%. Aircraft noise emissions (including engines) are to be reduced by 50%, or 10 decibels (base year in each case 2000, target values per passenger kilometer). The second stage of Claire will be implemented on the basis of the geared turbofan, which will be developed into an ultra-high bypass engine in the next generation. MTU is already working on the preliminary design of this engine. We are advancing the requisite technologies for this generation of engines 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 EU's Clean Sky program, until they are mature enough to be applied in product development. One important related research program (ENOVAL) was successfully completed in 2018.

→ [What we achieved with Claire 2 in 2018](#)

Propulsion concepts for 2050: Claire Stage 3

The year 2050 has already begun for us: our experts, together with universities, have started work on the third stage of the Clean Air Engine Agenda (Claire 3). Our goals are ambitious: we want to reduce fuel consumption and CO₂ emissions by 40% and noise by as much as 65%. This will involve the use of completely new engine architectures. MTU kicked off its first specific projects for this in 2018 and is pursuing two different concepts:

- heat engines with novel cyclic processes beyond conventional gas turbines
- hybrid-electric propulsion systems

→ [What we achieved with Claire 3 in 2018](#)

Upgrade for existing products

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 portfolio include the V2500 SelectOne (1% reduction in fuel consumption, CO₂ / approx. 20% increase in service life) and the V2500 SelectTwo (1.5% reduction in fuel consumption, CO₂ / approx. 20% increase in service life). The fuel efficiency of the GENx-2B was improved by 1.6% as part of a Performance Improvement Package. Saving fuel not only minimizes resource consumption and environmental impact, but also reduces airlines' operating costs, of which kerosene accounts for about 30%.

With the power of plants, wind and sun: Sustainable kerosene

Sustainable fuels are essential for achieving climate protection goals in aviation. MTU is committed to the introduction of sustainable kerosene. It is advocating for this through the Bauhaus Luftfahrt think tank and the Aviation Initiative for Renewable Energy in Germany (aireg), an association involving airlines, manufacturers and research institutes. The aim is for 10% of the kerosene used in Germany to come from alternative raw materials by 2025. This corresponds to an annual requirement of 1.1 million metric tons of fuel. The first manufacturing processes have been matured and several alternative fuels have been approved for flight operations. These drop-in fuels can be mixed with conventional kerosene, and they meet the high quality and safety requirements of aviation: in view of the range the aircraft must cover, fuels must have very high energy density, a high flashpoint and a low freezing point. Temperatures of minus 50 degrees Celsius prevail at cruising altitude.



The first biofuels made from hydrogenated vegetable oils have now been approved for flight operations—despite the stringent requirements in aviation. However, experts believe that there is greater potential for non-biogenic processes. The key process here is power-to-liquid.

Larger quantities of sustainable kerosene are already produced by hydrogenating vegetable oils (HEFA = hydroprocessed esters and fatty acids). HEFA biokerosene complies with the specifications for fossil kerosene and has been used successfully. Analyses of greenhouse gas emissions and other environmental impacts are also available. In order to ensure that biofuels actually offer advantages for the climate, since 2018 they have had to demonstrate a greenhouse gas reduction of at least 60% compared to fossil fuels, in accordance with the European Union's renewable energy directive.

Research activities are currently focused on non-biogenic processes, especially power-to-liquid processes. For these, hydrogen is first produced by electrolysis from water using electricity from wind power or solar power plants. The raw materials for the production of the desired liquid fuel are obtained by means of the proven Fischer-Tropsch synthesis together with carbon dioxide from the air, which the hydrogen converts into carbon monoxide. Another interesting manufacturing process is being investigated in the SOLAR-JET project, in which MTU participated. For the first time, researchers have produced aviation fuel from sunlight, water and carbon dioxide. The advantage of these engineered manufacturing processes is that the alternative fuel is based on almost unlimited resources.

Electric flight

A much-discussed topic concerning the future of aviation is electric flight. MTU is also looking at this issue, collaborating with research partners to conduct studies on all conceivable concepts in order to evaluate them and be prepared for any such developments. The key findings are that current technology is still several decades away from battery-electric passenger aircraft the size of an A320. If development of battery storage capacity continues to advance at 5% annually, battery-electric regional aircraft might be possible in 30 years. Concepts have been drawn up for batteries with the necessary capacity to power short- and medium-haul aircraft, but these will require a few more decades of development to put into practice. At present there are no known battery concepts that would provide the capacity sufficient for long-haul aircraft.

Hybrid propulsion 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 looking into these propulsion concepts as part of stage 3 of its Clean Air Engine Agenda. We want to collaborate with partners to investigate hybrid-electric or all-electric powertrains for air taxis or 19-seater aircraft.



→ Find out more <https://www.youtube.com/embed/Wd0laxyAFpI>

More information about:

[MTU Code of Conduct](#)

[SRIA Agenda](#)

[IATA goals](#)

[ICAO climate agreement](#)

[aireg e.V.](#)

[Bauhaus Luftfahrt](#)

[MTU research network](#)



102-12, 103-2, 103-3, 201-2, 302-5, 305-3



7, 8, 9

Product stewardship & supply chain

Sustainable supplier management

Our suppliers around the world are a key part of the value that MTU adds. We have a shared goal: to work together as partners to achieve sustainable production. To govern these partnerships, we have defined the environmental and social criteria that are important to us.

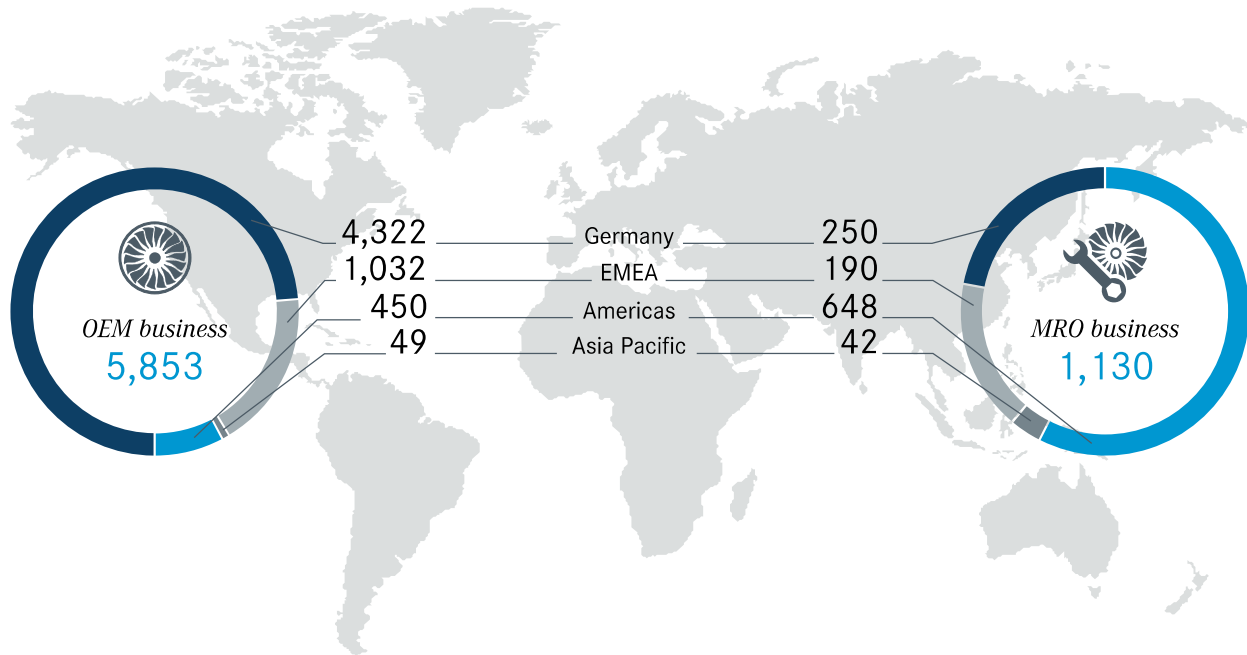


We procure components, goods and services for our production and maintenance activities from suppliers based all over the world. We include the global supply chain in our sustainability activities.

The value added of an MTU product includes important pre-production stages at external suppliers. We seek to create reliable relationships with those suppliers based on mutual trust. In keeping with our claim of sustainable value creation and the expectations of our stakeholders, we uphold certain standards in purchasing. For us, the pursuit of sustainable supplier management (responsible sourcing) encompasses environmental and social aspects as well as transparency along the supply chain. Key sustainability requirements are mandatory for suppliers. We place the same standards as regards sustainability on the collaboration with our suppliers that we do on our own business activities. To a large extent, the same standards apply to both of MTU's business segments: original equipment manufacturing (OEM; new commercial engines including spare parts) and maintenance, repair and overhaul (MRO; commercial engines). 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 2018, MTU worked with 6,983 suppliers around the world (2017: 6,521). The slight growth occurred in both the OEM and MRO business units across all regions. Europe is home to 83% of the suppliers, with 65.5% of the total number of suppliers located in Germany.

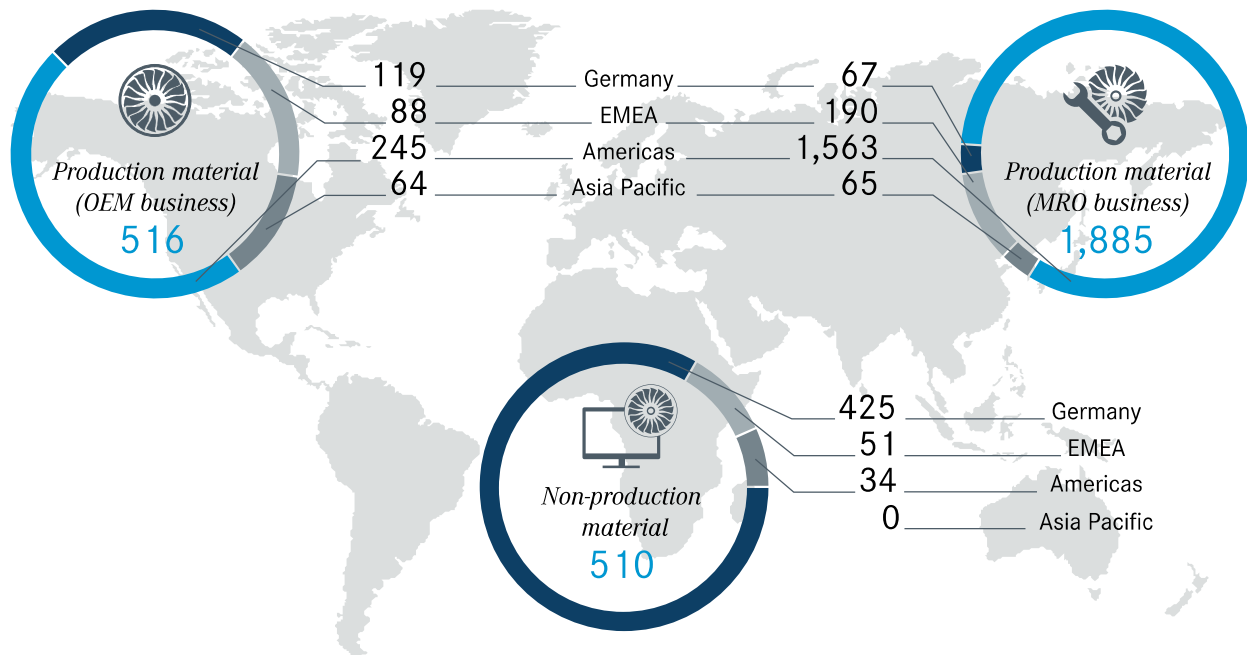
 MTU suppliers 2018 by region



Supplier base for production material and non-production material for OEM (new commercial engines including spare parts) and MRO (commercial maintenance) segments EMEA = Europe (excluding Germany), the Middle East and Africa; Americas = North, Central and South America plus the Caribbean; Asia Pacific = East Asia, Southeast Asia, Australia and Oceania

The purchasing volume for production material in 2018 ran to some EUR 516 million for the OEM business (2017: EUR 476 million) and to just under EUR 1.9 billion for MRO (2017: EUR 1.5 billion). In 2018, we purchased non-production material to the tune of EUR 510 million for OEM and MRO combined (2017: EUR 447 million). By and large, we were able to source production and non-production material for the OEM business at our own discretion. By contrast, MRO purchasing volume for spare parts and repair work is subject to strict requirements imposed by the relevant OEMs. As a result, MTU Maintenance has less room for maneuver in selecting suppliers. The sole exception is MTU Maintenance Lease Services (MLS) in Amsterdam.

Purchasing volume 2018 by region (in EUR m)



Purchasing volume for OEM (new commercial engines including spare parts) and MRO (commercial maintenance) segments. EMEA = Europe (excluding Germany), the Middle East and Africa; Americas = North, Central and South America plus the Caribbean; Asia Pacific = East Asia, Southeast Asia, Australia and Oceania

Measured by purchasing 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. In our OEM business segment, 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 the manufacturers of blanks or finished parts, whereby the company procures raw materials itself only to a small extent (→ [Conflict minerals in raw material purchasing](#)). For commercial engine modules, the average proportion of sourced parts lies between 48 and 69%.

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 countries in which we operate. The local proportion of the purchasing budget (production and non-production material) was 22.4% in Germany and 9.9% in Poland. Overall, MTU sourced 20.5% of its entire purchasing volume from local suppliers.

Our contribution to the SDGs

We view our commitment to fair, global supply chains for our products through compulsory social standards as our contribution to SDG 8 on “Decent work and economic growth,” one of the Sustainable Development Goals of the UN’s 2030 Agenda. We also consider it an expression of our corporate social responsibility outside our factory walls. Through compliance requirements for suppliers, we also support SDG 16 on “Peace, justice and strong institutions,” a secondary objective of which calls for reducing corruption and bribery worldwide.



→ [Learn more about our contribution to the Sustainable Development Goals \(SDGs\)](#)

Setting sustainable standards in purchasing

We have established a binding Code of Conduct for Suppliers that is a fixed component of the contracts. 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% of the Group reporting entity. Moreover, MTU’s General Terms and Conditions of Purchase also contain environmental, social and compliance stipulations. In our General Terms and Conditions of Purchase for our European sites, we also insist on compliance with the EU’s REACH chemicals regulation.

→ [Human rights and conflict minerals in the supply chain](#)

To raise awareness of sustainability standards in the supply chain, we regularly provide purchasers with training on compliance matters 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 training, including some specifically intended for MTU purchasers.

Suspicious that the Code of Conduct for Suppliers may have been breached can be reported to MTU’s ombudsman. Should a supplier be implicated in charges of corruption, extortion, the granting of undue advantage or the use 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. MTU reserves the right to carry out on-site audits to verify compliance with the Code of Conduct. No accusations of possible breaches of the Code of Conduct were reported during the period under review. Nor were there any complaints about suppliers. In 2018, no cooperation was terminated because of sustainability deficiencies or other complaints.

Risk management and assessment

We believe partnerships based on trust are key to sustainable supplier management. For this reason, we seek out long-term relationships with our 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, MTU worked with 1,019 new suppliers (2017: 1,014), or 14.6% of the total (2017: 15.5%). All suppliers must be approved 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's engine leasing business, Amsterdam-based MLS, has its own separate but similar process. To cover environmental aspects, we request proof of certification to standards such as ISO 14001. Using periodic evaluations, we regularly review existing suppliers, including with respect to their ISO 14001 certification. Last year, we carried out a total of 351 audits on all major suppliers, which included on-site inspections and interviews. Once approved, suppliers must regularly demonstrate their ISO 9001 compliance for quality management via re-certifications. → [Our risk analysis of suppliers is presented in the chapter on human rights](#)

Outlook

Our plan is to integrate sustainability aspects into existing supplier audits for the OEM and MRO business. Preparations began in 2019.

More information about:

[Code of Conduct for suppliers](#)



102-9, 102-10, 103-2, 103-3, 204-1, 308-1, 308-2, 407-1, 408-1, 409-1, 412-3, 414-1, 414-2



1-5, 8



Environmental protection

Environmental protection in production

As a manufacturing company, we face the challenges of climate change and resource conservation. With our environmental management system, we aim to develop, manufacture and maintain engines and modules in a way that is as energy-efficient as possible and minimizes emissions and raw material consumption. We view environmental and climate protection as our corporate responsibility. That applies not only to our manufacturing operations, but also to our products and services.



- Environmental management
- Conservation of resources
- Emissions

Environmental protection in production

Environmental management

Environmental protection is an important maxim guiding how we do business. At all MTU 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.



We ensure compliance with statutory requirements and internal standards through regular measurements and tests, for example on environmental samples.

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 the environmental impact of our production processes and products in advance. We integrate insights from this into corporate decisions. We apply the precautionary principle so as to keep negative environmental impact to a minimum. The most significant way we can help protect the environment is by means of ecologically efficient products, as the environmental impact (energy consumption, CO₂ emissions, noise) of our products is greatest during their use. → [Eco-efficient engines](#)

Integrated environmental protection covers:

- making continuous improvements
- precautionary approach
- involving employees
- limiting environmental impact
- carefully complying with statutory limits and requirements
- using resources and energy sparingly



9.5
million euros

In 2018, we invested some EUR 9.5 million in environmental protection, more than half of it on climate protection.

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. Responsibility for company-wide environmental protection is assumed by the Executive Board. Uniform high standards are applied across the MTU Group through an environmental management system that defines processes, responsibilities and targets at the site level. 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 company 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.

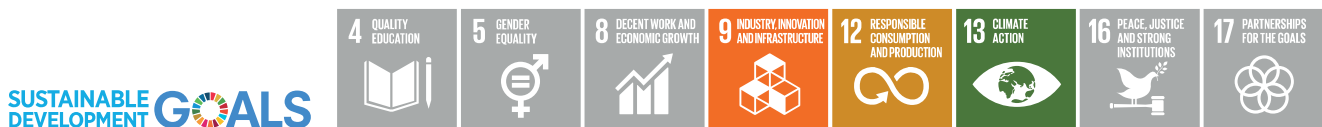
Environmental management is handled locally; all of MTU’s production sites have a dedicated environmental department in charge of implementation. The Executive Board receives a quarterly report on the consumption of energy (Scope 2) and potable water at all production sites. Individual site managers are directly responsible for environmental protection. They are advised and supported by their local environmental departments. The environmental departments regularly share their innovations and best practices with each other 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 to the EU Eco-Management and Audit Scheme (EMAS).

→ [Overview of our certifications](#)

Our contribution to the SDGs

Through our environmental management system, we continually improve energy and resource efficiency and minimize emissions of CO₂ and pollutants in production and maintenance. In this way, we meet the expectations of our shareholders. In doing so, we also want to help fulfill the Sustainable Development Goals (SDGs) of the UN's 2030 Agenda, specifically SDG 9 on "Industry, innovation and infrastructure," SDG 12 on "Responsible consumption and production" and SDG 13 on "Climate action."



→ [Learn more about our contribution to the Sustainable Development Goals \(SDGs\)](#)

We use various measures to achieve improvements in our energy and carbon footprints. In the reporting year, we spent some EUR 9.5 million in total (2017: EUR 14.6 million) on investments and ongoing expenses in a bid to increase our environmental compatibility. The lion's share of that (EUR 5.2 million) went to climate protection. The decline compared to the previous year is mainly due to the fact that the investments for the new co-generation plant (BHKW) were all incurred in 2017.

We have our environmental management system regularly reviewed

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

All production and maintenance 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 provide information about the effects of potential malfunctions at the Munich site, as required by Germany's Hazardous Incident Ordinance. MTU has comprehensive fire protection measures in place that comply with legal directives.

In 2018 as in previous years, there were 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

We maintain a dialog with our stakeholder groups about MTU's environmental impacts. Stakeholders can use the available media channels to direct complaints and report abuses to us, which we will follow up. This applies to employees, suppliers, residents and other stakeholders. In the reporting year, MTU's production sites once again received no substantiated complaints about negative environmental impacts caused by our operating activities. Stakeholders can consult environmental officers at the German sites with any questions or comments. → [Stakeholder dialog](#)

Our → [Environmental statements for Munich, Hannover and Ludwigsfelde](#) provide information to the public annually about our environmental impacts and environmental management. In addition, we offer stakeholders the opportunity to make use of an → [Online survey on sustainability](#) to give us feedback.

We promote greater environmental protection in industry and business through the following global and local initiatives:

- UN Global Compact
- Bavarian Energy Efficiency Network
- Munich Business Climate Pact (Klimapakt Münchner Wirtschaft)
- YVR Airport Authority's Environmental Management Plan

We involve our employees in active environmental protection and promote environmentally conscious behavior through awareness events, information campaigns and training courses at all our production sites. Raising the awareness of all employees in production and administration is part of our Code of Conduct regarding environmental protection. For example, we introduced reusable beverage cups at our locations in Hannover and Munich. At our Munich headquarters, we want the Zero mission to reduce resource consumption and emissions and promote environmentally conscious behavior among our employees. We carried out numerous activities as part of Zero 2018, including the introduction of biomethane for the co-generation plant that went into operation in April, energy-saving campaigns and green office solutions. Success is already visible in many areas. We will continue the campaign in 2019 with further measures.

All fully consolidated production sites of the MTU Group worldwide (Munich, Hannover, Ludwigsfelde, Rzeszów and Vancouver) are included in our environmental reporting for this Sustainability Report. Smaller sites are not relevant for our environmental impacts and are therefore not included.

More information about:

[MTU stakeholder survey](#)

[UN Global Compact](#)

[Bavarian Energy Efficiency Network](#)

[Munich Business Climate Pact \(Klimapakt Münchner Wirtschaft\)](#)



102-11, 102-12, 103-2, 103-3, 307-1



7, 8

Environmental protection in production

Conservation of resources

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. Our energy- and resource-efficient processes contribute to resource conservation.

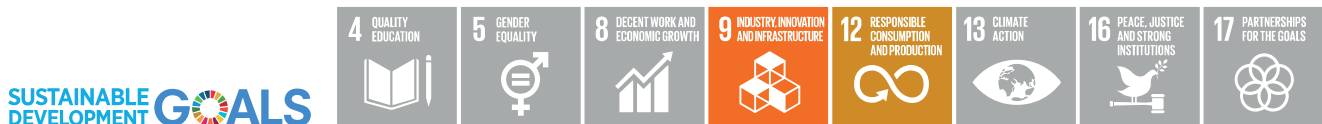


In its production processes—such as the manufacturing of rotors for the high-pressure compressor shown here—MTU uses water for cooling and is careful to ensure efficient consumption.

With the help of our environmental management system, we aim to advance our resource-conserving production processes, and gradually improve energy efficiency in the manufacture of our products and in the maintenance of engines and modules. Our goal is highly efficient production and maintenance with minimal use of resources. We use raw materials, water and energy sparingly. This is set out as a guideline for all employees in our Code of Conduct and our MTU Principles. Conserving resources is also a way for us to reduce our production costs. The use of resources depends on batch sizes in production and maintenance. We are currently in the process of ramping up production at all sites, so reducing resource and energy consumption is a particular challenge for us.

Our contribution to the SDGs

In making our process as resource-conserving as possible, we support two Sustainable Development Goals (SDGs) of the UN's 2030 Agenda: SDG 9 on "Industry, innovation and infrastructure" and SDG 12 on "Responsible consumption and production." A secondary objective of SDG 9 calls for sustainable industry with more efficient use of resources and increased use of environmentally friendly technologies and industrial processes. Our sustainable waste management system at our production sites contributes in particular to SDG 12, which explicitly calls for a significant reduction in global waste generation by 2030.



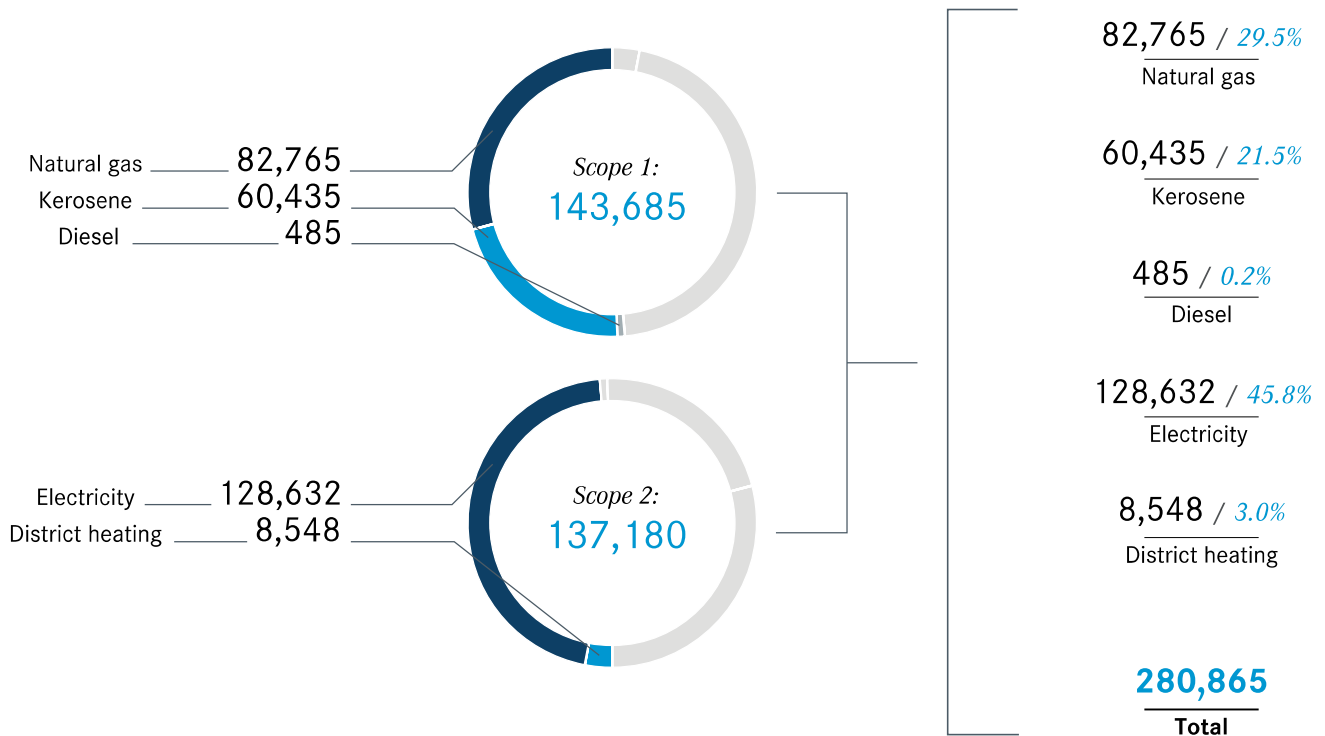
→ [Learn more about our contribution to the Sustainable Development Goals \(SDGs\)](#)

Energy

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 (<0.2%). In Munich, we generate energy using a cogeneration plant (BHKW), which we have comprehensively modernized and has operated using biomethane since spring 2018 (previously using certified palm oil). Compared to conventional power plants, cogeneration plants are much more efficient and emit less pollution. The Hannover site makes use of 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).

In the reporting year, we invested some EUR 3.9 million in energy-saving measures. The main driver of these measures was a shop renovation in Hannover.

Energy sources used in 2018,
 Scope 1 and 2 (consumption in MWh; share in %)
 GRI 302-1



Production sites only

Measures for energy-efficient production/maintenance

- Well water for cooling purposes
- District heating network modernization
- Improvements to thermal insulation
- Building automation systems
- Heat recovery systems
- Renewable energy
- Energy-efficient compressed air supply
- Energy-efficient lighting systems
- Waste heat from compressed air generation
- Electric transport in the plants
- Machine shutdowns during disruptions of production to reduce the base load

Our energy consumption

Our Scope 1 energy requirement totaled 143,700 megawatt hours (MWh) for 2018. Compared to the previous year (2017: 149,100 MWh), we were able to reduce energy consumption slightly (3.6%)—despite ramping up production at our sites. Scope 1 primarily concerns the energy sources natural gas and kerosene. Kerosene is used as a fuel for testing engines on the test stand, so consumption depends on how extensive the tests are and on engine size. 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 in order to reduce the amount of development testing for new engines. This is an important contributor to resource conservation. All newly maintained or manufactured engines must complete a test run prior to delivery for safety reasons and to demonstrate their performance.

In 2018, we procured a total of 137,200 MWh of external energy (Scope 2), which is 4.3% more than in the previous year (2017: 131,600 MWh). Purchased energy is mainly electricity (93.7% of the total energy in Scope 2). Our use of green electricity is determined by the extent to which our chosen suppliers feed it into the grid. MTU Maintenance Canada gets all its electricity from hydroelectric power stations and therefore 100% from renewable resources.

Energy supply, production, Scope 1 and 2 (in MWh) GRI 302-1

	2018	2017	2016
Total	280,900	280,700	299,200
Fossil fuels (natural gas, diesel, kerosene) Scope 1	143,700	149,100	161,600
Non-fossil fuels (vegetable oil) Scope 1	0	0	8,300
Electricity, district heating (external) Scope 2	137,200	131,600	129,300

Production sites only; the vegetable-oil-powered BHKW was decommissioned in 2017 and a new facility powered by biomethane went into operation in 2018.

The total energy requirement for Scope 1 and 2 was 280,900 MWh in 2018, which was almost exactly the same as in the previous year (2017: 280,800 MWh). We apply systematic energy management primarily to manage our consumption of our main energy sources, electricity and natural gas (75.3% of energy in 2018), and to implement improvements.

Our progress in energy management in 2018

- Further energy-efficiency improvements made to buildings during construction and refurbishment, Munich
- Further expanding machine cooling, Munich
- LED lighting, several production sites
- Changing the chiller (free cooling) in work scheduling, Rzeszów
- Switching UV lighting in parts inspection areas from mercury vapor to LED, Ludwigsfelde
- Renovating the roof to increase heating efficiency, Hannover
- Reducing compressed air leaks, all sites
- Replacing a boiler with a micro gas turbine, Hannover

Water

Water is a valuable resource that we use sparingly. We have effective water management systems in place at all production sites. Our water consumption also fluctuates depending on production volumes. In keeping with the precautionary principle, we treat wastewater properly and in accordance with the applicable legal requirements. We spent some EUR 2 million on water protection in 2018. The Zero mission we launched at our Munich site also aims to decrease water consumption overall (absolute reduction) or, when production increases, to keep the increase in water consumption at a lower rate (relative reduction). Our fully consolidated production sites are in Europe and Canada, so they are not located in water-stressed regions, which are regions in which water is a scarce resource.

Our water consumption

We use drinking water for production and maintenance processes, in sanitary facilities and in the cafeteria. In addition, we use well water for cooling processes. We record water consumption locally as an absolute value. This amounted to a total of 7.4 million cubic meters for all production sites (2017: 6.9 million m³). The higher consumption figure is due to more groundwater at the Munich site, where MTU uses Quaternary groundwater from its own wells, and to increased drinking water consumption. Water consumption was 97.5% groundwater and only 2.5% drinking water. 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. Thanks to this recirculation, we have to treat only a small amount of wastewater before discharging it into the municipal sewers. This enabled us to save around 600,000 m³ of water in the reporting year. Our sustainable water management also includes systematic inspection and renovation of the well water and sewer canal networks.

Water balance (in m³) GRI GRI 303-1, 306-1

		2018	2017	2016
	Total	7,444,000	6,915,000	7,078,000
Intake	Potable water	186,000	173,000	153,000

	Groundwater	7,258,000	6,742,000	6,925,000
	Total	8,049,000	7,174,000	7,371,000
Discharge	Sewer system	140,000	132,000	145,000
	Surface water	1,519,000	1,179,000	1,096,000
	Groundwater	6,390,000	5,863,000	6,130,000

Production sites only, estimated figures for the Vancouver and Ludwigsfelde sites for the discharge of wastewater into the sewer system.

Water quality

MTU treats wastewater in suitable sewage systems according to the type and extent of pollution. The quality of the discharged wastewater complies with the official requirements issued for the respective sites. Strict monitoring at the sites ensures that legal limits are observed. We comply 100% with all local authority requirements. Neither water sources nor water surfaces are 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.

Material and waste

The long service life of our products and the continuous improvement of our maintenance processes reduce our demand for raw materials. As a rule, aircraft engines spend 30 years in service before they are decommissioned. In all of our production methods, we pay attention to efficiency in the use of materials 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% 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.” This is important because the number of blisks being installed in engines is increasing. We are one of the world’s leading companies in the field of blisk production and repair. → [Sustainability over the entire lifecycle of an engine](#)



300,000

fewer paper cups

We have abolished paper cups at all our German sites and replaced them with returnable or deposit cups. This means we avoid using 300,000 disposable cups per year at our Munich site alone.

We achieve greater material efficiency in the production of new parts by using additive processes such as 3D printing of metals. This manufacturing technology enables the rapid 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 just 5-10% of the powder ending up as excess material that cannot be used. This significantly reduces the amount of resources used. MTU is steadily building up this area after founding an in-house Center of Excellence for it in 2018.

Harmless materials: REACh regulation

Wherever possible, we avoid using materials that are hazardous to the environment or to health 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(VI) are subject to authorization. MTU implements all provisions of the EU regulation for protecting employees and the environment. We use the REACh-listed material chromium trioxide for wear and corrosion protection. In 2018 the European Chemicals Agency ECHA authorized its continued use in our processes until 2029 on the basis of the extremely safe workplace standards in our electroplating activities. At the same time, we are pushing ahead with the long-term elimination of SVHCs that require authorization. Two technology projects are currently underway at MTU with which we are looking for chromic acid/chromium(VI) substitutes. Initial results are available for one project. We oblige our suppliers to comply with the EU's legal requirements (registration, authorization, etc.) via the General Terms and Conditions of Purchase if they use REACh substances in their auxiliary or operating materials.

Our material consumption

The consumption of production materials (alloys and spray powder) amounted to 3,756 metric tons in the past financial year, while the quantity of consumables and supplies was 8,328 metric tons.

Material consumption (in t) GRI 301-1

	2018	2017	2016
Total	12,084	9,792	10,596
Production material	3,756	2,519	2,161
Consumables and supplies	8,328	7,273	8,435

Production sites only, externally sourced material only; production material comprises titanium and nickel alloys and spray powder; consumables supplies include oils, cooling lubricants, fuels, chemicals, packaging and paper. For engine parts, MTU uses returnable packaging that can be reused several times.

Our products require the use of materials that are classified as conflict minerals due to their possible origin in Central Africa and can be problematic with regard to human rights violations. Rather than procuring these mineral raw materials directly, we have implemented appropriate processes in our supplier management in order to comply with our duty of care with regard to human rights. → [There is more information on this under human rights](#)

In 2018, we implemented new green office solutions as part of the Zero mission at our Munich site. This includes, for example, increasing its procurement of more sustainable office supplies. MTU was even awarded first place by its supplier Lyreco for sustainable customer ordering behavior. Further Zero measures are to follow in 2019.

Waste management

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. MTU has abolished disposable beverage cups at all its German sites and replaced them with returnable or deposit cups for employees. This means we avoid using 300,000 paper cups per year in Munich alone.

Waste footprint (in t) GRI 306-2

	2018	2017	2016
Total waste	8,010	7,100	5,660
Recycled	7,060	6,210	5,010
Disposed of	950	890	650
Hazardous waste	3,290	3,010	1,520
Recycled	2,440	2,210	910
Disposed of	850	800	610

Production sites only, 2016 Germany only; as of 2017: fully consolidated MTU Group according to uniform waste categories; not including construction waste

Total waste generation increased year on year in 2018 (+13.8%). Measured against that total, the MTU Group achieved an overall recycling rate of 88.1% (excluding construction waste), which is an improvement on the previous year (2017: 87.5%). 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 41.1%. Construction waste amounted to 546 metric tons and is due to various construction activities as we expand our sites. In 2018 as in 2017, no soil contamination was found at MTU sites that resulted from hazardous materials or pollutants.



103-2, 103-3, 301-1, 301-3, 302-1, 302-4, 303-1, 303-2, 303-3, 303-4, 303-5, 306-1, 306-2, 306-3



7-9

Environmental protection in production

Emissions

We want to continuously reduce the greenhouse gas emissions and airborne pollutants resulting from development, manufacturing and maintenance work in our plants as a contribution to global climate protection and local air quality. We have already made progress with a number of measures.



Whenever we test an engine—here a PW1100G-JM at MTU Maintenance Hannover—we produce emissions, including CO₂. Over the past three years, we have been able to reduce our total greenhouse gas emissions at our plants. Test runs are not only important as proof of safety and performance, they are also prescribed by the authorities.

The use of energy for manufacturing and maintenance in our plants results in emissions of greenhouse gases and airborne pollutants, which contribute to climate change. Additional greenhouse gas emissions occur in the upstream and downstream value chain. The greatest proportion of emissions with an effect on the climate occurs when our products are used. This is why CO₂ and pollutant emissions from our products are of greater relevance to us and form the focus of our sustainability strategy. For a detailed description of how we have used a technology agenda to set ourselves ambitious goals for eco-efficient products, see the section on product stewardship. → [Product stewardship & supply chain](#)

We continuously assess airborne emissions during manufacturing and maintenance at our plants according to the recognized international Greenhouse Gas (GHG) Protocol. Our aim is to reduce them permanently. Of all the greenhouse gases that the Kyoto Protocol lists as having an impact on the climate—such as carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFC), perfluorocarbons (PFC) and sulfur hexafluoride (SF₆)—only the CO₂ 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. CO₂ emissions from business trips and transports in the external logistics chain fall under Scope 3.

Our contribution to the SDGs

By reducing greenhouse gases, we can contribute to the Sustainable Development Goal 13 on “Climate action” and live up to our responsibility as a manufacturing company in the face of global challenges such as climate change.



→ [Learn more about our contribution to the Sustainable Development Goals \(SDGs\)](#)

CO₂ emissions

In 2018, MTU emitted a total of 67,500 metric tons (2017: 75,000 metric tons) of CO₂. The CO₂ emissions caused by us have decreased by 12.8% over the past three years (2016–2018), with reductions achieved for both Scope 1 and Scope 2. Natural gas accounted for the lion’s share of Scope 1 CO emissions (24.6% of total emissions), and aircraft fuel—kerosene—accounted for 23.1% of all CO₂ emissions. Around half of all our CO₂ emissions (51.1%) are caused by electricity, the main energy source (Scope 2 / purchased externally). Our electricity and natural gas requirements are dependent on production volume; our kerosene requirement on the type and duration of test runs.

CO₂ emissions (in t)
Scope 1 und 2
GRI 305-1, 305-2

	2018	2017	2016
Total	67,500	75,000	77,600
Scope 1	32,400	33,300	36,800
Scope 2	35,100	41,700	40,800

Production sites only

Last year, our capital expenditure on property, plant and equipment and intangible assets amounted to a total of EUR 5.2 million. The goal of this investment is to reduce CO₂ 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 want to reduce the CO₂ emissions at the company’s largest plant by 25% by 2020 (baseline year: 1990). In total, we have already saved some 435,000 metric tons of CO₂.



435,000

metric tons of CO₂ saved

By 2020, we want to reduce CO₂ emissions at our Munich site by 25%. We have already saved almost half a million metric tons.

Examples of annual CO₂ savings

- Using well water for cooling purposes: some 2,600 metric tons
- Turning machines off instead of putting them on standby: 340 metric tons
- Operating BHKW 2.0 cogeneration plant using biomethane: 7,500 metric tons

Our Munich site is a member of the Munich Business Climate Pact (Klimapakt Münchner Wirtschaft), the first phase of which brought together 15 major Munich companies committed to reducing CO₂ by a total of 40,000 metric tons during its three-year term. MTU exceeded its share of 5,500 metric tons and in fact saved 7,000 metric tons thanks to its modernized cogeneration plant. In addition, the Zero mission 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.

Electromobility in MTU transport

We also extend our climate protection efforts to cover our transport and logistics chain. Measures include optimizing routes for in-plant transport and using vehicles with better environmental performance or electric motors to reduce fleet consumption. We reduce CO₂ emissions by, for example, setting an upper emission limit for company vehicles or by using electric cars in our own vehicle fleet. A total of four electric cars and two electric delivery vehicles are currently in use. We are gradually expanding electromobility. We have installed electric charge spots at our Munich and Hannover sites.



In 2018, MTU Maintenance Hannover added a new electric delivery vehicle for its canteen to its transport fleet on the company's premises.

Furthermore, MTU promotes sustainable commuting practices among its workforce, for example through a special discounted “job ticket” for the local public transportation network. In the spirit of “green travel,” the company is aiming to make business trips more environmentally friendly and has created new travel booking options such as carpooling.

Emissions from the transport and logistics chain (excluding company vehicles owned by MTU) fall under Scope 3, for which we currently have data covering only Germany and Canada. In total, these CO₂ emissions amounted to 9,230 CO₂ equivalents/t, which means they are 17.1% lower over the three-year period (2016–2018).

CO₂ emissions (in equivalents/t)
Scope 3
 GRI 305-3

	2018	2017	2016
Total	9,230	9,470	11,140
Train travel	10	10	40
Air travel	9,010	9,240	10,930
Cars (rental cars)	210	220	170

Data can currently be gathered only for Germany and Canada.

Airborne emissions

The energy sources we use generate other airborne emissions aside from CO₂ 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. We also calculate these emissions and want to reduce them. For example, generation of electricity and heat in the new BHKW 2.0 cogeneration plant cuts emissions of nitrogen oxides by 80% and of carbon monoxide by 66% compared to its predecessor. As with CO₂ emissions, we are recording a decline in air pollutant emissions. Absolute emissions in 2018 totaled 239 metric tons, mainly nitrogen oxides (158 metric tons).

Airborne emissions (in t) Scope 1 und 2 GRI 305-7

	2018	2017	2016
Total	239	248	269
Carbon monoxide (CO)	26	31	27
Nitrogen oxide (NO _x)	158	159	185
Sulfur dioxide (SO ₂)	51	53	53
Fine particles (dust)	4	5	4

Production sites only

Outlook

The Munich Business Climate Pact is to be continued from 2019 to 2021, and MTU will be participating once again. In addition, the initiative was recognized by the German government as a particularly innovative energy efficiency network at the Hannover Messe 2019.



102-3, 103-2, 103-3, 305-1, 305-2, 305-3, 305-5, 305-7



7-9



Employees and society

Social responsibility

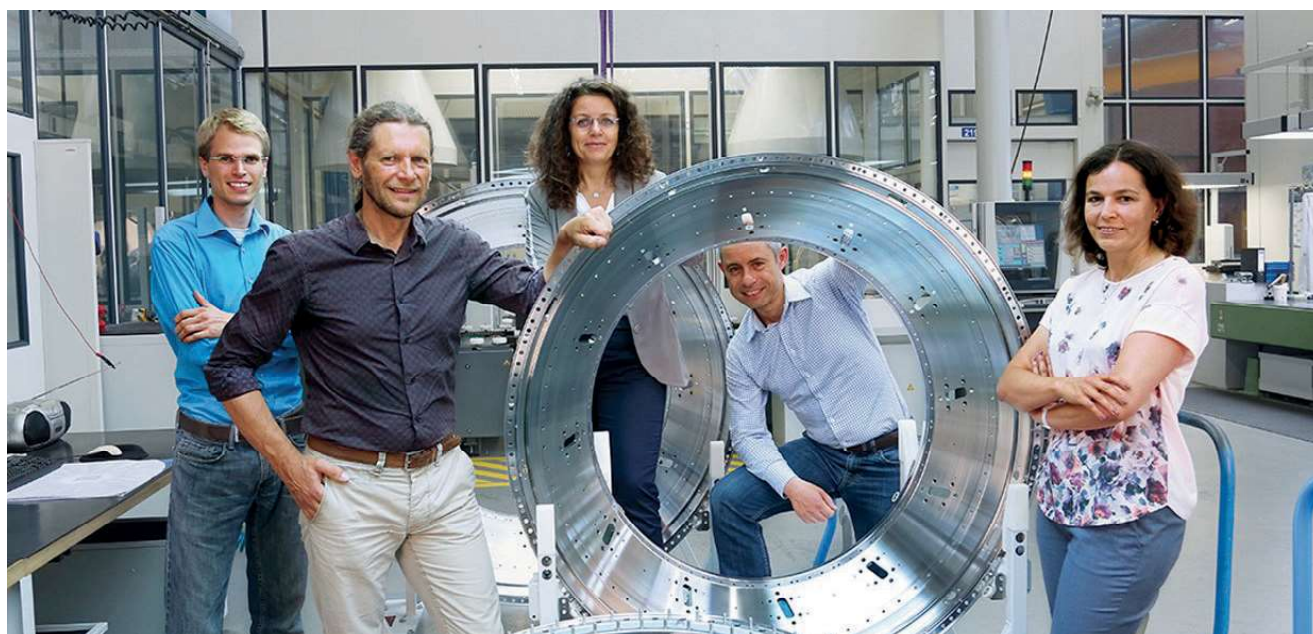
MTU's employees are a strong team and the key to our success. We create a working environment that is attractive, sustainable and marked by a sense of responsibility. This includes flexible working arrangements, high-quality training and development opportunities and comprehensive occupational safety. Our leadership values provide orientation in leading MTU successfully into the future with the commitment of each individual. The cornerstone of our corporate social responsibility is exchange and cooperation with science and research.

- MTU as an employer
- Occupational health and safety
- Employee development
- Diversity & equal opportunity
- Corporate social responsibility

Employees and society

MTU as an employer

We create an innovative and respectful working environment in which our employees can develop in the long term and deliver the best results for MTU. As an attractive and responsible employer, we also find the talented people we need for future projects and tasks.



Our employees make a major contribution to MTU's long-term success. That is why we want to create a world of work that inspires and connects. In this way, we can tackle tomorrow's product innovations together today.

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 ensures it retains its capability to innovate and remains competitive. In addition, we are competing with other technology companies for the best people at our locations worldwide. We are in the process of ramping up production, expanding at several locations and thus recruiting more new employees. This means being perceived as an attractive and future-oriented employer is particularly important for all international MTU subsidiaries. We want all our employees to be able to deliver their best possible contribution to MTU's continued success. This is also important against the background of demographic developments and the digitalization of the world of work. We launched a Digital Transformation Program in 2018: In 300 projects, we are driving digitalization throughout the company. We're looking to recruit new experts to support us in this challenge.



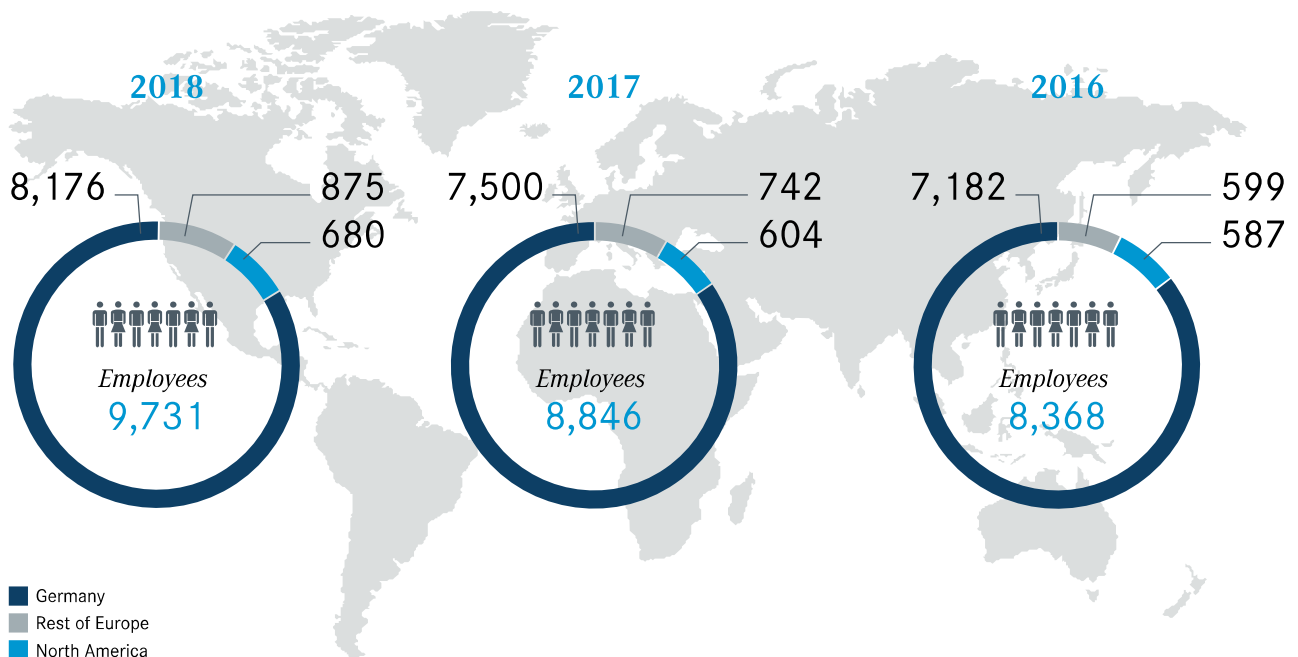
9,731

employees at MTU

Our workforce is growing: at the end of 2018, MTU had a total of 9,731 employees working around the world at its fully consolidated sites. This is 10% more than in the previous year.

MTU's global workforce grew by 10% in 2018, reaching 9,731 employees at the end of the year (2017: 8,846). The number of employees rose in all regions, most strongly in Europe. 9,051 employees (93%) were employed in Europe—84 percent in Germany alone. The share of the workforce in North America was 7%. MTU has maintained a workforce of more than 8,300 employees over many years. Over 90% of employment contracts were permanent in 2018.

MTU's employees by region



Total workforce at fully consolidated sites including apprentices, interns, thesis students and doctoral candidates, students and holiday staff, temporary part-time employees on parental leave, and marginal workers, but excluding temporary agency workers and inactive employment contracts; as at December 31 each year. MTU's shareholdings in joint ventures in Europe and Asia are not fully consolidated and are therefore not included.

Responsibility for employment issues lies with the Executive Board. The CEO is also the Director of Labor Relations. MTU's human resources department 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. The full Executive Board receives 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. The inclusion of various factors in our human resources strategy plays a decisive role in creating a sustainable working environment. From our point of view these factors are diversity, lifelong learning, health, leadership culture and digitalization.

Employee groups by region GRI 102-8

	2018	2017	2016
Blue collar workers			
Germany	49.4%	50.0%	49.2%
Rest of Europe	51.5%	49.7%	46.5%
North America	49.5%	47.9%	52.5%
White collar workers			
Germany	50.6%	50.0%	50.8%
Rest of Europe	48.5%	50.3%	53.5%
North America	50.5%	52.1%	47.5%
Employees on temporary contracts			
Germany	701	346	177
Rest of Europe	154	–	–
North America	11	–	–
Apprentices			
Germany	279	287	311
Supervised workers			
Germany	513	539	395

Rest of Europe	1	40	7
North America	0	0	0

Blue-collar and white-collar employee groups measured as a proportion of the active workforce (employees with permanent or fixed-term contracts, temporary part-time employees on parental leave, excluding students, interns, trainees/apprentices, short-term holiday workers, temporary agency workers and employees from external companies); we have been collecting data on employees on temporary contracts for all regions since 2018.

We create fair working conditions

As an employer, MTU shows responsibility towards its employees by creating 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 opportunity 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

→ [MTU Code of Conduct](#)

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 the → [Compliance](#) and → [Human rights](#) chapters. The chapter on human rights also deals with the issue of discrimination. 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 respect employees' rights and safeguard 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 2018, 98.3% of the people employed by the company were covered by collective agreements, a figure that stood at 86.2% worldwide in the same year.

Our contribution to the SDGs

The following UN Sustainable Development Goals (SDGs) are relevant to MTU's human resources work: SDG 4 on "Quality education"; SDG 5 on "Gender equality"; and SDG 8 on "Decent work and economic growth." Over the past five years, MTU has created almost 1,400 new, high-quality jobs across the Group and is pursuing the overall goal of conducting sustainable business. For us, this also includes offering all employees the same fair and innovative working conditions.



→ [Learn more about our contribution to the Sustainable Development Goals \(SDGs\)](#)

In dialog with our employees

We place great emphasis on trusting and respectful relationships with our employees and take their 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 also have a Group works council that handles Group-related issues. At the company's 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.

Employee surveys with good results

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 are regularly conducted in Germany, Poland, Canada and the United States (MTU Aero Engines North America). In Germany, the latest survey was conducted in 2018 and achieved a high participation rate of 81%. The results show positive development overall compared to the previous survey three years ago. The High Performance Organization Index, which measures the performance of a company (e.g. in terms of commitment, leadership, processes, structures), rose to 73%. Calls for action, such as better cooperation across teams and locations or efficiency of decision-making processes, are dealt with by an interdisciplinary team of senior management and the Executive Board in a structured follow-up process. Managers actively drive developments at the divisional and team level in dialog with their employees. MTU Aero Engines Polska in Rzeszów also asked its workforce for feedback in 2018. The participation rate was 70%. Overall, 84% of the employees were highly satisfied with MTU as an employer. In all survey categories, the rating was in the upper third. We apply a follow-up process to design better strategies for team cooperation and further develop leadership skills.

We have established further employee involvement forums at our sites around the world, ranging from works meetings in Germany and town halls in the United States to special instruments such as leadership feedback and team barometers. We are currently revising and improving our ideas management system for improvement suggestions from employees.

The outside view of MTU

In addition to internal employee surveys and feedback responses, external rankings provide valuable pointers for our human resources work. In comparative analyses with other companies, MTU receives consistently positive ratings. It again performed well in Germany, Poland and Canada in the most recent TOP Employer rating.

Certifications and rankings in 2018

- TOP Employer Germany
- TOP Employer Poland
- TOP Employer British Columbia, Canada
- Top Company and Open Company on Kununu
- Women's Career Index

→ [More about MTU's awards](#)

We also regard our low staff turnover rate as yet another sign of high employee satisfaction. In the reporting year, this was 4.0% for the MTU Group (previous year: 3.8%). The high level of loyalty to our company is also reflected in employees' length of service with the company. In Germany, we achieve an average length of service of around 20 years.

Staff turnover GRI 401-1

	2018	2017	2016
No. of employees that left the company	313	281	319
Germany	228	186	253
Rest of Europe	39	39	18
North America	46	56	48
Turnover rate (%)	4.0	3.8	4.3
Germany	3.5	2.9	4.1
Rest of Europe	5.9	6.9	3.2
North America	7.6	9.9	8.4

Turnover rate measured as a proportion of core workforce, annual average, figures include retirements, 2016 figure for the region "Rest of Europe" adjusted due to incorrect calculation

Remuneration and additional benefits

For us, fair wages are part of an appreciative and respectful approach. 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, regardless of gender or other characteristics against which discrimination occurs. 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 96.6% of MTU employees worldwide regularly receive an appraisal 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 training opportunities. 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. The company made social contributions totaling EUR 122.6 million (2017: EUR 114.3 million).

MTU enables its employees to share in the company's success. Each site does this using different regulations and programs. We also offer an employee stock option program in Germany (participation rate in 2018: 2,113 employees). Some of our international locations offer their own long-term bonus schemes, as in Rzeszów, or award annual bonuses (Vancouver).

Achieving a better work-life balance

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
- Support for families (advice on arranging childcare, care 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. Part-time working and parental leave are initiatives that employees can avail themselves of. Part-time work accounted for 6.8% of employment (data collected only in Germany, 2017: 6.6%). The number of employees on parental leave in Germany in 2018 rose to 324 (2017: 261), 39.2% of whom were women on parental leave.

Alternative working arrangements (Germany) GRI 102-8, 401-3

	2018	2017	2016
Part-time employees (in %)	6.8	6.6	6.4
Employees on parental leave	324	311	281
Employees on parental leave, female	127	128	97

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. Given discrepancies between national legal considerations, we do not consider it useful to consolidate these figures at the Group level. 2017 figure for employees on parental leave adjusted following database standardization.



102-8, 102-12, 102-16, 102-41, 103-2, 103-3, 401-1, 401-2, 401-3, 404-3, 405-2



3, 6

Employees and society

Occupational health and safety

We want to create a safe and healthy working environment for our employees. High occupational safety standards and a company health management system lay the foundation for a competitive workforce. We strive to continuously improve and make a success of our preventative occupational safety concept and employee health services. We have upheld a high level of safety in our company for many years.



At our German sites, we have placed greater emphasis on ergonomics management—both in production and assembly and for office workspaces.

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 also embedded in the Code of Conduct as a mandatory minimum standard for all international MTU subsidiaries. In addition, we have established an internal standard that lays down parameters, rules and KPI definitions applicable across all locations. A Group report is submitted to the Executive Board each quarter. Our occupational safety approach is not centralized, so each location is responsible for its own operational implementation. At the individual production sites, occupational safety is the responsibility of the site managers, and occupational safety officers are appointed at the management level. Local technical departments take action on occupational safety issues on site and report regularly to 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 / employee representatives.

Occupational safety forms part of MTU's integrated management system (IMS) policy and is regularly reviewed and improved. At 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 management systems in place at the German sites are certified externally in accordance with the international Occupational Health and Safety Assessment Series (OHSAS 18001) standard. This means that 84% of the workspaces comply with this external standard; all workspaces in the company are part of MTU's IMS.



4.3
accidents per
1,000
employees

At 4.3 per 1,000 employees in 2018, the number of reportable accidents was—as in previous years—well below the industry average for the metal industry (35 accidents per 1,000 employees).

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. We regularly assess workspaces 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. Should the assessment reveal specific aspects pertaining to the cause of accidents, we will take further steps to increase safety precautions. In addition, the company has a system in place to record and evaluate near-misses at all production sites. MTU holds regular safety training for all employees. First-aiders are appointed and obligated to attend a refresher course every two years. The local technical departments are continually carrying out prevention work at the company's sites through training sessions and information on occupational safety issues.

Our contribution to the SDGs

A secondary objective of “Decent work and economic growth,” the eighth Sustainable Development Goal (SDG) of the UN’s 2030 Agenda, calls on companies and organizations to support safe working environments for all employees. We consider SDG 8 to be relevant for MTU because we can actively implement it in our company with strict occupational safety standards and ongoing preventative measures.



→ [Learn more about our contribution to the Sustainable Development Goals \(SDGs\)](#)

High level of safety at MTU

As in the previous financial year, high standards in occupational safety across the Group are one of our annual corporate objectives. In addition, each year we define tolerance thresholds at each location for category 4 reportable workplace accidents (accidents that entail more than three days lost). The Group-wide accident rate for 2018 was 4.3 reportable workplace accidents per 1,000 employees (2017: 3.7). MTU has thus reached a high level of safety compared to the average in the German metalworking industry (Wood and Metal Trade Association—BG Holz und Metall) of 35 accidents per 1,000 employees.

Occupational safety GRI 403-9

	2018	2017	2016
Reportable workplace accidents (entailing more than three days lost)	42	33	43
Germany	35	27	35
Rest of Europe	3	2	1
North America	4	4	7
Fatal industrial accidents per location	0	0	0
Days lost as a result of reportable accident	922	486	606
Germany	841	355	550

Rest of Europe	30	52	18
North America	51	79	38
Accident rate per 1,000 employees	4.3	3.7	5.8
Germany	4.3	3.6	5.6
Rest of Europe	3.4	2.7	1.8
North America	5.9	6.6	12.2

Accident statistics relate to total workforce at fully consolidated sites including apprentices, interns, thesis students, doctoral candidates, pupils, students and holiday staff, employees on fixed-term contracts, and marginal workers, but 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 at MTU involving temporary workers in 2018: 7

With 42 reportable workplace accidents entailing more than three days lost, 2018 saw an increase over the previous year's figure of 33. This increase is fully within the usual range of fluctuations from year to year, and MTU's accident rate remains low. The main reason for the rise was the higher number of accidents at the Munich and Ludwigsfelde locations. We were unable to identify a common cause of these accidents, so subsequent measures focus on raising awareness of safe behavior even further. As in previous years, there were no fatal accidents in 2018. The sharp increase in the number of days lost due to accidents is attributable to individual events involving particularly long absences in Germany. The total number of reportable workplace accidents in the Group is low. At the other locations in Europe and North America, in contrast, the number of days lost declined from their 2017 levels.

We continue developing our safety culture

We derive proactive measures from regular risk assessments, routine inspections of workstations, and audits in production and administration. These measures focus on promoting safety-conscious working so as to continuously refine the safety culture:

- Regular cross-audits and exchange among the German sites
- “Zero” mission to achieve zero accidents, Munich
- Launch of the “Enhancing the safety culture” campaign, Hannover
- Workspace ergonomics assessment, Ludwigsfelde
- Standardized safety walks, Rzeszów/Vancouver
- “My safe workplace” informational campaign and award to the safest workstation, Rzeszów

→ The individual measures are presented in more detail in the non-financial statement of the 2018 Annual Report, p. 97

Outlook

MTU Maintenance Hannover in 2019 is the first site to be certified to the new ISO 45001 standard, which will replace OHSAS 18001 and will unite occupational safety and company health management for the first time.

Health management

Health is a key success factor when it comes to overcoming corporate challenges. The only way for MTU to retain its leading position is with healthy—and hence motivated and high-performing—employees. We also want to integrate health more strongly into our processes and structures as part of our company health management (BGM) system, especially considering demographic change and the digitalized world of work. At the start of 2018, we launched the “People are the center” campaign to provide an overview of all aspects of BGM, and also outlined these in guidelines for managers. We also held several week-long initiatives as well as a seminar on health-focused leadership for managers at our headquarters in Munich. In addition, ergonomics management is becoming increasingly important at German locations due to the aging workforce. Over the course of the reporting period, we took a closer look at workstations in production and implemented ergonomic measures in Industry 4.0 processes.

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 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 sites 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. In Germany, the health rate for the reporting period remained unchanged from the previous year at 94.6%.

Health rate

	2018	2017	2016
Germany	94.6%	94.6%	94.4%

Our employees outside of Germany can also take advantage of permanent health services. Employees in Vancouver, Canada have access to a free Employee Assistance Program. It offers a wide variety of support services on topics such as financial planning for healthcare costs, mental health, and personal or family counselling, as well as advice on equipping workspaces in a way that promotes good health. MTU Aero Engines North America offers its employees health and welfare benefits, including continued wages or salary for short- to long-term absences caused by illness or accidents as well as workplace reintegration, if necessary. At our site in Poland, the basic medical services on offer include a doctor who is on site once a week, psychological support as needed, and flu shots.

Outlook

In 2019, we will conduct a survey in Germany about BGM so as to further develop or realign the services we offer.

More information about:

[MTU's current certifications](#)

[MTU's IMS policy](#)



103-2, 103-3, 403-1, 403-2

Employees and society

Employee development

Our success depends on the expertise of our workforce. Having the right employees with the right skills on board secures our continuous growth course. That is why we promote lifelong learning for all employees in important phases of their professional lives. In addition, we are intensively developing our leadership culture in order to remain innovative and fit for the future in times of social change.



"We transform" is one of our new leadership values. Digitalization and technological transformation are increasingly shaping working life at MTU. We are making MTU and its employees fit for the future.

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 on human factors (failure through human error) or for employees with certification authorizations under aviation legislation. The opportunities for personal and professional development of our employees also make us an attractive employer for new minds and for our talented individuals. 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 development—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 the training indicators through the annual education and training report, and occasionally discusses selected important training initiatives.

Digital learning worlds

New learning techniques play a part in the digital transformation of the company. We therefore want to make continuing vocational training more sustainable via a new online portal. Our employees in Germany have been able to use an e-learning portal since mid-2017. In addition to initial web-based training, the IT tool also enables employees to organize their own development in consultation with their manager. Participants enjoy the digital learning programs and rate them as good to very good. Since the launch, we have gradually expanded the training content, and the first learning programs for international sites are set to be made available as of 2019.

Our Group-wide works agreement in Germany 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. The directive applies to 84% of the total workforce. International sites have their own regulations; at MTU Aero Engines North America, for example, each employee receives an annual development plan. At MTU's 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 establish the training requirements of the workforce in a standard process (training interview or divisional / company-level interviews). Employees evaluate training courses they have completed in a personal meeting with their manager, or in some cases via a feedback form. A training history documents completed training and development courses. Training officers can be consulted at any time for advice on needs-focused training.

Employee training GRI 404-1

	2018	2017	2016
Training days (total)	29,468	21,971	22,324
Training days per employee	3.0	2.3	2.7
Proportion of women in training courses	14.3%	13.6%	15.0%
Investment in training (EUR million)	5.1	3.9	3.7

All figures for 2017 and 2018 excluding Vericor, USA; data on investment in education not available for MTU Maintenance Canada.

We invested a total of EUR 5.1 million in employee training in the past financial year—considerably more than in the two previous years. This increase is mainly due to expansion at our sites and the recruitment of new employees. The total number of training days was 29,468, which was also significantly higher than in the previous year (2017: 21,971). On average, our employees each completed three days of training last year. At 14.3%, the proportion of women in training courses was pretty much in line with the Group-wide proportion of women of 14.4%.

Our contribution to the SDGs

We actively support SDG 4 on “Quality education,” one of the Sustainable Development Goals set out in the United Nations’ 2030 Agenda. At this time of digital change, we are giving our employees the chance to improve their sustainable skills. High-quality employee development plays an important part in helping us make the most of the opportunities that digitalization presents to secure our long-term position as a technology leader. In addition, we contribute to the SDG by training young people in various professions.



→ [Learn more about our contribution to the Sustainable Development Goals \(SDGs\)](#)

We act according to new leadership values

A special focus in employee development is on anchoring sustainable leadership skills in management. These skills will enable managers to work with their employees to shape MTU’s future successfully and actively. This is also reflected in our annual corporate objectives. Our objective for 2018 was to create more efficient leadership through clear expectations, open feedback and responsible decision-making. The Group-wide Business Challenge training initiative is an important instrument for strengthening leadership. In the reporting year, the focus was on further developing our leadership culture. With “Business Challenge: Leadership Values,” we are currently implementing common leadership values for sustainable leadership behavior and an innovative corporate culture. To complement existing MTU skills, the Executive Board and managers have jointly developed the “We transform, We empower, We create trust” leadership values across divisions and sites. We have been implementing our leadership values in our organizational units in Germany since fall 2018, with the international sites to follow in 2019. The International Leadership Program (ILP) will be launched again in 2019 to further promote a common understanding of leadership in a global corporate environment.

Management training

In addition to Business Challenge, MTU offers a number of other programs that we use to develop our managers and support them both professionally and personally. These include:

- Development centers
- Management transition coaching
- Building on Talent / International Building on Talent
- International Leadership Program
- Future Dialog discussions as part of the RESPONSE program, Hannover
- Management development program, Ludwigsfelde
- Management Growth, Rzeszów

We support talented people

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. We systematically identify people at MTU with the potential to assume key roles and support 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 in which too few potential managers work. A know-how buddy system and the exchange of expertise with the aid of knowledge maps help the company preserve valuable expertise and experience. 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 engineering. We also face the challenge here of determining how to retain talented employees and help them grow.

The next generation is particularly important to us

Training is a central component of securing promising young employees. We offer young people in Germany a solid grounding in ten different trades, while our dual courses of study still offer different specializations. We pursue a holistic approach that goes beyond specialist topics to also cover social and ecological aspects, 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; last year they accounted for 3.4% of the total workforce (3.8% in 2017). MTU employed 279 apprentices in Germany at the end of the year (2017: 287). In addition, we offer practical courses of study in collaboration with selected vocational academies.

In an effort to attract potential recruits early on, numerous MTU sites take part in educational initiatives including:

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



103-2, 103-3, 404-1, 404-2



6

Employees and society

Diversity & equal opportunity

Diversity makes us more successful. Collaboration between different cultures, generations and genders ensures a multitude of skills, perspectives and experiences, which makes us more flexible and innovative. This is why we constantly promote diversity & equal opportunity within MTU.



We consider a diverse workforce to be a real asset. Young employees with high potential, such as MTU Aero Engines North America employees who have completed the Engineering Rotation Program to join the company, work together with seasoned MTU experts. In addition to generational diversity, we also place great emphasis on having an intercultural workforce and gender equality.

MTU is actively committed to equal opportunity and equal treatment of all employees and takes a clear stand against discrimination in the workplace. We have laid down these principles in our globally applicable Code of Conduct. We want to 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 our innovative capabilities and competitiveness. → [Code of Conduct](#)

To ensure diversity & 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. We have processes in place that allow breaches of the Code of Conduct or of internal guidelines to be reported. → [These are laid out in detail in the chapter on human rights](#)

MTU commits to diversity & equal opportunity in the following external initiatives:

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

Our contribution to the SDGs

Our commitment to diversity is an aspect of our responsibility to the United Nations' 2030 Agenda for Sustainable Development. This commitment will help achieve SDG 5 on "Gender equality"—one of 17 Sustainable Development Goals (SDGs).



→ [Learn more about our contribution to the Sustainable Development Goals \(SDGs\)](#)

We are committed to equality of leadership

Constantly promoting a diverse and international workforce is one of our overarching corporate objectives. We attach particular importance in this context to gender diversity in order to make better use of all our potential in the face of demographic change and better position the company for the future. MTU views fostering female talent and equality of leadership as its greatest innovation potential. One important goal for us is to increase the proportion of women in management positions—we aim to achieve 13% by 2022 for all management levels except the Executive Board level in Germany. We are pursuing a separate goal for the Executive Board: by 2022 the number of female members is to reach 25%. The Supervisory Board already has two female members each from the employee and shareholder sides.

The Executive Board is kept regularly informed about the fostering of female talent and the measures that have been initiated. In addition, it presents a report on equality at the works meeting at German locations once a year. In Germany, the works council is also involved in decisions subject to co-determination, such as flexible working time rules. The principal focus of our initiatives in 2018 was once again to secure more female talent for the company and offer female employees greater support throughout their careers. We operate these measures locally.

MTU participates in mentoring programs and initiatives to promote more women in leadership positions and intensified its commitment to these efforts during the period under review:

- Cross-Mentoring Munich (a program organized by the City of Munich since 2003)
- Mentoring Program offered by the University of Stuttgart for Women in Studies and Research, "FeelScience" module for female doctoral students (new since 2018)
- Multi-stage funding program offered by the Technical University of Munich for women doctoral students and postdocs, participation in the Women of TUM Talks (new since 2018)
- Program partner and company advisory board of the new collaborative "Project U" project for female students of STEM subjects at Leibniz University Hannover (since 2018)
- Partner of the Women in Leadership Foundation, Canada (new since 2018)

Proportion of women

GRI 405-1

	2018	2017	2016
Managers	10.7%	10.3%	10.7%
Workforce	14.4%	14.1%	14.0%

measured as a proportion of the active workforce (employees with permanent or fixed-term contracts, temporary part-time employees on parental leave, excluding students, interns, trainees/apprentices, short-term holiday workers, temporary agency workers and employees from external companies) and recorded at the end of each year; we do not have figures on the proportion of women by employee group.

The proportion of women in management positions and in the workforce has risen slightly in 2018 compared to the previous year and shows a stable to slightly increasing trend in the three-year perspective (2016–2018). → [An analysis of this can be found in the non-financial statement in the 2018 Annual Report, p. 99.](#)

We aim to take diversity aspects into account when filling new positions and selecting employees within MTU. In particular, we were able to increase the proportion of women in the Development Center, a personal development program for employees with high potential, from 11.9% in the previous year to 20%.

In addition, we achieved a good result in the Women’s Career Index (FKI), an external tool for evaluating career opportunities for women in business enterprises, which evaluates us annually. In the most recent rating, (2018), MTU’s sixth place put it among the best companies in Germany. The benchmark also provides us with suggestions for new initiatives or measures.

Programs and initiatives (internal and external)

- Munich Memorandum for Women in Management
- Cross-Mentoring Munich (a program organized by the City of Munich)
- Women in Leadership Foundation
- Talent Management
- Development centers
- 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 opportunities. → [There is more information on this under “MTU as an employer.”](#) Development of a women’s network at the Munich site began in 2018.

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. In an effort to secure the long-term performance of our employees, we operate a company health management system (→ [Occupational health and safety](#)). Employees in every age group receive equal access to training and development. We offer a range of measures geared toward younger generations: Apprenticeships, trainee programs and development programs for high-potential employees (→ [Employee development](#)).

Age groups GRI 405-1

	2018	2017	2016
< 30 years	16.9%	14.9%	13.7%
30 – 50 years	52.4%	52.1%	52.5%
> 50 years	30.7%	33.0%	33.8%

measured as a proportion of the active workforce (employees with permanent or fixed-term contracts, temporary part-time employees on parental leave, excluding students, interns, trainees/apprentices, short-term holiday workers, temporary agency workers and employees from external companies) and recorded at the end of each year.

We were able to further promote age diversity in 2018 and achieved a greater age mix. The proportion of under-30s rose from 14.9% (2017) to 16.9%. For us, it is each individual's employability that counts. It is important to us to integrate employees with disabilities. In 2018, employees with disabilities made up 5.4% (2017: 5.7%) of the workforce in Germany, where statutory requirements apply. This means we meet the prescribed quota.

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. MTU has employees from 60 countries working together. 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). → [Find out more about our training programs](#)



60
countries

MTU is diverse: we have employees from 60 countries successfully working together and contributing their own individual cultural background.

Outlook

MTU Maintenance Canada joined the Women in Leadership Foundation (WIL) Founded in 2001, the organization is strongly committed to having women throughout Canada in leadership positions. MTU Maintenance Canada plans to send four employees on WIL's renowned five-month Accelerated Leadership Program. In addition, the human resources department is actively exchanging ideas with local politicians on how technical professions can be made more attractive for young female graduates in order to have more women fill positions in technical fields.

More information about:

[Charter of Diversity](#)

[UN Global Compact](#)

[Munich Memorandum for Women in Management](#)

[Cross-Mentoring Munich \(a program organized by the City of Munich\)](#)

[Women in Leadership Foundation](#)

[The MTU "Studienstiftung" foundation for female students in scientific and technical fields](#)



102-12, 103-2, 103-3, 405-1



6

Employees and society

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 rely on a new generation of skilled employees and an innovative business environment. In addition, we support social projects that have a local impact close to our locations.



We offer many young people in Germany apprenticeships at MTU—for instance to become aircraft maintenance mechanics—in specially set up training workshops.

Corporate social responsibility is an integral part of the MTU Principles, which state: “MTU takes its responsibility for the environment and society seriously.” Particularly in the case of its sites in Germany and Poland, the company is a major local employer offering a wide variety of attractive jobs in a high-tech environment. This has a positive effect on employment in the areas where the sites are located, including in less economically successful region such as Brandenburg, Germany. We also offer apprenticeships in various trades in Germany. We generally take a long-term approach to employment. In addition to training and developing our employees, we invest in the expansion of our plants, as we are currently doing in Munich, Ludwigsfelde, Hannover (Germany) and Rzeszów (Poland). This strengthens the local economy and job market, which means we also play a role in social issues such as infrastructure and prosperity. We contribute to society through income tax, too. → [How we add value by steadily increasing shareholder value](#)

Our contribution to the SDGs

Our commitment to social responsibility moves us closer to attaining several of the UN's Sustainable Development Goals (SDGs). We see our corporate social responsibility as a contribution to achieving SDG 4 on "Quality education"; SDG 5 on "Gender equality"; and SDG 17 on "Partnerships for the goals." With our educational initiatives, we are engaged in increasing the number of girls and women who pursue scientific and technical careers, thus improving equal opportunity. We create equal access to high-quality education irrespective of gender or other characteristics. Through intensive collaboration with universities and research institutions on increasing eco-efficiency in aviation, we enter into partnerships aimed at achieving the common goals of sustainable development. Such collaborations are highly important, especially when it comes to new, groundbreaking technologies such as alternative fuels or electric flight.



→ [Learn more about our contribution to the Sustainable Development Goals \(SDGs\)](#)

Our corporate social responsibility

As a company that engages heavily in research, 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. In 2018, we had a total of 279 apprentices. Our holistic approach combines technical qualifications with methodological and social skills. It involves our apprentices in all aspects of the company, including health management, environmental protection, social values and our no-blame culture. MTU also 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. In addition, MTU participates in numerous educational projects and initiatives for children and young people (→ [Diversity & equal opportunity](#), → [Employee development](#)). For example, MTU Maintenance Hannover is now committed to supporting the Jugend forscht young researchers initiative for the fourth year in a row. It is both a partner and host of the regional contest with responsibility for organization and financing.

MTU's technology network

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 to safeguard MTU's capacity for innovation.

Centers of competence (CoCs)

MTU runs six scientific centers of competence across Germany, each with its own research focus. In 2018, the German Aerospace Center (DLR) opened a new institute in Augsburg for testing and simulating gas turbines (TESIG), which will become part of MTU's Center of Competence for Propulsion Systems. Here is where we are building the virtual engine R&D platform as well as a one-of-a-kind test center for validating new propulsion solutions. The institute is a cornerstone of efforts to strengthen the virtual engine research landscape.

Bauhaus Luftfahrt

To address longer-term topics in aviation, we joined forces with partners to set up Bauhaus Luftfahrt, A visionary think tank with an international dimension that pursues novel, unconventional, holistic and interdisciplinary research. It brings industry and science together under one roof, focusing primarily on exploring the socioeconomic, political and ecological aspects of aviation, designing visionary aircraft, unearthing promising technologies for the future, and devising knowledge management strategies.

Fraunhofer-Gesellschaft

Collaboration with various Fraunhofer Institutes in Germany is a key area of activity in MTU's cooperative ventures—particularly when it comes to production and materials technologies. With its broad spectrum of expertise, the Fraunhofer-Gesellschaft works on industry-related research contracts on behalf of MTU.

→ [Our technology network](#)

We support the next generation of researchers and scientists

We run a series of sponsorship schemes at the University of Stuttgart and DLR 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 Leibniz Universität Hannover and Technische Universität Braunschweig. Our international locations also work together with selected universities and colleges in their regions: MTU Aero Engines Polska has established an alliance with the Lezajsk Technical School, and MTU Aero Engines North America has 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 with their careers.

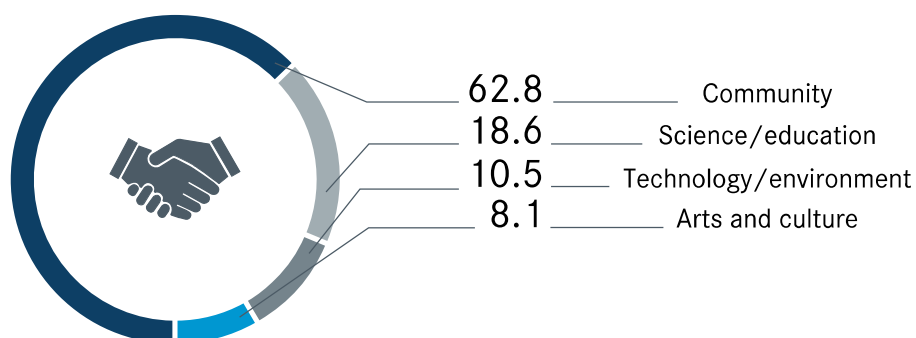
MTU research experts give regular presentations and guest lectures at universities. We provide a significant proportion of the lectures for the engine technology course at the Brandenburg University of Technology (BTU) Cottbus. MTU has endowed a chair for aircraft engine structural mechanics at the University of Stuttgart as well. We also give national and international university groups the opportunity to gain insights into how an industrial company works. We offer trainee programs, dual vocational training, work placements for high school students, work experience for students and opportunities for writing bachelor’s/master’s/doctoral theses at our European sites. These are key factors on the labor market. In 2018, there were 457 students working with us as part of their undergraduate or postgraduate 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.

Corporate citizenship

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 for specific projects over general institutional funding, which are selected and the support implemented independently by the MTU subsidiaries concerned on the basis of careful research. Internal guidelines govern the granting of donations and sponsorship, and a centrally managed clearance and approval process ensures that the rules are adhered to.

Donations and sponsorship in 2018 (distribution in %)



In the reporting year, we supported almost 90 projects and institutions. Together with regional partners, we also achieved local goals that we could not have met on our own. For example, MTU is committed to the Munich Business Climate Pact and makes a local contribution to sustainable development through new e-mobility solutions or carpooling.

Examples of our social responsibility projects in 2018

- Funding of the TurBienchen e.V. child daycare center initiative, Munich
- Sponsorship for childcare while schools are on vacation
- Off-site deployment of MTU's company fire department and doctor, Munich
- wohlBEDACHT e.V. dementia center, Munich
- Die Arche (The Ark)—a project devoted to improving the lives of children in Potsdam, near Berlin
- Cystic fibrosis charity run, Berlin
- InklusVision (inclusive sound festival), Hannover
- Luftfahrt ohne Grenzen (Wings of Help) e.V.
- MTUlandia children's playground, Rzeszów
- Hands on Hartford, East Hartford
- American Lung Association, East Hartford
- Des mach ma!, an event organized by Munich companies



Our employees are involved, for example, in the Fight for Air Climb in the United States, the Plant to Plant Challenge in Germany, snow disaster aid in Bavaria and the Humboldt Broncos hockey club in Canada, following its tragic bus accident.

We welcome our employees' voluntary efforts to support good causes. This is covered by an internal company agreement. At MTU Aero Engines Polska, for instance, 38 volunteers took part in a long-term project to construct the MTUlandia playground. After opening in 2018, MTUlandia has been gradually expanded and is expected to be finished in 2019. Another example in 2018 was the Plant to Plant Challenge, in which MTU employees cycled about 700 kilometers from the Hannover site to the Munich headquarters to raise funds for charity. For every kilometer they cycled, the volunteers donated 10 cents to nonprofit organizations. MTU increased the amount to a total of EUR 6,000. In addition, the company allows staff to undertake projects with the German Federal Agency for Technical Relief during their paid workday, and offers the services of lay justices for labor tribunals and social justice courts and of examiners for the Chamber of Industry and Commerce.



103-2, 103-3, 201-1



7

Goals set and achieved in 2018

Sustainable governance

	Goal	Status/ Deadline	Comments
Compliance	Reorganize Compliance Board	Achieved	The new appointments are presented under Compliance.
	Introduce Compliance Officer function	Achieved	Measure taken from compliance system review
	Introduce a web-based reporting system	2019	Measure taken from compliance system review
	Conduct regular compliance audits to ensure business processes comply with statutory requirements and guidelines	Ongoing	
	Carry out employee training	Ongoing	In 2018, we conducted training on compliance issues, in particular on anti-corruption and international trade, as well as on the MTU Code of Conduct.
Stakeholder dialog	Communicate MTU's contribution to the SDGs	2018/2019	Publish MTU's contribution to the SDGs at www.mtu.de , further information in this report, flyer to follow in 2019
	Extend the stakeholder survey	2019	The online survey is supplemented by the topic of SDGs.
	Conduct stakeholder survey on sustainability at MTU	Ongoing	We have revised the online survey at www.mtu.de , and interviews have taken place with selected representatives of important stakeholder groups.
	Undertake non-financial reporting in accordance with the German CSR Guidelines Implementation Act	Ongoing	part of the Annual Report
	Reinforce sustainability aspects of stakeholder dialogs on established platforms	Ongoing	
	Exchange more information with partners on sustainability issues	Ongoing	
Sustainability management	Consolidate sustainability topics in the risk management process	Achieved	A quarterly survey on the key sustainability topics was launched in 2018.

Expand CR Steering Committee and CR team	Achieved	The CR Board has been established as a decision-making body for sustainability, as has the CR Reporting function.
Review CR management processes	Achieved	
Benchmark and introduction of CR database	2019	
Participate in sustainability ratings	Ongoing	
CR training	Ongoing	Train new CR team members and hold campus lecture

Product stewardship

	Goal	Status/ Deadline	Comments
Product quality and flight safety	Lower or at least keep the number of customer complaints stable at all locations compared to the previous year	Goal partly achieved	Achieved in 2018 at the majority of locations
	Launch improvement project for analyzing what went wrong if a customer complains	Achieved	
	Run quality initiative at MTU Maintenance	2019	
	Conduct monitoring and recertification audits for quality management systems	Ongoing	
Climate strategy	Achieve a 15%* reduction in CO ₂ 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.
	Achieve a 25%* reduction in CO ₂ emissions with the second-generation geared turbofan	2030	Implementation of the second stage (Claire 2); launch of numerous technology projects within the framework of the German federal government's aviation research program (LuFo V-3) with the aim of reducing fuel consumption, commissioning of a new product-ready axial compressor at RWTH Aachen University to demonstrate advanced compressor technologies

	Achieve a 40%* reduction in CO ₂ emissions with an integrated ultra-efficient propulsion concept	2050	Implementation of the third stage (Claire 3); coordination of work content of a partner technology project to evaluate and demonstrate the feasibility of novel circular processes; investigation of hybrid-electric or all-electric powertrains for aircraft taxis or aircraft (19-seater) with partners in preparation
	Support the rollout of sustainable fuels with MTU engine expertise	Ongoing	e.g. by participating in research projects, studies and practical tests
Aircraft noise	Achieve a 20 dB** (cumulative) reduction in noise emissions relative to ICAO Stage 4 with the first-generation geared turbofan	2020	All models in the Pratt & Whitney GTF™ engine family will be rolled out into large-scale production by 2020.
	Achieve an 11 dB** 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); launch of numerous technology projects within the framework of the German federal government's aviation research program (LuFo V-3) with the aim of reducing noise emissions using enhanced noise measurement and calculation processes
	Achieve a 15 dB** 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

	Goal	Status/ Deadline	Comments
Supplier management	Incorporate sustainability aspects into existing supplier audits	from 2019	
	Conduct annual survey of all relevant suppliers on compliance with the Dodd-Frank Act concerning conflict minerals	Ongoing	For 75% of the Group reporting entity
	Require new suppliers to commit to the Code of Conduct	Ongoing	For 75% of the Group reporting entity
	Conduct standardized assessment of risks in the supply chain	Ongoing	Risk analysis by country and product group launched

Environmental protection in production

	Goal	Status/ Deadline	Comments
Reduced consumption of energy and resources	Reduce CO ₂ emissions by 25% at the Munich site as part of Clean Air Industrial Site (benchmark year: 1990)	2020	
	Zero mission (zero emissions, zero waste) in Munich	Ongoing	e.g.: introduction of returnable cups at the German locations, Green Office: increased use of eco-friendly office materials, offer of eco-friendly travel alternatives in the travel portal for business travel bookings
	Promote sustainable mobility	Ongoing	We have installed electric charging spots at our Munich and Hanover sites, and we are operating additional electric vehicles for internal transport. Electric charging spots will soon be installed at the Ludwigsfelde site.
	Carry out employee training on sustainable resource consumption and the company's environmental activities	Ongoing	
	Reduce the environmental footprint of business travel (resource consumption and CO ₂ emissions) by making increased use of modern communication technologies	Ongoing	
Energy-saving measures	Reduce the amount of energy required to power buildings	Ongoing	
	Upgrade to LED lighting	Ongoing	
	Shut down machines and systems during extended interruptions to operations	Ongoing	
	Improve the efficiency of compressed air generation	Ongoing	
	Use groundwater for cooling	Ongoing	
Material efficiency	Sustainable manufacturing concepts: Apply new laser-based additive manufacturing techniques to build production parts	Ongoing	The range of parts is continuously being expanded; a department was set up in 2018 to cluster activities.

	Develop materials that are more lightweight and more resistant to extreme temperatures, resulting in lower fuel consumption and emissions.	Ongoing	
Environmental certifications	Certification to ISO 14001 and validation under the Eco-Management and Audit Scheme (EMAS)	Ongoing	The Hannover and Berlin sites are certified to ISO 14001; the Munich, Hannover and Ludwigsfelde sites are validated under EMAS. The relevant audits were passed again in 2018.
	Publish annual environmental statements for the German sites according to EMAS	Ongoing	

Employees

	Goal	Status/ Deadline	Comments
Occupational safety	Limit reportable workplace accidents to a maximum of 20 within the MTU Group (production sites)	Not achieved	Yearly tolerance threshold for 2018 exceeded, mainly attributable to the higher number of accidents at the Munich and Ludwigsfelde locations, but MTU's overall accident rate remains low at 4.3 accidents per 1,000 employees.
	Run surveillance and recertification audits in the MTU Group in accordance with OHSAS 18001 for sites that are already certified	Annual	Audits were passed again in 2018.
	Run a safety at work campaign with key topics	Ongoing	Local measures were implemented at production sites in 2018.
Occupational health	Conduct employee survey on occupational health management at the German sites	2019	
	Obtain certification to ISO 45001	2019	MTU Maintenance Hannover is the first MTU site to be certified to this new standard.
	Promote a healthy diet	Ongoing	
	Ergonomics management	Ongoing	Ergonomic measures in Industry 4.0 manufacturing processes were introduced in 2018.

Attractiveness as an employer	Strengthen international focus of employer branding	Ongoing	
	Continue developing offers to improve people's work-life balance	Ongoing	
	Receive "Top Employer" status in Germany, Poland and British Columbia, Canada	Annual	
	Roll out 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
Diversity & equal opportunities	Have a higher proportion of women in management positions (target: 13%) and on the Executive Board (target: 25%)	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	
	Participate in initiatives designed to promote young female talent	Ongoing	e.g. Girls' Day or the Research Camp for Girls
Training and development	Continue with Business Challenge training initiative	Achieved	Launch MTU Business Challenge III
	Introduce a new online learning portal for employees	2019	E-learning offerings have been expanded for German sites; international sites will be connected in 2019.
	Offer new training opportunities to promote greater internationalization	2019	Launch the next round of the International Leadership Program (ILP)
	Anchor the new leadership values company-wide	2019	As part of Business Challenge Leadership in Germany from 2018, international sites to follow from 2019
	Conduct management transition coaching	Ongoing	
Employer/employee dialog	Conduct regular employee surveys	Achieved	We have implemented measures for sites in Germany and Poland.
	Confer MTU Award to honor outstanding performance	2019	

Run company suggestion scheme (BVW) for putting employees' ideas for improvement into practice	Ongoing	Launch of new BVW 2019
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Society

	Goal	Status/ Deadline	Comments
Corporate volunteering	Support employee volunteer work	Ongoing	
Investing in young talent	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
	MTU foundation with the goal of actively supporting development of female students in STEM disciplines	Ongoing	
	Award the Wolfgang Heilmann Prize for young scientists	Annual	
Promote science journalism	Sponsor the German award for aerospace journalism	Annual	

GRI and UN Global Compact index

The MTU Aero Engines 2018 Sustainability Report was drawn up in compliance with the Global Reporting Initiative (GRI) and meets the GRI standards (“Core” option). The GRI index contains cross-references of the GRI disclosures to the individual chapters in the report. Furthermore, the Sustainability Report serves to provide information on progress made in accordance with the UN Global Compact (UNGC). In this index, you will also find cross-references of the statements in this report to the ten principles of the UNGC.

General disclosures 2016

Organizational profile

GRI standard	UNGC principle		Reference/Comment
102-1		Name of the organization	MTU Aero Engines
102-2		Activities, brands, products and services	MTU Aero Engines
102-3		Organization’s headquarters	MTU Aero Engines
102-4		Countries where the organization operates	2018 Annual Report, p. 67
102-5		Nature of ownership and legal form	MTU Aero Engines 2018 Annual Report, p. 38
102-6		Markets served	2018 Annual Report, p. 165
102-7		Scale of organization	MTU Aero Engines
102-8	6	Total workforce	MTU as an employer <i>Information on the proportion of women by employment type and employment contract is treated as confidential at MTU.</i>

102-9	Supply chain	Sustainable supplier management
102-10	Changes to the supply chain	none
102-11	Precautionary approach	Environmental management
102-12	External charters, principles, or other initiatives	<p>Compliance</p> <hr/> <p>Eco-efficient engines</p> <hr/> <p>Environmental management</p> <hr/> <p>MTU as an employer</p> <hr/> <p>Diversity and equal opportunity</p>
102-13	Memberships	<p>Selection:</p> <ul style="list-style-type: none"> • Aviation Initiative for Renewable Energy in Germany e.V. (aireg) • Bauhaus Luftfahrt e.V. • Bavarian Employers' Associations for the Metalworking and Electrical Industries (bayme) • bavAIRia e.V. • German Aerospace Industries Association (BDLI) • Federation of German Security and Defence Industries (BDSV) • Deutsche Gesellschaft für Luft- und Raumfahrt – Lilienthal-Oberth e.V. (DGLR) • Friends and Sponsors of the Deutsches Museum • Deutsches Verkehrsforum e.V. • German Aerospace Center (DLR) • Enterprise for Health • European Aerospace Quality Group • Forum Luft- und Raumfahrt e.V. • IATA Strategic Partnerships • Chamber of Commerce and Industry for Munich and Upper Bavaria (IHK) • Münchener Bildungsforum gem. n.e.V. (Munich-based network for employee training and HR development) • Stifterverband für die Deutsche Wissenschaft (sponsors' association for German science) • Trace International, Inc. • Bavarian Industry Association • Bavarian Employers' Associations for the Metalworking and Electrical Industries (vbm) • UN Global Compact (Signatory) • Association of German Engineers (VDI)

Strategy

GRI standard	UNGC principle		Reference/Comment
102-14		Statement from the Executive Board	Foreword by the Chief Executive Officer

Ethics and integrity

GRI standard	UNGC principle		Reference/Comment
102-16	10	Values, principles and codes of conduct	Compliance MTU as an employer

Corporate governance

GRI standard	UNGC principle		Reference/Comment
102-18		Governance structure	2018 Annual Report, p. 34–35, 62–63

Stakeholder engagement

GRI standard	UNGC principle		Reference/Comment
102-40		Stakeholder groups	Stakeholder dialog
102-41	3	Collective bargaining agreements	MTU as an employer
102-42		Identifying and selecting stakeholders	Stakeholder dialog
102-43		Approach to stakeholder engagement	Stakeholder dialog
102-44		Key topics and concerns of stakeholders	Stakeholder dialog

Reporting practice

GRI standard	UNGC principle		Reference/Comment
102-45		Consolidated Group entities	About this report
102-46		Material aspects identified	Material topics
102-47		List of material topics	Material topics
102-48		Restatements of information	About this report
102-49		Changes in reporting	About this report
102-50		Reporting period	About this report
102-51		Date of most recent report	About this report
102-52		Reporting cycle	About this report
102-53		Contact point for questions regarding the report	About this report
102-54		Option to apply GRI standards	About this report
102-56		External assurance	About this report

Management approach 2016

Management approach

GRI standard	UNGC principle		Reference/Comment
103-1		Boundaries to material topics	<p>Materiality principle <i>MTU determines the relevance of the material topics along the 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>
103-2		Management approach and its components	<p><i>The management approaches are presented for each material topic.</i></p>
103-3		Evaluation of the management approach	<p>Sustainability strategy and organization</p> <hr/> <p>Material topics</p> <hr/> <p>Stakeholder dialog</p> <hr/> <p><i>Management approaches to the material topics</i></p>

Topic-specific standards 2016

Economic

GRI standard	UNGC principle		Reference/Comment
Economic performance			
103-2, 103-3	7	Management approach	MTU Aero Engines Sustainability strategy and organization Corporate social responsibility Eco-efficient engines
201-1		Value generated and distributed	MTU Aero Engines Corporate social responsibility <i>Key figures are not broken down by market or region</i>
201-2	7	Financial implications and risks due to climate change	Eco-efficient engines
Procurement practices 2016			
103-2, 103-3		Management approach	Sustainable supplier management
204-1		Proportion of spending on local suppliers	Sustainable supplier management
Anti-corruption 2016			
103-2, 103-3	10	Management approach	Compliance
205-1	10	Operations assessed for risks related to corruption	Compliance
205-2	10	Information and training about anti-corruption	Compliance
205-3	10	Confirmed incidents of corruption and actions taken	Compliance
Anti-competitive behavior			

103-2, 103-3	Management approach	Compliance
206-1	Legal actions for anti-competitive behavior, anti-trust and monopoly practices	Compliance

Environmental

GRI standard	UNGC principle		Reference/Comment
Materials			
103-2, 103-3	7, 8	Management approach	Environmental management Conservation of resources
301-1	7, 8	Materials used by weight or volume	Conservation of resources
301-3	8	Recycled products and their packaging materials	Conservation of resources
Energy			
103-2, 103-3	7, 8	Management approach	Environmental management Conservation of resources
302-1	8, 9	Energy consumption within the organization	Conservation of resources
302-4	8, 9	Reduction of energy consumption	Conservation of resources
302-5	8, 9	Reductions in energy requirements of products and services	Eco-efficient engines
Water			
103-2, 103-3	7, 8	Management approach	Environmental management Conservation of resources
303-1	7, 8	Water withdrawal by source	Conservation of resources
303-2	7, 8	Water sources affected	Conservation of resources

303-3	7, 8	Water recycled and reused	Conservation of resources
Emissions			
103-2, 103-3	7-9	Management approach	Environmental management
			Emissions
305-1	7, 8	Direct (Scope 1) greenhouse gas emissions	Emissions
305-2	7, 8	Energy indirect (Scope 2) greenhouse gas emissions	Emissions
305-3	7, 8, 9	Other indirect (Scope 3) greenhouse gas emissions	Emissions
			Eco-efficient engines
305-5	8, 9	Reduction of greenhouse gas emissions	Emissions
305-7	7, 8	Significant air emissions	Emissions
Effluents and waste			
103-2, 103-3		Management approach	Environmental management
			Conservation of resources
306-1	8	water discharge	Conservation of resources
306-2	8	Waste by type and disposal method	Conservation of resources
306-3	8	Spills	Conservation of resources
Environmental compliance			
103-2, 103-3		Management approach	Environmental management
307-1	8	Non-compliance with environmental laws and regulations	Environmental management
Supplier environmental assessment			
103-2, 103-3	8	Management approach	Sustainable supplier management

308-1	8	New suppliers that were screened using environmental criteria	Sustainable supplier management
308-2	8	Negative environmental impacts in the supply chain	Sustainable supplier management

Social

GRI standard	UNGC principle		Reference/Comment
Employment			
103-2, 103-3	6	Management approach	MTU as an employer
401-1	6	Employee turnover	MTU as an employer
401-2		Benefits provided to full-time employees	MTU as an employer
401-3	6	Parental leave	MTU as an employer
Labor/management relations			
103-2, 103-3		Management approach	MTU as an employer
402-1	3	Minimum notice periods regarding operational changes	Germany: Agreements 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). As a rule, this is also laid down in the collective agreements. In cases in which the arbitration body's decision can overrule an agreement between the works council and employer, the regulations governing the notice period remain valid until replaced. Also laid down in the collective agreements are the notice periods for the assertion of claims for employers as well as employees. 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. US: According to the WARN Act.
Occupational health and safety			

103-2, 103-3		Management approach	Occupational health and safety
403-1		Percentage of total workforce represented in formal joint management worker health and safety committees	Occupational health and safety <i>The entire workforce of all our production sites is fully represented in the locally organized occupational safety committees, the composition of which reflects the legal requirements for employer and employee representation in the respective countries .</i>
403-2		Injuries, occupational diseases, days lost and work-related fatalities	Occupational health and safety
Training and education			
103-2, 103-3	6	Management approach	Employee development
404-1	6	Average hours of training per year per employee	Employee development
404-2		Lifelong learning	Employee development
404-3	6	Percentage of employees receiving regular performance reviews	MTU as an employer
Diversity and equal opportunity			
103-2, 103-3	6	Management approach	Diversity and equal opportunity
405-1	6	Diversity of governance bodies and employees	Diversity and equal opportunity
405-2	6	Ratio of basic salary and remuneration of women to men	MTU as an employer, remuneration and additional benefits
Non-discrimination			
103-2, 103-3	6	Management approach	Human rights
406-1	6	Cases of discrimination and corrective actions taken	Human rights
Freedom of association and collective bargaining			
103-2, 103-3	2, 3	Management approach	Human rights
407-1	2, 3	Operations and suppliers for which the right to freedom of association and collective bargaining may be at risk	Human rights

			Sustainable supplier management
Child labor			
103-2, 103-3	2, 5	Management approach	Human rights
408-1	2, 5	Operations and suppliers at significant risk for incidents of child labor	Human rights
			Sustainable supplier management
Forced or compulsory labor			
103-2, 103-3	2, 4	Management approach	Human rights
			Sustainable supplier management
409-1	2, 4	Operations and suppliers with significant risk for incidents of forced and compulsory labor	Human rights
			Sustainable supplier management
Human rights assessment			
103-2, 103-3	1, 2	Management approach	Human rights
			Sustainable supplier management
412-1	2	Operations that have been subject to human rights reviews	Human rights
412-2	1	Employee training on human rights policies or procedures	Compliance
412-3	2	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	Human rights
			Sustainable supplier management
Supplier social assessment			
103-2, 103-3	2	Management approach	Human rights
			Sustainable supplier management
414-1	2	New suppliers that were screened using social criteria	Human rights
			Sustainable supplier management

414-2	2	Negative social impacts in the supply chain and actions taken	Human rights
			Sustainable supplier management
Public policy			
103-2, 103-3	10	Management approach	Stakeholder dialog
415-1	10	Political contributions	Stakeholder dialog
Customer health and safety			
103-2, 103-3		Management approach	Product quality and flight safety
416-1		Products and services for which health and safety impacts were assessed	Product quality and flight safety
416-2		Incidents of non-compliance concerning the health and safety impacts of products and services	Product quality and flight safety
Marketing and labeling			
103-2, 103-3		Management approach	Product quality and flight safety
417-1		Requirements for product labelling and information	Product quality and flight safety
417-2		Incidents of non-compliance concerning product labeling and information	Product quality and flight safety <i>In the reporting period, there were no incidents of non-compliance with the regulations.</i>
Customer privacy			
103-2, 103-3		Management approach	Compliance
418-1		Substantiated complaints concerning breaches of data protection	Compliance
Socioeconomic compliance			
103-2, 103-3		Management approach	Compliance
419-1		Non-compliance with laws and regulations in the social and economic area	Compliance

Materiality principle
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Material topics	Relevance for MTU along the value chain		
	Upstream activities (e.g. supply chain)	Activities within the MTU group	Downstream activities (e.g. flights operated by airlines)
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 ₂ 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 business	significant	significant	significant
Responsible sourcing MRO business	significant	significant	significant
Environmental management: energy		significant	
Environmental management: waste		significant	
CO ₂ 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		significant	
Work-life balance		significant	
Demographic change		significant	
Corporate citizenship		significant	

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



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Masthead

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