

2019 SUSTAINABILITY REPORT

Our ideas and concepts *for a sustainable future*



Our ideas and concepts for a sustainable future

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 and sustainability does not end at the gates of our plants: we involve the supply chain in our activities, too.



100%
reduction in emissions

Is this possible for air travel? This is the vision that drives us. Our long-term goal is to help aviation become emissions-free and, in doing so, achieve the two-degree target set out in the Paris Climate Agreement.



65%
less aircraft noise

With the help of our Clean Air Engine agenda, we want cut aircraft noise by more than half. Flying as a whole is set to become significantly quieter, too.



Reiner Winkler
Chief Executive Officer
MTU Aero Engines AG

“The coronavirus pandemic demonstrates the importance of responsible and decisive action. As a company, we bear responsibility for the protection and health of our employees, but we also recognize our obligation to society and the environment. That is why we are continuing to pursue the changes necessary to create a more sustainable future.”



- Foreword by the Chief Executive Officer
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Introduction

Foreword by the Chief Executive Officer



Reiner Winkler

Chief Executive Officer

MTU Aero Engines AG

Dear readers,

The coronavirus pandemic presents us all with unexpected challenges, affecting the way people and companies all over the world live and work. Things that the entire aviation industry, and by extension MTU, had previously taken for granted have now been thrown into disarray. But what the crisis reaffirms is the importance of responsible and decisive action. As a company, we bear responsibility for the protection and health of our employees, but we also recognize our obligation to society and the environment. That is why we are continuing to pursue the changes necessary to create a more sustainable future. We firmly believe that we can achieve a great deal by doing so.

Climate action is at the forefront of our sustainability activities. In times of climate change, the aviation industry, too, must do its bit to help reduce CO₂ emissions. We have a vision and that is to be an enabler of emissions-free flight and mobility that doesn't rely on fossil fuels. This isn't something we can do overnight. We have therefore drawn up a "Technology roadmap towards emission free flying" to help us pursue clear goals and transform compelling ideas into airworthy concepts. Our vision requires us rethink the aircraft engine and consider different approaches—and that is precisely what we are doing. From hybrid-electric and battery-electric engines to fuel cells and alternative fuels—we're looking at all the options for driving the decarbonization of aviation. In doing so, we want to help achieve the goal of limiting global warming to less than two degrees Celsius, as set out in the Paris Agreement.

We also address a wider range of topics in this report. Our climate action efforts extend to production activities at our sites. In that regard, we are currently examining new climate concepts for our facilities. You can also read about the specific progress we made in 2019, not only in reducing CO₂ emissions in our plants, but also with respect to energy consumption and waste management. We include the supply chain in sustainable value creation and attach great importance to safeguarding the respect of human rights in suppliers' upstream production processes for our components. As part of our due diligence, we carry out supplier risk analyses, a process that we intend to refine in the future so we can further enhance our assessment of potential risks.

Our compliance system sets out the legal and ethical framework for our actions, while our Code of Conduct and internal guidelines lay down clear requirements and serve as a point of orientation. To supplement this compliance system, we introduced a new reporting platform in 2019. Through this web-based helpline, all MTU stakeholders have the opportunity to submit reports or information—anononymously, if desired.

We have already achieved a great deal, but we still have a lot to do. Our success is contingent on a motivated, qualified and healthy workforce. At MTU, we provide an innovative and diverse working environment with flexible working models, tailored personal development options and social working standards marked by a sense of responsibility. We have always attached great importance to occupational safety and protecting our employees' health. This remains a top priority during the coronavirus pandemic and we have introduced a whole host of additional measures accordingly. Last but not least, we are committed to an innovative leadership culture that supports us in all our undertakings. To give this culture a solid foundation, we introduced our leadership values “we transform, we empower, we create trust” in 2019 at our sites both in Germany and abroad. These leadership values are now firmly established at all management levels throughout the Group.

In all of this, we are guided by the United Nations' Sustainable Development Goals and the ten principles of the UN Global Compact. They are key to helping us navigate the way to a more livable future. We won't let the coronavirus throw us off this course, and indeed it won't.

Even in these difficult times, we are committed to conducting our business sustainably in all its various facets. You can find out for yourselves how we go about that in this sustainability report. I hope it makes for a stimulating read!

Yours sincerely,



Reiner Winkler
Chief Executive Officer
MTU Aero Engines AG

GRI: 102-14

Overview

The enterprise MTU

MTU Aero Engines AG is Germany's leading engine manufacturer. The Group offers solutions for the entire aircraft engine lifecycle—from development to production to maintenance. MTU products and services are characterized by innovative and sometimes unique approaches.



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.

86
years

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



10,660
employees

were working at MTU's fully consolidated sites around the world at the end of 2019.



4.6
billion
euros
in
revenue



was recorded by MTU for the financial year 2019.

16
company
locations
around
the
world



give MTU a presence in important markets and regions.

MTU Aero Engines is a technological leader in low-pressure turbines, high-pressure compressors, turbine center frames as well as manufacturing processes and repair techniques. In the commercial OEM business, the company plays a key role in the development, manufacturing and marketing of high-tech components together with international partners. MTU components are used in one third of the world's commercial aircraft. In the commercial maintenance sector the company ranks among the top three service providers for commercial aircraft engines and industrial gas turbines. The activities are combined under the roof of MTU Maintenance. In the military arena, MTU Aero Engines is Germany's industrial lead company for practically all engines operated by the country's military. MTU operates a network of locations around the globe; Munich is home to its corporate headquarters.

→ [More at www.mtu.de](http://www.mtu.de)

MTU's highlights of 2019



→ You can find this film at https://www.youtube.com/watch?v=6P_ruIozIGI

The 2019 financial year: We continued on our path of success

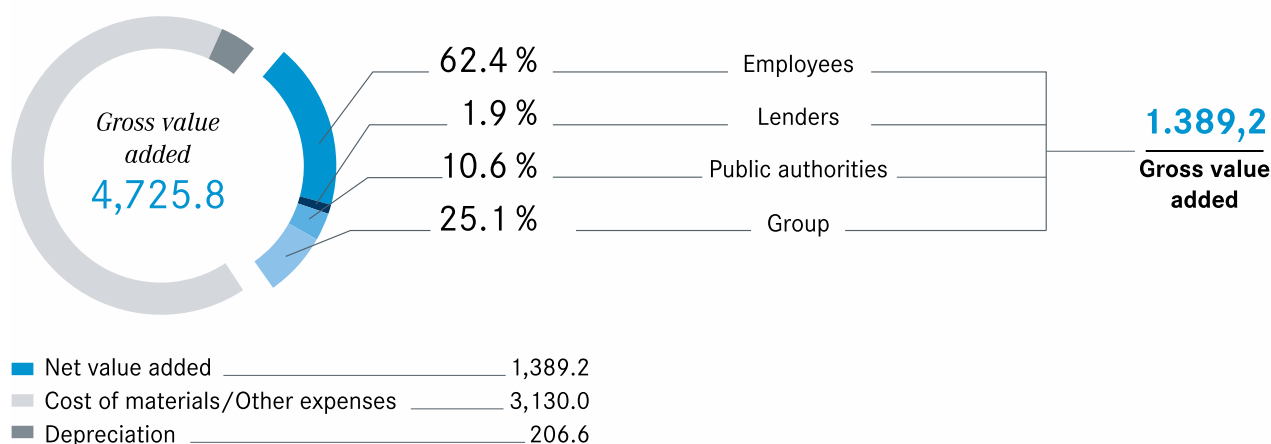
For us, 2019 was another record year and we were able to continue our profitable growth trajectory. We take a long-term approach to our company's success and our goal is to steadily increase shareholder value. Our commercial success generates added value for our stakeholders and contributes to society's 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 the end of 2019, the MTU Group employed 10,660 people at fully consolidated locations around the world, with 293 young apprentices training. We are a major employer in the region at all major international locations. Our plan is to establish a new repair site in Serbia, where we will provide specialist aviation training based on the dual-track system in Germany. We offer 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 in Germany and Rzeszów in Poland. Through our innovative capabilities, we create upstream value chains and jobs in the supply chain. We work with around 6,200 suppliers, mainly in Europe.

In 2019, we again exceeded the previous year's revenue figure to achieve a new record of EUR 4.628 billion. Operating profit (EBIT adjusted) rose by 13% to reach a new all-time high of EUR 756.9 million. We reported net income of EUR 537.6 million, a new record and a year-on-year increase of 12%. The company's order backlog ran to EUR 19.8 billion in 2019, which in purely numerical terms translated to production capacity utilization of some four years. Geared turbofan engines accounted for the majority of the new orders we took. They serve as the basis for our [Clean Air Engine agenda](#) goal of further reducing aircraft noise and CO₂ emissions.

Financial data (in EUR m)
 GRI 201-1

	2019	2018
Revenue	4,628.4	4,567.1
Earnings before interest and tax (EBIT, adjusted)	756.9	671.4
Income taxes	178.2	154.0
Earnings after tax (adjusted)	537.6	479.1
Capital expenditure on property, plant and equipment and intangible assets	478.9	272.8

Consistent with our goal of steadily increasing shareholder value, we continued our pattern of positive development in 2019. Net value added has remained at a consistently high level over several years, and again amounted to EUR 1.4 billion in the year under review. Most of that (62.4%) went to our employees in the form of wages, salaries and other benefits, while the Group retained 25.1%. The proportion allocated to pay taxes levied by public authorities accounted for 10.6%. To overcome the crisis resulting from the coronavirus pandemic, MTU has taken various financial measures to safeguard the company's liquidity. These include, for example, the proposal by the Executive Board and the Supervisory Board to the Annual General Meeting to carry forward the net profit for financial year 2019 into this year. Consequently, it was not possible to make any statements about dividends to shareholders at the time this report went to press. We also offer our employees the opportunity to participate in MTU's success through an annual employee share program.

Value added 2019 (in EUR m)
 GRI 201-1


Gross value added = revenue and other income; dividends to shareholders: The Executive Board and Supervisory Board proposed to the Annual General Meeting to carry forward the net profit for 2019 into this year.

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-oekom
- CDP
- MSCI ESG Research

Information about the coronavirus pandemic

This sustainability report covers the 2019 financial year and is being published as the world fights against the coronavirus pandemic. People and companies are in a different situation today than they were in the reporting year. MTU is doing its part to help contain the pandemic and has taken numerous measures to protect its workforce. The current situation notwithstanding, we want to live up to our corporate social responsibility. You can find more information [here](#).

More information about:

Ratings & rankings: www.mtu.de

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

Coronavirus pandemic

MTU vs. virus

The coronavirus pandemic presents us all with unexpected challenges, affecting the way people and companies all over the world live and work. In times like these, we bear responsibility as a company for the protection and health of our employees, but we also want to show our solidarity with society and do what we can to help. Here is an overview of the measures we are taking and the activities we have launched.

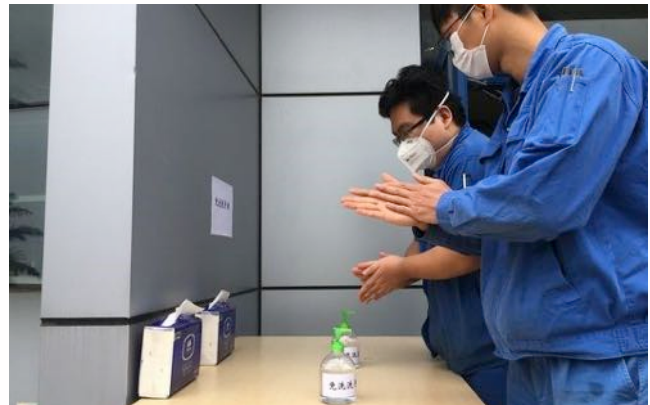


Employee protection is at the center of our coronavirus crisis management.

The following provides a summary of all the information available to us up to the editorial deadline on June 12, 2020 relating to our ongoing measures and activities in response to the coronavirus pandemic. The goal of all measures and activities is to get through the crisis together with determination, protect employees and visitors at our locations from infection as best we can, and preserve MTU's economic strength and financial assets.

We protect our employees

We have put extensive measures in place across all sites to protect our employees' health during the coronavirus pandemic. These technical and organizational measures apply both to the actual workstations and to daily workflow processes. We want to offer our employees the best possible protection against the coronavirus and minimize the risk of infection as far as possible. The aim is to prevent infection in day-to-day working life. To this end, we have drawn up guidelines that are binding for all employees. We increasingly rely on mobile working, virtual conferences and alternating presence in the office to limit the number of employees present at one time and reduce the risk of infection. Hygiene measures such as increased cleaning of contact surfaces or the distribution of disinfectant on the premises are intended to help prevent the spread of the virus. We have issued distancing and hygiene regulations that must be strictly adhered to during any unavoidable meetings of small groups requiring physical attendance as well as in communal areas and canteens. The wearing of protective masks is mandatory wherever a minimum distance of two meters cannot be maintained, for example in production. MTU provides masks for this purpose. If necessary, we take workplace-related measures or individual measures to protect employees who belong to risk groups.



MTU vs. virus: Our protective measures include the wearing of masks at work and taking hygiene precautions such as regular hand disinfection.

We are running a comprehensive communication campaign to keep employees continuously up to speed with important changes and processes and to sensitize them to the risks and dangers of the coronavirus. MTU's crisis committee, on which various functions of the company are represented, has initiated company-wide measures to protect employees. The committee also ensured that all the German sites were coordinating with one another on a daily basis.

How we are responding to the economic crisis

We want to ensure that MTU emerges from the crisis at full strength and with its capacity for innovation fully intact. In view of the pandemic, the company temporarily suspended most of its activities at several European sites in April 2020. Besides being our response to the beginnings of an interruption in the supply of materials, this coordinated shutdown of our operations was a way for us to protect the workforce and help contain the spread of the pandemic. We did this in close cooperation with our customers and partners. We made sure that we were there for all stakeholders during this time and ensured our availability to handle important concerns. Wherever operations had to be maintained, appropriate precautions were taken to protect employees. The shutdown affected our production sites in Munich and in Rzeszów, Poland, as well as our maintenance operations in Hannover and Ludwigsfelde near Berlin. This enabled us to weather the first phase of the crisis calmly and collectedly and with great cohesion.

Following the suspension of operations, we resumed with short-time working arrangements at our German sites. The organizational and technical measures we have adopted to prevent coronavirus infections mean we continue to ensure high standards of protection for our employees' health on-site. To overcome the crisis, MTU has taken various financial measures to safeguard the company's liquidity. These include, for example, the proposal by the Executive Board and the Supervisory Board to the Annual General Meeting to carry forward the net profit for financial year 2019 into this year.

MTU is continuing to closely monitor the highly dynamic situation surrounding the coronavirus and is taking the necessary operational and financial precautions in good time to minimize any negative economic impact on the company.

We responded quickly: Occupational safety in line with the new legal standard

We have implemented a comprehensive package of measures to enable operations to resume at MTU's sites and to offer the maximum possible protection against infection to the employees on-site for this purpose. The measures comply with the new occupational safety standard issued by the German Federal Ministry of Labour and Social Affairs (BMAS SARS-CoV-2 occupational safety standard of April 16, 2020). All employees in Germany received written instructions on this in early May 2020. In this way, we are fulfilling our legal duty of care as an employer to prevent coronavirus infections. Instruction on the new statutory occupational health and safety standard is a fundamental component of our operational measures concept and is supplemented as required by instructions and measures specific to technical areas.

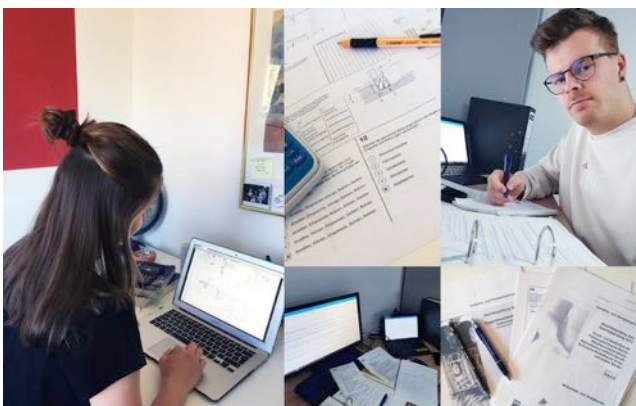
We show solidarity

Because short-time working can lead to cases of particular hardship among colleagues, MTU has set up a solidarity relief fund worth more than EUR 4 million. The Executive Board and well over 90% of senior management have waived a significant slice of their variable remuneration for the past financial year. This solidarity fund enables us to help ensure that we all share the burden.



MTU vs. virus: Each site issues employees with masks centrally. In addition, at the beginning of April we were able to donate protective masks to Bavarian hospitals and the Brandenburg regional association of the German Red Cross.

We have also been directly involved in fighting the pandemic through support and donations. In Munich, we provided more than 50,000 protective masks for use in Bavarian emergency facilities and hospitals. This was possible because MTU always keeps protective masks in stock, further masks were due to arrive and we had sufficient equipment available for emergency operations. MTU Maintenance Berlin-Brandenburg donated 10,000 masks to the Brandenburg chapter of the German Red Cross. The masks were mainly put to use in local care facilities. Staff at MTU in Rzeszów took part in a fundraising campaign for the nearby hospital in Lańcut, one of the clinics in Poland providing intensive care for coronavirus patients. Employees and management felt it was important to support first and foremost those people working in hospitals and care settings, who are giving their all.



MTU vs. virus: Our Munich training team turned to home schooling during the suspension of operations and made use of digital possibilities to teach theory. Our board members and employees also used video conferencing to stay in touch with customers, partners and their teams during the crisis.

Our reporting concept

About this report

Each year, MTU Aero Engines AG compiles a sustainability report to comprehensively inform its stakeholders about corporate responsibility (CR) of an economic, environmental or social nature within the company. The report provides information about the company's CR strategy, objectives and performance and also describes the priorities and progress made in 2019, building on the previous report. It supplements the non-financial statement in our Annual Report.

Reporting period and cycle

The reporting period covers financial year 2019 (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 as an online report at → sustainability.mtu.de in June 2020. 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, unless 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 2019 Sustainability Report was drawn up in compliance with the Global Reporting Initiative (GRI) and meets the GRI standards ("Core" option). In accordance with these globally recognized sustainability reporting guidelines, 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 is regularly checked and updated, and 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 2019 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 of the UN Global Compact, we support the Sustainable Development Goals and want to help achieve them by 2030. We present our contribution to the SDGs under → [Sustainable Development Goals](#).

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.

→ [News and media](#)

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. We have already reported selected key figures for topics of very high importance in our non-financial statement. These have been verified by auditors as part of a limited assurance.

Contacts

Please address questions about the report 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.

This document has been formulated in gender-neutral terms.

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



Corporate governance

Conducting business responsibly

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.



500
employees trained
on compliance



Zero
tolerance approach
to violations

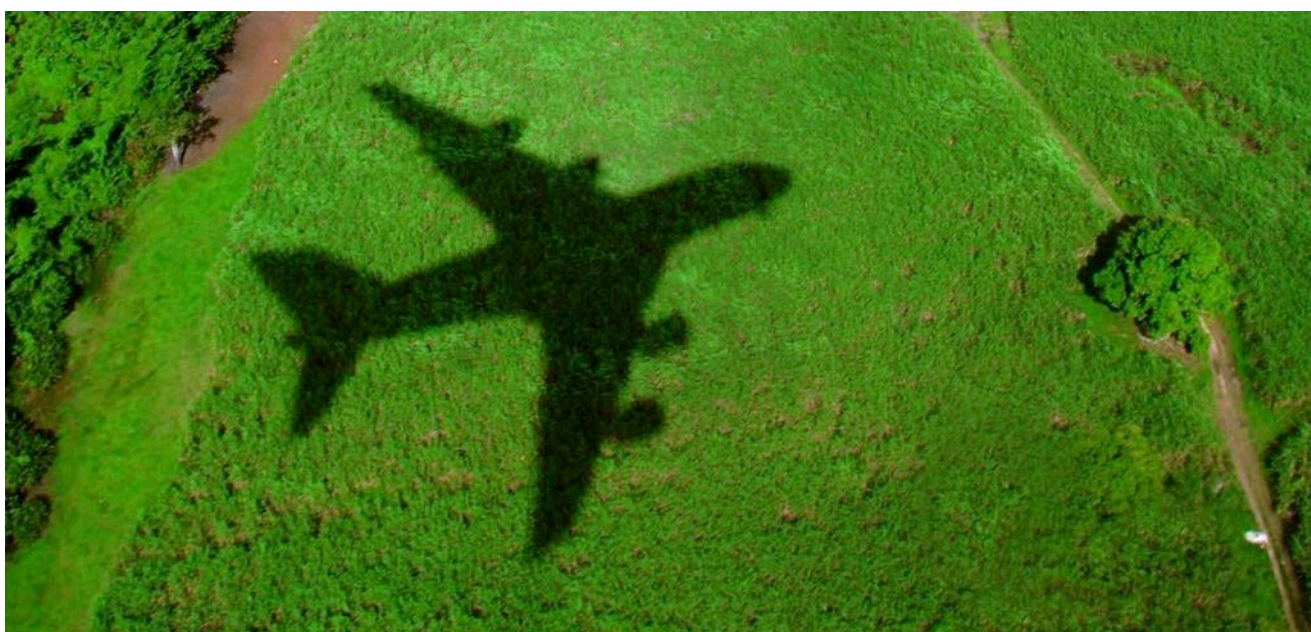


- Sustainability strategy and organization
- Global Development Goals
- Material topics
- Stakeholder dialogue
- Compliance
- Human rights

Our responsibility

Sustainability strategy and organization

Aviation is changing. It must become cleaner, quieter and thus more sustainable. As an engine manufacturer and key player in the sector, we want to actively drive these changes. We think of sustainability primarily in terms of developing innovative propulsion solutions for better climate action. Our mission is to achieve emissions-free flying. But our focus also extends beyond products. As a manufacturing company and employer of nearly 11,000 people, we act responsibly in all key areas.



This calls for sustainable propulsion concepts that must significantly improve aircraft energy and emissions footprints and reduce aircraft noise to make flying more sustainable.

Ten years ago, we adopted our vision of “We shape the future of aviation” and it is more relevant now than ever. Shouldering responsibility is simply part of our corporate identity. This sense of responsibility is reflected in every area of our business and extends to the entire value chain. Climate action is a key concern. It is a challenge for our business, but also an incentive to focus our innovative strength on sustainable solutions. In 2019, sustainability as a strategic goal was enshrined in our corporate objectives and is part of our corporate strategy.

Air travel should remain attractive, including to future generations. What’s more, aviation is essential for a reliable, global flow of commodities. This calls for sustainable propulsion concepts that meet the high safety standards of aviation, improving energy and emissions footprints and reducing aircraft noise. We follow our technology roadmap to help us achieve our long-term goal of emissions-free aviation. In doing so, we want to help achieve the goal of limiting global warming to less than two degrees Celsius by 2050, as set out in the Paris Agreement, and pave the way for the decarbonization of the industry. We firmly believe that taking a sustainable approach to our business will allow us to remain competitive and successful in the long term. In this way, we can ensure that our products create value for our customers by helping airlines to offer passenger flights that are less harmful to the environment and climate.

Air travel should remain attractive, including to future generations. We work on sustainable propulsion concepts follow our technology roadmap to help us achieve our long-term goal of emissions-free aviation.

That is why product stewardship is the cornerstone of our sustainability strategy, which addresses the key topics of product quality, flight safety, fuel efficiency, CO₂ emissions, noise emissions and innovations. We take a comprehensive approach to sustainability that extends to compliance, environmental protection at our locations, employee concerns, the supply chain, and corporate citizenship. In total, we have defined 24 strategic focus topics → [Key topics](#). In addition to long-term solutions, we also want to make quick-impact improvements.

Our contribution to the SDGs

We support the Sustainable Development Goals (SDGs) set by the United Nations. Of the 17 goals for 2030, eight are particularly important to us because we can directly help achieve them. Our greatest impact on achieving the SDGs is through eco-efficient engines and environmental protection in production. The following goals are relevant to us:

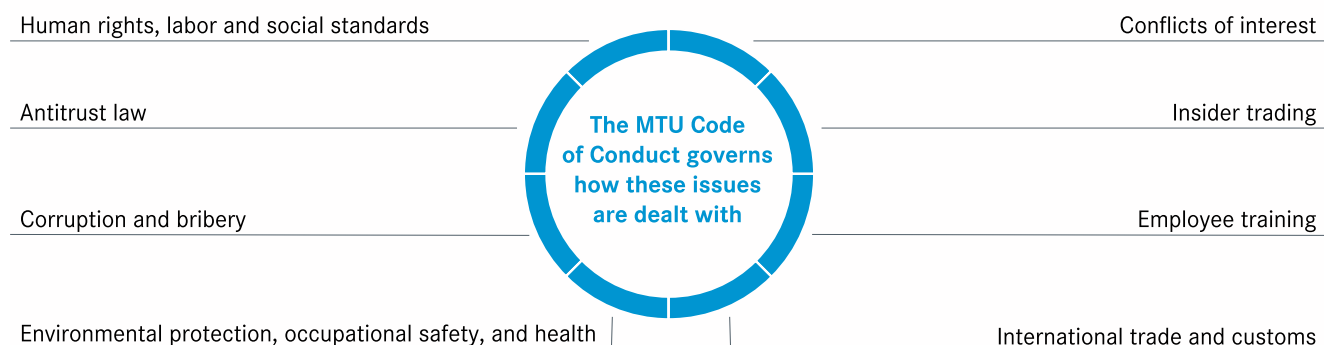


→ [Learn more about our contribution to the SDGs](#)

Our company is steeped in tradition and has a strong foundation of values

The Executive Board conducts our business activities with responsibility toward our employees and toward society as well. The [German Corporate Governance Code](#) sets out clear rules for good corporate leadership that we at MTU have been following for many years. MTU CEO Reiner Winkler is a member of the government commission that established and develops these rules. A key tool we use for embedding sustainability within and throughout MTU is our Code of Conduct. It defines clear standards for working with and regulating our behavior 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. Following the Code is a top priority and all stakeholders have access to a system through which to report breaches. We investigate all reports and leads and take disciplinary action should a breach be proven. The Code of Conduct is scheduled for review in 2020. → [Compliance](#)

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 to sustainability: “MTU takes a proactive approach to its responsibility toward the environment and society.” By following core leadership values (we transform, we empower, we create trust), we are creating a leadership culture based on trust and support that promotes sustainable and innovative thinking.

Achieving more together: The UN Global Compact



10,833
companies

from 156 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.

We see the [ten principles of the UN Global Compact \(UNGC\)](#), 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. And through our [Code of Conduct](#) we transfer these principles to the supply chain. This Sustainability Report also serves to outline progress made in accordance with the UNGC.

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

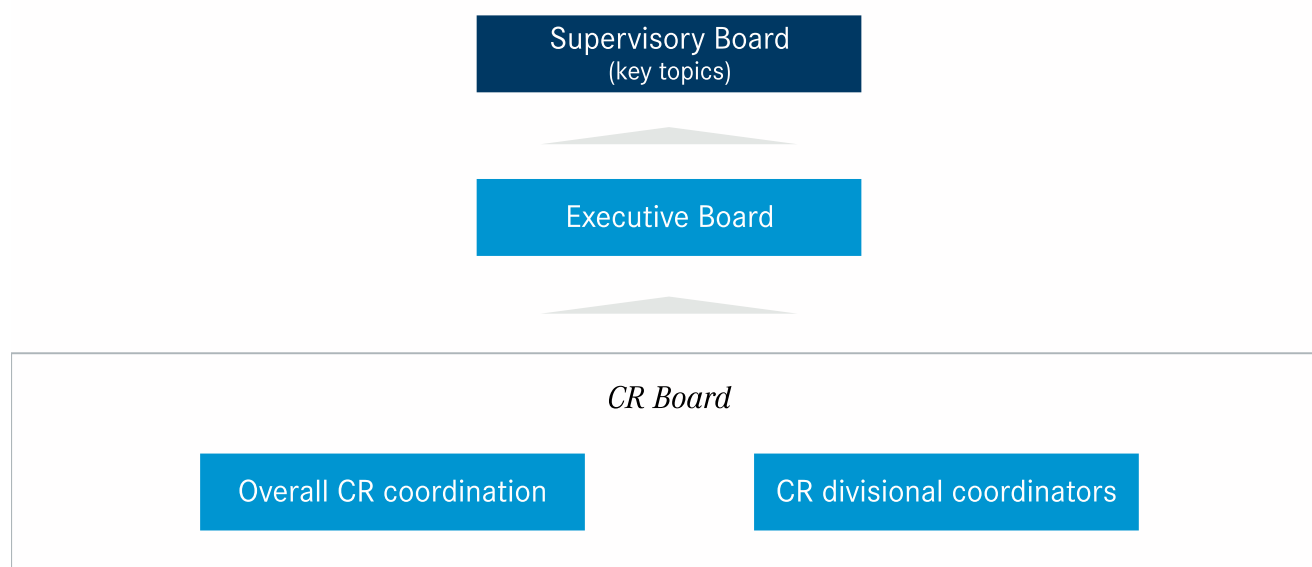
- [UN Universal Declaration of Human Rights](#)
- [Principles of the UN Global Compact](#)
- [The UN's 2030 Agenda](#) and [Sustainable Development Goals \(SDGs\)](#)
- [Core labor standards of the International Labor Organization \(ILO\)](#)
- [German Corporate Governance Code](#)

Driving sustainability forward within the company – our management

We have integrated sustainability into organizational structures and established sustainability management throughout the MTU Group. A Corporate Responsibility (CR) Board is responsible for the implementation of CR management on behalf of the Executive Board. Through the CR management system, we monitor our sustainability strategy, performance and goals. The CR Board acts as the system's decision-making authority, drawing its members from the tier-1 senior management team. It is responsible for driving the topic of sustainability forward at MTU. The CR Board meets on a regular basis and as required. In the financial year 2019, for instance, the Board convened for a special session on human rights, which play a larger role in MTU's sustainability strategy in response to the latest → [Materiality analysis](#). The CR Board is in charge of CR activities at MTU 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 CR topics, and reporting on CR issues. It also works with an interdisciplinary CR team to continuously develop CR management.

An important role in the operational implementation of the strategy is played by the CR 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.

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.

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, the company conducts a quarterly risk survey on sustainability topics of high materiality. In consultation with their upper management, the CR divisional coordinators conduct the survey according to standardized criteria and use a scale similar to the one for risk management. The results of the risk assessment are reviewed quarterly by the CR Board. 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 2019 identified no significant risks in relation to the top issues of our CR strategy. Material risks are those that are very likely and have a severe negative impact.

MTU's position on the TCFD recommendations

Founded by the Financial Stability Board, the [Task Force on Climate-related Financial Disclosures \(TCFD\)](#) has published recommendations for achieving transparent corporate reporting on climate-related risks and opportunities. The core elements of these recommendations are governance, strategy, risk management, metrics and targets. Through our product solutions and resource-conserving production, we are working hard to tackle the challenges of climate change and to continuously lower CO₂ emissions. We already report extensively on climate-related topics in our Sustainability Report and also disclose our performance and progress in the CDP ratings. We advocate companies releasing transparent, relevant sustainability information and are currently exploring how we can implement TCFD recommendations.

Outlook

Society expects industry to come up with solutions for a more livable future. We are aware of our role and responsibility in this transformation process and want our contribution to making flight an ecologically viable option also for future generations to extend beyond excellent products and services. This is what drives us to invest in our sustainability efforts and refine our strategy. In the process, we want to set more medium- to long-term goals in all areas, further underline the significance of sustainability within the company and rework our risk management.

GRI: [103-2](#), [103-3](#)

UNGC: [1-10](#)

The UN's 2030 Agenda

Global goals for sustainable development

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. Industry is also called upon to do its bit and make contributions towards achieving the 2030 Agenda goals. MTU lives up to this responsibility.



Our contribution to the Sustainable Development Goals

At the core of the 2030 agenda are 17 goals for sustainable development, or SDGs for short. These goals embrace the three dimensions of sustainability—economy, environment and society—in equal measure. We support the implementation of the SDGs and have identified eight goals to which we can contribute and which are therefore relevant for MTU:



→ [Overview of our contribution to the SDGs](#)

The following examples and projects show the specific action we take to promote individual SDGs. They are intended to reflect the range of topics and activities with which we encourage sustainability in the company, in the supply chain or as part of our commitment to corporate social responsibility.

SDG 4: Quality education



Offering good educational opportunities: To enable lifelong learning, we have created digital learning worlds at MTU that provide an appealing environment, available in several languages, for our employees to flexibly build on their knowledge. We also provide high-quality training for our youngest employees: our apprentices. We offer training for ten different career paths as well as practical courses of study in collaboration with selected vocational academies. And our training is second to none: last year, our top training was recognized with an award from the Chamber of Commerce and Industry (IHK). More information about our commitment to education under → [Employee development](#)

Other ways we support SDG 4:
→ [Corporate social responsibility](#)



SDG 5: Gender equality



Promoting diversity & inclusion: Chief Technical Officer Lars Wagner has assumed patronage of our new Network of Engine Women (NEW), which we established in Munich in 2019. NEW is all about new suggestions, new impetus, new routes and new perspectives. The idea behind it is to tap deeper into the benefits of diversity by exploring innovation, creativity and corporate culture. More information about our commitment to diversity under → [Diversity and inclusion](#)

Other ways we support SDG 5:
→ [Human rights](#)
→ [Corporate social responsibility](#)



SDG 8: Decent work and economic growth



Protecting employees: We attach great importance to safe working conditions at our plants and subsidiaries. The importance of this concern came to the fore during the coronavirus crisis and it became a focus of our activities. We want to do our bit to contain the pandemic and ensure our employees are protected against infection through a wide range of measures. In addition, we donated over 60,000 face masks to medical and social institutions. More information under → [MTU vs. virus](#)

Other ways we support SDG 8:

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



SDG 9: Industry, innovation and infrastructure



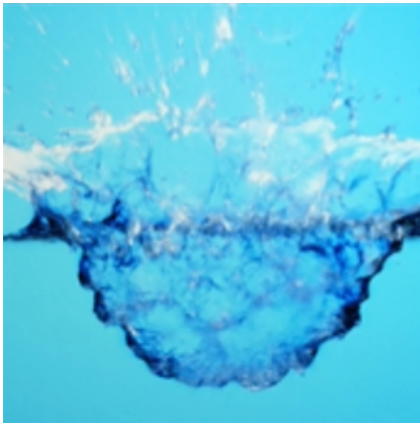
Collaborating locally on global goals: We joined forces with other companies to form the Munich Business Climate Pact (Klimapakt Münchner Wirtschaft), which entered its second round in 2019. In the first round, we already succeeded in saving some 7,500 metric tons of CO₂. Now we have set ourselves a new goal and want to save another 5,000 metric tons. More information about our commitment to climate action in production under → [Emissions](#)

Other ways we support SDG 9:

- [Climate & flying](#)
- [Aircraft noise](#)
- [Environmental management](#)
- [Conservation of resources](#)



SDG 12: Responsible consumption and production

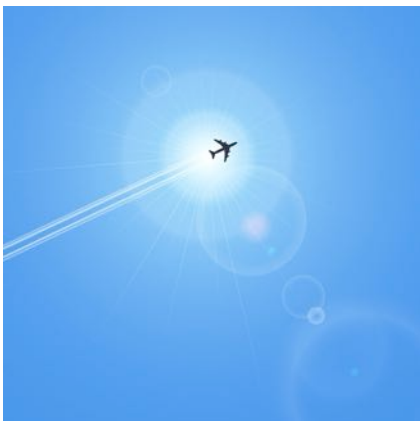


Making production sustainable – based on the example of well water: At our headquarters in Munich, we use well water for cooling to a great extent in our production processes and subsequently feed it back. As a result, we draw only small amounts from the municipal drinking water supply. To enable us to use well water, we have our own wells on our premises. Using well water contributes to climate action and protection, as it means we eliminate the need for energy-intensive cooling processes such as compressor cooling systems. More information about environmental protection at our various sites under → [Conservation of resources](#)

- Other ways we support SDG 12:
- [Climate & flying](#)
 - [Aircraft noise](#)
 - [Environmental management](#)



SDG 13: Climate action



Rethinking aircraft propulsion: Our experts are working on various conceivable propulsion concepts for the future to pave the way for more climate-compatible aviation. Their creative and innovative approaches also foresee a role for fuel cells. Because they emit only water, fuel cells enable virtually climate-neutral and pollutant-free flying. Read about how this could work under → [Climate & flying](#)

- Other ways we support SDG 13:
- [Environmental management](#)
 - [Emissions](#)



SDG 16: Peace, justice and strong institutions



Working together for integrity: We introduced a new reporting system in 2019 that is online, anonymous and available in several languages. iTrust enables employees and external stakeholders to submit reports and any leads they have to MTU's Compliance Officer if they feel that individual activities and actions breach the company's guidelines or value management. iTrust can be accessed via the MTU intranet and website. More information about our approach under → [Compliance](#)

Other ways we support SDG 16:
→ [Supplier management](#)



SDG 17: Partnerships for the goals



Europe commits to clean aviation: We pursue collaborative ventures in a wide range of areas in order to make a difference. Collaboration with universities and research institutions is especially important when it comes to research and development. At the Paris Air Show on June 19, 2019, we signed up to Horizon Europe, a declaration of intent by 23 European companies, universities and research institutions. This agreement provides the framework for key collaborations on climate action and has the ambitious goal of emissions-free flight. More information about our climate action activities under → [Climate & flying](#)

Other ways we support SDG 17:
→ [Corporate social responsibility](#)



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

SDG graph "17 goals to transform our world"
Source: UN communications materials
SDG 9 image source: Andreas Gebert, City of Munich's Department of Labor and Economic Development

Key topics of focus

Materiality analysis

We have developed a sustainability strategy that is the cornerstone of our commitment to corporate social responsibility. As part of a systematic process, we regularly analyze important fields of action and key topics for our sustainability management and reporting. In doing so, we have an eye on both MTU business and the concerns of our stakeholders.



Our focus is on product stewardship, which addresses the key topics of quality, safety, fuel efficiency, aircraft engine CO₂ and noise emissions, and innovations.

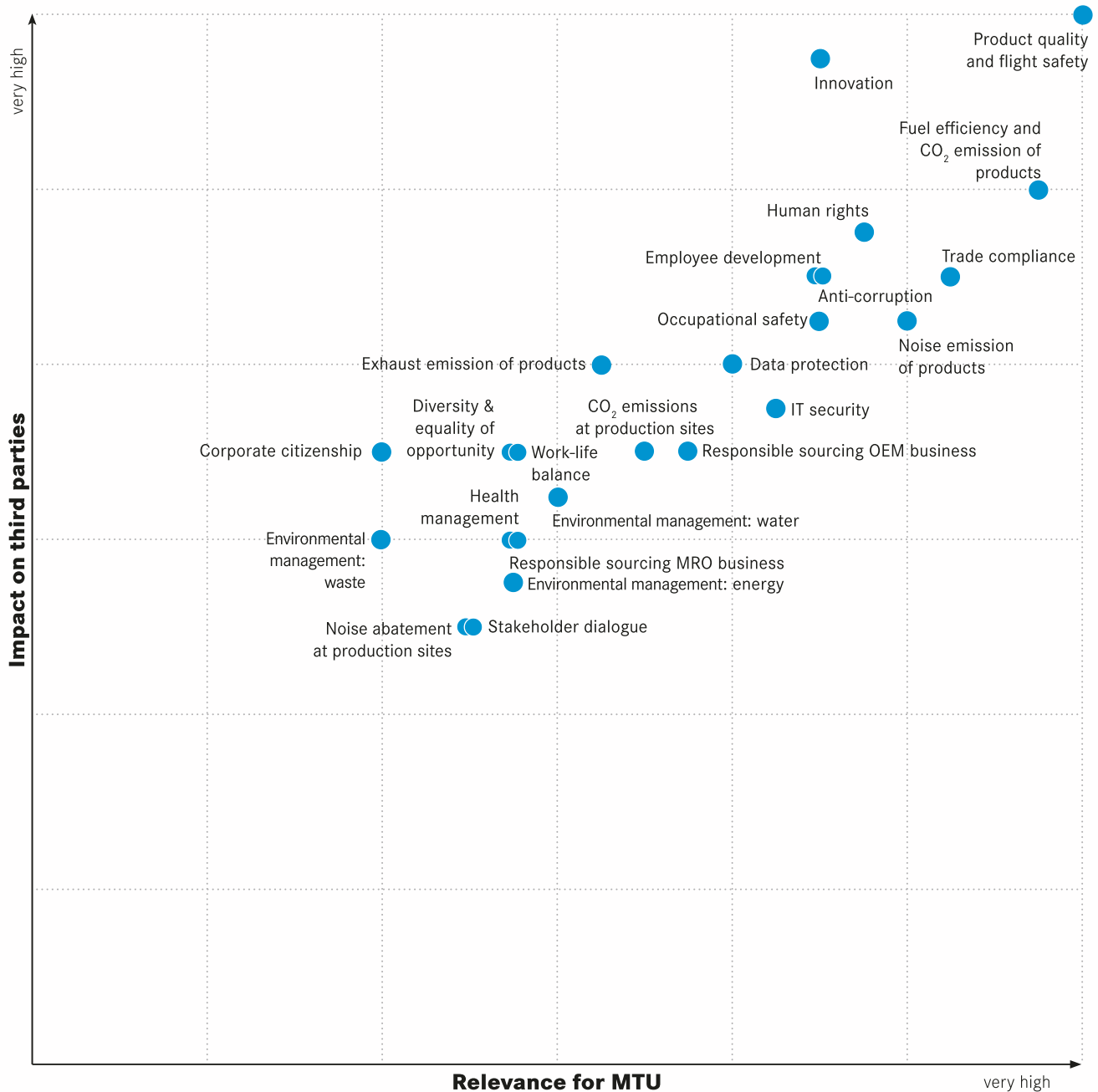
We review our sustainability strategy annually as regards the latest changes and developments. This allows us to recognize opportunities and risks for our business in good time and to honor our claim of being a company that acts in a sustainable manner. In this materiality analysis, we evaluate the individual topics using defined criteria. These criteria correspond to each topic's significance for our business activities and how these affect society and the environment. The criteria are incorporated into the evaluation according to a defined weighting scheme. The analysis covers all our key business areas and fully consolidated locations as well as information gathered from our dialogue with stakeholders, with which we address societal expectations and requirements. → [More information about Stakeholder dialogue](#). We present the results for the respective financial year in a materiality matrix.

The materiality analysis follows a multi-stage process: It is managed by the central CR coordination team, with analysis of the key topics performed by the CR divisional coordinators within the departments. Next comes a workshop in which the interdisciplinary CR team discuss the evaluation of the topics and their position within the materiality matrix. Acting as the ultimate decision-making body for sustainability, the CR Board then signs off on the matrix. The Executive Board and the Supervisory Board's Audit Committee are involved in the materiality determination process. → [Our CR management in detail](#)

Results for 2019

For financial year 2019, we defined a total of 24 topics with a material economic, environmental or social impact, which we are pursuing as part of our sustainability management. Changes to the previous year mainly relate to the higher importance rating of human rights for our CR management, which henceforth extends not only to our own employees, but also to the supply chain (previously only with respect to responsible sourcing). Due to expansion at numerous locations and the increasing levels of digitalization, employee development has become more crucial to our company's success. Group-wide, diversity & equality of opportunity were rated less of a priority in the reporting year. In addition, the aspect of discrimination is covered by human rights. Given the differing approaches to managing IT security and data protection, we have evaluated and mapped these topics separately. Due to current challenges, environmental protection in production is of increasing importance within our sustainability strategy. The same goes for responsible supply chains (responsible sourcing, OEM and MRO).

Materiality matrix: Important sustainability topics for MTU



Evaluation of topics for the financial year 2019 adopts the materiality concept in accordance with the legal implementation of CSR guidelines in Germany (CSR-RUG)

Steadily increasing shareholder value and demographic change are no longer pursued as individual topics within our sustainability strategy. Steadily increasing the value of the company is already covered by the definition of materiality and thus is the foundation for all our activities. Demographic change is no longer a separate topic because the relevant aspects, such as employee training, are already covered by other topics. Environmental and occupational safety compliance has been integrated into those topics.

We have identified no new key topics as part of the current materiality process.

Materiality principle (GRI 103-1)

Product stewardship

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)
Product quality and flight safety	significant	significant	significant
Innovation	significant	significant	significant
Fuel efficiency and CO ₂ emission of products		significant	significant
Noise emission of products*		significant	significant
Exhaust emission of products		significant	significant

Corporate governance

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)
Trade compliance	significant	significant	significant
Anti-corruption	significant	significant	significant
Human rights	significant	significant	significant
IT security	significant	significant	significant
Data protection	significant	significant	significant

Employees and society

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)
Employee development		significant	significant
Occupational safety	significant	significant	significant
Diversity and equality of opportunity		significant	
Work-life balance		significant	
Health management		significant	
Stakeholder dialog		significant	significant
Corporate citizenship		significant	

Value creation

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)
CO ₂ emissions at production sites		significant	
Environmental management: water		significant	
Environmental management: energy		significant	
Noise abatement at production sites		significant	
Environmental management: waste		significant	
Responsible sourcing OEM business	significant	significant	significant
Responsible sourcing MRO business	significant	significant	significant

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

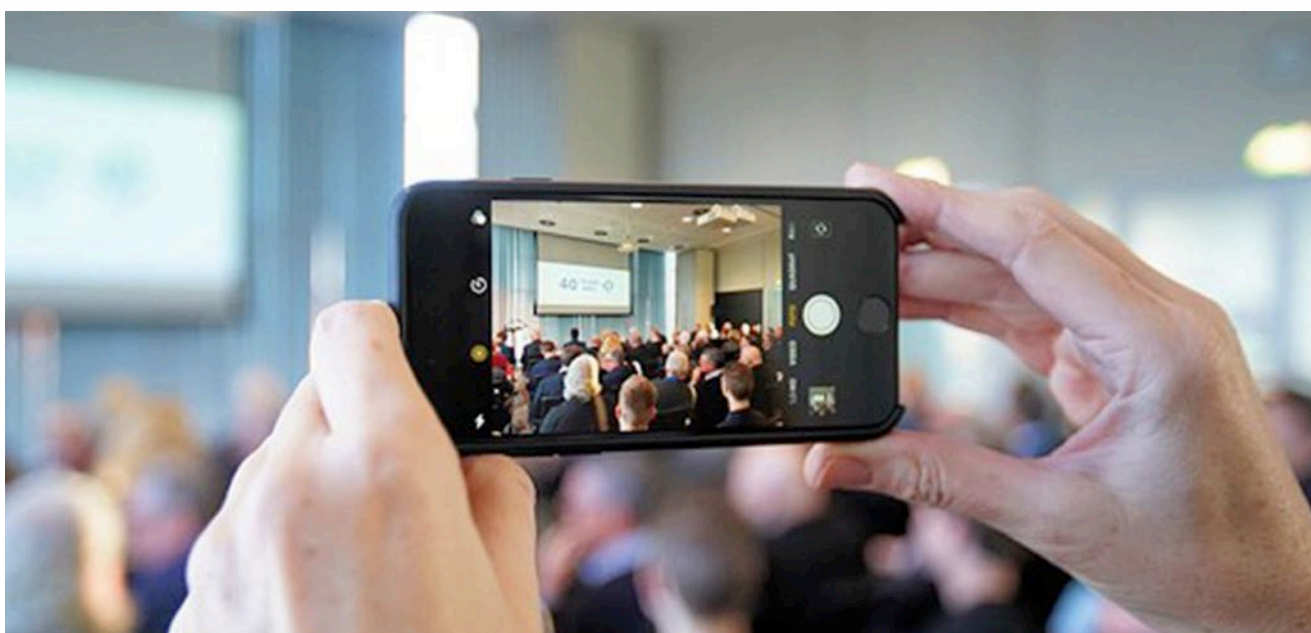
GRI: 102-46, 102-47, 103-1

UNGC: 1-10

Providing information about sustainability

Stakeholder dialogue

Maintaining a dialogue with our stakeholders plays a key role in our success. In terms of sustainability, this means creating transparency in our performance and progress, actively providing information about key topics, and addressing societal developments and requirements in a timely manner. This allows us to continuously improve and increase confidence and trust in our company.



We embrace dialogue with our stakeholders and make use of various opportunities and formats to this end. For example, we invite stakeholders to events at MTU such as the 40th anniversary of MTU Maintenance Hannover last year, as pictured here.

We strive to conduct a proactive, mutually supportive dialogue with our key stakeholders. We pursue this dialogue regularly, with the actual frequency determined by the need for communication and/or information. Our aim is to achieve wide societal acceptance for our business activities and to provide information about the challenges, developments and technologies relating to sustainable aviation. This stakeholder dialogue also gives us the opportunity to respond to suggestions, expectations and feedback and act on new topics in good time. It helps us evaluate how our activities and products are affecting the environment and society in general. → [Materiality analysis](#)

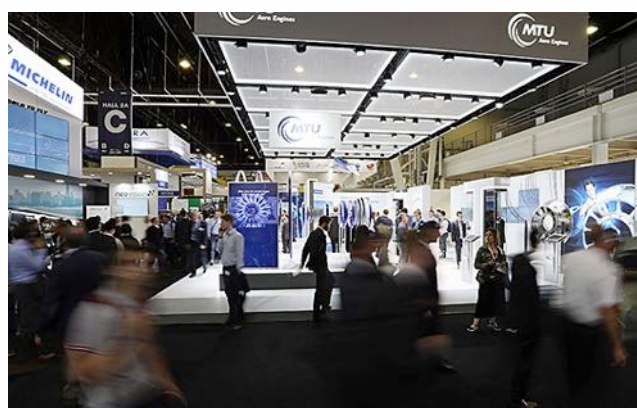
Stakeholders are individuals, groups or organizations that have a regular relationship with MTU. Our key stakeholders are employees, customers, business partners, suppliers and shareholders. We are also in continuous dialogue with scientists, researchers, analysts, journalists, politicians, associations, NGOs, employee representatives, neighbors and communities.



Dialogue with shareholders: At the Annual General Meeting (left) and Investor Day, we provided information about MTU's business development and answered shareholders' questions.

Communication with our stakeholders takes place over various channels and platforms so we can incorporate their interests and feedback. This dialogue is mostly tailored to the target group or a specific topic. We use an [online survey](#) available on our website to invite all stakeholders to discuss our sustainability strategy. In 2019, we collected and evaluated just under 250 responses, while expanding the survey to include questions about our efforts to achieve UN Sustainable Development Goals. At our locations, we pursue a direct dialogue with the general public, for instance with community representatives, neighbors and other interest groups.

In 2019, key sustainability topics we addressed in our stakeholder dialogue included climate action and environmental protection in the aviation industry—in particular CO₂ emissions from products and production—sustainable aviation fuels (SAFs), human rights (especially in the supply chain), sustainable finance as well as social topics such as diversity. We are also stepping up our use of social media channels to communicate about sustainability topics and we now post on Twitter and Instagram in addition to Facebook, LinkedIn and Xing. MTU currently has some 55,000 followers, and this figure continues to rise. In the reporting year, we also held a Sky Lounge on “sustainable flight” with representatives from politics, industry and associations and plan to do so again in 2020.



Industry dialogue: MTU took part in the National Aviation Conference 2019 in Leipzig (left). At the Paris Air Show, we provided visitors to our booth with information about our activities and concepts.

Our stakeholder groups and dialogue platforms

Employees

Topics

- Health and safety
- Career and advanced training opportunities
- Compensation and benefits
- Work-life balance
- Diversity and equality of opportunity
- Co-determination

Forms of dialogue

- Internal media
- Employee surveys
- HR services
- Dialog and information events
- Company suggestion scheme

Business partners and customers

Topics

- Product quality and safety
- Sustainable technologies
- Product fuel efficiency
- Human rights
- Compliance

Forms of dialogue

- Voice of the customer
- Trade fairs
- Corporate communications media channels

Suppliers

Topics

- Product quality and safety
- Environmental protection
- Responsible sourcing
- Compliance with MTU standards

Forms of dialogue

- Supplier portal
- Audits
- Supplier surveys
- Supplier Days

Capital market

Topics

- Product innovation/eco-efficiency
- Responsible corporate governance
- Human rights
- Compliance

Forms of dialogue

- Annual General Meeting
- Conferences and roadshows
- Investor discussions
- Trade fairs

- Climate protection
- Risk management
- Supplier management

- Ratings
- Financial communications

Science and research

Topics

- Developing new technologies
- Promoting research and teaching
- Networking between industry and research
- Study of engineering and scientific disciplines
- Recruiting

Forms of dialogue

- Joint research projects
- Work in MTU centers of excellence
- Trade fairs
- Visits from university student groups
- Presentations/discussions at universities

Media

Topics

- Innovation and technologies
- Aviation sector/eco-efficiency
- MTU as an employer
- Financial issues
- Site development
- Compliance

Forms of dialogue

- Press releases
- Press conferences and briefings
- Plant tours
- Internet / social media
- Trade fairs

Region

Topics

- Social commitment
- Climate protection
- MTU as an employer
- Site development
- Compliance

Forms of dialogue

- Museum open house days
- Community partnerships
- Internet / social media
- Plant tours

Politics, public agencies

Topics

- Developing and promoting technology
- Climate protection, eco-efficiency
- Political frameworks and regulations

Forms of dialogue

- Parliamentary evening
- Plant visits
- Trade fairs

- Mobility concepts
- Site development
- Demographic change
- Globalization
- Compliance

- Political discussions
- Background talks
- Visits by political delegations

Associations and organizations

Topics

- Eco-efficiency
- Promoting innovation and technology
- Economic and labor policies

Forms of dialogue

- Meetings and committees
- Participation in forums and events

Political dialogue

MTU takes no party political position as a matter of principle. We purposely cultivate 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. Our key points of contact 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, the company's political dialogue is managed centrally by the Group Representation Office of the Corporate Communications department. Topics of discussion with political decision-makers included innovation, technology development and funding, eco-efficiency in 2019, focusing on climate and flight as well as SAFs, the relevance of air traffic to society, site development, economic and labor market policy, and export of goods. We pursue our industry-specific interests through memberships in various professional associations. → [Overview of our memberships in the GRI index under Organizational profile](#)

We do 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 our [Code of Conduct](#), and must be granted central approval. Mandatory requirements are stipulated in our 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. → [Donations & sponsorship](#), → [Compliance](#)

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

UNGC: 10

Ethics & integrity

Compliance

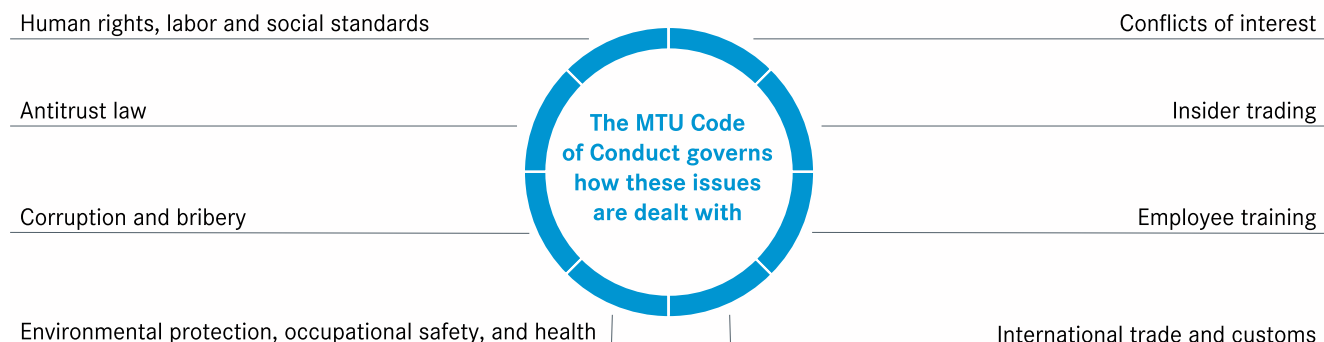
We act with integrity in our working and business relationships. The key basis for this is a Group-wide Code of Conduct that provides all of us with binding guidelines for our behavior in the company, toward our business partners, our customers, and in society. For us, compliance means adhering to the law and our internal regulations, such as our Code of Conduct. In doing so, we pursue a zero-tolerance approach to violations should they occur.



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 provide an authoritative 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 prevention or antitrust law.

Key topics of the Code of Conduct



→ [MTU Code of Conduct](#)

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 us act in a consistent and reliable manner. As a [signatory to the UN Global Compact \(UNGC\)](#), we have committed ourselves to preventing corruption within our company → Principle 10 of the [UNGC](#). 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.

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, which strengthens trust in MTU. In addition to the Group-wide Code of Conduct, our internal regulations concern the prevention of corruption and apply especially to customer events, donations, sponsoring and the approval process for sales consultants.

Our contribution to the SDGs

“Peace, justice and strong institutions” is SDG 16 of the UN Sustainable Development Goals (SDGs) for its 2030 Agenda. It calls for a significant decrease in all forms of corruption and bribery. With a comprehensive compliance system in place, we are actively taking steps to combat corruption and bribery, minimize the risk thereof and support fair competition. We expect our suppliers to uphold the same standards as we do. In this way, we as a company are able to contribute to sustainable development in line with SDG 16 and, with integral and transparent business practices, provide an open and progressive environment that benefits society as a whole.



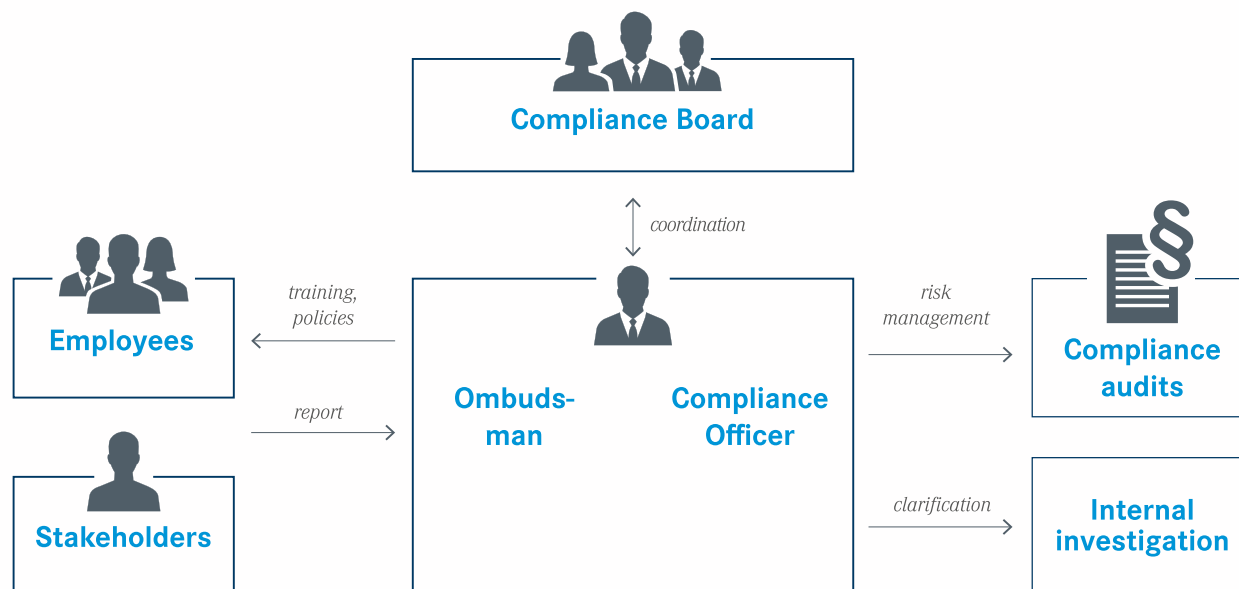
→ [Learn more about our contribution to the SDGs](#)

Embedding compliance in the organization

MTU has a compliance system for the entire company. As the final decision-making authority, the CEO is responsible for the company’s business ethics and anti-corruption policy. The core functions responsible for ensuring ethical and correct conduct are a Compliance Board and a Compliance Officer. Both the Compliance Board, whose members are top managers from various departments, 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 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.

In addition, the managing directors of the sites must ensure that all compliance-relevant provisions and regulations are adhered to within their areas of responsibility, and they must see to it that compliance is appropriately embedded in the local organization.

 MTU's compliance organization



The core functions responsible for ensuring ethical and correct conduct at the company are a Compliance Board and a Compliance Officer.

Responsible international trade

Another key compliance topic for us is observance of international trade law, also known as trade compliance. MTU has its own organizational unit dedicated to ensuring trade compliance and has also 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 we are permitted to sell or provide and to where, to whom and for what purpose. Compliance with the applicable international trade regulations is a binding requirement of the Code of Conduct. → [Export control law is outlined in the non-financial statement in the Annual Report \(p. 118-119\)](#)

The central international trade department is responsible for implementing regulations with process standards that are uniform 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 his capacity as the person in charge of MTU exports.

Data protection and IT security

In our business activities, we take care to provide comprehensive data protection. In times like these and given the increasing levels of digitalization in the world of work, such protection is becoming more and more important. We have established an appropriate management system and expect all employees to comply with data protection regulations, a claim that is underpinned by our Code of Conduct. We have appointed data protection officers or coordinators in all of our 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 EU General Data Protection Regulation (GDPR) and of the national legislation applicable at each location. The Executive Board is briefed on data protection once a month.

We also intensively discuss the topic of IT security, as this is a fundamental prerequisite for our business success. 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. This also includes an internal body of rules and regulations that we have established in line with the international ISO 27001 standard.

Our compliance management system works

We want to prevent compliance violations and ensure that business decisions are made with integrity. We do not tolerate any kind of conduct that violates laws or regulations. We respond to reports immediately and appropriately, and take disciplinary action in the event of detected violations. 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. We also did not receive any formal complaints regarding corruption. No significant fines were levied against MTU for breaches of applicable laws, and it faced no legal action stemming from corruption or due to antitrust or anticompetitive practices. In 2019 as in previous years, we had no reportable violations regarding data protection. Similarly, there were no substantial violations of the principles underpinning the Code of Conduct.

Global reporting system

We have set up a global whistleblower system that allows employees and external stakeholders to report instances of unlawful conduct to the Compliance Officer. Tips and reports can also be submitted anonymously via a web-based electronic reporting system. If the report is found to be credible, the Compliance Officer 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. In the reporting year, an internal communication campaign informed all employees and managers at all sites across the Group about iTrust, the new reporting procedure. The reporting system is available in various languages. → [iTrust](#)

We treat the identity of the whistleblower and the information they impart as strictly confidential—even if the suspicion turns out to be unfounded. This is ensured by means of an internal regulation. 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.



500
employees

In the reporting year, we trained more than 500 employees across all hierarchical levels on compliance matters at our sites.

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, we inform them about the Code of Conduct and require them to 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. We regularly train our employees and managers at all hierarchical levels on the Code of Conduct, corruption prevention and the compliance management system. This applies in particular to new hires. In addition, we hold compliance training as needed for employees from selected areas, such as sales. In the reporting year, we trained more than 500 employees across all MTU sites on compliance matters in both e-learning and classroom sessions. In addition, we continuously provide information about and raise awareness of special compliance issues, such as data protection, in a way suitable for each target group. The Compliance Officer and the legal department can also advise our employees and managers as needed.

Limiting risks of non-compliance

We have put various control mechanisms in place to ensure compliance throughout the company and to minimize risk. In the reporting year, we evaluated all fully consolidated sites for corruption risks; no substantial risk was found. The Compliance Officer additionally inspects all sales support consulting contracts for possible corruption risks before they are placed or renewed, 2019 included, and found no indications of corruption. 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 always ensure that our Group regulations are up to date. To that end, once a year we evaluate whether changes or amendments are necessary. In doing so, we draw on a wide range of input, including concerns raised by our employees. Here is what we have resolved to do: We are further developing our reporting system for all Group locations and also aim to rework the Code of Conduct and the corresponding e-learning course. Furthermore, in 2020 we plan to implement a new training concept in the area of international trade law.

In addition, we will completely overhaul the MTU Group's data protection guidelines. As a global company, we require a uniform level of data protection with a standard in place that applies across the Group worldwide.

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

UNGC: 1, 10

Our due diligence

Human rights

We respect human rights and are committed to seeing that they are upheld within the Group and upstream along the value chain. Respect for human rights is firmly embedded in our corporate culture by means of several instruments. Beyond this commitment, we aim to prevent the violation of human rights at MTU and in the supply chain.



MTU sees it as its duty to respect the individuality and dignity of all, maintain equality of opportunity in the workplace and prevent 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. We pursue the goal of preventing human rights violations from occurring in our 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 UN's global development goals. We want to further these SDGs as a company by respecting and promoting human rights and preventing adverse effects. We support SDG 5 on "Gender equality" and SDG 8 on "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 SDGs](#)

Codes of Conduct for Employees and Suppliers

MTU sees it as its duty to respect the individuality and dignity of all, maintain equality of opportunity in the workplace and prevent 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. Also in Germany, we have worked with employee representatives to enact internal guidelines on fair and cooperative conduct that are designed to prevent bullying, sexual harassment and discrimination. They stipulate a systematic process for handling complaints.

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, we provide 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. Our suppliers are obligated to uphold this 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, we require our suppliers to apply the Code to their subcontractors and reserve 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 we rigorously follow up on all complaints or reports of human rights infringements. Reports may be made by employees or external stakeholders to the Compliance Officer as a confidential contact point in the Group, or anonymously via the new, web-based [iTrust reporting system](#), available in multiple languages. This applies to all human rights concerns.

Additional points of contact for employees have been set up at each location, about which we provide information on site. For example, in compliance with legal regulations such as the AGG in Germany, a trained person on site is identified as the contact point for complaints regarding discrimination. For cases of sexual harassment, female employees can go to a female contact person. In accordance with Canadian law, MTU Maintenance Canada has established an Employment Equity Committee to review complaints and reports and has also named an Employment Equity Officer to serve as a confidential point of contact. At MTU Aero Engines Polska, this function is carried out by a person elected by the employees. 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. In cases of substantiated complaints, we take appropriate corrective action. → [More information about the collaboration between management and the works council in the chapter on MTU as an employer](#)

Across the entire Group, no site received a substantiated complaint in 2019 according to the respective anti-discrimination legislation in effect there. Furthermore, there were no substantial violations within the MTU Group of the principles underpinning the Code of Conduct. No reports of suppliers violating the Code of Conduct regarding human rights were submitted.

Risk analysis

We have identified no business location that we must consider at significant risk of child, forced or compulsory labor, or at which the freedom of association and right to collective bargaining could be compromised. 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.

Regarding the supply chain, we apply a concept for an annual risk analysis of all key suppliers to the sites in Germany, Poland and Canada as well as the MTU Aero Engines North America subsidiary. The concept takes into account MTU-specific product groups and the countries they are sourced from. This process incorporates the assessment of the annual [Global Slavery Index compiled by the Walk Free Foundation](#), which evaluates countries regarding forced and child labor and legal frameworks, among others. MTU applies the concept to the OEM and MRO segments separately, since each handles procurement through its own organizational units. Throughout this process, we have identified no supplier that poses a significant risk as regards child, forced or compulsory labor, or at which the freedom of association or right to collective bargaining could be compromised. MRO also conducts a supplier evaluation twice a year for vendors used by the German sites. In the future, we will expand the evaluation to cover additional sustainability aspects as well.

Conflict minerals

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, tungsten and gold, which can be found in some of our engine components. 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 that commit human rights violations. MTU strives for a sustainable and transparent value chain that excludes the use of conflict minerals. We never directly 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, our American partners and customers require that we disclose the origin of minerals used in our components and limit our sources to certified mining companies and primary-alloy producers ([Conformant smelters and refiners list](#)). In turn, MTU demands that its relevant suppliers should specify the origin of such minerals, in order to ensure that the value chain contains only conflict-free raw materials. The general terms and conditions and contract provisions require suppliers to provide information about the source of minerals in accordance with the EICC/GeSi Conflict Minerals Reporting Template. In 2019, no infractions came to the knowledge of MTU that infringe on the principles of the Dodd-Frank Act.

Outlook

We plan to further refine our risk analysis concept for suppliers in 2020, putting the emphasis on a more differentiated evaluation of product risk.

Monitoring for NAP in Germany is scheduled to finish in 2020, and a new EU regulation on conflict minerals is due to take effect in 2021. We keep an eye on these developments in human rights law so as to properly comply with relevant requirements in a timely fashion. → [More information about our supplier management](#)

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

UNGC: 1-6



Product stewardship

Creating sustainable and safe products

When it comes to climate action in aviation, we firmly believe that we can bring about positive change. With this optimistic mindset, we continue our work on enabling passengers to fly safely and with a clear conscience in the future. We pursue a definitive technology roadmap to develop new products for the next few decades. Because we want to do more than just keep our finger on the pulse—we want to find solutions for a long and sustainable future.



Zero

emissions from air travel



65%

less aircraft noise



- Product quality and flight safety
- Climate & flying
- Aircraft noise
- Research and development

Ensuring high standards

Product quality and flight safety

Every year, millions of people board an aircraft equipped with our products and technologies. We aim to ensure that they land safely back on the ground. Safety first—for us, safe flight operation is way more than just a legal requirement. In aviation, it is fundamentally the highest priority. That’s why we place high demands on quality and safety in our processes along the entire value chain. Not least because reliable and high-quality products are our trademark.



Safety and quality are the top priority in aviation. We conduct our operations in accordance with uniformly high quality standards and safety regulations across the whole MTU Group.

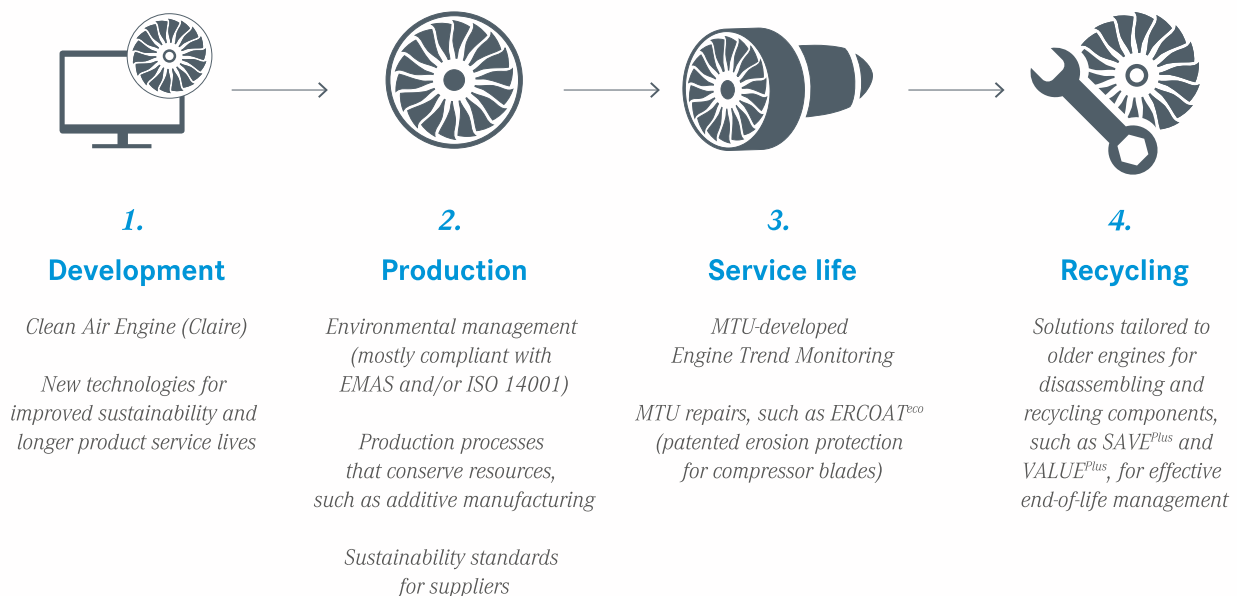
Safety is imperative in aviation, and legal requirements concerning safety are subject to strict monitoring by the relevant authorities. This is why product quality and flight safety are just as important to us as well. The company must comply with the legal requirements imposed upon it as an organization that develops, manufactures and maintains products, parts and equipment for 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, safe mobility solutions play a key role in the economy and society and represent 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 key corporate objectives. Through independent, accredited external auditors, we regularly validate and certify our IMS.

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 climate 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, we have 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 identified components that have been approved by the appropriate aviation authority and are based on approved development documentation. They must also have been produced or maintained in compliance with aviation regulatory processes by a company officially authorized to do so.



0
**breaches of
compliance**

In 2019, we didn't again record a single breach of compliance with regard to the quality and safety of our products.

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 product's entire service life. We hold our suppliers to the same standards and audit them regularly to ensure compliance. To ensure quality and safety requirements are upheld, 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 after undergoing extensive test series.

In the previous financial year, once again there were no breaches of statutory regulations regarding compliance in connection with the purchase or operation of our products that resulted in a fine, sanction or warning for MTU.

Our quality standards are high

At MTU, we develop and refine our quality system together with our standards and regulations on an ongoing basis. This involves applying the ideas that emerge, for example, from collaboration in the [Aero Engine Supplier Quality Group](#) or from regular exchanges of experience and information among our quality managers in the aviation industry. In the reporting year, we improved our internal quality reporting system to better assess customer complaints, for instance.

We include all our employees in our high quality standards and provide key information across all locations through our 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 bulletins and lessons learned). We provide managers and employees with training on quality issues specific to the individual sites. Every employee receives IMS training.

Shopfloor/office management at all production and maintenance 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. We completed our Group-wide quality initiative for the commercial MRO segment at the end of 2019. With the initiative, we improved planning and maintenance processes throughout all MRO activities in accordance with best practice, or put ourselves on the right track making improvements.

We have customers and authorities conduct 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.

Customer satisfaction is at the core of all we do

A high level of product quality and safety is crucial for customer satisfaction. "High customer satisfaction" was a focus of our corporate objectives in 2019, with "quality at high levels" as a subordinate objective. IMS, our certified quality management system, supports us in ensuring customer satisfaction, process orientation and continuous improvement in all phases of development, production and maintenance. IMS takes into account, for example, the requirements of the standards ISO 9001, EN/AS9100, ISO 14001/EMAS and OHSAS 18001 (to be replaced by ISO 45001), and serves as a model approach in the aviation industry.

We set great store by customer complaints as an indicator of their satisfaction with the quality of MTU products. We follow up and analyze all customer complaints relating to products delivered in substandard quality. Appropriate measures are then defined and implemented so as to permanently eliminate the cause of the defects. In 2019 as in 2018, our goal was to lower or at least keep the number of customer complaints stable at all locations. We succeeded in doing this only at certain locations. At the majority, the number increased due to significantly higher production volumes and changes to the local product portfolio, for example, the new geared turbofan engine program or MRO parts repairs.

We are in dialogue 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. Once a quarter, we use an IT-based "voice of the customer" module to measure current customer satisfaction levels for our Hannover, Ludwigsfelde 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 use this valuable feedback to identify areas for improvement and initiate measures accordingly. Doing so allows us to continuously optimize our performance, increase customer satisfaction and stay 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:

Clean Air Engine agenda: [Climate & flying](#) and [Aircraft noise](#)

[Climate protection in production](#)

[MTU maintenance technologies](#)

GRI: 102-43, 103-2, 103-3, 302-1, 416-1, 416-2, 417-1, 417-2

Eco-efficient engines

Climate & flying

What moves us? What can we move? These are questions we have been asking ourselves since long before the current social debate on climate action. Moreover, we have been pursuing a roadmap for sustainable product development for years. This guides the hard work we are doing to minimize aircraft engines' fuel consumption and CO₂ and pollutant emissions in several stages. Now we want to go one step further and are aiming for emissions-free flight.

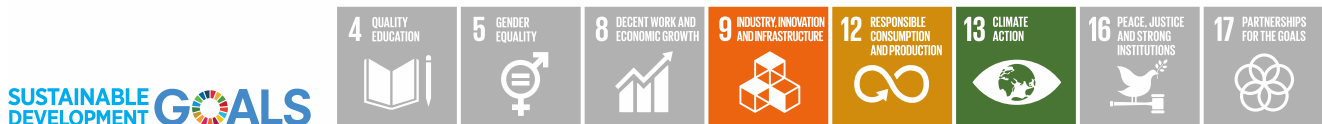


We are driving climate action in air transport with our innovative and low-emission propulsion concepts. A prime example is the PW1100G-JM geared turbofan for the A320neo—pictured here making its maiden flight. The engine reduces CO₂ emissions by 16%.

Aviation is an important backbone of the economy. It ensures worldwide mobility, contributes to growth and prosperity and also connects people and cultures with each other. Today's globally connected industries cannot function without it. However, flying has an impact on the environment and in particular on the climate and has recently seen strong growth rates. This is a major challenge that we are addressing as a responsible company: we are actively involved in shaping the change towards sustainable aviation with innovative, low-emission propulsion concepts. Our activities focus on climate action and the reduction of in-flight CO₂ emissions, with the ultimate goal of achieving fully emissions-free aviation. The only way we can do this is if the entire industry pulls together and policymakers implement the appropriate framework. For that reason, we are involved in numerous aviation initiatives.

Our contribution to the SDGs

Our sustainable product development contributes to the Sustainable Development Goals (SDGs) of the UN's 2030 Agenda. We see our greatest impact as being in the areas of SDG 13 on "Climate action" and SDG 9 on "Industry, innovation and infrastructure." In addition, our ecologically efficient engines support SDG 12 on "Sustainable consumption and production." The SDGs are to be achieved by 2030, which is why UN Secretary-General Antonio Guterres has proclaimed the new decade the "Decade of action." Our approach is longer-term, extending to 2050 and beyond, as aviation is characterized by very long development and operating cycles.



→ [Learn more about our contribution to the SDGs](#)

Pioneering: Our approach to climate action

We are working on solutions to make flying more environmentally friendly, with a focus on reducing fuel consumption and hence the CO₂ emissions of engines. Given our expertise in the development and manufacture of high-pressure compressors and low-pressure turbines, this is something we can directly influence. We are also conducting research into new propulsion concepts that will pave the way for aviation to become emissions-free. Sustainable product development with reduced fuel consumption 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 and CO₂ emissions are directly proportional and are a major factor in how aviation affects the climate. This is why improving fuel efficiency is very important to us, as it reduces both resource consumption and the impact on the climate. In addition, the use of alternative fuels, known as sustainable aviation fuels (SAFs), can significantly reduce CO₂ emissions both from the aircraft fleet already in service and from our new engines. This is why we are calling for the use of SAFs. They are absolutely essential for climate-friendly aviation.

Our vision: Emissions-free flight.

How do we intend to achieve this? We have drawn up our approaches in our "Technology roadmap toward emission free flying" which outlines a possible path to long-term emissions-free aviation. Only this way will we be able to help achieve the goal of limiting global warming to less than two degrees Celsius, as set out in the Paris Agreement.

We are committed to meeting the goal set out in the [Paris Agreement of 2015](#) of limiting global warming to less than two degrees Celsius. This target far exceeds the goals defined by the European aviation industry and research sector's [Strategic Research and Innovation Agenda \(SRIA\)](#) and extends beyond [the worldwide targets set out by the International Air Transport Association \(IATA\)](#). In our "Technology roadmap toward emission free flying," we present a possible path to long-term emissions-free aviation. We are currently revising our Clean Air Engine agenda to redefine targets and ensure we help achieve the overarching Paris target.

We have a climate strategy and are pursuing a clear goal

Climate change is one of the greatest global challenges of our time. There is broad consensus in society on limiting climate change to a maximum temperature increase of two degrees Celsius by 2050 (Paris target). To achieve this, global emissions of greenhouse gases must be drastically reduced. 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 climate action a key focus of its sustainability strategy and pursues specific goals, particularly for products, as the vast majority of CO₂ emissions over an aircraft engine's entire lifecycle occur in flight, in other words during the service life of our products. We actively support decarbonization, i.e. the shift to a long-term carbon-free economy, and include our own business activities in our climate action. → [Learn more about this commitment under Climate protection in production.](#)

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. Since CO₂ emissions have the greatest effect on the climate, the greatest potential for us to have an impact lies in cutting down on this greenhouse gas by developing energy-efficient engines. New combustor concepts can significantly reduce NO_x emissions. Since the combustor is not one of the components in our commercial aviation portfolio, we can make only an indirect contribution to avoiding nitrogen oxides by improving efficiency. Contrails and cirrus clouds also have an impact on the climate; they are generated under certain temperature and humidity conditions in the atmosphere triggered by particle and water emissions. Clever selection of flight routes and altitudes can greatly reduce contrails and cirrus clouds or even avoid them. Contrails can also be reduced with the help of sustainable fuels, as these produce fewer particulate emissions due to a lower proportion of aromatics. New propulsion concepts developed by MTU promise major reductions in the long term, both in terms of NO_x emissions and in the formation of contrails.



3
million metric
tons of
CO₂ saved

The first generation of the GTF Engine Family already powers 744 aircraft through the air, helping reduce CO₂ emissions by more than three million metric tons. (Source: Pratt & Whitney, May 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 must 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 and CO₂ emissions are defined in the SRIA since 2012. However, since these are not sufficient to meet the target set out in the Paris Agreement, we have undertaken to accelerate and broaden our activities in this regard. We believe that aviation must become emissions-free in the long term, which is why we are currently revising our Clean Air Engine agenda and the specific goals it pursues for the coming decades up to 2050—to make this a reality.

We have already achieved a great deal: The geared turbofan engine

With the first generation of the GTF Engine Family, which we are developing and manufacturing together with our partner Pratt & Whitney, we have not only achieved but in fact exceeded our first climate target of a 15% reduction in CO₂ emissions (16% for the PW1100G-JM that powers the A320neo, for example). Since 2016, this engine family has been successively introduced in various models for a total of five aircraft applications. With almost 10,000 orders and options, it has become a major business success and measurably reduces the burden on the environment: this first generation has already enabled airlines to avoid more than three million metric tons of CO₂ in flight. It also brings significant improvements in terms of airborne pollutants: the geared turbofan's NO_x emissions are 50% lower than those of its predecessor model.

Our Clean Air Engine agenda: Paving the way for emissions-free flight

Following the promising launch of the new geared turbofan engine, we now want to reduce fuel consumption and CO₂ emissions even further. To achieve this, we are taking an evolutionary approach based on the geared turbofan, which still offers huge potential for improvement. In the next generation, we want to develop its technology and turn it into an ultra-high bypass engine. Running the new engines on sustainable fuels (SAFs) will largely avoid CO₂ emissions altogether. Our engineers are already busy working on preliminary designs and technologies for the new generation. Within the German government's LuFo aeronautics research program and European technology initiatives such as Clean Sky 2, we are driving development to get the engine ready for full-scale production; for example, we opened a new component test center at our headquarters in Munich in 2019 to test new materials and designs. This technology development work could be completed by 2027.

We advocate the use of sustainable aviation fuels

We believe they are indispensable in paving the way to climate-friendly aviation. The idea is to shift away from consuming fossil fuels and toward sustainable, renewable fuels. We are doing our part to ensure that this potential is harnessed for aviation.

As part of our Clean Air Engine agenda, we're exploring different approaches to reducing fuel consumption and CO₂ emissions; our ultimate goal is to make aviation emissions-free. In our pursuit of this goal, we have completely new propulsion concepts on our agenda, which must surpass today's technology by a long way. After all, these revolutionary engine architectures hold great potential and open the door to emissions-free flight. We are pursuing several promising concepts, which our experts are already working on together with universities: one is known as the composite cycle concept, in which an additional piston compressor and piston engine significantly increase air compression. In turn, this further reduces fuel consumption and CO₂ emissions. The advantage of this approach is that the design of the aircraft would not have to be changed to accommodate such an engine. However, it brings with it another great challenge: the high pressure and temperature ratios in the engine increase NO_x emissions.

Another concept, the water-enhanced turbofan (WET engine), employs a heat exchanger to use the energy from the engine's exhaust gas stream. It works by evaporating water in a heat exchanger and injecting the vapor into the combustor for the turbine to generate additional power. A condenser is employed to obtain the requisite water from the exhaust gas. "Wet" combustion of this kind massively reduces nitrogen oxide emissions. This concept also cuts fuel consumption and CO₂ emissions by a large degree. In addition, it greatly limits the climate impact of contrails by largely eliminating emissions of water vapor. If this concept proves to be viable, there will be a further challenge to solve together with the aircraft manufacturer: how to integrate the required condenser into the aircraft.

In order to implement our plans, we signed a letter of intent for the EU's Clean Sky follow-up program Horizon Europe at the Paris Air Show in June 2019. As one of 23 players involved in Horizon Europe—including companies, research institutions and universities—we want to work together to decarbonize aviation in the future.

At the same time as developing these revolutionary new heat engines, we are pushing ahead with the development of electric propulsion systems.

Battery-electric or hybrid-electric propulsion systems? Both are conceivable

Battery-electric propulsion systems enable emissions-free aviation—provided the power is produced sustainably. As things stand, however, battery-electric engines are not technically feasible for existing commercial passenger aircraft. Today's battery concepts do not come anywhere near the energy density of conventional kerosene. Batteries' storage capacity is still far too small to power commercial flights. But battery-electric flight is a viable option for air taxis carrying a small number of passengers over short distances.

One possible concept for longer distances would be hybrid propulsion systems combining electric motors, generators, gas turbines and batteries. These open up completely new possibilities in aircraft design and propulsion technology while still using kerosene or SAFs as high energy density fuels for greater range. Disadvantages of hybrid propulsion systems, however, are the significant weight they add and energy conversion losses. We are participating in this future propulsion system through our stake in Silent Air Taxi, which was unveiled to the public in 2019 and is being developed in cooperation with RWTH Aachen University. It will have a parallel hybrid-electric propulsion system.

A true alternative: Sustainable fuels

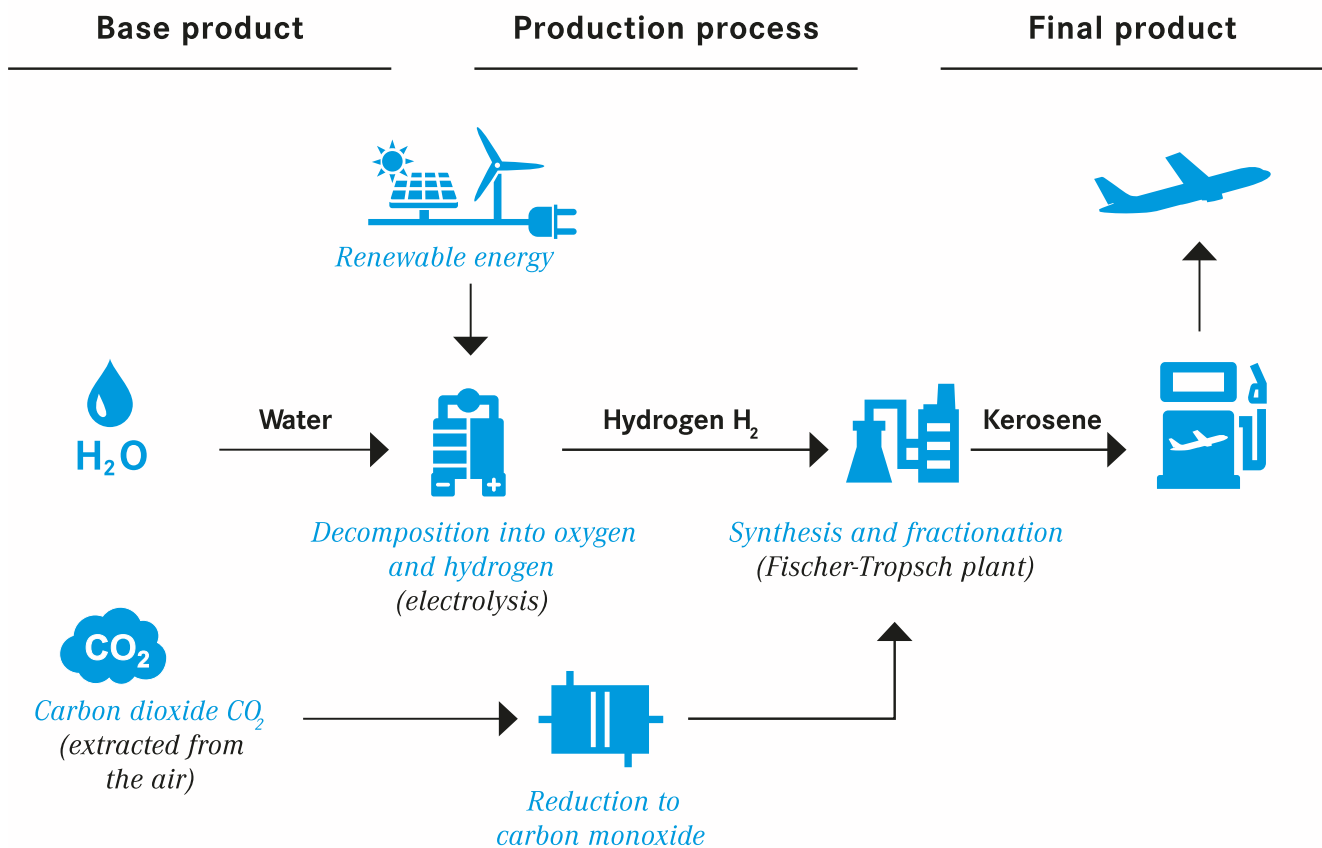
Our position is clear: aviation must move away from the use of fossil fuels and tap far deeper into renewable energy sources. Because sustainable fuels have the potential to neutralize CO₂ emissions generated by aviation, they are an indispensable part of efforts to reach the target of the Paris Agreement.

Sustainable fuels can already be used in today's infrastructure, which is why MTU is advocating for their adoption. We do this, for instance, through our involvement in the Bauhaus Luftfahrt think tank and the [Aviation Initiative for Renewable Energy in Germany \(aireg\)](#), an association we set up together with airlines, manufacturers and research institutions.

The first synthetic fuels have already been approved for flight operations, having successfully met the stringent quality and safety requirements. The new fuels can be "dropped in" to existing infrastructure, which means there is no need to modify the engine or aircraft. Currently, only biomass-based fuels are available in larger quantities. However, the inputs for their production would otherwise be used for food and these fuels are much more expensive than conventional kerosene.

Experts believe that there is greater potential for non-biogenic processes, in other words for synfuels that are produced using renewable electricity or sunlight. There are two methods suitable for producing electricity- and sunlight-based fuels: power-to-liquid (PtL) and sun-to-liquid (StL). However, the production processes for this artificial kerosene are not yet available on an industrial scale, which means the fuels are still very expensive; at the moment, they cost many times as much as standard kerosene.

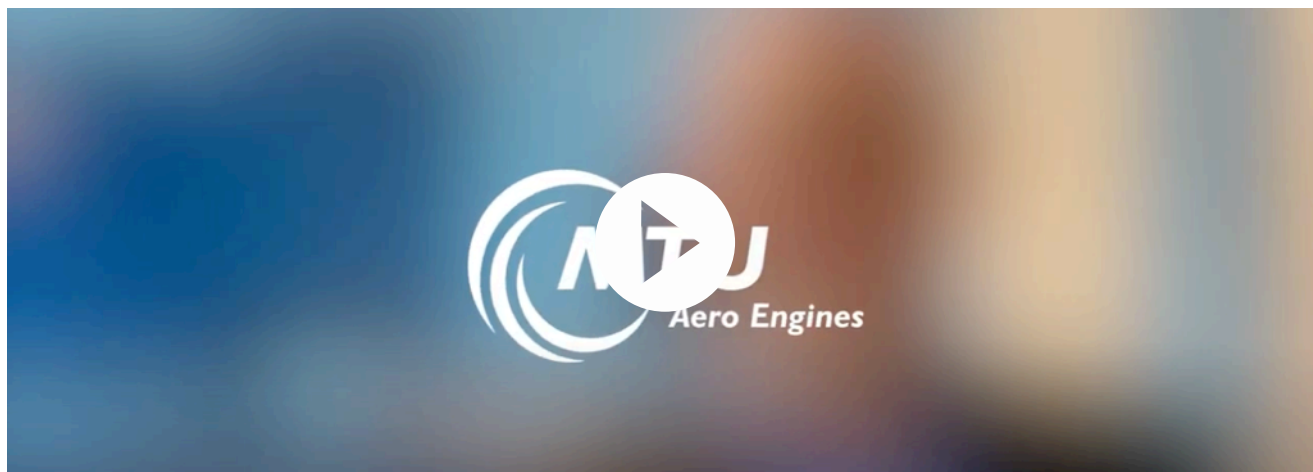
Power-to-liquid is a pioneering process for generating kerosene from water and CO₂



The power-to-liquid process uses renewable energy to produce hydrogen, synthesizes it with CO₂ to form hydrocarbons and processes these into a liquid fuel.

Does the future belong to the fuel cell?

One very promising propulsion concept is the hydrogen-powered fuel cell as an emerging technology for sustainable aviation. It emits nothing but water, paving the way for climate-neutral and pollutant-free flight. This concept uses hydrogen as its energy source and employs electric motors to drive the propulsors. Hydrogen has a very high energy density, so—in contrast to the electric battery—a fuel cell could conceivably also power long-distance flights. However, the fuel cells available today are not suitable for use in larger aircraft. Nevertheless, in light of their potential, we are pursuing this concept as a long-term solution as part of our Claire Technology Agenda.



→ You can find this film at https://youtu.be/8t0q_Se2o0

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

UNGC: 7, 8, 9

Picture: www.airbus.com

Eco-efficient engines

Aircraft noise

As part of our sustainable product development, we are not only working on reducing fuel consumption and the climate impact of air traffic. Our Clean Air Engine agenda also focuses on reducing aircraft noise and sets out clear targets to this end. Flying as a whole is set to become significantly quieter, too.



Powered by the geared turbofan from our Clean Air Engine agenda, the A320neo has reduced its noise footprint (propagation of aircraft noise in the airport area) by 75%. Further improvements are in the pipeline.

We are committed to active environmental protection and determined to reduce aircraft noise. This is important because quiet propulsion concepts can improve the situation for residents living near airports, thereby promoting society's acceptance of air travel, especially in view of the increasing number of aircraft movements. As with our approach to climate action, we have established several pillars to anchor the issue of aircraft noise in the company. In our [global Code of Conduct](#), we commit to climate protection and explicitly to reducing noise emissions from aircraft engines. We want to set standards in this area, and we have formulated our goal accordingly. The MTU Principles also include the requirement to create products with lower noise emissions under the heading "Environment and society."

Our contribution to the SDGs

Our active commitment to reducing aircraft noise helps achieve two SDGs of the UN's 2030 Agenda: SDG 9 on "Industry, innovation and infrastructure" and SDG 12 on "Responsible consumption and production." Reducing aircraft noise levels improves the aviation infrastructure that is important for growth and prosperity while at the same time leading to lower levels of pollution for people living around airports.



→ [Learn more about our contribution to the SDGs](#)

In contrast to CO₂ emissions, to receive certification from aviation authorities both aircraft and engines must meet noise limits set by the [International Civil Aviation Organization \(ICAO\)](#); in the past, these limits have been successively tightened. Furthermore, at almost every airport in the world, the fees charged for takeoff and landing are dependent on the noise emissions of the aircraft model.

How is aircraft noise generated?

Aircraft noise is caused by both the engine and the aircraft itself. Noise during takeoff is largely down to the fan and engine airflow; during landing, the aircraft also adds to noise as a result of turbulence around the fuselage, wings and landing gear.

In the certification of new aircraft models, noise is measured using a standardized process at three defined points and then cumulated. Aircraft noise has decreased continuously since the 1960s, by a total of about 17 EPNdB (effective perceived noise decibels) or about 70%.

Quieter flying: Our Clean Air Engine agenda provides answers in this area, too

With our Clean Air Engine agenda (Claire), we are pursuing not only climate action targets → [Climate & flying](#), but also targets for reducing aircraft noise emissions. Our project is in line with the European aviation industry and research sector's [Strategic Research and Innovation Agenda \(SRIA\)](#), which calls for noise reductions of 55% by 2035 and 65% by 2050. With the first-generation geared turbofan, we have already significantly reduced aircraft noise emissions as part of Claire Stage 1. They are on average 15–20 EPNdB (cumulated over the three ICAO measuring points) below the current legally stipulated noise emission class, ICAO Stage 4. This equates to a reduction in the geared turbofan's noise footprint (spread of aircraft noise near airports) of 75%.

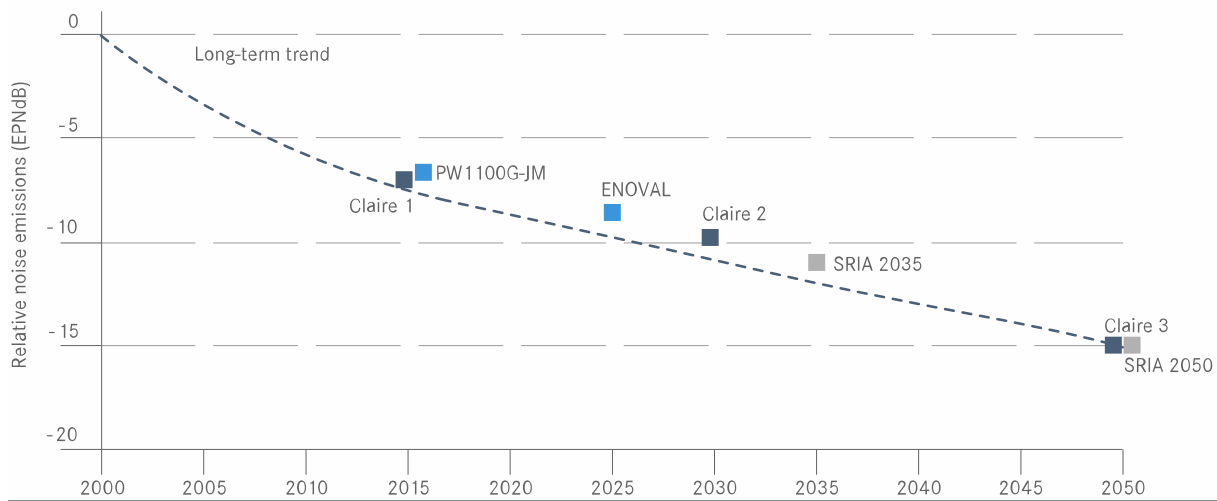


65%
**less aircraft
noise**

With our Clean Air Engine agenda, we have not only set ourselves targets for protecting the climate. We also want to gradually reduce aircraft noise—by up to 65% by 2050.

In the next step, Claire Stage 2, improvements to the second-generation geared turbofan are set to reduce aircraft and engine noise emissions by 50% (base year 2000). To achieve this, the engine industry has developed the necessary fans with a low pressure ratio and low-noise low-pressure turbines as part of European research programs such as ENOVAL.

SRIA and Claire agenda targets for reducing noise emissions



All the targets refer to an aircraft's noise emissions including engines (improvements are relative to an aircraft from the year 2000); noise level in EPNdB (effective perceived noise decibels) are relative to the limits defined by the International Civil Aviation Organization (ICAO) (Stage 4). A reduction in noise emissions of 10 EPNdB corresponds to a 50% cut in perceived noise.

In the third and final stage of Claire, noise emissions are set to be reduced by as much as 65% (base year 2000) thanks to new engine architectures such as integrated and distributed engines. Our engineers are currently working on various promising concepts for the future, and our acoustics experts are involved in our projects at every stage of product development, from technology management to subsequent engine design and optimization.

GRI: 102-12, 103-2, 103-3

UNGC: 7,8,9

Picture: www.airbus.com

Sustainable innovations

Research and development

We are a technology leader in aviation—and it is our extensive research work and a high level of innovation that keep us in this top position. With our comprehensive research and development activities, we want to implement innovative and sustainable solutions that strengthen our competitiveness and secure our business. Ultimately, all MTU's stakeholders benefit from this—above all our customers, employees and shareholders.



We bring together smart minds and a whole host of experts who are working on the solutions of tomorrow. Our engineers are also focusing their attention on emissions-free flight.

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. This applies above all to our research and development work. 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 dialogue, which we conduct on an ongoing basis with all stakeholders.

→ [More information about Stakeholder dialogue](#)

Our contribution to the SDGs

Our sustainable product solutions for aviation generate added value for our customers and for society. In this way, we support several of the United Nations' Sustainable Development Goals (SDGs): SDG 9 on "Industry, innovation and infrastructure," SDG 12 on "Responsible consumption and production," SDG 13 on "Climate action," and SDG 17 on "Partnerships for the goals." A secondary objective of SDG 9 calls for research and development to be expanded by 2030. We conduct intensive research and development work with numerous specialists in the company and in collaboration with universities and research institutions.



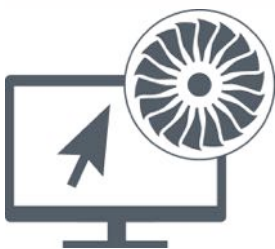
→ [Learn more about our contribution to the SDGs](#)

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 ([Climate action and Aircraft noise](#)) and receives regular updates on progress and the course of the projects. MTU manages its product development in a multistage 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 will create advanced product designs and derive technology requirements from them. And over the long term (up to 2050), our engineers will use a technology radar to develop pilot concepts and initiate the development of enabling technologies. The basis of this technology process is our culture of innovation, which we cultivate with a variety of initiatives. These include a Group-wide innovation management concept, the Inno Lab and Ideation Challenges through which we gather and evaluate ideas from employees related to a specific field of innovation.



“In the Inno Lab, we put ideas on the fast track,” says Dr. Carsten Subel, Head of the Inno Lab at MTU, on the global search for technology trends and the significance of a company culture that lets innovation thrive. [Read the interview here](#)

We stepped up our investment in clean technologies in the reporting year: in 2019, we invested EUR 214.3 million (2018: EUR 201.2 million) in research and development. R&D as a proportion of revenue was 4.6% (2018: 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 almost 1,300 engineering specialists around the world. Our teams bring together bright minds from fields as diverse as acoustics, fuel cells, 3D printing and bionics. → [Our intellectual property management system ensures that we protect our extensive technological expertise](#)

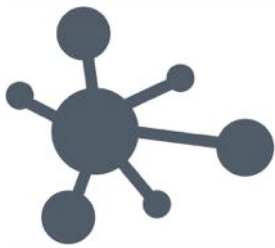


214.3
million euros

A large portion of our research and development spending, which amounts to EUR 214.3 million, goes toward improving our environmental sustainability of aircraft engines. We currently have around 150 technology projects in the research pipeline.

We have an extensive network

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 institutions, and companies around the world → [MTU's research network](#). 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.



100
research
partners

We have access to a strong network of universities, research institutions and companies and participate in important aviation research programs.

In addition, we cooperate directly with numerous universities and research institutions and maintain several centers of competence at selected German universities, which are devoted to specific research topics. There is more information about this in the chapter on → [Corporate social responsibility](#)

GRI: 102-12, 102-43, 103-2, 103-3

UNGC: 7, 8, 9



Value creation

Sustainable 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. We include the upstream supply chain in a sustainable process of creating value.



11.6

**million euros spent on
climate protection**



448,000

**metric tons of CO₂ saved
for our Munich location**

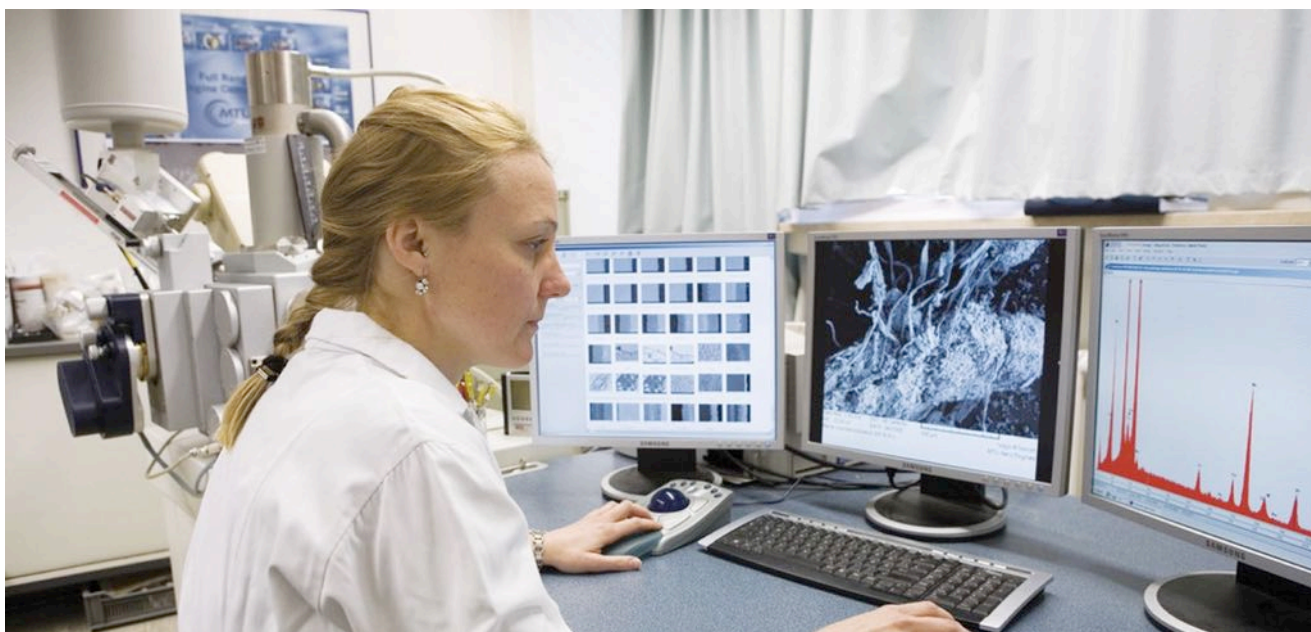


- Environmental management
- Conservation of resources
- Emissions
- Supply chain

Climate protection in production & maintenance

Environmental management

Climate 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.

Climate 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 climate is by means of ecologically efficient products, as the environmental impact (energy consumption and CO₂ emissions) of our products is greatest during their use. → [Climate & flying](#)

Integrated environmental protection covers:

- Making continuous improvements
- Precautionary principle
- Involving employees
- Limiting environmental impact
- Carefully complying with statutory limits and requirements
- Using resources and energy sparingly



11.6
million euros

We spent around EUR 11.6 million on climate protection in 2019; investments into improving the environmental compatibility of our sites accounted for around half of this amount.

Furthermore, we have embedded our environmental responsibility in the MTU Principles in the section entitled “Environment and society,” and our annual corporate objectives held us to high standards of climate protection again in 2019. Responsibility for company-wide climate 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 approval 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.

Our environmental management approach is not centralized. All of MTU’s production sites have a dedicated environmental department and take care of implementing measures on a local level. The Executive Board receives a quarterly report on environmental KPIs; up until 2019, this included the energy and water consumption at all production sites. As of 2020, we have now switched this internal reporting metric to CO₂ emissions per production hour. Individual site managers are directly responsible for climate protection; they receive advice and support from the local environmental departments. The environmental departments regularly share their innovations and best practices with each other. We regularly train employees on matters relevant to the environment, such as the safe handling of hazardous goods or chemicals.

Some of our sites are certified to ISO 14001, the international standard for environmental management systems, and/or to the EU Eco-Management and Audit Scheme (EMAS). → [Overview of our certifications](#). We plan to align the structures at our Munich site with an ISO 50001 energy management system, as we have done in Hannover.

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 SDGs](#)

We use various measures to achieve improvements in our energy and carbon footprints. In the reporting year, we spent some EUR 11.6 million in total on investments and ongoing expenses in a bid to increase our environmental compatibility. These include, for example, wastewater treatment, safe waste disposal, use of renewable energies, energy-saving measures and noise abatement. Energy-saving measures accounted for the company's largest single investment in environmental protection.

We have our environmental management system regularly reviewed

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

Emergency management plans have been prepared to deal with interruptions to operations with a negative environmental impact, and a crisis committee has been set up. We also hold regular staff drills and provide instructions on what to do in the event of an emergency. MTU has comprehensive fire protection measures in place that comply with legal directives.

In 2019 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. No non-monetary sanctions were brought against MTU.

Climate protection in dialogue with stakeholders

We maintain a dialogue 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 immediately follow up. This applies to employees, suppliers, residents and other stakeholders. In the reporting year, we received a complaint at our Hannover location from an industrial neighbor regarding an unpleasant odor and vibrations from the test stand. We responded to this by taking successful countermeasures. Stakeholders can consult environmental officers at the German sites with any questions or comments. → [More about Stakeholder dialogue](#)

Our → [Environmental statements for Munich, Hannover and Ludwigsfelde](#) provide information to the public annually about our environmental impact and environmental management. In addition, we offer stakeholders the opportunity to make use of an → [Online survey on sustainability](#) to give feedback. We are a member of the Climate Management 2.0 Peer Learning Group in the [UN Global Compact's](#) German network. In this group, we share experiences with other companies and work together to develop solutions to the major climate action challenges.

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

- [UN Global Compact](#)
- [Been-i Bavarian energy-efficiency network](#)
- [Munich Business Climate Pact \(Klimapakt Münchner Wirtschaft\)](#)
- [YVR Vancouver Airport Authority's Environmental Management Plan](#)

We involve our employees in active environmental protection endeavors and promote environmentally conscious behavior through awareness events, information campaigns and training courses at all our production sites. Raising the awareness of all employees in production and administration is part of our Code of Conduct regarding climate protection. At our Munich headquarters, we want the Zero mission to reduce resource consumption and emissions and promote environmentally conscious behavior among our employees.

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. By comparison, smaller sites are not relevant for our environmental impact and are therefore not included.

Outlook

In 2019, we analyzed new concepts for climate action at several of our sites, the evaluation of which is still ongoing at the time of writing. Potential implementation of such a concept at the site or group level is therefore still to be determined.

In line with the Zero vision from our eponymous Zero mission, we are also setting up a new environmental program for the 2020–2022 period at our Munich site.

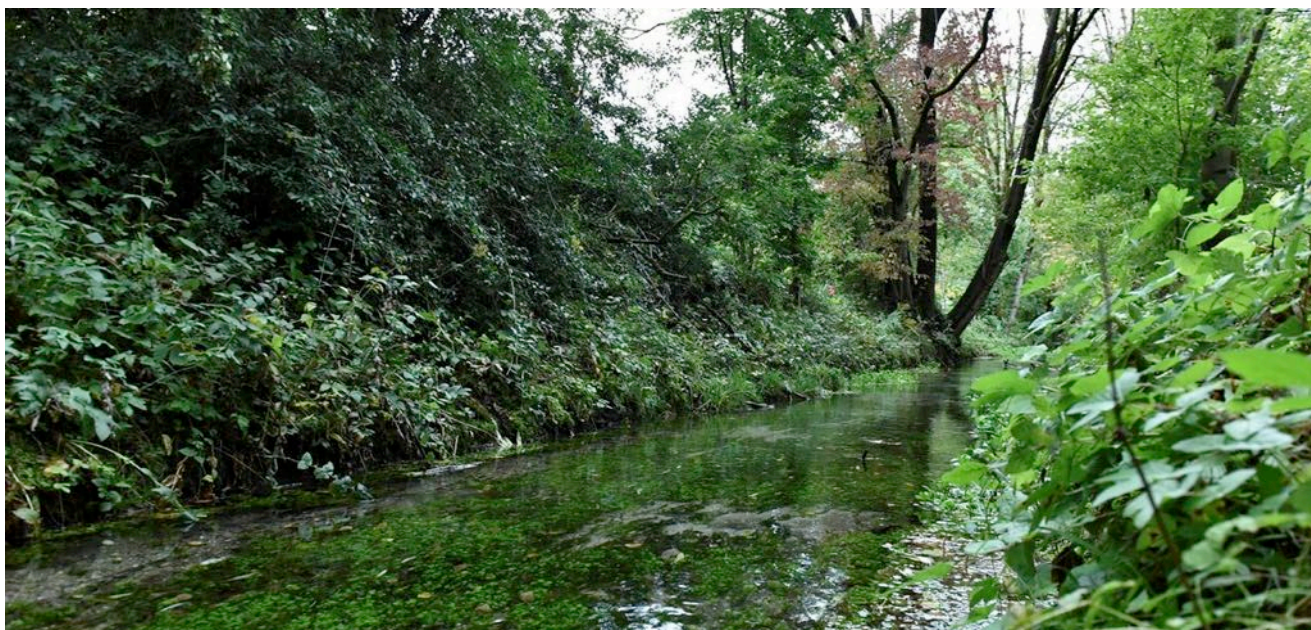
GRI: 102-11, 102-12, 102-43, 103-2, 103-3, 307-1

UNGC: 7, 8

Responsible conduct

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. Using processes that are efficient in terms of energy and raw materials, we aim to minimize consumption of scarce resources and reduce emissions. In this way, we are able to contribute to climate action and protection.



We protect resources—this also applies to bodies of water at our locations, such as the Schwabenbächle stream (pictured here) that runs past our headquarters in Munich. We release rainwater from our shops and a small part of the groundwater we obtain into the stream in accordance with our permit from the authorities.

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. In 2019 we were again ramping up production at all sites, which poses a particular challenge for us when it comes to reducing or consumption of resources and energy.

Our contribution to the SDGs

In making our process as resource-conserving as possible, we support two global Sustainable Development Goals (SDGs): 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 contributes in particular to SDG 12, which calls for a significant reduction in global waste generation by 2030. All the measures we take to protect resources, reduce our energy requirements, and above all use renewable energies, ultimately also benefit SDG 13 on “Climate action.”



→ [Learn more about our contribution to the SDGs](#)

Energy

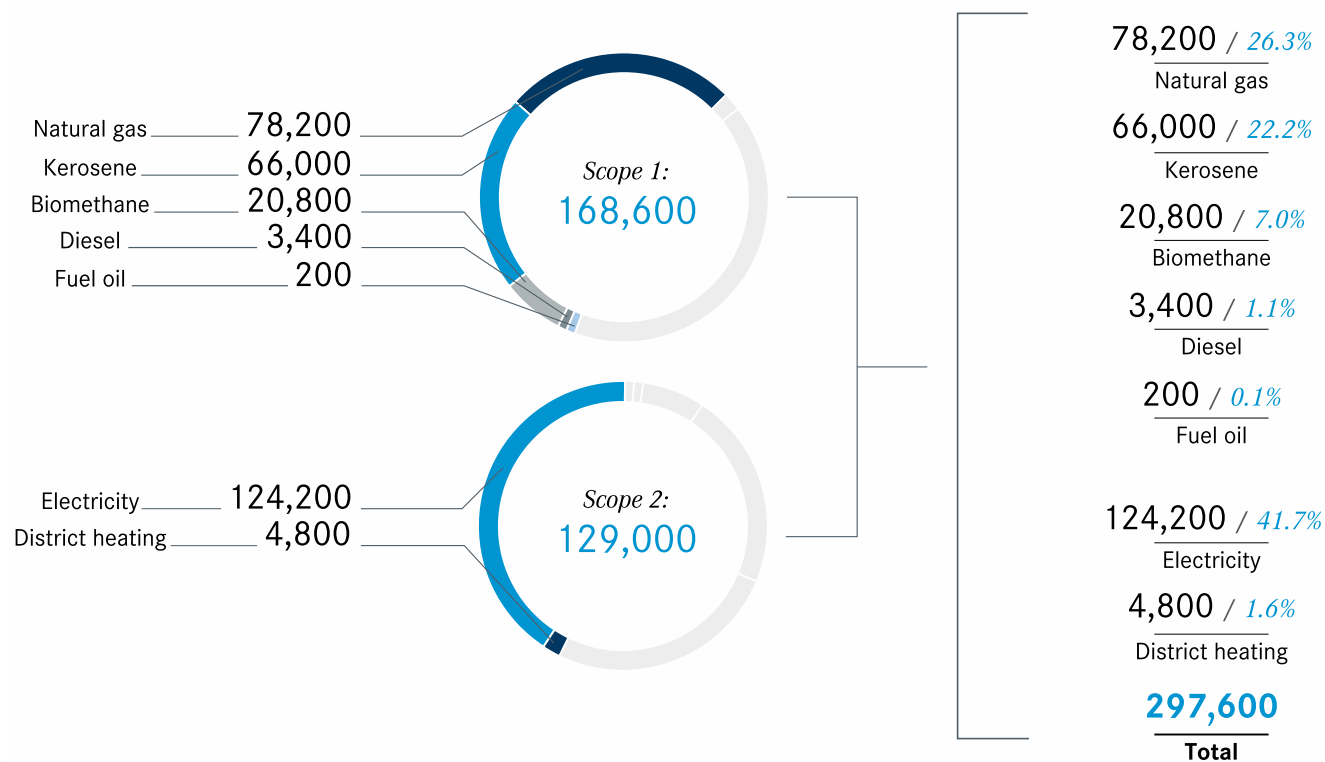
MTU relies on a mix of renewable and non-renewable energy sources and chooses energy resources based on security of supply, cost effectiveness and environmental considerations. Regarding non-renewable primary energy, we use natural gas, the aviation fuel kerosene and a very small amount of diesel and heating oil (together accounting for less than 5%). In Munich, we generate electricity and heat using a cogeneration plant (BHKW). Compared to conventional power plants, cogeneration plants are much more efficient and emit less pollution. In addition, we use biomethane for the BHKW. The Hannover site makes use of solar energy with the aid of a solar thermal power plant and, in 2019, commissioned a BHKW cogeneration plant comprising three micro gas turbines for generating electricity and heat. We also achieve greater energy efficiency by having the sites use waste heat from compressed air generation as thermal energy (combination principle).

In the reporting year, we invested some EUR 1.4 million in energy-saving measures. The main driver of these measures was a renovation of the facade to make it more energy-efficient and a switch to high-efficiency pumps in Hannover.

Energy sources used in 2019

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 (direct energy consumption) remained at the previous year's level in 2019—despite the ongoing production ramp-up production at our sites. MTU's total Scope 1 energy consumption totaled 168,600 megawatt hours (MWh) compared with 162,200 MWh for 2018 (+3.9%). 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. All newly maintained as well as manufactured engines must complete a test run prior to delivery for safety reasons and to demonstrate their performance. Our digitalization strategy 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. To this end, a number of projects in the area of development and technology are already underway. This is an important contributor to resource conservation. Regarding renewable energy, we used 20,800 MWh of biomethane for our cogeneration plant, a slightly larger share than in the previous year (2018: 18,100 MWh).

In 2019, we procured a total of 129,000 MWh of external energy (Scope 2), somewhat more than in the previous year (2018: 125,600 MWh). Purchased energy is mainly electricity, with a share of 96.3%. Our use of green electricity is determined by the extent to which our chosen suppliers feed it into the grid. Our selection is based on economic and environmental considerations. MTU Maintenance Canada gets all its electricity from hydroelectric power stations and therefore 100% from renewable resources. This corresponds to a share of around 3% of MTU's total electricity procurement.

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

	2019	2018	2017
Total	297,600	287,800	277,600
Direct energy consumption, natural gas, kerosene, other = Scope 1	168,600	162,200	151,100
Indirect energy consumption, electricity, district heating = Scope 2	129,000	125,600	126,500
Covered by Scope 1: non-fossil fuels = biomethane	20,800	18,100	

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 297,600 MWh in 2019, which, even with the production ramp-up, was only just above the previous year's level (+3.4%). With a systematic energy management system, we manage primarily the consumption of our main energy sources electricity and natural gas and implement improvements.

Our progress in energy management in 2019

- Renovation of lighting in several production facilities, Munich
- Switch to LED lighting, several production sites
- An end to computers in stand-by mode, Munich, Vancouver
- Switch from pneumatic tools to electrically operated tools, Ludwigsfelde
- Renewal of pumps and systems, renovation of facade and roof, Hannover
- Preparations underway to recover compressor heat to use for heating rooms, Rzeszów
- Remote working from home, Munich, Vancouver

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. One of the aims of the Zero mission at our Munich site is to decrease water consumption overall (absolute reduction) or, when production increases, to keep the increase in water consumption at a lower rate (relative reduction). In 2019, we invested some EUR 1.1 million in improved wastewater management.

Our fully consolidated production sites are in Germany, Poland and Canada, so they are not located in water-stressed regions as determined by the [World Resources Institute's Aqueduct Water Risk Atlas](#) (water risk for those countries: low or low/medium). Water-stressed regions are regions in which water is a scarce resource. We monitor the development of water availability in the regions in which we operate, which allows us to make decisions about additional measures to take, if required.

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. Water withdrawal amounted to around 9.7 million cubic meters for all production sites (2018: 8.7 million m³). The higher water usage figure is due primarily to more groundwater at the Munich site (where we use Quaternary groundwater from our own wells). The water used was 97.9% groundwater and only 2.1% came from the municipal drinking water supply. Using well water contributes to climate action and protection, as it eliminates the need for energy-intensive cooling processes such as compressor cooling systems.

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 614,000 m³ of water in the reporting year. We also use recycled water for the chemical cleaning of engine parts. Our sustainable water management also includes systematic inspection and renovation of the well water and sewer networks.

Water balance (in m³) GRI GRI 303-3-303-5

		2019	2018	2017
	Total	9,691,000	8,682,000	8,820,000
Intake	Potable water	204,000	186,000	173,000
	Groundwater	9,487,000	8,496,000	8,647,000
	Total	9,652,000	9,176,000	9,018,000
Discharge	Sewer system	133,000	140,000	132,000
	Surface water	1,634,000	1,519,000	1,290,000
	Groundwater	7,885,000	7,517,000	7,596,000

Production sites only; no water withdrawal or discharge in water stress areas; data presented in line with official wastewater and well reports and may deviate from previous publications. At the Munich site, a small proportion of the well water and some of the rain water collected from the roofs is discharged as surface water via the Schwabenbächle stream. Rainwater is discharged into the municipal sewer system only in the event of heavy rainfall. As a result, the sum of the volume discharged into groundwater and surface water may not correspond to the volume withdrawn.

Water quality

We treat 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. We carry out strict monitoring at the sites to ensure that legal limits are observed and comply 100% with all local authority requirements. Neither water sources nor water surfaces were negatively impacted or polluted by our operating activities, and again no harmful substances were leaked in 2019. This also applies to our site in Canada in particular, 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 ensure our demand for raw materials is reduced. Aircraft engines as a rule 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. We develop our 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.



400,000

fewer single-use cups

We have abolished single-use cups at our Munich and Hannover sites and replaced them with returnable or deposit cups. This means we already avoid using 400,000 single-use cups per year; our site in Ludwigsfelde also plans to make the switch.

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.

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. We implement 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. The European Chemicals Agency EChA authorized MTU to continue its use in several of our processes until 2029 on the basis of the extremely safe workplace standards in our surface coating 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 with which we are looking for chromic acid/chromium(VI) substitutes. 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, spray powder and steel) amounted to 4,340 metric tons in the past financial year, while the quantity of consumables and supplies was 10,080 metric tons. In total, we needed 16,030 metric tons of materials in 2019, slightly up from the previous year (15,110 metric tons) due above all to a greater requirement for production materials as a result of the ramp-up. Of this total, 10% were made from renewable materials. As part of our Zero mission in Munich, we switched to recycled paper for all printers in 2019, which meant that we were able to obtain just under 1% of our material from recycled sources.

Material consumption (in tons)

GRI 301-1

	2019	2018	2017
Total	16,030	15,110	12,490
Production material	4,340	3,760	2,520
Consumables and supplies	10,080	10,030	8,920
Other materials	1,610	1,320	1,050

Externally sourced material for production sites; production material comprises titanium and nickel alloys and spray powder; consumables and supplies include oils, cooling lubricants, chemicals, lubricants, gases and kerosene and diesel used as fuel; the other material comprises paper, cardboard packaging and wooden pallets and boxes. For the period mentioned above, we compiled our material consumption according to new parameters. As a result, it may deviate from earlier data published for the years 2017–2018. 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 human rights due diligence. → [More information about Human rights](#)

Waste management

MTU practices sustainable waste management with the safe disposal of waste sorted according to waste type and recycling process. First and foremost, we try to avoid waste, reuse leftover materials and use waste 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. This is how we achieve high recycling rates over the years. We have abolished single-use drinks cups at our Munich and Hannover sites and replaced them with returnable or deposit cups. As a result, we can avoid using almost 400,000 paper cups per year. Our site in Ludwigsfelde near Berlin also plans to cease using single-use cups.

Waste footprint (in t) GRI 306-2

	2019	2018	2017
Total waste	8,370	8,010	7,100
Recycled	7,320	7,060	6,210
Disposed of	1,050	950	890
Share of hazardous waste	3,440	3,290	3,010
Recycled	2,590	2,440	2,210
Disposed of	850	850	800

Production sites only; not including construction waste

Total waste generation in 2019 amounted to 8,370 metric tons and increased only marginally year on year (+4.5%). Measured against that total, the MTU Group achieved an overall recycling rate of 87.5%. The amount of waste produced and recycling routes depend primarily on production capacity utilization. The share of hazardous waste in the reporting period was 41.1%. In 2019 as in 2018, no soil contamination was found at MTU sites that resulted from the leakage of hazardous materials or pollutants.

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

UNGC: 7-9

Climate action at our sites

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 protecting the global climate and improving local air quality. Through numerous measures, we are making progress in these areas.



We support e-mobility solutions: we have installed charging stations on our premises and introduced electric cars and hybrid vehicles to our fleets. We plan to expand the scope of our efforts in this regard in the future.

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 goals for eco-efficient products and how we are striving to achieve emissions-free flight, see the section on → [Climate & flying](#).

We continuously assess greenhouse gas emissions related to the manufacture and maintenance of engines and modules 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. Upstream and downstream CO₂ emissions, for example generated by suppliers or 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 SDG 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 SDGs](#)

CO₂ emissions

In 2019, MTU emitted a total of 78,800 metric tons (2018: 76,000 metric tons) of CO₂, representing a slight increase in absolute CO₂ emissions of 3.7%. This is due primarily to a rise in Scope 1 CO₂ emissions at almost all sites resulting from higher production volumes. Our Scope 1 emissions are caused mainly by the use of natural gas (which accounts for 20.1% of the overall carbon footprint) and kerosene (also 20.1%); our natural gas requirements are dependent above all on production volume, our kerosene requirement on the type and duration of test runs. At 50.8%, use of electricity (Scope 2) makes up the largest share of CO₂ emissions. Scope 2 emissions have remained at a constant level over the last three years. Our specific CO₂ emissions amounted to 168 kilograms per production hour in 2019.

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

	2019	2018	2017
Total	78,800	76,000	74,400
Scope 1	38,200	36,500	34,000
Scope 2	40,600	39,500	40,400

Production sites only; emission factors according to the GHG Protocol with site-specific emission factors for Scope 2; figures reported here from previous years may therefore deviate from earlier publications. Data on emission reductions from the Munich Business Climate Pact (Klimapakt Münchner Wirtschaft) is calculated according to a standardized emission factor for all companies that differs from our local emission factor.

The Clean Air Industrial Site (CLAIR-IS) program will continue to run at MTU’s headquarters in Munich until the end of 2020. With the help of this program, we want to reduce the CO₂ emissions at the company’s largest plant by 25% (baseline year: 1990). And we aim to do so even though production has quadrupled over the past decade. In total, we have already saved some 448,000 metric tons of CO₂. A new environmental program for the Munich site, with defined reduction targets up through 2022, is being planned.



448,000

metric tons of CO₂ saved

By the end of 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 CO₂ savings in 2019

- Using well water for cooling purposes: some 5,600 metric tons
- Turning machines off instead of putting them on standby: 770 metric tons
- Operating BHKW 2.0 cogeneration plant using biomethane: 6,500 metric tons
- Using micro gas turbines: 260 metric tons

MTU is a member of the [Munich Business Climate Pact \(Klimapakt Münchner Wirtschaft\)](#), which entered its second round in 2019 with the slogan “More cooperation—more climate action.” In the first round, we reduced our CO₂ by 7,500 metric tons; now, we have set our sights on cutting a further 5,000 metric tons by 2021. As a manufacturing company, we believe we have a special duty here. This initiative was recognized by the German government as a particularly innovative energy efficiency network at the Hannover Messe 2019. In addition, our in-house Zero mission at our Munich site has launched various actions to minimize consumption and emissions.

Electric driving

Electric cars, hybrid vehicles, electric charging stations—at MTU we are increasingly turning to e-mobility for our transport solutions, and we also support employees in finding a more sustainable way to get to work. We want to increase the proportion of electrically powered vehicles in MTU’s fleet and install more electric charging stations on our premises.

To make our company’s environmental impact still more transparent, we take part in the annual assessment by the international non-profit organization [CDP](#), which collects data on companies’ greenhouse gas emissions, climate risks and climate strategies on an annual basis. By participating, we aim to further improve the climate-related information about our carbon footprint and are currently examining how to communicate business-relevant climate risks and opportunities in the future according to the recommendations of the [Task Force on Climate-related Financial Disclosures \(TCFD\)](#). [We present our position on TCFD recommendations here.](#)

Electromobility at MTU

We also extend our climate action 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 our company vehicles or by using electric cars in our vehicle fleet. In Germany, we have a total of eight all-electric and two plug-in hybrid vehicles in use, representing 6% of the whole fleet. We expect to be able to increase that to at least 10% in 2020. We have installed eight normal charging stations, some of them in employee parking lots. By 2022, we aim to expand the network to as many as 15 charging stations for MTU and employee vehicles, and to offer rapid-charging stations as well. Furthermore, we promote sustainable commuting practices among our workforce, through a special discounted “job ticket” for the local public transportation network or web portals for carpooling. Last year, as part of our Zero mission, we conducted a survey of the 5,527 employees at the Munich site to find out about the transportation they use and sustainable alternatives. We are currently reviewing the results of the survey for potential solutions to put into practice.

Emissions from the transport and logistics chain (excluding company vehicles) fall under Scope 3, for which we do not have complete data. The amount of CO₂ emissions caused by business trips (travel by aircraft, train or rental car) totaled 6,900 metric tons in 2019.

CO₂ emissions (in t CO₂ equivalents) Scope 3 from business travel [GRI 305-3](#)

	2019	2018	2017
Total	6,900	6,600	6,700
Emissions per employee	0.8	0.9	0.9

2017–2018: only Germany and Canada, 2019: Germany, the Netherlands and Canada (absolute emissions therefore not comparable with values from the previous year); emission factors according to the GHG Protocol, historical values reported here may therefore deviate from earlier publications.

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 aim to reduce these emissions as well. For example, generation of electricity and heat in the new BHKW cogeneration plant at the Munich site cuts emissions of nitrogen oxides by 80% and of carbon monoxide by 66% compared to its predecessor. Absolute emissions for 2019 totaled 266 metric tons, which, due to production activities, was above the previous year's level (+9%). Nitrogen oxides accounted for the lion's share of these emissions, primarily due to the use of kerosene in test runs.

Airborne emissions (in tons)

Scope 1 und 2

GRI 305-7

	2019	2018	2017
Total	266	244	243
Carbon monoxide (CO)	42	38	40
Nitrogen oxide (NO _x listed as NO ₂)	184	167	162
Sulfur dioxide (SO _x listed as SO ₂)	36	35	36
Particulates (dust)	4	4	5

Production sites only; data newly recorded for the period detailed above, for which some emission factors were corrected.

Outlook

In 2019, we analyzed new concepts for climate action at several of our sites, the evaluation of which is still ongoing at the time of writing. Potential implementation of such a concept at the site or group level is therefore still to be determined. It may also be possible to use sustainable aviation fuels across the Group, which would enable us to perform sustainable test runs on our test stands using climate-neutral fuels. We will continue to investigate the feasibility of this approach with regard to economical, technical and approval-related considerations.

GRI: 102-3, 103-2, 103-3, 305-1, 305-2, 305-3, 305-4, 305-5, 305-7

UNGC: 7-9

Responsible sourcing

Supplier management

We work with numerous suppliers around the globe; they play a key role in our value creation. We have a shared goal: to work together as partners to achieve sustainable production. As a basis for this collaboration, we have defined the environmental and social criteria that are important to us.

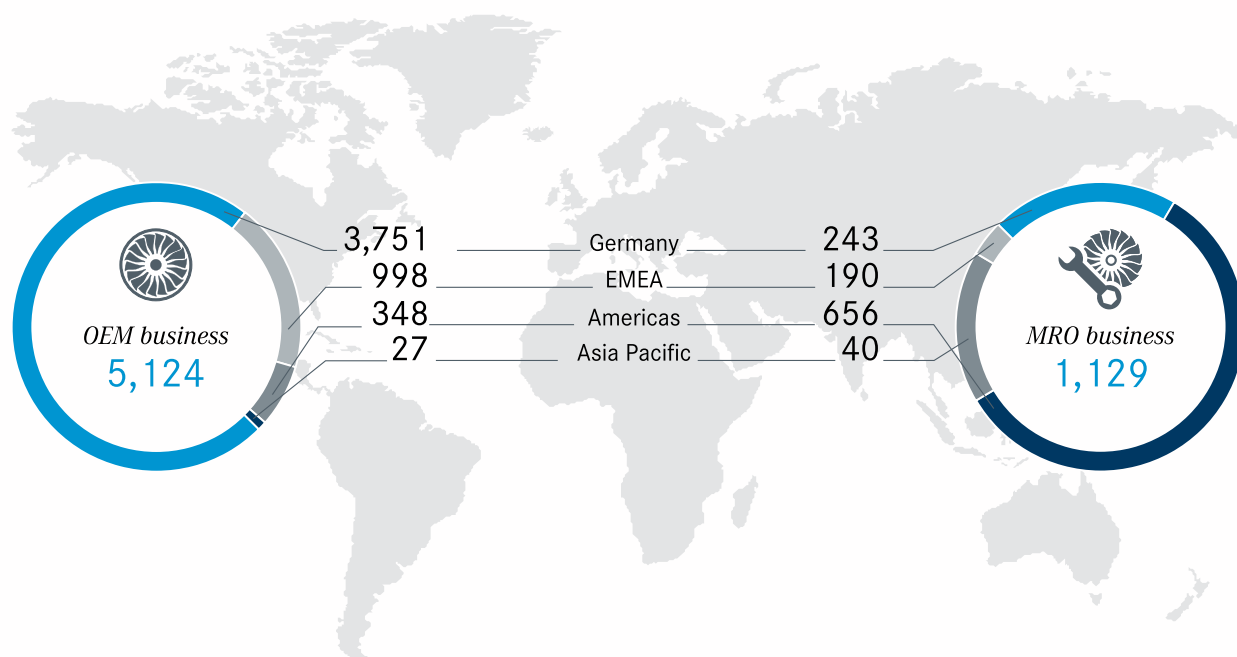


We procure components, goods and services for our production and maintenance activities from suppliers based all over the world. We integrate the global supply chain into our sustainability activities.

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: new and spare parts (original equipment manufacturer: OEM) and commercial maintenance (maintenance, repair and overhaul: MRO). However, they each have their own organizational units for sourcing production material.

Because today's supply chains are so global, extensive and complex, we concentrate our efforts regarding sustainability aspects on the supply step immediately upstream (tier 1). However, our direct suppliers are contractually obliged to ensure that their subcontractors also abide by our defined standards. In 2019, our sites worked with 6,253 suppliers around the world; our supplier base was smaller than in the previous year (2018: 6,983), especially regarding OEM suppliers from Germany. Europe is home to 82.9% of the suppliers, with 63.9% of the total number of suppliers located in Germany.

 MTU suppliers 2019 by region (production and non-production material)

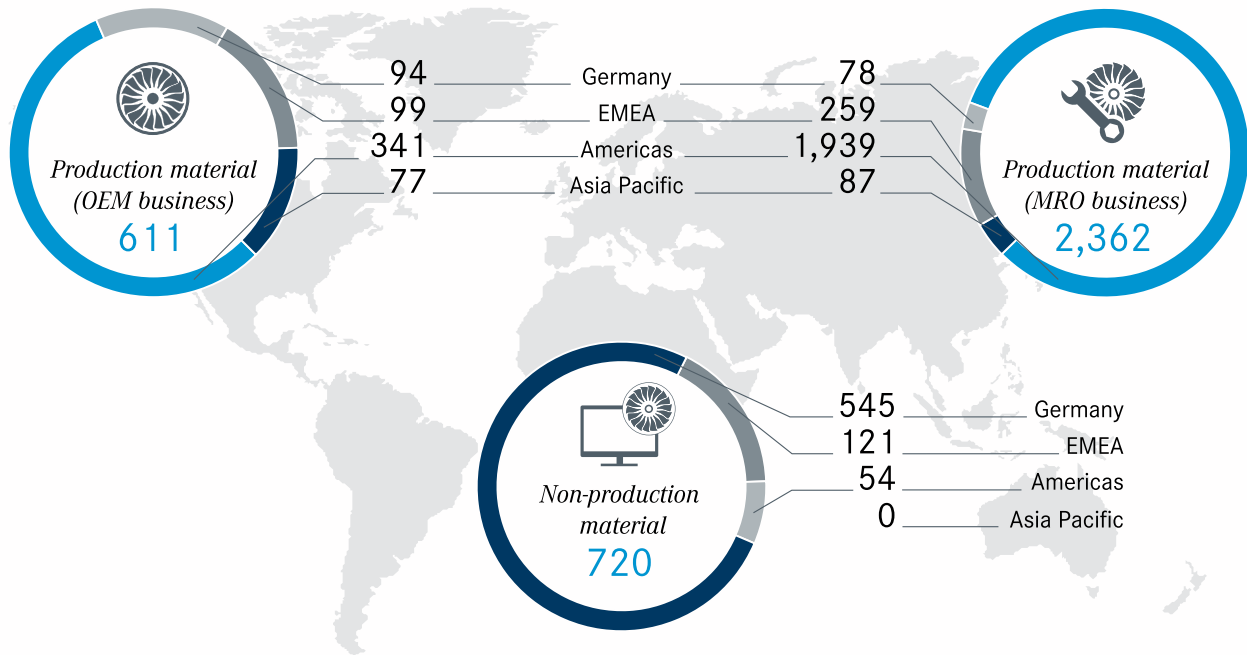


Supplier base for production material and non-production material for OEM (new and spare parts) and MRO (commercial maintenance) segments EMEA = Europe (excluding Germany), the Middle East and Africa; Americas = North, Central and South America plus the Caribbean; Asia Pacific = East Asia, Southeast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

The purchasing volume for production material in the OEM business in 2019 ran to some EUR 611 million for the OEM business (2018: EUR 516 million) and to just under EUR 2.4 billion for MRO (2018: EUR 1.9 billion). In 2019, we purchased non-production material to the tune of EUR 720 million for OEM and MRO combined (2018: EUR 510 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.

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 the business for new and spare parts, we procure across the entire breadth of the supply chain, from blanks to finished parts. We always source castings and forgings externally, and the same goes for special materials for which MTU has not built up manufacturing expertise, such as electronic control systems. If possible, we source our supplies directly from the manufacturers of blanks or finished parts, whereby the company procures raw materials itself only to a small extent (→ [The measures we take regarding conflict minerals in raw material purchasing](#)). For commercial engine modules, the average proportion of sourced parts lies between 52% (Poland) and 69% (Germany).

Purchasing volume 2019 by region (in EUR m)



Purchasing volume for OEM (new and 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; non-production material excluding Vericor; production material for Vericor estimated

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 19.6% in Germany and 44.3% in Poland. Overall, MTU sourced 18.7% of its entire purchasing volume from local suppliers.

Our contribution to the SDGs

Through responsible supplier management, we can help achieve a number of the global Sustainable Development Goals. In particular, we view our commitment to fair, global supply chains for our products through compulsory social standards as a contribution to SDG 8 on “Decent work and economic growth,” and also as an expression of our corporate social responsibility outside our factory walls. Through compliance requirements for suppliers, we support, for instance, 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 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 RECh chemicals regulation. When managing our suppliers, we place a particularly strong focus on safeguarding the respect of human rights. This topic is presented separately in the chapter on corporate governance. → [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 professional 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. Our purchasers are also trained on the Code of Conduct for Suppliers. In addition, we offer special corporate responsibility training, including bespoke training for purchasers.

Suspicious that the Code of Conduct for Suppliers may have been breached can be reported confidentially to MTU's Compliance Officer. Reports can also be submitted anonymously via the web-based [iTrust](#) system, which is available in several languages. 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 or registered during the period under review. Nor were there any complaints about suppliers. Therefore in 2019, as in previous years, no supplier partnership was terminated because of sustainability deficiencies, confirmed cases of corruption 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 1,407 new suppliers (2018: 1,019), or 22.5% of the total (2018: 14.6%). All suppliers are vetted before being accepted into MTU's supply chain. This process includes a binding supplier disclosure and contractual undertaking to comply with the Code of Conduct. MTU'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. Once approved, suppliers must regularly demonstrate their ISO 9001 compliance for quality management via re-certifications. We present our analysis of risks relating to human rights in the supply chain in this report under → [Human rights](#). We plan to further develop this in the future.

Outlook

Our plan is to integrate sustainability aspects into supplier audits for the OEM and MRO business.

GRI: 102-9, 102-10, 103-2, 103-3, 204-1, 205-3, 308-1, 308-2, 407-1, 408-1, 409-1, 412-3, 414-1, 414-2

UNGC: 1-5, 8



Employees and society

Social responsibility

We are a leading player in the aviation industry underpinned by a strong team. To bring out the best in our employees, 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 and comprehensive occupational health and safety. Standardized leadership values provide guidance and create a leadership culture based on trust and support that promotes sustainable and innovative thinking. The cornerstone of our corporate social responsibility is exchange and cooperation with science and research.



5.4

**million euros
for education**



4.4

**accidents per
1,000 employees**



- [MTU as an employer](#)
- [Occupational safety](#)
- [Employee development](#)
- [Diversity & inclusion](#)
- [Corporate social responsibility](#)

Responsible employment policy

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 right people with exactly the right talent that we need. We are working on lots of exciting projects and tasks with which we are actively shaping the future of aviation. To do this, we rely on the expertise on the part of each and every one of us.



We work in teams on our company's challenges and tasks and support this by providing a working environment that sparks inspiration and brings us together.

We are a driver of technology in the high-tech sector of aviation and want to help shape key changes. Our capability to innovate and remain competitive is key to our existing and potential employees perceiving us as an attractive employer. We draw on a global workforce of motivated and highly qualified employees who pull together to tackle tasks and challenges. Thanks in particular to the ramp-up of new engine programs as well as to automation and digitalization at the company, we are increasingly needing to grow our team of highly skilled professionals. To ensure our continued success, we want to attract the most talented individuals to MTU and create a working environment in which all our employees can perform at their best. We foster this environment with our respectful and cooperative leadership culture in which we recognize strong performance, promote flexible and digital working arrangements and welcome feedback. We offer our employees opportunities for long-term personal development, embrace diversity and inclusion, and protect our employees' health and safety. That's what makes us an internationally successful company.

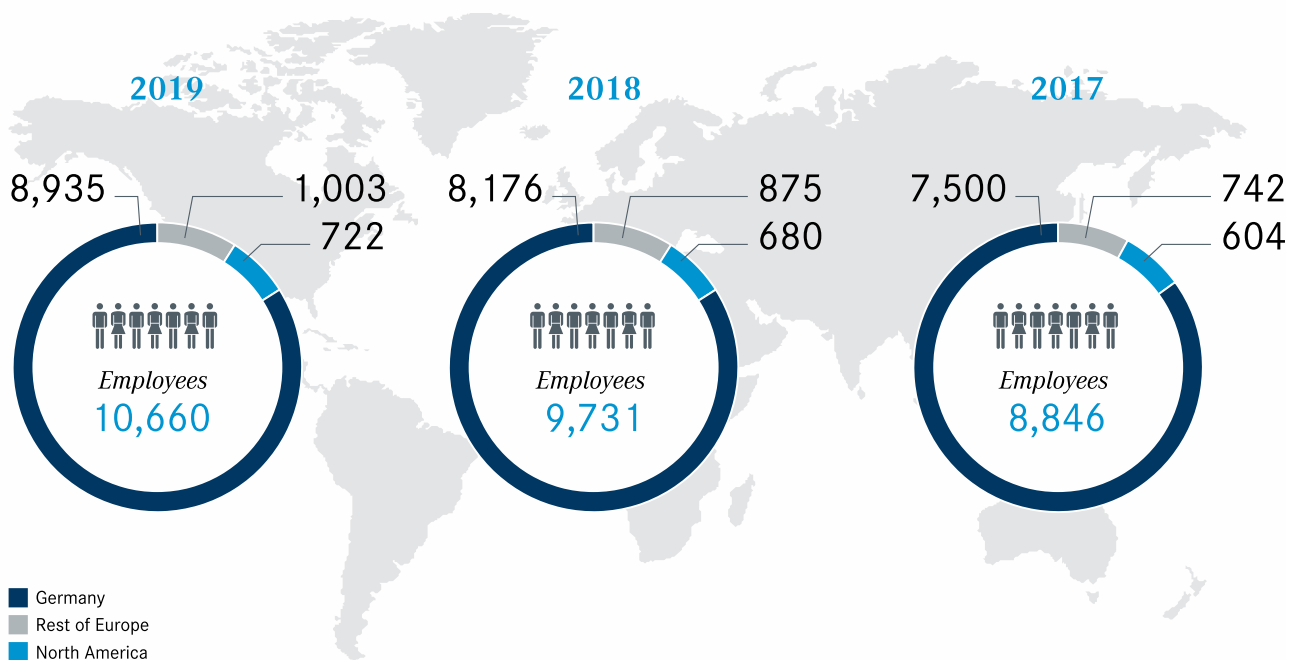


10,660 employees at MTU

The MTU family is growing: At the end of 2019, MTU employed more people than ever before. 10,660 to be precise—9.5% more than in the previous year.

MTU’s global workforce grew again in 2019, reaching 10,660 employees at the end of the year (2018: 9,731). This corresponds to an increase of 9.5 percent. Our MTU family has been growing and growing since 2016. The number of employees rose in all regions, most strongly in Europe (+9.8%). 9,938 employees were employed in Europe—and 83.8% of the total workforce is in Germany alone. The share of the workforce in North America was 6.8%. 92% of employment contracts were permanent in 2019.

MTU’s employees by region (GRI 102-8)



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 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.

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 fair and secure working conditions.



→ [Learn more about our contribution to the SDGs](#)

We have a human resources strategy that we use to position MTU as a sustainable employer for existing and new employees alike. In 2019, we revised this strategy to further enhance the attractiveness and competitiveness of the company in the labor market. The aim of our efforts to further develop the stature of MTU as an employer is to secure the sustainability of our company, particularly to ease generational change at the German locations, and to utilize the potential of automation and digitalization for the ramp-up of the new engine programs. To this end, an internal team of experts has formulated specific goals to further enhance the MTU working environment and has drawn up fields of action to achieve them. This involves various "futurework@MTU" initiatives, such as knowledge transfer, new forms of collaboration, modern HR tools and the acquisition of expertise required for the future.

We have also introduced common leadership values and rolled them out across the Group in 2019: We transform, we empower, we create trust. These form the basis for a cooperative and coaching-oriented management style and collaboration that keeps MTU on the road to long-term success.

Employee groups by region
GRI 102-8

	2019	2018	2017
Blue collar workers			
Germany	49.3%	49.4%	50.0%
Rest of Europe	50.9%	51.5%	49.7%
North America	49.1%	49.5%	47.9%
White collar workers			
Germany	50.7%	50.6%	50.0%
Rest of Europe	49.1%	48.5%	50.3%
North America	50.9%	50.5%	52.1%
Employees on temporary contracts	865	866	346
Germany	706	701	346
Rest of Europe	154	154	–
North America	5	11	–
Apprentices	293	306	298
Germany	280	279	287
Rest of Europe	0	0	0
North America	13	27	11
Temporary agency staff	395	514	579
Germany	395	513	539
Rest of Europe	0	1	40
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 workers and employees from external companies); we have been collecting data on employees on temporary contracts for all regions since 2018.

Social working standards apply for all employees

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
- Equality of opportunity in the workplace
- Dealings with suppliers, customers and business partners in industrial relations
- Cooperation with 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 this Code of Conduct, statutory requirements, plus our 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 details the anti-discrimination measures we take. As a signatory to the [UN Global Compact](#), we are committed to observing its principles of respect for human rights and equal treatment in the workplace, and we undertake to implement 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 2019, 98% of the people employed by the company in Germany were covered by collective agreements (e.g. collective bargaining agreements), a figure that stood at 85.7% worldwide in the same year.

We welcome feedback and ideas from our employees

The relationships we form with our employees are based on respect and trust and we 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 dialogue 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.

We carry out an employee survey at regular intervals at all of our larger locations 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. The next round of surveys is planned for 2021. Moreover, we have established further employee involvement forums at our sites around the world. These range from works meetings in Germany and townhall meetings in the United States to special instruments such as leadership feedback and team barometers. We use an idea management system to obtain and evaluate improvement suggestions from employees. Another way for employees to contribute is by submitting ideas for smart solutions as part of our regular Ideation Challenges. We take particularly promising suggestions and test their potential and feasibility in projects in our Inno Lab. In addition, in late 2019, we called on managers at certain hierarchical levels to work in interdisciplinary teams to develop a vision for MTU for 2040. We evaluated the ideas submitted as they were pitched, and selected two of the teams to present their visions to MTU's upper-level management. We will again review all submissions and follow up on valuable impetus.

Award-winning attractiveness as an employer

In comparative analyses with other companies, MTU received several employer awards again in 2019.

Certifications and rankings in 2019

- TOP Employer Germany
- Germany's most attractive employers (Universum)
- Top employer for training (MTU Maintenance Hannover)
- TOP Employer Poland
- TOP Employer British Columbia (Canada)
- Canada's Top Employers for Young People
- Canada's Best Employer for Recent Graduates
- Top Company and Open Company on Kununu
- Women's Career Index

→ [More about MTU's awards](#)



3.4 % staff turnover

The turnover rate remained at a low level again in 2019. Together, all the programs and measures we pursue help ensure that MTU remains an attractive employer.

We also regard our low staff turnover rate as yet another sign of high employee satisfaction. In the reporting year, this was 3.4% for the MTU Group (previous year: 4%). 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 14 years.

Staff turnover GRI 401-1

	2019	2018	2017
No. of employees that left the company	289	313	281
Germany	192	228	186
Rest of Europe	37	39	39
North America	60	46	56
Turnover rate (%)	3.4	4.0	3.8
Germany	2.7	3.5	2.9
Rest of Europe	4.6	5.9	6.9
North America	8.9	7.6	9.9

Turnover rate measured as a proportion of core workforce, annual average, figures include retirements; no data is available on new hires and turnover by age group. We report on new hires in the chapter on Diversity & inclusion

We reward performance with attractive remuneration and additional offers

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 in 2019, 92.8% of all MTU employees worldwide received a regular appraisal of their performance (at least once a year).

We offer a broad range of additional perquisites. In addition to the statutory obligations, in Germany these include accident insurance, profit-sharing, family-related services, mobility benefits, a healthcare service and training opportunities. The company has a pension scheme for all its employees, who can opt to top up the share contributed by the company themselves on a voluntary basis. This gives them the flexibility to manage their own pension funds as they see fit. At our international locations we offer a range of additional benefits such as private life insurance, health insurance and retirement planning support.



114
million euros

In addition to their salary, we offer our employees a wide range of social benefits such as a company pension scheme; in 2019, we invested EUR 114 million in such benefits.

MTU enables its employees to share in the company's success. Each site does this using different regulations and programs. We also offer an annual employee stock option program in Germany (participation rate in 2019: 2,517 employees). Some of our international locations offer their own long-term bonus schemes, as in Rzeszów (Poland), or award annual bonuses, as is the case in Vancouver (Canada).

Enabling flexible and digital working

At MTU, we believe in teamwork. We recognize the specific needs and various life phases of our employees and respond to these by providing various offers and opportunities for flexible working through a range of part-time models and mobile working arrangements. This way, we help achieve a better work-life balance. Part-time work increased in the reporting year, accounting for 7.4% of employment (data collected only in Germany, 2018: 6.8%). The number of employees on parental leave in Germany in 2019 rose to 395 (2018: 324).

To put collaborative work at MTU on a more sustainable footing, we're increasing our use of digital working models and plan to enhance them with a social intranet. Using new digital communications channels, we aim to promote knowledge exchange throughout the company and bring employees from different areas into contact with one another.

Alternative working arrangements (Germany)

GRI 102-8, 401-3

	2019	2018	2017
Part-time employees (in %)	7.4	6.8	6.6
Employees on parental leave, total	395	324	311
Employees on parental leave, female	143	127	128
Employees on parental leave, male	252	197	183

The right to parental leave in Germany is governed by the German Parental Allowances and Parental Leave Act, which applies to the entire workforce. The legislation stipulates that any employee 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.

Our initiatives include

- Flexible working hours and flextime accounts
- 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

GRI: 102-8, 102-12, 102-16, 102-41, 102-43, 103-2, 103-3, 201-3, 401-1, 401-2, 401-3, 404-3, 405-2

UNGC: 3, 6

Ensuring a high level of protection

Occupational health and safety

At MTU, our employees should have a safe and healthy environment in which to work. This forms a key part of our corporate social responsibility and is fundamental to our corporate success. High occupational safety standards and a company health management system lay the foundation for a capable workforce. We strive to develop and enhance our preventative occupational safety concept and employee health services on an ongoing basis. In 2019, we again achieved a high level of safety that exceeds the industry average by a significant margin.

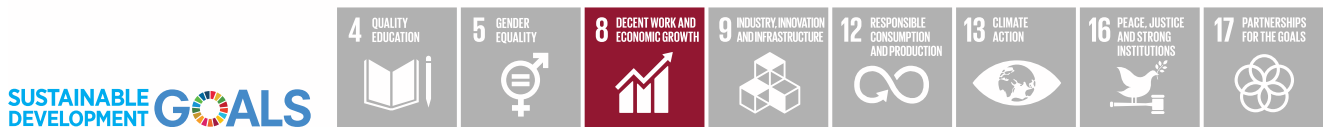


We strive to prevent health and safety risks to our employees. To achieve this, we take a whole range of precautions such as providing personal protective equipment.

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 [Group-wide 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 of our international 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 all locations are responsible for implementing their own, which enables them to tailor it to their local needs and requirements. At the individual production sites, occupational safety is the responsibility of the site managers; occupational safety officers are appointed at the management level. Local technical departments take action on occupational safety issues on-site and report regularly to their 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 employee representatives.

Our contribution to the SDGs

A secondary objective of SDG 8 of the UN's 2030 Agenda, "Decent work and economic growth," calls on companies and organizations to support safe working environments for all employees. We consider this SDG to be relevant for MTU because we can help achieve it directly by implementing strict occupational safety standards and ongoing preventative measures.



→ [Learn more about our contribution to the SDGs](#)

Occupational safety forms part of our [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 or the new ISO 45001 international standard for occupational health and safety management systems, to which we are already certified → [MTU's current certifications](#). Accordingly, 83.8% of the workspaces comply with an external standard; all workspaces in the company are part of our IMS based on the principle that "safety takes priority in what we do." This includes the workspaces occupied by temporary workers.



4.4
accidents per
1,000
employees

That is far above the industry average. At 4.4 per 1,000 employees in 2019, the number of reportable accidents at MTU was significantly below the metalworking industry average of 34 accidents per 1,000 employees.

We strive to prevent health and safety risks to our employees and third parties. To this end, we regularly assess workspaces for any risks and hazards they present for employees. Where necessary, we implement appropriate measures to prevent or at the very least minimize potential stresses. That also applies to workspaces occupied by temporary workers. 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 / temporary workers 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. We strongly encourage the workforce to report unsafe situations. Regular safety training for all employees and temporary workers is mandatory across the Group. We train all employees and temporary workers on health and safety matters specific to working life at MTU when they first start working at the company. In addition, managers receive repeated mandatory training on occupational safety. First-aiders are appointed and obligated to attend a refresher course every two years. The local technical departments carry out ongoing prevention work at the company's sites through training sessions and information campaigns.

We achieve a high level of protection

High standards in occupational safety across the Group were again one of our annual corporate objectives in 2019. In addition, accident-free and low-stress workspaces form part of our IMS policy. In addition, each year we define maximum tolerance thresholds at each location for category 4 reportable workplace accidents (accidents that entail more than three days lost), ranging from 0 to 10. Regrettably, we were not able to meet this threshold at two production sites. With 47 reportable workplace accidents entailing more than three days lost across the Group, 2019 saw an increase over the previous year's figure of 42. All production sites except for the one in Poland reported an increased number of accidents in the past financial year. Here, it should be noted that we employed more people across the Group than before. As in the previous year, the Group-wide accident rate was low in 2019 at 4.4 reportable workplace accidents per 1,000 employees (2018: 4.3). We have thus achieved a high level of safety compared to the average in the German metalworking industry (Wood and Metal Trade Association—BG Holz und Metall, data for 2018) of 34 accidents per 1,000 employees. As in previous years, there were no fatal accidents in 2019. We also record and analyze accidents involving temporary workers on our premises. Accidents among this group entailing more than three days lost dropped from 7 (2018) to 4 (2019). The accident rate (per thousand employees) has reduced from 5.5 to 3.6 as a result.

Occupational safety

GRI 403-9

	2019	2018	2017
Reportable workplace accidents (more than three days lost)	47	42	33
Non-reportable workplace accidents (1–3 days lost)	32	37	35
Non-reportable workplace accidents (requiring medical attention)	21	12	20
Fatal workplace accidents	0	0	0
Days lost as a result of reportable accident	1,226	922	486
Accident rate per 1,000 employees	4.4	4.3	3.7
Workplace accidents temporary workers	4	7	14
Fatal workplace accidents temporary workers	0	0	0

Accident statistics relate to total workforce at fully consolidated sites including apprentices, interns, thesis students, doctoral candidates, students and holiday staff, employees on fixed-term contracts, and marginal workers. Workplace accidents do not include any commuting accidents. The day of the accident does not count as a day lost.

The marked increase in the number of days lost due to accidents is attributable to individual events involving particularly long absences. The total number of reportable workplace accidents in the Group is low. Analyses of accidents in 2019 show that the company has a very high level of technical and organizational safety with regard to its machines and equipment; accordingly, the accidents that arise tend to be related to behavior and less so to the operation of machines and equipment.

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 continue to focus on promoting safety-conscious working so as to continuously refine the safety culture. They include, for example, regular awareness campaigns at the individual sites: in Munich, for example, on forklift traffic on the premises, and in Hannover on the use of personal protective equipment. In 2019, we also placed a stronger focus on workplace ergonomics with better equipment and on further lowering employees' exposure to dust.



We have equipped all the forklifts in our Munich plant with "blue spots" so that pedestrians see them in good time. Robot-supported deburring workstations are now more ergonomic. In the redesign, we also furnished them with state-of-the-art suction devices, obviating the need for operators to wear protective masks.

Outlook

As a result of the greater number of days lost at the Munich site, we plan to launch a new occupational safety campaign to raise awareness of safe behavior in the workplace among production employees. In Hannover, we have started individual coaching sessions for shop foremen to support them in promoting safety-conscious behavior among their employees. We are continuing these measures in the offices.

Moreover, we are currently revising our reporting of occupational safety incidents to the Executive Board in order to ensure that this topic gets even greater attention at the management level. We will also standardize our accident reporting for temporary workers across all sites.

Health management

Health is a key success factor when it comes to overcoming corporate challenges. The only way for MTU to retain its strong, competitive 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. For years now, ergonomics management in particular has been growing in importance at our German locations. Accordingly, we are taking a closer look at workstations in production and implementing ergonomic measures in Industry 4.0 processes

In Germany, we again surveyed our employees about the services offered under our BGM system. The feedback shows that our “People in Focus” information campaign in 2018 and 2019 raised awareness of our employee health services. In addition, compared to previous surveys, more employees stated that they had made use of the services (47% of the 2,500 respondents).

In Germany, the health rate for the reporting period remained on a comparable level with the previous year at 94.4%..

Health rate

	2019	2018	2017
Germany	94.4%	94.6%	94.6%

Health services at the German sites cover occupational health and—at sites with a company doctor—emergency medicine and are responsible for general preventive measures. These services are available to all employees and temporary workers. Counseling services offer employees and temporary workers support with performance and work-related issues as well as mental health issues. In addition, all of our German locations offer supplementary in-house and external services. This includes in-house case managers, who provide advice for employees returning to work following a long absence, as a result of sickness or an accident for instance, to ensure that they get the best possible support with their reintegration. External providers offer a comprehensive support package for family-related matters. Additional benefits offered by MTU include fitness centers, which are run either in-house or by external partners, as well as physiotherapy, ergonomics training and on-site vibration training.

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 absences caused by illness or accidents as well as workplace reintegration. At our site in Rzeszów (Poland), the basic medical services on offer include a doctor who is on-site once a week, psychological support as needed, and sports club membership.

Information about the coronavirus pandemic

This sustainability report covers the 2019 financial year and is being published as the world fights against the coronavirus pandemic. People and companies are in a different situation today than they were in the reporting year. MTU is doing its part to help contain the pandemic and has taken numerous measures to protect its workforce. The current situation notwithstanding, we want to live up to our corporate social responsibility. You can find more information [here](#).

GRI: 103-2, 103-3, 403-1, 403-2, 403-3, 403-4, 403-5, 403-6, 403-8, 403-9

Promoting lifelong learning

Employee development

Our success depends on the skills and expertise of our workforce. That's why we believe our employees should be given every opportunity to give their best. In this time of societal change, we want to remain innovative and sustainable and have the right employees with the right skills in our ranks. That is why we promote lifelong learning in important phases of professional life and actively support our managers as they lead MTU to a successful future.



We support our managers in their work with their teams to successfully transition MTU into the new decade and shape technological change.

Innovative strength and competitiveness are key factors for success in the aviation industry. We firmly believe that continuous, intensive employee development is essential for MTU. This is why we are investing specifically in the training and development of our talent. 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). The opportunities for personal and professional development of our employees also make us an attractive employer for new minds and our own talented individuals.

In addition to industry-specific vocational training and dual courses of study aimed at building up knowledge over the long term, we support and promote the development of all our employees—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. In the reporting year, we signed off on a new human resources strategy, part of which is about helping us expand the personal development activities we offer. Among the strategy's specific goals are autonomous learning, safeguarding our expertise, and building up future skills.

The head of human resources is responsible for the training and development of employees Group-wide. The Executive Board receives an annual update on training indicators and discusses selected training initiatives.

Our contribution to the SDGs

We actively support SDG 4 on “Quality education” from the UN’s 2030 Agenda for Sustainable Development. At this time of digital change, we are giving our employees the chance to improve their sustainable skills. High-quality employee development featuring attractive training opportunities 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 SDGs](#)

The huge significance of training and development is reflected in the scale of opportunities we offer and how much we invest in them. This is based on our Group-wide works agreement in Germany, which guarantees access to training for all employees and requires management to conduct an interview with each employee once a year to discuss their development opportunities (training interview). The directive applies to 83.8% of the total workforce. At our three sites in Germany, the works council is also involved in employee training in accordance with the German Works Constitution Act (Betriebsverfassungsgesetz) and has a say in the annual training and development program. International sites have their own regulations; at MTU Aero Engines North America, for example, each employee receives an annual development plan.



5.4
million euros

That is how much we invested in employee training in 2019. To help our employees expand their knowledge and skill sets, we offer virtual self-study courses, technical training and soft skills workshops. These offers are available to all employees.

A welcome-on-board program provides new employees with important information about working at MTU. In the spirit of life-long learning, we then continue to support them in widening their know-how and developing their potential. We establish training requirements annually 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.

Digital learning worlds

New learning techniques play a part in the digital transformation of the company. We make our development opportunities attractive and sustainable via an online learning portal, which we systematically feed with new content and formats. Since 2019, our employees in Germany have had the option of completing courses in English, and we have also set up an e-learning platform for our employees in Poland that offers web-based training in English and Polish. Another advantage is that employees can organize how to develop their know-how themselves, in consultation with their manager. Many employees are using our digital learning programs: 48% have already participated in online training. We are also seeing good participation from colleagues in manufacturing.

In 2019, we continued our widespread investment in employee training. We invested EUR 5.4 million in training schemes Group-wide (2018: EUR 5.1 million). At 27,174, the total number of training days was slightly lower than in 2018, which is due to the increased use of short formats. On average, our employees each completed 2.5 days of training last year. At 16.1%, the proportion of women in training courses was somewhat higher than in 2018 and was above the Group-wide proportion of women of 14.7%.

Employee training GRI 404-1

	2019	2018	2017
Training days (total)	27,174	29,468	21,971
Training days per employee (Group-wide)	2.5	3	2.3
Training days according to employee category (Germany) per manager	3.2		
Training per employee category (Germany) per employee included in collective bargaining agreements	2.7		
Proportion of women in training courses (Group-wide)	16.1%	14.3%	13.6%

Figures exclude Vericor (USA); we started recording training days by employee category in 2019 for Germany.

We act according to consistent leadership values

A focus in our 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. To ensure sustainable leadership behavior and an innovative corporate culture, we have established standardized, company-wide leadership values (we transform, we empower, we create trust). We introduced these in Germany in 2018 as part of a leadership value process and went on to hold an extensive series of "inspiration events" and departmental workshops in 2019. In spring 2019, we held launch events and related workshops to roll out our leadership values in Poland, the Netherlands and North America. The leadership values are thus now firmly established at all management levels in the Group. Under our corporate objectives for 2019, we resolved to see to it that the new leadership values are observed and that their effect on leadership culture is tangible in terms of performance. We are seeing positive signs that our leadership culture is evolving to place a greater focus on employees' autonomy, fully foster their ideas and potential, inspire innovation, and create sustainable teams.

Our multifaceted approach to training our managers

We also offer development opportunities and programs across all hierarchical levels in order to identify and best cultivate new talent, while supporting our existing managers in their professional development. This involves not only a new Leadership Exploration Program for new managers, which was launched in 2019, but also a Development Center, which, by way of exercises and interviews, supports talented employees in honing their individual development plan for assuming a management position. These allow us to objectively evaluate talented individuals and promote their visibility throughout the company. Some 80% of new managers with leadership responsibilities appointed in 2019 had participated in Development Center activities. Specialist managers who are experts in their particular field but do not lead a team also receive assistance from a Development Center to prepare them for their role. In addition, every two years managers can take part in our International Leadership Program, which promotes a common understanding of leadership in a global corporate environment. A new round began in early 2019; participants included employees from our locations in Germany and abroad.

Our programs

We have numerous Group-wide initiatives that we use to develop our managers and support them both:

- Development centers
- Business Challenge
- Leadership Exploration Program
- Management transition coaching
- Building on Talent/International Building on Talent
- International Leadership Program

We also offer programs for managers that are specific to the individual sites:

- Management development program, Ludwigsfelde (Germany)
- Management Growth, Rzeszów (Poland)
- Engineering Management (Shaping R&D Leadership), Rzeszów (Poland)

Establishing and preserving valuable expertise

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. Our talent management approach also serves to ensure 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. Moreover, we cover a certain portion of tuition fees for employees there who return to university to pursue a master's degree as part of their development plan. This location faces the special challenge of determining how to retain talented employees and help them grow.

Award-winning work with young talent

At MTU, training is a central component of securing promising young employees. We offer young people in Germany a solid grounding in ten different trades as part of a dual-track approach, while the places we offer for students taking dual courses of study 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. → [For examples, see the section about corporate social responsibility](#). We are not alone in recognizing the high quality of the training we provide: In 2019, the Hannover Chamber of Industry and Commerce awarded MTU Maintenance Hannover with the "Top employer for training" seal. And we were also particularly pleased that three of our Munich-based graduates were awarded the Bavarian State Prize by the Upper Bavarian government for their outstanding academic performance. They had trained to become qualified aircraft maintenance mechanics at MTU.

Apprentices have made up a constant proportion of MTU's workforce for many years; last year they accounted for 2.8% of the total workforce (2018: 3.1%). As of the end of the year, MTU employed 293 apprentices. In addition, we offer practical courses of study in collaboration with selected vocational academies.

New local training opportunities

Also when it comes to establishing and expanding our locations, and the new appointments that come with that, it is essential to train our employees and provide them with a solid grounding in their field. In Hannover and Ludwigsfelde, metal workers seeking a lateral shift can gain additional qualifications and support our maintenance activities. In the course of the planned establishment of a new location in Eastern Europe, MTU Maintenance Serbia d.o.o, we signed a cooperation agreement with the Republic of Serbia. This agreement outlines the establishment of training for local aviation industry professionals following the dual-track system used in Germany.

We get involved

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
- EUROTEC
- Jugend forscht contest for young researchers
- Komm, mach MINT! (a German STEM initiative)
- Business4School

GRI: 103-2, 103-3, 404-1, 404-2

UNGC: 6

Enabling equality of opportunity

Diversity & inclusion

Diversity makes us more successful and is therefore an integral part of our corporate culture. We consider a diverse workforce to be a real asset. Different ideas and experiences broaden our horizons and make us more flexible and innovative. At MTU, we are always working to increase diversity and inclusion, championing a culture of impartiality.



We benefit from having a diverse workforce. Bringing different experiences, perspectives and employee backgrounds together in a team provides a springboard for the best ideas and concepts to emerge.

MTU is actively committed to equality of 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. → [Code of Conduct](#) 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. Given the high complexity of engineering projects, it is advantageous to have mixed teams.

To ensure diversity and an inclusive working environment within the company, 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 to designated points of contact. → [These are laid out in detail in the chapter on human rights.](#)

As a signatory to the [UN Global Compact](#), a unique sustainability initiative, we commit to preventing discrimination in the workplace. We are also committed to the following diversity and equality of opportunity initiatives:

- [Charter of Diversity](#)
- [Munich Memorandum for Women in Management](#)
- [Komm, mach MINT! \(a German STEM initiative\)](#)

Our contribution to the SDGs

Our commitment to diversity is an aspect of our responsibility to the UN's 2030 Agenda for Sustainable Development. In particular, this commitment will help achieve SDG 5 on "Gender equality." MTU's inclusion policy supports SDG 4 on "Quality Education" and SDG 8 on "Decent work and economic growth," whose secondary objectives include promoting the participation of employees with disabilities.



→ [Learn more about our contribution to the SDGs](#)

We are committed to equality of leadership and gender

We want to create a culture of innovation within the company, aided by the promotion of a diverse and international workforce. We attach particular importance in this context to gender diversity in order to make better use of all our potential in the face of societal change and better position the company for the future. We see fostering female talent and equality of leadership as our greatest innovation potential. This view is supported [by a recent ILO study](#) that concluded that having more women in management positions enhances a company's performance as its appeal as an employer. It follows that one of our key goals is to increase the proportion of women in management positions to 13% by 2022 for all management levels in Germany except the Executive Board level. 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.



14.7%

proportion of women

Upward trend: MTU employed more women last year and the share of management positions held by women increased to 11.5%. We want to further increase this share in the future.

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 involved in decisions subject to co-determination, such as flexible working time rules. We also offer internal and external training opportunities in gender equality.

The principal focus of our initiatives is to secure more female talent for the company and offer female employees greater support throughout their careers. A key part of this is our participation in mentoring programs, including:

- Cross-Mentoring Munich (a program organized by the City of Munich)
- Mentoring Program offered by the University of Stuttgart for Women in Studies and Research
- “Project U” project for female students of STEM subjects at Leibniz University Hannover
- Accelerated Leadership Mentorship Program offered by the Women in Leadership Foundation, Canada

Proportion of women GRI 102-8, 405-1

	2019	2018	2017
Managers	11.5%	10.7%	10.3%
Workforce	14.7%	14.4%	14.1%
Germany	14.7%	14.2%	13.9%
Rest of Europe	14.3%	15.3%	15.7%
North America	15.1%	15.6%	14.4%

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 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.

When it comes to the proportion of women in the workforce, we see an ongoing gentle upswing. The current share is 14.7%. In 2019, we also succeeded in once again increasing the proportion of women in management (11.5%). We believe we are on course to achieve our goal of 13% women in management by 2022.

We aim to take diversity aspects into account when filling new positions and selecting employees within MTU. In 2019, the proportion of women in the Development Center, a personal development program for talented employees with the potential to assume key roles, was 13.7% and thus greater than our current proportion of women in management positions. The share of new female employees across the workforce was 16.9%, slightly above the current rates for female employees in the workforce and in management positions.



Women with a science or technical degree have excellent career opportunities. An interview with Dr. Mihaela Sorina Seitz, Senior Manager, Advanced Materials at MTU, on supporting female STEM students. [Read the interview here](#)

In addition, we are rated annually by the Women's Career Index (FKI), an external tool for evaluating career opportunities for women in business enterprises. In 2019, we once again achieved good results. Our placing sixth puts us among the best companies in Germany.

We want to incorporate our female employees' experience more strongly into the decision-making process. At our headquarters we have established "New - Network of Engine Women" under the patronage of the Chief Technology Officer. This goes further than finding ways to better support female talent. It is also about having an interdisciplinary exchange and dialogue among employees and management with a view to identifying relevant pioneering topics and trends and developing suitable initiatives. In addition, we are a new project partner in Komm, mach MINT!, a German STEM initiative that aims to inspire more women to pursue qualifications and careers in the fields of science, technology, engineering and mathematics.

Programs and initiatives (internal and external)

- Talent Management
- Development centers
- Network of Engine Women
- [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](#)
- [Girls' Day](#)
- [The Lower Saxony Technical Internship \("Niedersachsen Technikum"\)](#)
- [Komm, mach MINT! \(a German STEM initiative\)](#)

We have a range of offers open to all employees to improve their work-life balance, including flexible working hours, services to assist families and mobile working opportunities → [More information under MTU as an employer](#).

Creating a working environment in which everyone can realize their potential

As an early member of the Charter of Diversity, MTU has for years been committed to creating a working environment that is free from prejudice, one that recognizes and supports diverse potential. We want to be a positive example of diversity, create a culture of impartiality and ensure all employees have equal opportunities in the workplace. This approach is inclusive of employees who identify themselves as lesbian, gay, transgender or intersex. We embrace diversity and welcome all employees who wish to enhance the company. Individual talent should be able to unfold within a respectful and appreciative environment with an emphasis on solid performance and personal commitment. We support public initiatives to prevent bullying and discrimination, participating regularly in Pink Shirt Day in Canada, for instance.

As part of our inclusion efforts, we recognize the importance of integrating employees with disabilities. In 2019, the proportion of our employees in Germany with disabilities was 5.1%, which meets statutory requirements. At our locations in Germany, we have elected representatives for employees with severe disabilities as well as dedicated inclusion officers who act as points of contact for issues relating to disability. New buildings at our locations, as the new canteen in Munich, are designed with universal access in mind.

We also believe in good relations between young and old, and we take age diversity into consideration in our company. We are meeting the challenges associated with the ageing workforce in Germany and the fact that people are working longer from career entry to retirement. 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

	2019	2018	2017
< 30 years	18.2%	16.9%	14.9%
30 – 50 years	52.8%	52.4%	52.1%
> 50 years	29.0%	30.7%	33.0%

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 workers and employees from external companies) and recorded at the end of each year.

In this time of demographic change, we have succeeded in increasing age diversity at MTU and achieving a greater age mix. The proportion of employees under 30 has risen from 14.9% (2017) to 18.2% in the reporting year.

Cultural diversity provides us with opportunities

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. [A study by the Bertelsmann Stiftung \(2018\)](#) argued that cultural diversity among employees has a positive effect on a company's innovative strength. As a long-established player in the industry, we have strong roots in Germany, but our character draws on a variety of cultural backgrounds. Employees of 55 different nationalities work together in Germany alone. In the face of rising xenophobia, we take an unambiguous position and call on our employees, for instance as part of International Day for the Elimination of Racial Discrimination, to take an active stand in favor of diversity and equality. Various activities (International Leadership Program, International Building on Talent) help us to enhance the international nature of our business. → [Find out more about our training programs](#)



55
countries

MTU is diverse: We have employees from 55 countries successfully working together in Germany and adding their individual cultural background to the mix.

GRI: 102-8, 102-12, 103-2, 103-3, 401-1, 405-1

UNGC: 6

Strengthening local communities

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 sites.



We offer young people apprenticeships at MTU—for instance to become aircraft maintenance mechanics—in specially set up training workshops. In addition to technical qualifications, we place a focus on the development of methodological and social skills.

Corporate social responsibility is an integral part of the MTU Principles, one of which states: “MTU takes its responsibility for the environment and society seriously.” At many of our sites, we are a major local employer offering a wide variety of attractive jobs in a high-tech environment. This has a positive effect on the local employment situation, including in less economically successful regions 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); in Serbia, we are planning to build a new repair shop. These investments strengthen the local economy and job market, and in turn have a positive effect on social aspects 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 equality of 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 electric flight.



→ [Learn more about our contribution to the 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 dialogue with young people and new talent.



293
apprentices

New cohort of aviation experts: We had almost 300 apprentices on board with us at MTU last year. They complete a two-to-three-year apprenticeship based on Germany's dual-track system or an 18-month on-the-job training course at our site in Canada.

We offer young people a solid grounding in various trades. In 2019, we had a total of 293 apprentices. That equates to 2.8% of the total Group-wide workforce. In Germany, where most of our apprenticeships take place, the share is 3.1%. Our integrated approach combines technical qualifications with methodological and social skills. It involves our apprentices in all aspects of the company, including health management, climate protection, social values and our no-blame culture. At our planned new site in Serbia, we want to establish a local training program for aviation industry specialists based on Germany's dual-track system. 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, we participate in numerous educational projects and initiatives for children and young people (→ [Diversity & inclusion](#), → [Employee development](#)).

Strong technology network

Collaborating with universities and research institutions 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 our capacity for innovation.

We run six scientific centers of competence at different universities across Germany, each with its own research focus. The German Aerospace Center (DLR) is building a test and simulation center for gas turbines in Augsburg, of which MTU will make intensive use. We want to use this center to validate numerical simulation processes (virtual engine) with experimental procedures in test cells in such a way that it is possible to draw up new designs in the future with considerably less testing. In addition, we co-founded Bauhaus Luftfahrt, a visionary think tank to address longer-term topics that pursues novel, unconventional, holistic and interdisciplinary research, bringing industry and science together under one roof. Among other things, the Bauhaus researchers devise visionary aircraft concepts and investigate ecological aspects and socio-political drivers in aviation. Collaboration with various Fraunhofer Institutes in Germany is a key area of activity in our 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 our behalf.

→ [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. Together with Technische Universität Braunschweig, we operate what is known as a maintenance laboratory to enable students to experience engine maintenance at our premises as part of their master’s studies. 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. Our engineering subsidiary in the USA also financially supports the Eurotech scholarship program at the University of Connecticut.

Our long-term programs include a foundation through which we 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.

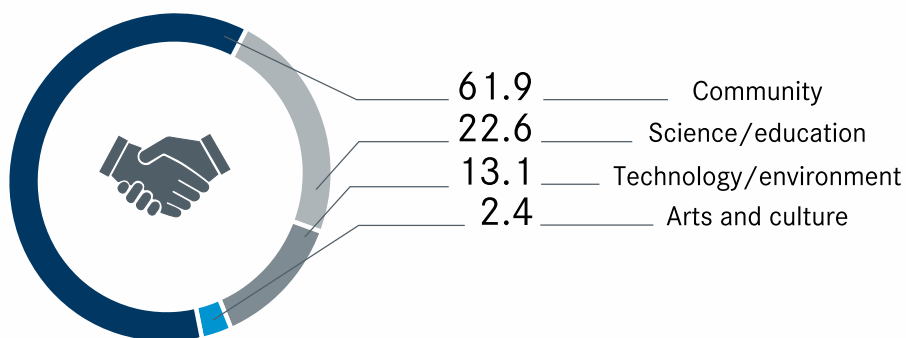
MTU research experts give regular presentations and guest lectures at universities. We provide a significant proportion of the lectures for the engine technology course at the Brandenburg University of Technology (BTU) Cottbus. MTU has endowed a chair for aircraft engine structural mechanics at the University 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 2019, there were 523 students working with us as part of their undergraduate or postgraduate program, on work experience or as holiday staff.

Each year, MTU 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.

How we get involved

We support 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 2019 (distribution in %)



Managers' social day at the TurBienchen daycare center



As part of their social day, our Executive Board and managers created new attractions for the children at the TurBienchen daycare center, a parents' initiative located adjacent to the Munich headquarters. MTU Executive Board members Michael Schreyögg (1st photo, right, clockwise), CEO Reiner Winkler (2nd photo, right) and Lars Wagner (3rd photo, left) were all in agreement: "As a company, MTU has a social responsibility to live up to, and action days like these are one of the ways we do that."

In the reporting year, we supported over 80 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 e-mobility solutions. In the reporting year, we initiated a regional mobility forum at our Munich site in order to work together with politicians, industry and associations to improve local transport.

Examples of our social responsibility projects in 2019

- Luftfahrt ohne Grenzen (Wings of Help) e.V
- Sponsorship for childcare while schools are on vacation
- Funding of the TurBienchen e.V. child daycare center initiative, Munich
- Off-site deployment of MTU's company fire department and doctor, Munich
- Munich Theater for Children charitable company
- Die Arche (The Ark)—a project devoted to improving the lives of children in Potsdam, near Berlin
- Cystic fibrosis charity run, Berlin
- Clinic Clowns e.V., Hannover
- MTULandia children's playground, Rzeszów
- Hospice for Children, Rzeszów
- Adopt-a-Family, Rocky Hill
- Hands on Hartford Community Meals, East Hartford

Our sites commit in a wide variety of ways



Our employees do their bit, for example, by taking part in Pink Shirt Day in Canada (top left) or in the Plant-to-Plant Challenge in Germany (top right). Even our apprentices take on community projects. For example, they built a playground in the forest (bottom left) and collected trash in the neighborhood as part of the “Hannover ist putzmunter” clean-up day.

We welcome our employees' voluntary efforts to support good causes. This is covered by an internal company agreement. Our apprentices volunteer in a variety of ways, for example by collecting returnable bottles from the break rooms and donating the deposit, or by clearing nearby streets of rubbish during a public action day. Our employees took part in the “Des mach ma!” action day organized by companies in Munich and in the social day organized by the Freiwilligenzentrum volunteering association in Hannover. In Rzeszów, MTU Aero Engines Polska celebrated the opening of the MTULandia children's playground, which was built by employees in a long-term project supported by the city. In Rocky Hill, at our US location, employees support the local food bank with donations and help sort the food. In 2019, MTU employees once again took part in the Plant-to-Plant Challenge, this time cycling from the Ludwigsfelde site near Berlin to the Munich headquarters to raise funds for charity. Ten cents per kilometer ridden by the cyclists plus a donation from MTU added up to a total of over EUR 12,000 for charitable institutions. 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.

Information about the coronavirus pandemic

This sustainability report covers the 2019 financial year and is being published as the world fights against the coronavirus pandemic. People and companies are in a different situation today than they were in the reporting year. MTU is doing its part to help contain the pandemic and has taken numerous measures to protect its workforce. The current situation notwithstanding, we want to live up to our corporate social responsibility. You can find more information [here](#).

GRI: 103-2, 103-3, 201-1

UNGC: 7

Our sustainability program

Goals and goal attainment for 2019

Corporate governance

	Goal	Status/ Deadline	Comments
Compliance	Introduce a web-based reporting system	Goal achieved	Measure taken from compliance system review
	Further refine the reporting system for all Group locations	2020	
	Revise the Code of Conduct	2020	
	Revise the MTU Group's data protection guidelines	2021	
	Conduct regular compliance audits to ensure business processes comply with statutory requirements and guidelines	Ongoing	
	Carry out employee training	Ongoing	We also held training sessions on compliance matters at all sites in 2019. As we revise the Code of Conduct, we will also adapt the corresponding e-learning course. In addition, we will be implementing a new training concept in the area of international trade.
Stakeholder dialog	Extend the ongoing stakeholder survey on sustainability topics	Goal achieved	We have added the SDGs as a topic in the online survey and received initial feedback.
	Undertake non-financial reporting in accordance with the German CSR Guidelines Implementation Act	Ongoing	Part of the Annual Report. In 2019, we incorporated the issue of human rights in the supply chain
	Exchange more information with partners on sustainability issues	Ongoing	
Sustainability management	Benchmark and introduce new CR database	Goal achieved	

Revise the risk management process	2020/2021	Revise risk management for sustainability topics according to CSR-RUG
Benchmark CR management	2020/2021	
Report on climate-related risks and opportunities in accordance with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).	2020/2021	
Participate in sustainability ratings	Ongoing	
Conduct 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	For the majority of sites, the number of customer complaints increased due to significantly higher production volumes and changes to the local product portfolio.
	Run quality initiative at MTU Maintenance	Goal achieved	Improvements for planning and maintenance processes across the division according to the best practice principle
	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	2021	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 approx. by 2021.
	Execute further stages of the Clean Air Engine agenda with a significantly faster reduction of emissions compared to the old plan and the long-term goal of emissions-free aviation	Not yet defined	We are currently revising our technology agenda and its specific targets for stages 2 and 3 with regard to climate action. It is to be adopted in 2020.
	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	2021	All models in the Pratt & Whitney GTF™ engine family will be rolled out into large-scale production approx. by 2021.
	Achieve an 11 dB** reduction in noise emissions (per aircraft movement, corresponds to -55%) with the second-generation geared turbofan	2030	Development of the necessary fans with a low pressure ratio and low-noise low-pressure turbines as part of the ENOVAL European research program
	Achieve a 15 dB** reduction in noise emissions (per aircraft movement, corresponds to -65%) with the third-generation geared turbofan	2050	Reduced emissions thanks to new engine architectures such as integrated and distributed engines

* 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 2020/2021	
	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	Further refinement of the risk analysis with regard to human rights is planned for 2020; the emphasis is on a more differentiated evaluation of product risk

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	
	Evaluate a potential new climate action concept	2020	An interdisciplinary working group has been set up to examine an appropriate concept and how it can be rolled out within the Group.
	Zero mission (zero emissions, zero waste) in Munich	Ongoing	
	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	
	Develop materials that are more lightweight and more resistant to extreme temperatures, resulting in lower fuel consumption and emissions.	Ongoing	

Environmental certifications	Achieve 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 2019.
	Publish annual environmental statements for the German sites according to EMAS	Ongoing	

Employees

	Goal	Status/ Deadline	Comments
Occupational health and safety	Comply with the annual tolerance thresholds for reportable workplace accidents at production sites	Goal partly achieved	We exceeded the annual tolerance threshold for 2019 at two locations; MTU's accident rate remains low with 4.4 accidents per 1,000 employees.
	Conduct employee survey on occupational health management at the German sites	Goal achieved	
	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 2019. Following MTU Maintenance Hannover, MTU Aero Engines AG is now also certified to the new ISO 45001 standard.
	Run a safety at work campaign with key topics	Ongoing	Local measures were implemented at production sites in 2019.
	Promote a healthy diet	Ongoing	
	Perform ergonomics management	Ongoing	
Attractiveness as an employer	Strengthen the 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	2019: Mobility survey and Bike Safety Day in Munich; carpooling app in Ludwigsfelde
Diversity & inclusion	Have a higher proportion of women in management positions (target: 13%) and on the Executive Board (target: 25%)	By 2022	Target is set for women in management for Germany
	Heighten managers' awareness of their responsibility to promote equality of opportunity, particularly work-life balance	Ongoing	Intensified communication measures
	Champion initiatives designed to promote young female talent	Ongoing	New as of 2019: Project partner in "Komm, mach MINT!" (German STEM initiative; external), "New" women's network (internal)
Employee development	Introduce a new online learning portal for employees	Goal achieved	E-learning courses are being successively expanded for German sites and an online platform has been established at the Polish site.
	Offer new training opportunities to promote greater internationalization	Goal achieved	New round of the International Leadership Program (ILP) has been launched.
	Anchor the new leadership values company-wide	Goal achieved	Management values are enshrined throughout the Group at all management levels.
	Conduct management transition coaching	Ongoing	
Employer/employee dialog	Confer MTU Award to honor outstanding performance	Goal achieved	MTU Award was conferred again in 2019.
	Run company suggestion scheme (BVW) for putting employees' ideas for improvement into practice	Ongoing	The launch of a new concept is planned for 2020.
	Conduct training for managers on leadership values with the focus on employee involvement	2020	

Society

Goal	Status/ Deadline	Comments
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Corporate volunteering	Support employee volunteer work	Ongoing	
Investing in young talent	Have an 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
	Operate an 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	

Reporting in accordance with standards

GRI and UN Global Compact index

The MTU Aero Engines 2019 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

Organizational profile (102-1 – 102-13)

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	2019 Annual Report, p. 49
102-5		Nature of ownership and legal form	MTU Aero Engines 2019 Annual Report, p. 30
102-6		Markets served	2019 Annual Report, p. 149
102-7		Scale of organization	MTU Aero Engines
102-8	6	Total workforce	MTU as an employer

			Diversity and inclusion <i>Information on the proportion of women by employment type and employment contract is treated as confidential at MTU.</i>
102-9	Supply chain		Supplier management
102-10	Changes to the supply chain		Supplier management
102-11	Precautionary approach		Environmental management
102-12	External charters, principles, or other initiatives		Compliance
			Climate and flying
			Environmental management
			MTU as an employer
			Diversity and inclusion
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 (102-14)

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

Ethics and integrity (102-16)

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

Corporate governance (102-18)

GRI standard	UNGC principle		Reference/Comment
102-18		Governance structure	2019 Annual Report, p. 26-27, 44-45

Stakeholder engagement (102-40 – 102-44)

GRI standard	UNGC principle		Reference/Comment
102-40		Stakeholder groups	Stakeholder dialogue

102-41	3	Collective bargaining agreements	MTU as an employer
102-42		Identifying and selecting stakeholders	Stakeholder dialogue
102-43		Approach to stakeholder engagement	Stakeholder dialogue Product quality and flight safety Research and development Environmental management MTU as an employer
102-44		Key topics and concerns of stakeholders	Stakeholder dialogue

Reporting practice (102-45 – 102-56)

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	<i>Some climate figures from previous years have been recalculated. In such cases, this is indicated alongside the data in question in the report.</i>
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

Management approach (103-1 – 103-3)

GRI standard	UNGC principle		Reference/Comment
103-1		Boundaries to material topics	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>
103-2	1-10	Management approach and its components	<i>The management approaches are presented for each material topic.</i>
103-3	1-10	Evaluation of the management approach	Sustainability strategy and organization Material topics Stakeholder dialogue <i>Management approaches to the material topics</i>

Topic-specific standards

Economic standards (201-1 – 206-1)

GRI standard	UNGC principle		Reference/Comment
Economic performance			
103-2, 103-3	7	Management approach	Sustainability strategy and organization Corporate social responsibility Climate and flying
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	Climate and flying
201-3		Defined benefit plan and retirement plans	MTU as an employer
Procurement practices			
103-2, 103-3		Management approach	Supplier management
204-1		Proportion of spending on local suppliers	Supplier management <i>The company's major sites are in Germany, Poland and Canada.</i>
Anti-corruption			
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
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Environmental standards (301-1 –308-2)

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
301-2	7, 8	Recycled input materials used	Conservation of resources Product quality and flight safety
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	7, 8	Energy consumption within the organization	Conservation of resources
302-4	7, 8	Reduction of energy consumption	Conservation of resources
302-5	8, 9	Reductions in energy requirements of products and services	Climate and flying
Water and effluents			
103-2, 103-3	7, 8	Management approach	Environmental management Conservation of resources

303-1	7, 8	Interactions with water as a shared resource	Conservation of resources
303-3	7, 8	Water withdrawal	Conservation of resources
303-4	7, 8	Water discharge	Conservation of resources
303-5	7,8	Water consumption	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	7-9	Other indirect (Scope 3) greenhouse gas emissions	Emissions Climate and flying
305-4	7, 8	Intensity of greenhouse gas emissions	Emissions
305-5	8, 9	Reduction of greenhouse gas emissions	Emissions
305-7	7, 8	Significant airborne emissions	Emissions <i>To evaluate emissions, we use the emission factors from the German Environment Agency's ProBas database. Where we deviate from this: for sulfur dioxide we use emission factors from our own measurements for kerosene; for nitrogen oxide and carbon monoxide from the operation of engines we use MTU-specific factors (average values from NOx and CO emissions according to the ICAO database for all engines tested by us for the climb out operating point; for 2019 we adjusted the average value to account for two missing engine types, thus increasing the emission factors for NOx by 9% and for CO by 30%). For indirect emissions we use specific, locally adjusted emission factors based on ProBas.</i>
Waste			
103-2, 103-3	7, 8	Management approach	Environmental management

			Conservation of resources
306-2	7	Waste by type and disposal method	Conservation of resources
306-3	7	Spills	Conservation of resources
Environmental compliance			
103-2, 103-3	7	Management approach	Environmental management
307-1	7	Non-compliance with environmental laws and regulations	Environmental management
Supplier environmental assessment			
103-2, 103-3	8	Management approach	Supplier management
308-1	7	New suppliers that were screened using environmental criteria	Supplier management
308-2	8	Negative environmental impacts in the supply chain	Supplier management

Social standards (401-1 – 419-1)

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
			Diversity and inclusion
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	<p><i>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 3 working days for temporary contracts due to be replaced and 1-3 months for permanent contracts dependent on the length of the term of employment. Canada: 2 weeks. USA: 60 days for matters affecting 50% or more of the workforce.</i></p>
Occupational health and safety			
103-2, 103-3		Management approach	Occupational health and safety
403-1		Occupational health and safety management system	Occupational health and safety
403-2		Hazard identification, risk assessment and investigation of incidents	Occupational health and safety
403-3		Occupational health services	Occupational health and safety
403-4		Worker participation, consultation, and communication	<p>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></p>
403-5		Worker training	Occupational health and safety
403-6		Promotion of worker health	Occupational health and safety

403-8		Workers covered by occupational health and safety management system	Occupational health and safety
403-9		Work-related ill health	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 equality of opportunity			
103-2, 103-3	6	Management approach	Diversity and inclusion
405-1	6	Diversity of governance bodies and employees	Diversity and inclusion
405-2	6	Ratio of basic salary and remuneration of women to men	MTU as an employer
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 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
			Supplier management
Forced or compulsory labor			
103-2, 103-3	2, 4	Management approach	Human rights
			Supplier management
409-1	2, 4	Operations and suppliers with significant risk for incidents of forced and compulsory labor	Human rights
			Supplier management
Human rights assessment			
103-2, 103-3	1, 2	Management approach	Human rights
			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
			Supplier management
Supplier social assessment			
103-2, 103-3	2	Management approach	Human rights
			Supplier management
414-1	2-5	New suppliers that were screened using social criteria	Human rights
			Supplier management
414-2	2-5	Negative social impacts in the supply chain and actions taken	Human rights
			Supplier management

Public policy			
103-2, 103-3	10	Management approach	Stakeholder dialogue
415-1	10	Political contributions	Stakeholder dialogue
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
417-3		Incidents of non-compliance concerning marketing communications	In the reporting period, there were no incidents of non-compliance with the regulations.
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

More information about:

[The GRI standards for sustainability reporting](#)

[The ten principles of the UN Global Compact](#)

Masthead

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