



ESG report 2022



” Anyone who believes exponential growth can go on forever in a finite world is either a mad man or an economist.

Kenneth Boulding

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## CEO statement

G2-22

2022 was another very challenging year. The Covid-19 pandemic entered its third year. However, the reduction in travel and commuting activities seen in 2020 did not continue. The end of 2022 showed the highest global CO<sub>2</sub> emissions since the pre-Covid year 2019. And Covid-19 was not the only challenge for the value chain and telecommunications infrastructure. The significant shortage of semiconductors also continued. This had a strong impact on telecommunications, leading to price increases and delivery delays affecting every part of the value chain. Next, in early 2022, the war in Ukraine began. It caused massive harm, led to further divide between East and West, and longer-term economic, environmental and social damages are yet to be seen.

The China-US trade war also continued. In our case, it led to the relocation of parts of our supply chain towards Europe and the construction of our new TeraFactory in Meiningen in the center of Germany. The TeraFactory will start operations in early 2023. It is equipped

with photo voltaic and energy storage, and it can help reducing transportation, thus supporting our energy and emissions targets. It is also a test bed for future highest-efficiency production processes, based on 6G, IoT and AI.

2022 also saw lots of activities in the context of our merger with Adtran. This will not only lead to a perfect complement for our portfolios and related business opportunities. It will also have an impact on our combined future environmental efforts. Both, Adtran and ADVA, jointly committed to Net Zero targets in Q3/2022, and in the near future, we will see the implementation of ambitious climate targets, aiming at achieving the Net Zero status clearly before 2050.

2022 also saw the completion of our EU research project C-SERVEES on circular economy. The project gave us valuable insight as what to consider in order to boost circular business. Therefore, the coming years will also see improvements and innovations related to our circular-economy processes with benefits



for both, the value chain and the environment.

The executive board and I take full responsibility for driving ADVA with a balanced focus on sustainable business. Our solutions are changing the communication infrastructure of our customers and thus the digital landscape of our society. We also understand that doing business is not just about making the best technology. We're therefore taking additional steps to ensure that our business success is permanent. In this way, we also support the well-being of our environment and the success of our em-

ployees. In the medium to long term, these sustainable practices are the only way to conserve resources and reduce many of the associated costs.

**Dr. Christoph Glingener**  
Chief executive officer and CTO

## The two parts of this sustainability report

Our 2022 sustainability report is divided into two parts. Part 1 explains the context of ADVA, which is relevant both for an understanding of our business field and, more specifically, for the environmental management and energy management systems. Part 1 also contains information and answers on the Sustainability Reporting Standards of the Global Reporting Initiative (GRI<sup>2</sup> Standards 2021). This applies to content that has not been rated as material within the meaning of the German Commercial Code (HGB).

<sup>2</sup>Glossary: page 87

Part 1 includes the tabular compilation of the GRI indicators with the associated page references or short answers directly in the table. This can be found at the end of the sustainability report.

*The GRI indices are marked in gray under the respective headings.*

This also applies to Part 2 of the report, as it also contains answers to GRI indices. However, these are not part of the external validation.

Part 2 comprises the consolidated separate non-financial group report in accordance with section § 315b paragraph 3 of the German Commercial Code (HGB) and is referred to below as the “non-financial report” for the sake of simplicity. This non-financial report is prepared in accordance with §§ 315b and 315c, in conjunction with 289c to 289e HGB and serves to meet the requirements of the CSR Directive Implementation Act and is subject to a voluntary business audit with limited security in accordance with ISAE 3000 (Revised). Only the non-financial report in Part 2 is subject to this check. All information in Part 1 of the sustainability report does not belong to the non-financial report and is not part of the audit.



## Part 1 – ADVA and its context

### About ADVA

#### Company key facts

G2-1, G2-3, G2-6, G2-7

#### Global presence

The group operates in 25 countries with 38 sites. ADVA has significant operations in Germany, Poland, UK, USA, Israel and China. At year end 2022 (December 31), 2,014 employees were employed worldwide.

For our global presence, please see the picture on the right.

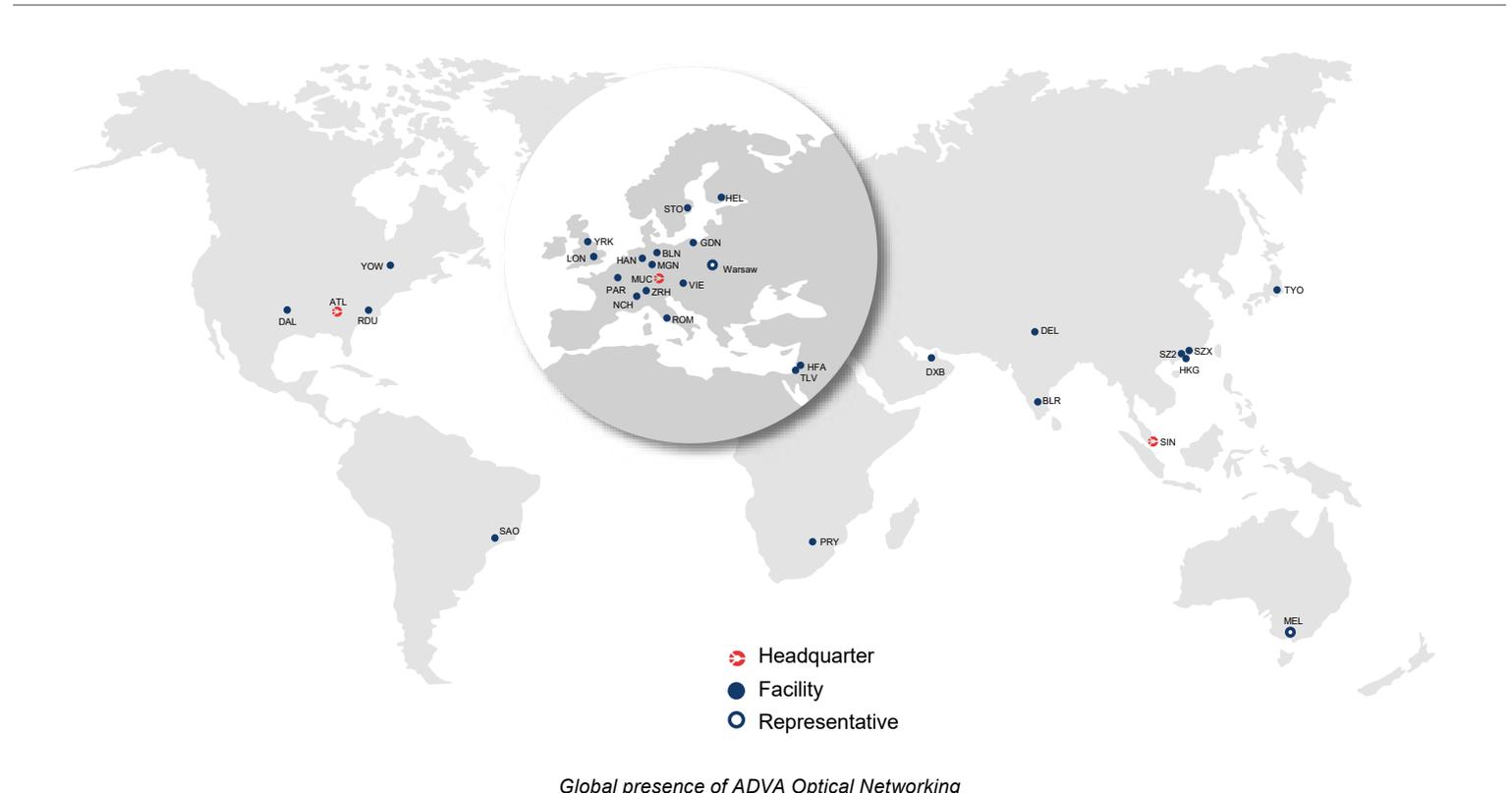
#### Quality and environmental commitment

ADVA is certified according to TL 9000<sup>2</sup>, ISO 9001<sup>2</sup>, ISO 14001<sup>2</sup>, ISO 22301<sup>2</sup> and ISO 50001<sup>2</sup>. We also perform product-portfolio lifecycle assessments (LCA) in accordance with ISO 14040<sup>2</sup>/14044<sup>2</sup> and ETSI ES 203 199<sup>2</sup>.

<sup>2</sup>Glossary: page 87

#### Public listing

ADVA is listed in the Prime Standard segment of the Frankfurt Stock Exchange (Symbol: ADV).



You can find more about ADVA in our [Annual Report 2022](#).

For any questions or comments regarding sustainability, please contact us at [sustainability@adva.com](mailto:sustainability@adva.com).

## Technology and infrastructure

G2-6

ADVA develops, manufactures, and sells solutions for a modern telecommunications infrastructure. On the one hand, this is our core business, but at the same time an important contribution to one of the social aspects. Our products are the basis of one of the most important infrastructures; they enable communication between people all over the world. Due to Covid-19, this again became more evident in 2022 than in pre-Covid years. The importance of this infrastructure is reflected in our portfolio, among other things, by the redundancy properties and encryption capabilities. These help to make the respective parts of the infrastructure less susceptible to, e.g., failures due to extreme-weather conditions and cyber-criminal attacks.

Overall, our portfolio includes fiber-optic transmission technology, Ethernet access and aggregation technology and solutions for the virtualization of network functions. In addition, ADVA supplies technologies for network synchronization and monitoring, as well as the software necessary for the safe operation of the networks. This is shown schematically in the figure below.

Our portfolio is briefly described below.

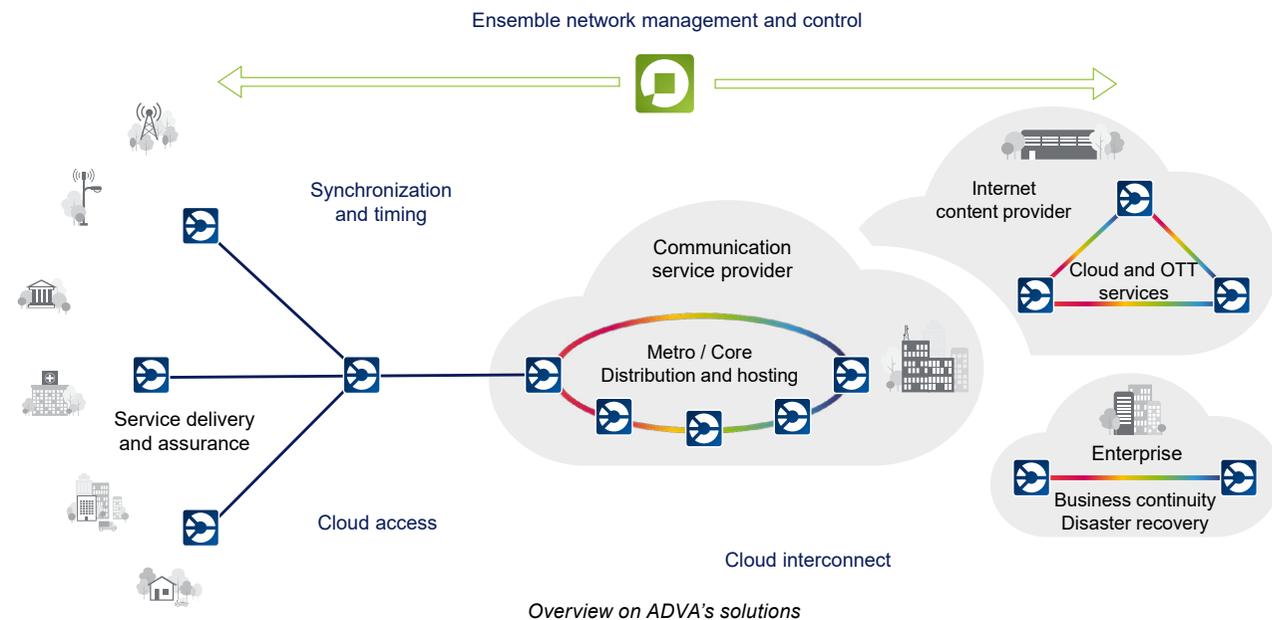
### Fiber-optic transmission technology

Optical fiber is the optimal physical medium for transmitting large amounts of data over long distances. The bandwidth-length product of fiber optics by far exceeds that of all other transmission channels (copper-based or wireless). Therefore, fiber optics are the foundation of all high-speed networks. ADVA's optical transmission solutions are based

on wavelength division multiplexing (WDM<sup>2</sup>). With WDM, multiple data streams are transmitted simultaneously over a pair of fibers by modulating each data stream per direction to an individual wavelength (i.e., color) of laser light. Each wavelength (more than 100 in total) carries different applications such as voice, video or data services. Combining (i.e., multiplexing) these wavelengths at

one end of the fiber, transmitting them, and separating (i.e., demultiplexing) them at the far end maximize the capacity of the fibers and make transmission more efficient. WDM supports all data protocols and transmission speeds and is the natural foundation for all high-capacity networks.

<sup>2</sup>Glossary: page 87



## Ethernet

Ethernet is the dominant OSI<sup>2</sup>-Stack Layer-2 data-link protocol for today's networks, supporting virtually all communication applications. ADVA provides feature-rich Ethernet transmission and demarcation solutions for fiber-based networks used to interconnect enterprises and mobile-network base stations with carrier networks. Features include aggregation, synchronization, monitoring, encryption, and virtualization.

<sup>2</sup>Glossary: page 87

## Software

The importance of software in networking technology is increasing rapidly. On the one hand, network operation and monitoring are automated by means of intelligent software. This increases user-friendliness and simplifies network control and maintenance. On the other hand, more and more network functions are virtualized (network function virtualization, NFV<sup>3</sup>). With NFV, the tight coupling between hardware and software in network elements is dissolved, and individual network functions can be developed and provided independently of the

underlying hardware. NFV is also one of the key technologies in data centers that enables reductions in energy consumption and therefore greenhouse gas (GHG) emissions.

<sup>3</sup>Glossary: page 87

## IT security

Requirements regarding IT security – integrity, authentication and confidentiality – are ever increasing. This is reflected, e.g., by the EU NIS Directive. ADVA is offering three security packages under the brand name ConnectGuard. These enable lowest-latency state-of-the-art encryption on either the photonic layer, the Ethernet layer or, via NFV, on Layer 3 or 4 of the OSI stack. This is complemented by the quantum-safe security mechanisms of post-quantum cryptography and quantum key distribution. In the future, these solutions will be offered via Adva Network Security.

## Synchronization

Reference clock sources that deliver highly precise frequency and time-of-day information are crucial to the effective transmission of digital signals in

several applications and network domains. Especially in mobile networks, the availability of highly accurate synchronization and timing information is crucial for the network-capacity increase and therefore, best end-user experience. With a complete end-to-end solution portfolio sold under the Oscilloquartz brand, ADVA can offer a smooth evolution across multiple generations of synchronization technologies.

## Monitoring

Monitoring is not restricted to digital performance monitoring, as it is done in our transport and Ethernet-demarcation gear. It can be extended to the passive fiber plant, in particular in the fiber-rich access space. Here, it helps to guarantee fiber integrity and to supervise complex fiber plant, even if the respective fibers are not yet lit by active gear. This enables, for example, certain service-level agreements. With the Advanced Link Monitoring (ALM) product line, ADVA can offer cost-effective and unique solutions that help our customers in not losing the view on their valuable passive-fiber and infrastructure assets.

## Governance

G2-9, G2-10, G2-12, G2-13, G2-14, G2-15, G2-16, G2-17, G2-18, G2-23

ADVA Optical Networking SE, the parent company of the ADVA group, is organized according to the two-tier system. This means that in addition to the shareholders organized in the annual general meeting (AGM), it has two organs of action: the management board as the executive body and the supervisory board as the supervisory body.

The management board, which manages the company's business, consists of three executive officers (CEO, CFO, and CMSO). Governance functions are divided between the CEO, who is responsible for technology, sustainability and as such, for most environmental aspects, and the group's quality management system, and the CFO, who is responsible for finance, risk management, compliance, legal, and human resources. All members of the management board are jointly responsible for the economic performance of the company. The correspondent review of the impact, risk and opportunity portfolio is performed at least once per year in line with the defined risk management process.

In addition to the management board, there is an international three-person supervisory board. Its members are appointed by the shareholders. The supervisory board appoints the members of the management board according to criteria that include expertise/experience, independence, diversity, and avoidance of conflicts of interest. Thus, the collective knowledge of the board is also mainly influenced by nomination. The supervisory board is also responsible for the approval of the group's annual financial report and this sustainability report. As such, the supervisory board is the highest governance body to review the impact, risk and opportunity analyses, including their effectiveness.

Below the management-board level, there are several large departments (like engineering, operations, sales, service, etc.) that are either led centrally or on a regional basis. Departmental heads typically have the hierarchical level of an SVP/VP or (Senior) Director, depending on the department's size and relevance and the concerned individuals' seniority.

The company follows a top-down strategic goal-setting process clustered into the areas of Customer Satisfaction, Growth & Profitability, Innovation, Operational Excellence and People, all of which are derived from the company's mission statement, core values and leadership principles. ADVA's strategic goals are broken down into departmental and individual goals cascading through the hierarchical ladder. As an example, the CTO defines the overall sustainability strategy which results in specific goals for multiple different departments and, in effect, hundreds of individual employees.

Consultation of shareholders is organized via the AGM. Regular consultation of other relevant stakeholder groups (e.g., customers) is, e.g., done via a structured customer satisfaction survey. Where relevant, immediate customer or other stakeholder feedback is provided to the management board. In addition, members of the management board may also directly consult with dedicated stakeholders (e.g., strategic customers).

The evaluation of the achievements of the management board is performed regularly (i.e., yearly) by the supervisory board. In addition, a variety of monthly (financial) metrics are generated, providing for a robust reporting and allowing quick reaction to arising risks or other unplanned events or circumstances. Actions (e.g., changes in long-term strategy or organization) are taken when required.

Critical concerns are communicated immediately (department leads to management board, management board to supervisory board). Details hereto including the applicable processes and mechanisms are outlined in the risk report of the [Annual Report](#).

## Values and leadership principles

G2-23

Our success is based on strong core values that are defined and exemplified by the top management level. All superiors are aware of their responsibility in this regard. Specific leadership principles promote this understanding. The following core values and leadership principles (collectively: “Values”) support sustainability in everything we do.

**Teamwork.** We stand for open communication and cooperation. We promote an inclusive work environment that values the diversity of people and their thinking. Employees from around 55 nations at 38 locations and agencies worldwide, as well as an international works council without trade union relations, make ADVA unique.

**Excellence.** We strive for perfection in everything we do. This includes our commitment to consistently exceeding customer expectations. To measure this, surveys are conducted annually to measure the group’s Net Promoter Score. Significant improvements and consistently high scores have been achieved in recent years, particularly in sustainability. The overview of this can be found in the [customer satisfaction rating](#).

**Responsibility.** Our strategic goals “Growth and Profitability”, “Innovation”, “Operational Excellence” and “People” are the cornerstones of our corporate development. They are linked to specific performance indicators and are updated annually. Meaningful department, team and employee goals support the achievement of these goals and are checked and updated every six months.

**Motivation.** The group strives to retain and motivate its employees. In addition to anonymous surveys on satisfaction, regular breakfast meetings are organized with an ADVA board member, which enable a personal discussion on problematic topics. The resulting action points, e.g., possibilities for personal further training, more transparent communication or improved change management, are addressed by the board.

**Integrity and honesty.** Compliance with applicable laws and regulations as well as the ethical standards and principles of the company (“compliance”) is crucial to create trust with our customers, suppliers, partners, and colleagues. Our commitment to integrity and honesty is implemented in our [Group Code of Conduct](#) and via a clear and precise division of responsibilities for compliance.

**Decisiveness.** Timely and well-founded decision-making is essential to keep up with the ever-increasing pace of innovation in our industry. To ensure the necessary continuous personal development, we have implemented a holistic management training program that is offered to all employees concerned.

**Respect.** The group takes an active role in the local communities in which we operate. This includes humility in our behavior and respect and courtesy in dealing with others. The same applies internally and regardless of hierarchy levels.

## Sustainability organization

G2-9, G2-12, G2-13, G2-14

ADVA runs a dedicated Global Sustainability Department that directly reports to the chief executive officer (CEO). The team sets the group's sustainability strategy in close cooperation with the respective peers in other departments, e.g., Human Resources, Quality Management, Engineering or Facilities. It identifies steps to be taken and tracks implementation, progress, and performance.

The team also creates internal awareness for sustainability through different campaigns, provides training, and engages externally with various groups of stakeholders. In addition, it is responsible for collecting, together with the related peers, the various tracked sustainability data and the related reporting.

Global Sustainability further provides content for external dissemination, and contributes to research projects, e.g., the EU H2020 project [C-SERVEES](#). It answers sustainability assessments and provides input to respective customers' tender sections or similar requests for information on the group's sustainability strategy, efforts, and performance. This includes ownership of the sustainability reports.

The sustainability department is the central point of contact for external sustainability-related queries, e.g., from CDP or dedicated customers. Other queries may arrive at certain other departments, e.g., Sales. Responses are compiled in cooperation with the peers of the respective departments.

Further responsibilities include the ownership of the entire product-portfolio life-cycle analyses, the respective feedback into R&D and other departments, and

content ownership of the group's product Environmental Requirements (formerly the Ecodesign<sup>2</sup> Guide), which is part of the hardware development process.

<sup>2</sup>Glossary: page 87

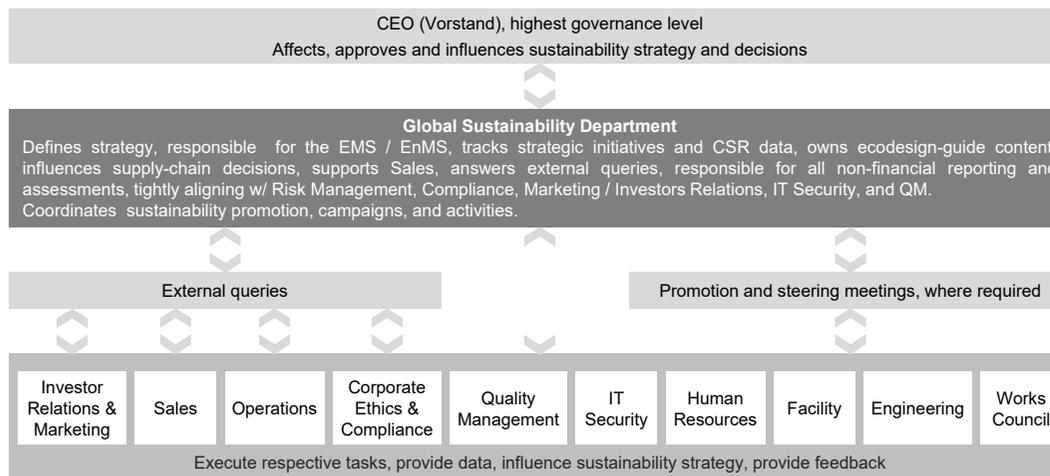
The team actively participates in the Experts Forum (ExFo) of Fraunhofer IPA in Stuttgart, Germany, as well as in the sustainability working group of the Telecommunications Industry Association

(TIA<sup>2</sup>). This working group was led by ADVA from the beginning of 2021.

<sup>2</sup>Glossary: page 87

In addition, the *sustainability committee* has an advisory capacity on certain aspects and questions regarding sustainability. They meet when necessary.

The sustainability-related organizational structure is shown below.



The group's sustainability organization

## Context analysis

### ICT and its impact

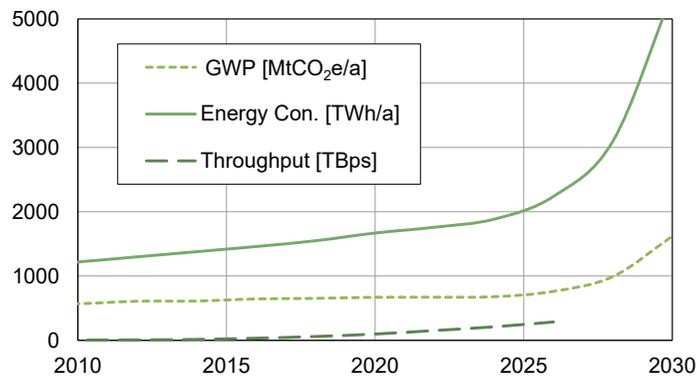
G3-3

ADVA's products are part of the global Internet or ICT sector. They are therefore part of an industry that consumes more than 2% of the electricity generated worldwide, and the trend is rising. This increase is a result of the steep rise in Internet bit rates. As a further consequence of electrical energy consumption, emissions from the ICT sector are also increasing. This is summarized in the diagram below, which is based on various sources.

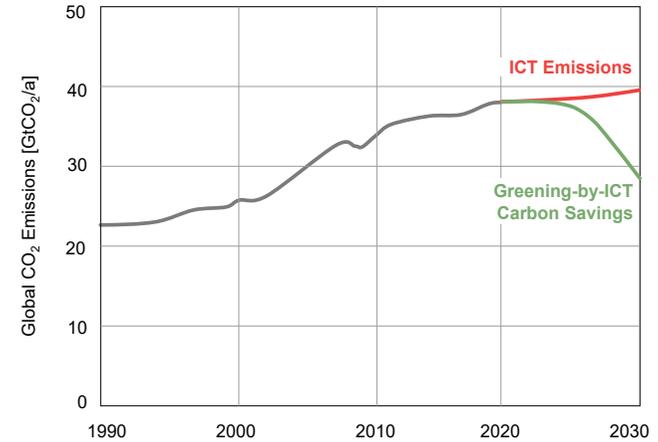
From the diagram and the references used, such as the Cisco Visual Networking Index (VNI), a fundamental problem

in the ICT sector can be derived: despite all efforts in terms of device efficiency, energy consumption and the associated CO<sub>2</sub> emissions are increasing. This is especially true for the network and data-center sub-areas, less so for the sub-area of ICT devices from private end customers. It is due to the development of ICT bit rates (or the throughput of devices or networks), which are growing exponentially. It is predicted that this exponential growth will continue for the next few years.

This leads to the requirement of continuous improvements of the network equip-



Internet throughput in terabytes per second (broken dark green line, based on the Cisco VNI), projection of global ICT energy consumption in terawatt hours per year (solid green line, based on [Andrae, Feb. 2019, DOI: 10.13140/RG.2.2.25103.02724]) and the resulting CO<sub>2</sub> emissions (GWP, Global Warming Potential, light green line).



Global greenhouse gas emissions according to [ourworldindata.org/co2-and-other-greenhouse-gas-emissions] and the ICT emissions from the previous diagram as well as the possible emission savings according to #SMARTer2030 – ICT Solutions for 21st Century Challenges from GeSI.

ment in terms of energy efficiency and emissions and is one of the main reasons for our focus on corresponding ecodesign and for the group's participation at the Science Based Targets initiative.

The ICT sector is one of the critical infrastructures, and not just since Covid-19. Namely, it also enables the significant reduction of global greenhouse gas emissions in various other sectors such as transport and logistics, traffic, energy networks and agriculture. The savings potential is ten times higher than ICT's own emissions. This is sometimes referred to as **Greening-by-ICT**. It is one of the few known ways to significantly reduce global energy consumption and

the associated emissions. This is shown below on the basis of global greenhouse-gas emissions.

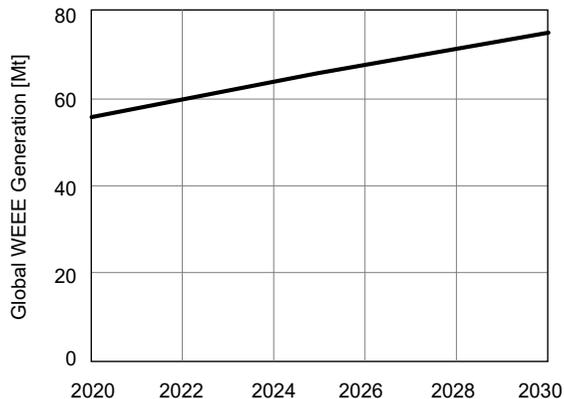
Within the wireline networks sector, ADVA ranks amongst the top 10 suppliers in the optical-networking and access-switching sub-segments. Since the wireline-networks segment also contains copper and passive optical access networks, routing and switching, none of which is covered by the group's portfolio, the total impact of our products to the wireline-networks sub-segment is <10%. ADVA's contribution to total global ICT emissions is less than 1%.

According to our context analysis of the environmental and energy management systems, the materiality analysis of the non-financial report, our reporting on greenhouse-gas emissions and finally the comprehensive lifecycle assessments of our portfolio, energy consumption and the related emissions are the main environmental impacts of our ICT devices. This can at least be generalized to other ICT devices with a similar operating mode (24/7 continuous operation, long service life). However, there are other environmental impacts.

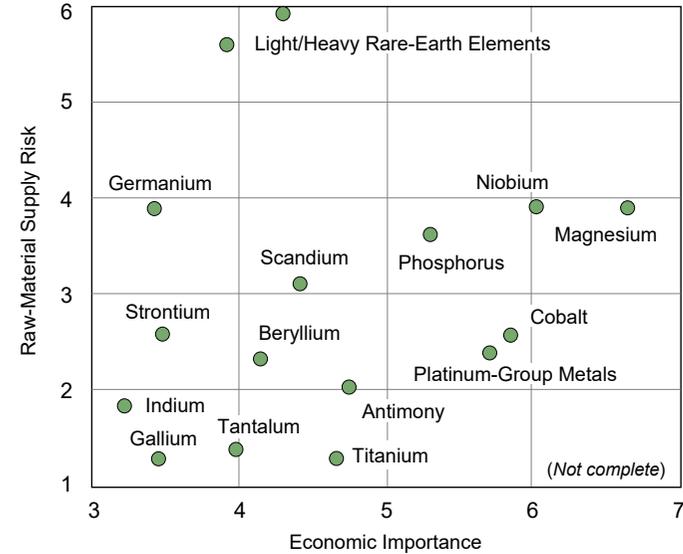
According to the analyses mentioned, the next most important effects are

those that result from the material consumption in the manufacture of the devices and the related electronic scrap (WEEE, Waste Electronic & Electrical Equipment). Both can be positively influenced by appropriate mechanisms of circular economy, which also results in the materiality rating of circular economy.

The forecast for global WEEE generation is shown below. The diagram shows that WEEE generation is expected to increase. In some cases very complex composition of electronic waste is also critical here. This makes efficient recovery of valuable materials difficult.



Global volume of electronic waste according to [O.S. Shittu, I.D. Williams, P.J. Shaw, "Global E-waste management: Can WEEE make a difference? A review of e-waste trends, legislation, contemporary issues and future challenges", Waste Management, Vol. 120, Feb. 2021, pp. 549-563, <https://doi.org/10.1016/j.wasman.2020.10.016j>].



The EU 2020 Critical Raw Materials list.

However, precisely this recovery is critical due to the raw-material situation. The EU list of critical raw materials from 2020 is shown in the next graph. Many of the critical raw materials are essential for the ICT sector, such as metals of the platinum group (PGM), rare earth elements (LREE, HREE), gallium, germanium, etc.

Other ICT environmental impacts include (human, ecosystem) toxicity, water consumption and a few more. These are recorded in lifecycle assessments but are only of secondary importance relative to the energy consumption.

Finally, in connection with corporate social responsibility (CSR), there are the aspects of work, health and safety as well as some other aspects such as conflict minerals, modern slavery or corruption. Altogether, they require a holistic approach to sustainability in ICT.

## Context analysis of EMS and EnMS

G2-12, G2-23, G2-29, G3-3

### Impact and context analysis

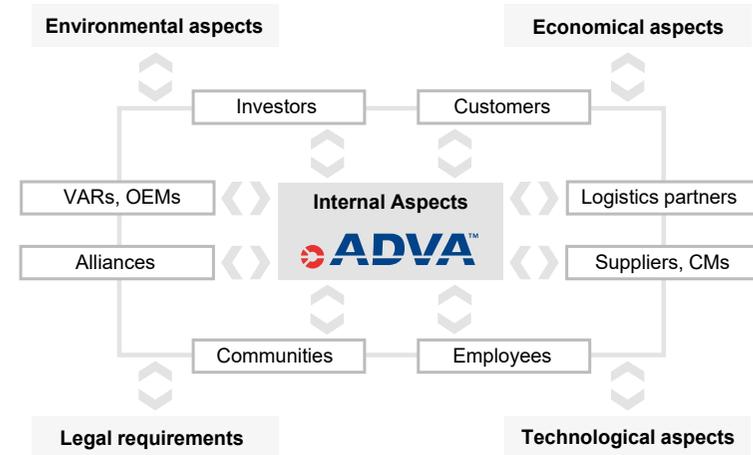
ISO 14001 and ISO 50001 require a context analysis for the areas of the environmental management system (EMS) and energy management system (EnMS), respectively. This context analysis is intended to identify and evaluate relevant interest groups (stakeholders) and their interests or requirements as well as aspects with relevant impact on the group or those on which the group has relevant impact. This serves to work out the most important aspects. These aspects can be EMS/EnMS-specific or have an influence on the EMS/EnMS.

### Interested parties and the related interactions and contributions that need to be considered are:

- Investors, via bilateral communication and, e.g., sustainability questionnaires
- Large customers, via bilateral communication, and feedback from customer satisfaction (CSAT) survey
- Selected value-added resellers and suppliers, via bilateral discussions and coaching
- Legal and governmental bodies, via related legislation and regulation, including – limited – feedback via industry fora

- NGOs, industry fora and other associations like Telecommunications Industry Association, Fraunhofer ExFo, EcoVadis, CDP, SBTi, via active participation, bilateral discussions and feedback and analyses regarding assessments
- Feedback and analyses from (successful) award applications (Environmental awards, CSR awards, etc.)
- Supply chain, via surveys, audits, coaching and others
- Employees, via surveys (ESS), bilateral communication, suggestions for improvement and others

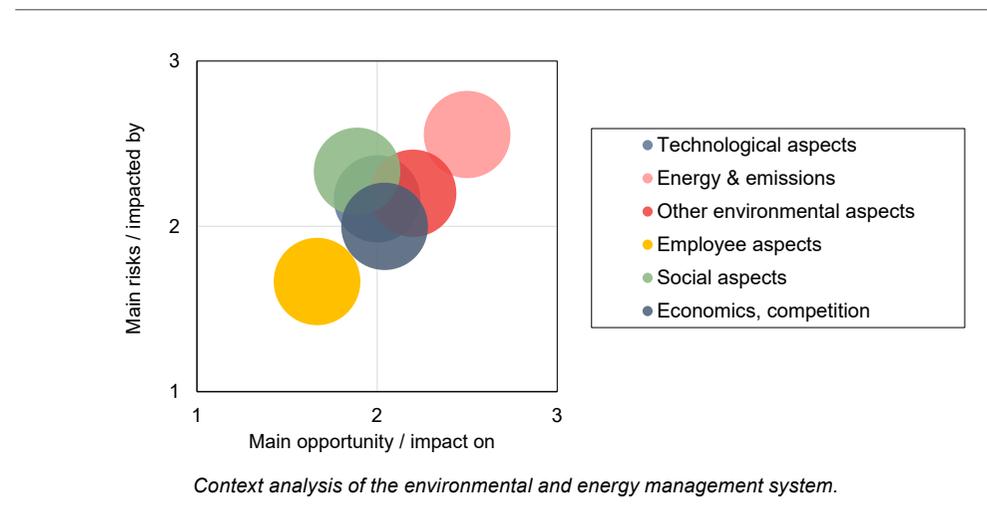
With these interest groups, the EMS/EnMS context can be represented schematically as follows.



*The examined EMS/EnMS context.*

Note that this diagram did not change compared to last year, despite the war in Ukraine and potential impacts on energy supply and related cost. These are covered under economical aspects.

Similar to the [Materiality analysis](#) in Part 2, the context analysis is updated on a yearly basis. To this end, it is discussed, aligned and updated by several internal ADVA stakeholders. This includes the compilation of the considered aspects and their evaluations. Attention is also paid to consistency between the context and materiality analyses and the risk analysis. The ratings of the participating stakeholders are averaged linearly. Finally, the context analysis is presented to and agreed by a management review meeting.



The result of the context analysis for the EMS/EnMS is shown in the diagram above. The X-axis shows opportunities or possibilities for influencing. The Y-axis shows risks and the ability to be influenced by the examined aspects.

The analysis covers the entire company with all sites. Site-specific measures can be derived from subsequent analyses.

The most highly rated aspects are energy & emissions. They are followed by other environmental as well as the other aspects examined here in the context of the EMS/EnMS.

Energy and emissions are clearly related to the central environmental aspect of our time – climate change and global warming. This is closely related to our

products and to emissions caused by the electricity we use. Both contributions are covered by our participation in the Science Based Targets initiative (SBTi), with the second contribution also falling under the scope of the ISO 50001 EnMS. Both emissions contributions are only loosely connected to location or sites.

In contrast, the EMS aspects of water consumption/pollution and waste (volume, disposal) fall into the area of other environmental aspects. They are weighted comparatively lower. Again, there is no strong location/site dependence.

The remaining aspects tend to be rated even lower for the context examined here, the EMS and EnMS.

## Relevance for EMS and EnMS

The context analysis basically confirms results from our comprehensive carbon-footprint reporting and from a portfolio-wide lifecycle analysis, refer to the chapters [Carbon emissions](#) and [Portfolio lifecycle assessment](#) respectively. From there, it becomes clear that GHG emissions account for the majority of the total group's environmental impact and need to be considered with the highest priority. This is reflected in our SBTi participation, with three emission targets that are compatible with the global climate goal of 1.5°C maximum global warming. In addition to these targets, ADVA committed to SBTi Net Zero in Q3/2022.

Global warming is followed by scarcity of resources. This aspect must primarily be addressed with circular economy mechanisms. The topic of circular economy is given a correspondingly high weight, it can also be found in the risk analysis. In addition, circular economy is also related to the reduction of emissions.

This is followed by the environmental aspects of water use and pollution, waste generation and treatment, and hazardous chemicals, which are weighted significantly lower. *These are considered in our portfolio lifecycle assessment.* Waste and its treatment are also taken directly into account in our CO<sub>2</sub> reporting. Therefore, all environmentally relevant parameters are considered in at least one way of tracking. From the high weighting of the emission aspects and global warming, several conclusions can be drawn with regard to the ISO standards and the related actions and strategies of the company.

Regarding **ISO 14001**, ADVA is *not* directly responsible for industrial-scale water usage or pollution. The group is also *not* responsible for large-scale waste generation. Where applicable, dedicated waste fractions (in particular, WEEE, batteries and cardboard) are separated and recycled. The latter can be derived from the [Environmental management](#) chapter.

In addition, the use of hazardous substances is limited to a *very small* amount, and ozone-depleting substances are neither used in our sites nor in our supply chain. **Thus, the environmental impacts of the group are determined by emissions or global warming.**

This prioritization also has an impact on the related targets and performance indicators. Except for the area of LCA, no quantitative targets are defined for the EMS in addition to the climate-related SBTi targets. LCA is especially relevant for the Scope-3 SBTi target since correct lifecycle assessments are a basic requirement for a targeted product and portfolio improvement.

Therefore, two targets are defined:

1. LCA shall cover >90% of the commercially relevant portfolio
2. Level of confidence in LCA results shall be as high as possible, according to respective due diligence.

**ISO 50001** activities completely overlap with our SBTi Scope-2 target and as such, with one of the relevant carbon-emissions areas. This means that ISO 50001 falls within one of our top-priority, climate-related, areas.

According to its relevance, **two targets** have been defined that fall into the domain of ISO 50001:

1. SBTi Scope-2 target of -67% of the absolute emissions from electricity consumption by 2032, compared to the base year 2016. This is the officially accepted target that supports a maximum global warming of 1.5°C.
2. Reduction of electricity consumption at the relevant locations by 1.5% per year. An intensity metric has been developed for this target that considers the electricity consumption of our major laboratories.

## Addition to the EU Taxonomy Regulation report

G203-2

The EU Taxonomy Regulation<sup>2</sup> requires, as far as applicable, the disclosure of expenses (CapEx, OpEx) or income that are linked to activities, products or services that are related to climate-change mitigation or adaptation activities of the reporting company or enable these in other areas. Similar information is required regarding circular economy.

<sup>2</sup>Glossary: page 87

### Climate change

As an environmentally conscious manufacturer of ICT systems, ADVA is basically able to make statements about its own performance, e.g., in the area of emission reduction as well as on corresponding reductions (i.e., climate change mitigation) that are enabled in other sectors by ICT systems. The latter is explained in more detail in the chapters [ICT and its impact](#) and [Product energy efficiency and Scope-3](#).

**On closer analysis, however, it turns out that ADVA cannot state most expenses or income that are eligible to the EU Taxonomy Regulation quantitatively.**

There are several reasons for this.

The first reason is the possible NACE sector categorization. ADVA cannot be assigned to NACE sector *J*, ICT, as electronics manufacturers are explicitly excluded here. This means, among other things, that any greening-by-ICT effects cannot be ascribed to the ICT manufacturers, but rather to the network operators – a disregard for realities.

In NACE Macro Sector *C*, Manufacturing, some product classes are listed that are irrelevant to ADVA. Only the category of *manufacturing low-emission technologies* appears to be applicable. However, a very detailed analysis is required here compared to other high-performance solutions with the same functionality. Apart from the prohibitive effort, this is *inherently impossible* because there are no fundamental alternatives to ICT products like the ones ADVA manufactures. Moreover, sufficiently detailed data from similar competing products are not available, amongst others in order to avoid the suspicion of industrial espionage. Thus, the required external validation also has to be omitted, and the complete sector-*J* approach has to be discarded for an exact quantitative report.

Furthermore, ADVA's potentially greatest contribution – enabling climate change mitigation in other areas through ICT – is impossible to quantify. This would require interrogating a four-digit customer base about the portion of their ICT services that support Greening-by-ICT within the overall mix of services that is transmitted via ADVA's ICT systems. This is impossible due to the large number of customers, and we would *never* get a complete answer. The latter, in turn, is due to the fact that in most cases, our customers would also have to ask *their* respective customers, since network operators or data center operators (i.e., customers of ADVA) *generally do not provide* the respective transmitted services. This creates prohibitive effort, which also fails due to confidentiality agreements and the like.

**Therefore, with some exceptions, ADVA cannot provide eligible quantitative data. Even in the longer term, we will provide qualitative Taxonomy Regulation reporting mainly.**

**In return, we consider the EU Taxonomy Regulation in its current state as completely inappropriate for disclosures that correctly reflect our efforts and our performance regarding the aspect of climate change.**

In general, there are four reportable categories for ADVA that relate to climate change.

1. Own performance in climate-change mitigation
  - a. Revenue with low-emission products
  - b. OpEx for the development of low-emission products
  - c. CapEx for zero-emission energy (own PV etc.)
2. Enabling climate-change mitigation in other areas
3. Own climate-change adaptation activities
4. Enabling climate change adaptation in other areas

With the exception of category 1.c., all categories can only be reported qualitatively or coarsely approximated (i.e., not suitable for validation), for the reasons stated above.

Around 60% of the company's total turnover is generated with energy-efficient products. As eligibility criterion for product energy efficiency, we used the affiliation of the respective products to the highest efficiency class according to relevant telecommunications equipment energy-efficiency (TEEER) rating standards.

Likewise, the OpEx for the development of these energy-efficient products can only be estimated. Here, a maximum of 10% of the development effort, totaling around 14 MEUR in the EU in 2022, can be assigned to these activities.

Related to enabled mitigation activities – Greening-by-ICT in other sectors – ADVA claims a global share according to being one of the 10 largest manufacturers of telecommunications-infrastructure equipment in the world. As stated above, this contribution is not eligible to Taxonomy reporting, although without such equipment, there would be no Greening-by-ICT activities. A similar

share related to enabled climate-change adaptation activities can be assigned to ADVA. Here, adaptation is enabled by the resilience, protection and restoration capabilities of our products. Again, these activities are impossible to quantize.

In 2022, there were no activities under own climate-change adaptation.

### Circular economy

On the aspect of circular economy, own activities as well as activities enabled by ICT can be reported. The latter include ADVA's contribution to the implementation of the asset administration shell (AAS) or the digital twin. The AAS has a clear reference to circular economy; it contains information about the material content of products or their maintenance history, for example. Because it is cloud-based, it uses, in one way or another, the ICT infrastructure to which ADVA also contributes. This share of ADVA, which contributes to enabled activities, cannot be deduced quantitatively, similar to the previous chapter.

Own circular-economy activities include the respective share of circular-economy related ecodesign activities as well as the take-back and recycling process at our Meiningen location.

Ecodesign for circular economy includes the sub-aspects design for disassembly, design for maintenance, design for longevity, guidelines for the use of plastic, and design for recycling. However, so far the focus of our ecodesign has been primarily on energy efficiency due to the dominance of the use phase of our products on their LCA. Therefore, it is not yet possible to estimate our expenditures for circular-economy-related ecodesign.

The return and recycling process in Meiningen is described in more detail in the chapter [Value chain and circular processes](#). It includes the activities of (reverse) logistics, repair, the analysis of products and their components as well as the creation and management of certain component stocks derived from them. Overall, several employees are bound by these activities. The operational costs for this amounted to around 1,500,000 Euros in 2022. This is an approximation, exact quantization is not possible to be derived.

The reuse of components also results in certain cost savings. As new and already used components cannot be compared, these savings cannot be stated exactly, neither.

## Do no significant harm (DNSH)

The EU Taxonomy Regulation requires all information to be checked against technical screening criteria. These require fundamental compatibility with all other environmental goals of the Taxonomy Regulation as well as with the requirements of the International Labor Organization.

The environmental aspects are regularly checked by our activities on the environmental management system, the energy management system and the related aspects of the TL 9000 telecommunications quality management system, which include lifecycle assessments of our products and circular-economy aspects. A particular incompatibility of our climate-change related activities on the other environmental aspects could not be determined. From lifecycle assessments, we can derive that our products are dominated, in terms of their environmental impact, by their use phase rather than by their production. The impact of use, i.e., emissions, are positively over-compensated by the Greening-by-ICT effects (mitigation made possible in other sectors).

Furthermore, a statement is required for all enabling adaptation activities as to how they for their part relate to climate hazards. Telecommunication networks can in principle be implemented with multiple redundancies. This is also true for our products through corresponding functionalities. This includes resilience and protection mechanisms against the effects of climate hazards.

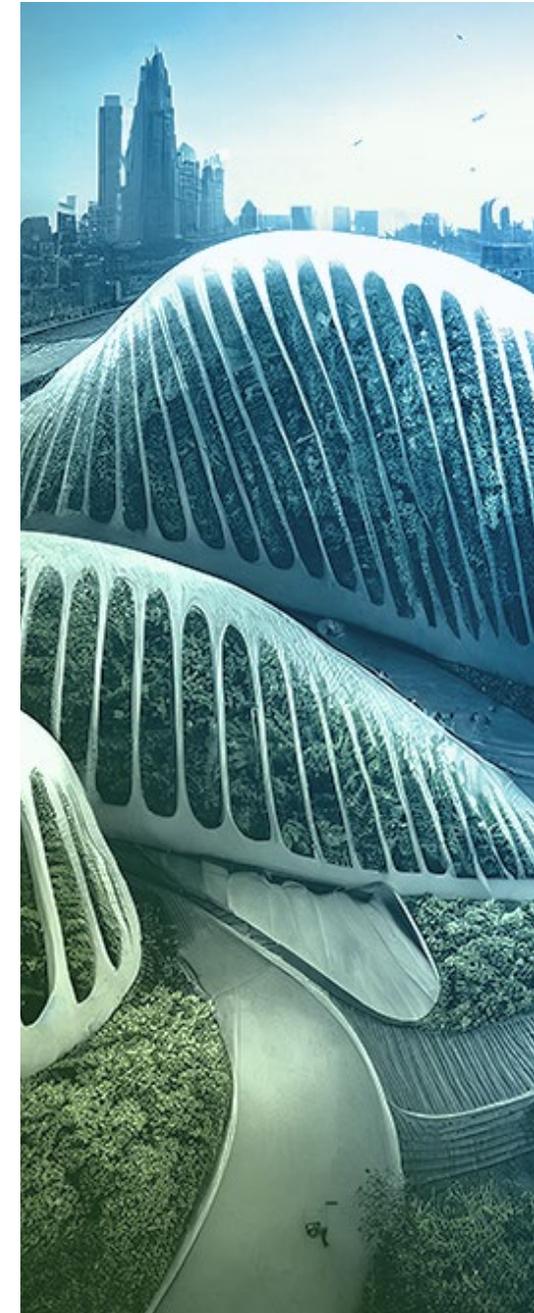
Similar considerations hold for our circular-economy activities. Here, it must be checked whether lifetime extension through maintenance and repair causes adverse effects on total-lifetime emissions. This can occur for products with strong use-phase dominance. In 2021/22, ADVA developed a simple metric for answering this question. This metric was already discussed in ITU-T standardization in Q4/2022. It is also described in the chapter [Resource availability and business models](#). The metric is based on full lifecycle assessments. Therefore, it also considers the environmental aspects of water quality, ecotoxicity and resource depletion.

The minimum social safeguard required in the Taxonomy Regulation, such as compliance with the requirements of the International Labor Organization, are also observed. This is described in the chapter on [equal opportunities](#). Compliance with these requirements is also monitored in the supply chain.

Ultimately, relevant references shall be named, especially when considering the qualitative aspects. In addition to the already cited reference *Digital with Purpose: Delivering a SMARTer 2030* from the Global e-Sustainability Initiative, the following two references are primarily to be mentioned:

- *Using ICTs to tackle climate change*, ITU and GeSI, Feb. 2011
- *Information and communication technologies for climate change adaptation in cities*, ITU-T FG-SSC Technical Report, March 2015.

Both references deal with the connection between climate change and its mitigation or adaptation through ICT.



## TCFD-Report

The Task Force for Climate-related Financial Disclosure, TCFD, defines requirements for transparent reporting on climate-change-related financial risks and opportunities. These requirements cover the aspects of management, strategy, risk management as well as metrics and goals. All four aspects can be tracked and reported to different degrees.

### Management

The management's responsibility for climate-related aspects is described in the [Sustainability organization](#) chapter in Part 1 of this report. Accordingly, the responsibility on the executive-board level lies with the CEO. Topics and key figures that are relevant to the climate are regularly presented and discussed in management reviews.

Specific numerical and measurable parameters were defined for climate-related remuneration for the entire executive board. These relate to our three SBTi targets and are based on the nominal annual emissions reductions to be achieved in the three SBTi/GHGP scopes.

### Strategy

Operational emission reductions have been pursued at ADVA for a number of years. This applies both to the area of our ISO 50001 activities, i.e., electricity-related emissions, as well as to the area of transport and logistics, which is particularly about reducing air freight. The reductions are achieved through electricity savings or an increase in the share of renewable energy as well as the continuously followed goal of minimizing air freight. Details on this can be found in the chapter [CO<sub>2</sub> emissions](#) (Part 1).

Since 2019, emissions reductions at ADVA have also been pursued strategically as part of our SBTi participation. Here, we have committed to reductions that are compatible with the 1.5°C target of maximum global warming compared to the pre-industrial state, also see the chapter [Carbon emissions](#) (Part 2) in Part 2 of this report. This was also part of the strategic company goals in 2022. It affects the areas of electricity and vehicle emissions as well as the emissions of the sold-products use phase.

Investigations into the resilience of our company strategy under different climate scenarios have been conducted. These analyses lead to the expectation that the general infrastructure business is likely to *increase* due to the ICT-enabled climate-change mitigation and adaptation activities in other areas (Greening-by-ICT). Furthermore, it is expected that production will be more local again in the future in order to reduce transport emissions and certain supply-chain disruptions.

### Risk management and climate change

Climate-related risks and opportunities (opportunities where available) are regularly (at least once a year) and systematically examined at ADVA. This is done in two stages. First, an analysis of the climate risks and opportunities to be expected for ADVA is carried out. This is done in the sustainability department and using relevant reference documents, such as the IPCC AR5 and AR6.

In accordance with the TCFD specifications, both, financial risks and opportunities in the transition phase and physical climate risks such as extreme-weather conditions etc. are considered. As far as necessary and sensible, this also extends to the supply chain. Climate scenario analyses are also carried out for selected relevant areas. Details are given later.

The following table summarizes the relevant aspects of the analysis that we have identified.

**Physical climate risks**

<b>A</b>	Sea level rise 0.3-0.6 m (toward 2100, depending on scenario), especially at US west coast and in Asia
<b>B</b>	Extreme precipitation events, especially in Asia and in parts of Europe
<b>C</b>	More consecutive hot days, soil-moisture decrease, higher risk of droughts in Europe, southern US

**Transition risks**

<b>1</b>	High required ecodesign effort and cost
<b>2</b>	Higher ISO 50001 effort and cost
<b>3</b>	Fuel switching (buildings), cost, feasibility
<b>4</b>	Fuel switching (cars), cost
<b>5</b>	Transport-mode shift, cost, feasibility
<b>6</b>	Higher carbon taxes
<b>7</b>	Cost for extended circular economy
<b>8</b>	Effort and cost for any new regulations
<b>9</b>	Negative impact on company image

**Transition opportunities**

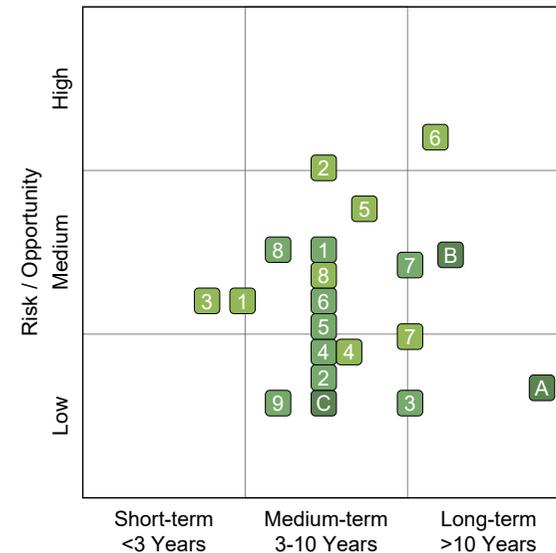
<b>1</b>	(Government) cooperation and rewards
<b>2</b>	Increase investors' long-term invests
<b>3</b>	Positive company image
<b>4</b>	Carbon-tax savings
<b>5</b>	Revenue through very efficient products
<b>6</b>	Revenue through mitigation/adaptation-enabling ICT
<b>7</b>	Strengthen resilience (company, supply chain)
<b>8</b>	Save transportation/travel cost

The aspects listed here take into account the location of our sites as far as possible from today's perspective. They are evaluated in the following diagram with regard to influence and the expected period of time for their occurrence. In particular, the transition risk no. 1, expenditure on ecodesign, is accompanied by appropriate processes at ADVA.

In the second stage of assessing climate risks, they are integrated into the company-wide risk management. This examines whether the previously identified and examined risks must be includ-

ed in the company risk report. To do this, as described in the corresponding chapter in the [annual report](#), they must meet certain criteria with regard to potential impact, probability of occurrence and time horizon. If this is the case, the relevant climate risks are also listed in the company report. Conversely, they are not listed there if they merely represent a comparatively lower risk. The risk report 2022-2024 lists climate change as one of the non-financial risks.

Climate-related risks are mitigated depending on their potential impact. In addition, financial opportunities are seized as long as they do not result in consequential risks in other areas (compare the do-no-significant-harm principle in the [EU Taxonomy Regulation](#)) and can be implemented promptly.



Climate-related risks and opportunities. For the aspects presented here, see the table above for explanation.

If a climate risk meets the criteria of company-wide risk management, its mitigation rules automatically apply. This includes the definition of responsibility, regular management reviews and dedicated, tracked countermeasures. This is described in the chapter [Sustainability risks and opportunities](#).

Climate risks are addressed, among other actions, through our SBTi participation, which in turn is part of the company strategy and the remuneration of the Executive Board. The corresponding measures to reduce emissions are therefore subject to regular internal and external controls. Therefore, over time, appropriate countermeasures are initiated as soon as there are significant deviations from the emission reduction paths.

For the analyzes, we mainly used two relevant references with regard to the transitional and physical risks:

- OECD/IEA. 2017: Energy Technology Perspectives 2017, Catalysing Energy Technology Transformations
- IPCC, 2013: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner,

M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp.

The IEA reference describes above all measures that have to be taken to avoid dramatic climate change, IPCC AR5 describes regional and pathway-dependent climate and weather events to be expected. For the 2022 assessment, AR5 was also complemented by IPCC AR6.

### Metrics and Goals

As shown in the chapter [Emissions \(Scope 1-3\)](#) in *Part 1* of the report, we report all emissions that apply to ADVA, especially in Scope 3. This has been the case since 2017.

ADVA pursues science-based emission reduction targets in the SBTi, as described in the chapter [CO<sub>2</sub> emissions \(Scope 1-3\)](#) in *Part 2* of the sustainability report. The registration for the SBTi took place in 2016, the official approval of the original 2°C targets in 2019 and the approval of the more stringent 1.5°C targets in 2020. These targets are part of the company strategy and are also part of the management board remuneration.

Around 99% of the Scope 1+2 emissions as well as around 95% of the total emissions (Scope 1-3) are validated externally.

The metrics that are used to calculate climate-related risks and opportunities in the form of scenario analyses essentially come from two references that have already been listed before in the chapter [Risk management and climate change](#). Both references (IEA, IPCC AR5) define several scenarios with which climate change can be mitigated to different extents. Of these scenarios, B2DS (IEA) and RCP2.6 (IPCC AR5) or RTS (IEA) and RCP6.0 fit well together, since they amount to roughly the same levels of global warming in 2100. In addition, the B2DS/RCP2.6 scenario fits well with our SBTi 1,5°C targets.

The risks mentioned in the references (and opportunities in the case of considering the transition phase) are first assessed qualitatively, in particular whether they are relevant for ADVA at all.

For risks of the transition phase, we predominantly consider the cost (and cost savings) related to emissions. An analysis of our emissions shows that it is primarily Scope-2 emissions and certain Scope-3 emissions that need to be considered. For Scope 2 and Scope 3, transportation, this results from the

amount of emissions on the one hand and the risk of rising costs due to CO<sub>2</sub> tax on the other. The same holds for Scope 3, product use, which was added in 2022. The results are presented in the [Scenario analysis](#) section. Other opportunities were also considered, see the previous section on [Risk management and climate change](#). However, these were not quantified further, as certain relevant parameters can only be quantified imprecisely.

The physical climate risks were examined for their relevance for ADVA with the help of the IPCC AR5. The supply chain was also considered. This results in the relatively high weighting of increasing drought on the one hand and extreme precipitation on the other hand in the corresponding regions. The increasing level of the world's oceans is only seen as a risk for the second half of the 21st century.

### Scenario analysis

The TCFD recommends climate scenario analyses for quantifying the risks and opportunities. At least two climate scenarios from relevant references should be used. We use the IEA and IPCC sources mentioned above. Two of the scenarios dealt with therein show good agreement. On the one hand, these are the Better-2°C Scenario (B2DS) of the IEA and the Representative Concentration Pathways 2.6 (RCP2.6) of the IPCC. Both describe a path to less than 2°C maximum global warming. This is also the path ADVA is committed to with its 1.5°C SBTi targets. The second scenario is the Reference Technical Scenario of the IEA or the RCP6.0 from the IPCC. These describe a path that, despite certain measures, leads to global warming of more than 2°C. These measures are better than Business as Usual (BAU), but have proven to be insufficient for a target of below 2°C global warming.

We analyze risks and opportunities in the transition phase for three areas: costs, cost savings and emissions with regard to purchased electricity (Scope 2) and to Scope 3, transportation and product use, respectively.

This is shown graphically below.

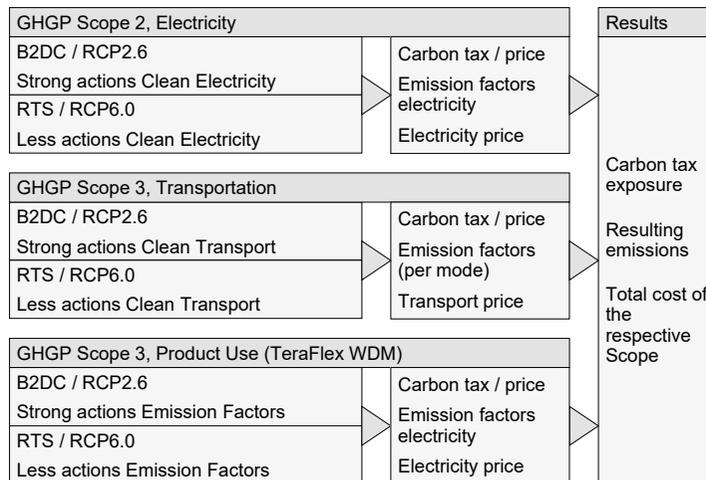
The resulting emissions and costs are calculated for the three cases (electricity,

transport, product use). Cost consist of the prices to be paid to the respective supplier and additional CO<sub>2</sub> taxes.

The best possible and realistic assumptions were made for all parameters – costs, taxes, emission factors, electricity consumption, tonnage volume, distribution of transport modes, product efficiency gain, etc., which are supported with references where possible. This inevitably leads to certain errors, but our analyses show clear trends that are retained even if the parameters vary greatly.

The quantitative result for costs and possible savings in relation to purchased

electricity is shown below. The timeline runs until 2032, the target year for our

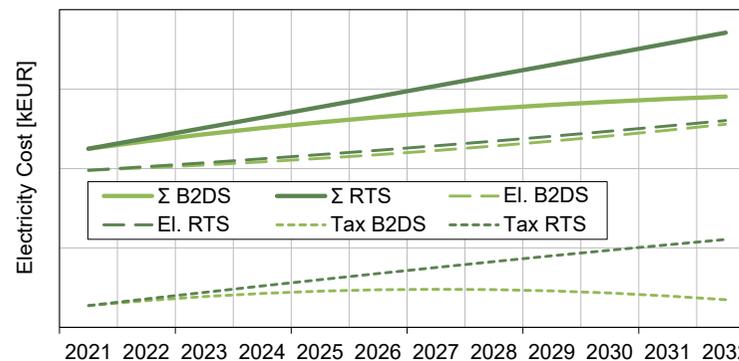


Three climate scenario analyzes. Risks and opportunities (potential costs, cost savings) in the transition phase in the areas of purchased electricity, transport and products use are examined. For this purpose, the scenarios B2DS/RCP2.6 or RTS/RCP6.0 according to IEA/IPCC are used.

SBTi goals. Costs are shown as a sum (Σ) and individually for CO<sub>2</sub> taxes and electricity costs for both scenarios.

A stronger increase for the cost of green electricity was assumed, but at the same time a slight decrease in consumption as a result of more effective ISO 50001 measures. Therefore, the electricity costs over time are almost identical for both scenarios. There is an increasing difference in the CO<sub>2</sub> tax, which results from the reduction in this tax as a result of an increasing share of green electricity.

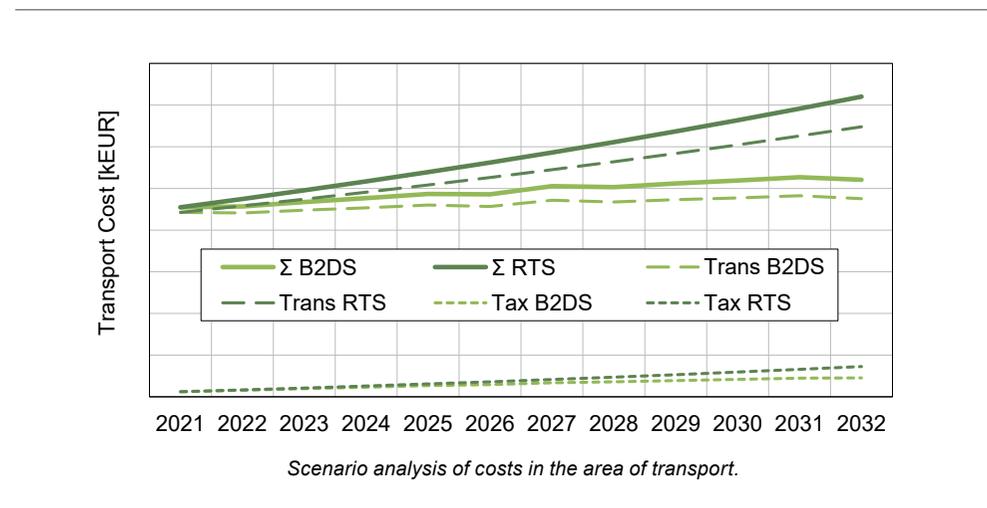
Overall, there is an increasing cost advantage for the B2DS/RCP2.6 scenario. This scenario will also achieve the SBTi Scope-2 target in 2032. This goal is not achieved by the RTS/RCP6.0 path, although a certain emission reduction is achieved here, too.



Scenario analysis of the costs for purchased electricity.

The quantitative results for the costs and possible savings in the area of transport are shown over time in the diagram below. For reasons of comparability, the time axis runs up to the year 2032, although transport emissions are not an SBTi target for ADVA. However, they are a significant Scope-3 contribution to our emissions. It is straightforward to show that the trends presented here would persist after 2032.

The diagram again shows transport costs, the related CO<sub>2</sub> taxes and the sum of the two components for the two climate scenarios described above. It should be noted that the ordinate range shown is exactly eight times as large as in the diagram shown above for purchased electricity.



Cost and emission savings are achieved for the B2DS/RCP2.6 path by changing the transport modes. Air freight is primarily to be reduced here. If applicable, this is supplemented by a certain shift of land transport to railway, as this has significantly better emission factors than road transport (difference of almost a factor of 10!). Cost savings also result from reducing the CO<sub>2</sub> tax.

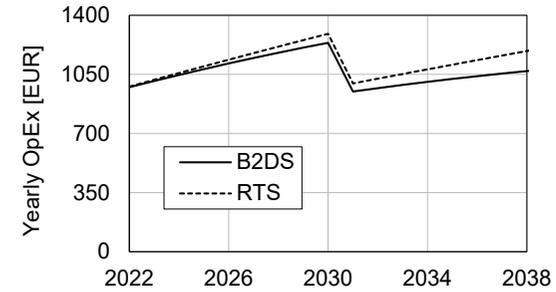
In total, the emissions for the B2DS/RCP2.6 path are reduced, in contrast to the RTS/RCP6.0 path, where emissions continue to rise. An annual increase in tonnage is assumed here. It is also assumed that, with the exception of rail transport, the emission factors of all other modes cannot be reduced significantly by 2032.

In 2022, we complemented the two scenario analyses presented so far by a third one, related to product use phase. Here, we considered a member of our high-end coherent WDM products and the development of operational cost and emissions over a long period, up to 2038. We used the same scenarios as before. In addition, following life-time-GWP optimization, we considered one product replacement with a more efficient successor product in the middle of the assessment period. The results for yearly cost and emissions (GWP) are shown below.

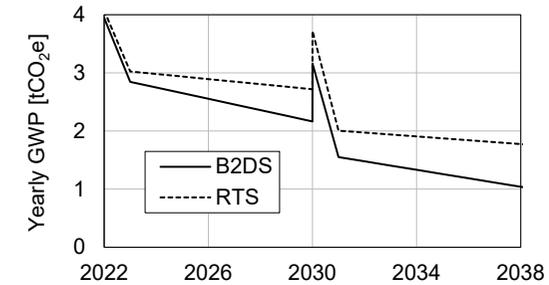
For both scenarios, yearly OpEx is increasing, whereas yearly GWP is decreasing. This is due to energy cost and CO<sub>2</sub> tax increasing and emission factors for the consumed energy decreasing, respectively. The step or peak in the middle of the assessment period results from the product replacement. It adds CapEx, but afterwards, OpEx is lower

due to better energy efficiency. Likewise, it adds the production emissions of the successor unit (the peak in the middle), but afterwards, yearly emissions decrease slightly faster. Apparently, regarding emissions, the replacement makes sense.

For both parameters (cost, emissions), the B2DS scenario performs better. We regard this scenario analysis as an opportunity (rather than risk) example. Combined with the aspect of Greening-by-ICT, products like the one assessed here will be required in the future.



Scenario analysis of operational costs in the area of product use.



Scenario analysis of GWP in the area of product use.

## Stakeholder engagement

G2-12, G2-29, G3-3

Stakeholder engagement is relevant in the sustainability context as it helps to identify the different stakeholders' expectations and to update the prioritization of the sustainability-related activities. As such, it is instrumental for both, the [context analysis](#) and the [materiality analysis](#).

Regarding sustainability, relevant groups of stakeholders are those who have an interest in, or influence, the group's actions, strategy, or reputation in that area. This includes parties that are influenced by the group's actions.

The following **groups of stakeholders** have been identified:

- Customers
- Shareholders, investors
- Suppliers, including logistics and energy suppliers, and contract manufacturers
- Legal, government agencies
- Associations, alliances, NGOs
- OEMs, VARs, service partners
- Communities
- Employees

The group's general approach to stakeholder engagement is to maintain a dialogue with the respective parties as regularly as possible. For certain stakeholders, e.g., some strategic customers, associations, interest groups and investor groups, this happens regularly and frequently and as part of the daily business. This allows us precise knowledge of the relevant requirements around sustainability with regard to the relevant interested parties, but it also gives us valuable feedback on their perspective and evaluation of our corresponding activities.

Other stakeholders are served at least regularly or even aperiodically through special campaigns.

Examples for our stakeholder engagement, with particular respect to our customers, can be found on the next page.

## Collaboration at industry alliances

G2-28

ADVA regularly contributes to sustainability-related industry alliances. Examples include our collaboration with the **TIA Sustainability Initiative**. Here, we periodically share best practice and contribute to the inclusion of sustainability aspects in the revision of the TIA standard TL 9000. In addition, ADVA has been leading the TIA Sustainability Working Group since the beginning of 2021.

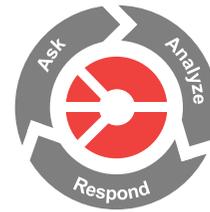
In 2022, we also continued our work with the **ExFo** (Experts' Forum) at Fraunhofer IPA in Stuttgart, Germany. The work of this forum is centered on the areas of REACh<sup>2</sup>, RoHS<sup>2</sup>, WEEE and conflict minerals, but also includes aspects such as circular economy or emissions reduction. As an industry forum, the ExFo can provide early warnings in cases where the related regulations and directives become updated.

<sup>2</sup>Glossary: page 87

Due to the Covid-19 situation and similar to 2021, there were no physical meetings in 2022, all meetings took place virtually, on the Internet.

## Customer satisfaction rating

G2-29



Our customer satisfaction is measured by the Net Promoter Score (NPS) on a yearly basis. For 2022, ADVA's NPS was 41%. A NPS above 30% is commonly regarded as good. However, our goal is continuous improvement of our customer satisfaction. Therefore, we strive to achieve a NPS of 50% in the future again.

In 2022, we conducted 49 interviews and more than 1000 ratings in eight categories, and around 1500 specific comments. Per category, one to five questions with answers potentially scaling from 1 to 10 were asked. We asked for aspects that add the most value for our customers, and for the most important things that we should improve.

The development of our NPS is shown in the table below.

*Development of our NPS.*

Net Promoter Score	2022	2021	2020	2019	2018
<b>Overall</b>	<b>41 %</b>	<b>48 %</b>	<b>50 %</b>	<b>44 %</b>	<b>52 %</b>
Technology & innovation	20 %	16 %	22 %	20 %	33 %
Product quality & reliability	40 %	26 %	31 %	41 %	46 %
Fault correction	40 %	47 %	40 %	42 %	50 %
Network planning and sales	66 %	76 %	73 %	72 %	66 %
Order mgmt., shipping, invoicing	31 %	51 %	70 %	47 %	47 %
Sustainability & cyber security	38 %	65 %	63 %	39 %	73 %
Technical services	66 %	72 %	67 %	56 %	61 %
Web content & documentation	34 %	36 %	29 %	22 %	32 %

## Corporate social responsibility according to GRI

G401-1, G405-1, G408-1, G409-1

### Information on employees

G2-6, G2-7, G2-8, G401-1, G405-1

On December 31, 2022, ADVA had 2,014 employees, including 36 apprentices (2021: 1,973 including 27 apprentices).

On average, ADVA had 1,975 employees in 2022, up from 1,897 in 2021 (not considering apprentices). Furthermore, at year-end 2022 and 2021, there were 30 and 23 external temporary employees as well as 28 and 26 internal fixed-term employees working for the company, respectively.

In 2022, the voluntary turnover rate was at 5.7% and the total number of new hires was 200.

ADVA works continuously to achieve a more balanced relationship between men and women in the workforce. Our Human Resources Information System (HRIS) offers detailed reporting functions and helps to track and improve these and other aspects of diversity.

The development of our gender ratio for all employees and in management can be derived from the next two tables.

<b>ADVA global</b>	<b>2022</b>	<b>2021</b>	<b>2020</b>
Males total	77.3%	77.9%	77.4%
Males in management	85.4%	83.9%	84.3%
Females total	22.7%	22.1%	22.6%
Females in management	14.6%	16.1%	15.7%
<b>Team leader</b>	<b>2022</b>	<b>2021</b>	<b>2020</b>
No male	60.1%	60.0%	59.1%
No female	19.8%	18.6%	19.3%
<b>No total</b>	<b>79.9%</b>	<b>78.6%</b>	<b>78.4%</b>
Yes male	17.2%	18.0%	18.2%
Yes female	2.9%	3.4%	3.4%
<b>Yes total</b>	<b>20.1%</b>	<b>21.4%</b>	<b>21.6%</b>

Being an international company, the diversity of nationalities, age, gender and religion is crucial in helping us continually improve our work environment and be a great workplace with a unique culture based on strong core values. We are committed to equal opportunities and to hiring minorities and employing veterans and people with disabilities.



Quotas ensure a certain percentage of people with disabilities in our employment base. To this respect, we are cooperating with Bundesvereinigung Lebenshilfe e.V. in Germany since 2008 in order to integrate people with disabilities in the working environment. If the quo-

tas are not achieved, a penalty is paid to the government.

The majority of our employees are between 30 and 50 years old. The age distribution by gender is shown in the next two tables.

Gender	Age group	2022	2021	2020
Male	<30 years	12.3 %	10.0 %	10.0 %
	30-50 years	54.7 %	56.4 %	56.4 %
	>50 years	33.0 %	33.6 %	33.6 %
<b>Male average</b>		<b>44.7 years</b>	<b>44.5 years</b>	<b>44.5 years</b>
Female	<30 years	12.9 %	11.1 %	11.1 %
	30-50 years	61.0 %	61.0 %	61.0 %
	>50 years	26.1 %	27.9 %	27.9 %
<b>Female average</b>		<b>43.1 years</b>	<b>42.9 years</b>	<b>43.5 years</b>

Gender	Age group	2022	2021	2020
Male	<30 years	191	179	145
	30-50 years	852	868	816
	>50 years	514	491	486
<b>Male total</b>		<b>1,557</b>	<b>1,447</b>	<b>1,538</b>
Female	<30 years	59	41	47
	30-50 years	279	279	258
	>50 years	119	115	118
<b>Female total</b>		<b>457</b>	<b>423</b>	<b>435</b>
<b>Employees total</b>		<b>2,014</b>	<b>1,870</b>	<b>1,973</b>

Our gender numbers may not look perfectly balanced. However, for reasons explained in the [Girls' Day](#) chapter, it is difficult to achieve a much better balance. This applies at least to the technical departments, which according to the table below make up a large part of the workforce.

Function	2022	2021	2020
Finance/ Admin/IT	182	179	177
Operations/QM	263	274	229
R&D	1,024	994	935
Sales/ Marketing/ Services	509	499	507
Apprentices	36	27	22
<b>Employees total (year-end)</b>	<b>2,014</b>	<b>1,973</b>	<b>1,870</b>

Our focus on R&D can clearly be derived from this table.

In 2022, we employed people of approximately 55 nationalities across 38 company sites.

The distribution of our employees at year-end, across the different countries where ADVA has operations is provided in the last table in this section. It becomes clear that we have significant operations in Germany, Poland, UK, USA, China, and Israel.

The data reported here is provided via our HRIS.

Employees per country (year-end)	2022	2021	2020
Germany*	542	537	508
Austria	5	3	2
Switzerland	43	41	42
Italy	16	15	14
Spain	3	3	2
France*	19	20	16
Poland	450	395	366
Finland	9	9	8
Sweden	4	3	3
United Kingdom*	125	122	119
Netherlands	2	3	3
Russia	2	2	2
South Africa	4	4	4
USA	386	407	392
Canada	23	23	16
Brazil	1	2	2
Australia	10	10	10
China	113	138	137
Hong Kong	2	4	4
Japan	9	7	7
India	76	67	62
Singapore	14	14	14
Malaysia	1	1	1
United Arab Emirates	2	1	1
Israel	117	115	113
<b>Total*</b>	<b>1,978</b>	<b>1,946</b>	<b>1,848</b>

\* Without apprentices

## Training and career development

G404-2

Training and further education is an important aspect for ADVA. ADVA's career development is planned and organized to match the company's needs with the career goals and interests of our employees. It is supported by regular involvements of our employees, such as in the ESS or so-called Breakfast Meetings of small groups of employees with a member of the executive board. It is further supported by regular performance reviews, which take place twice a year and which include training plans. These measures help us to keep our employees informed and address employee satisfaction.

Career development involves employees managing their careers either within or between ADVA organizations. Together with their managers, employees can set goals and objectives for their own personal career development.

ADVA also launched a global in-house **management training program**, the MTP. This includes 17 active modules and is targeted at all leaders who have people-management responsibilities. The MTP helps managers maximizing both, individual and team performance.

## ADVA University

G404-1, G404-2

ADVA is committed to running a state-of-the-art education, development and training program that also includes e-learning. This comprises comprehensive on-the-job training as well as specific continuing education opportunities to advance our employees' personal and professional development.

These development-related aspects are identified, documented and reviewed company-wide semi-annually within an electronic performance appraisal and competency management system.



The ADVA University portal is the single point of reference for all training needs. Courses on various technical and non-technical topics that are regularly requested are offered. This includes technical trainings that are mostly conducted internally by ADVA's own technical experts.

Next to the technical (in-house) trainings, the actual ADVA University offering includes courses in the areas of languages, professional and communication skills, customer service, leadership and management, safety, social media and marketing, sales and negotiation, interpersonal skills, teamwork, time and project management, Microsoft software, desktop publishing, and finance and accounting.

The ADVA University is regularly updated based on employees' feedback.

In 2022, employees attended 309 training sessions. The duration per session was between 30 minutes to a full week (5 days).

## Equal opportunities

G408-1, G409-1

ADVA is an equal-opportunity employer and has an on-going commitment to the creation of a workplace that is free of discrimination and harassment. This includes a **zero-tolerance policy** against all violations, and we also expect our suppliers to follow our [Supplier Code of Conduct](#), which is tightly connected to our general [Group Code of Conduct](#).

The company recruits, hires, trains and promotes individuals on all job levels without regard to race, religion, ancestry, sexual orientation, marital status, age, gender, physical or mental disability or any other characteristics.

The following international labor standards are the fundamental principles that ADVA is committed to. They aim to ensure the sustainable promotion and development of our employees.

- Freely chosen employment
- Child labor avoidance
- Working hours
- Wages and benefits
- Humane treatment
- Non-discrimination
- Freedom of association

Finally, the group is also committed to uphold the human rights of workers, and to treat them with dignity and respect as outlined in the Universal Declaration of Human Rights as well as in ADVA's Position on Slavery and Human Trafficking (see the following [link](#)). This also applies to our suppliers.

## Girls' Day 2022

G405-1, G413-1

As a telecommunication systems provider, ADVA works in the STEM field (science, technology, engineering, math). Historically, gender distribution has been quite asymmetric in this domain:

The graphic shows the proportion of women in the STEM area in Germany. The data for other regions, e.g., UK, does not differ significantly. Although increasing, the ratio of women in STEM area is well below 50%. Therefore, it is difficult to achieve gender parity in our *technical departments* (which covers most of our workforce).

On the other hand, the company is committed to increasing the percentage of women working in our company. One of the ways this can be achieved is by engaging with girls at schools regarding technical and engineering (STEM) studies. This goal is followed by the *Girls' Day* in Germany that ADVA actively participated in the recent years.

After two years, the Girls' Day took place physically again in April 2022. ADVA supported this at our sites in Meiningen and Berlin. Here, first insight was given in our doing as an international ICT vendor.

This year, highlights included visiting the educational workshop and our production. Here, the schoolgirls could build their own electronics project and splice fiberoptic cables.

We plan to continue our participation at Girls' Days in the future.

## Further employee benefits

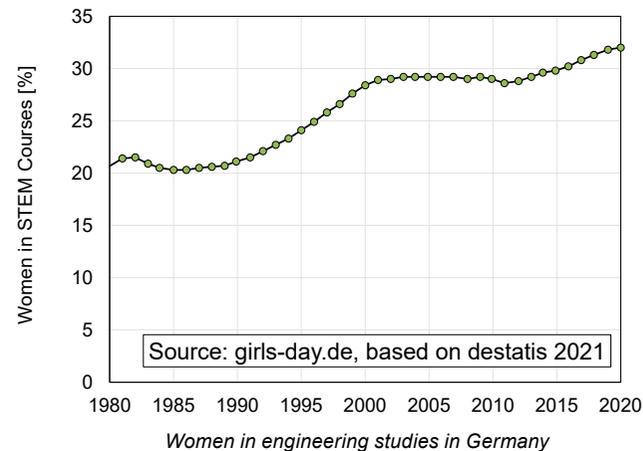
G401-2

Next to health & safety benefits (see next chapter), the company offers a range of further benefits to its employees. These include (but are again not limited to):

- Stock-options program
- Retirement provision
- Tuition reimbursement
- Food/snacks/beverages
- Various possibilities for time off. These include family medical leave, parental/maternity leave, jury duty leave, bereavement leave, military leave and more

- Team-building activities and group off-sites
- Various sports activities
- For the USA: life insurance, disability, and invalidity coverage

These benefits are available at all group sites, not just at significant locations, as long as they are not in contradiction with applicable local regulations. Part of these benefits is available to temporary and part-time employees as well.



## Occupational health & safety

G401-2, G403-1, G403-2, G403-3

ADVA is not externally certified with regard to ISO 45001. However, many parts of this standard are followed internally. This includes respective process documents and internal responsibility. Furthermore, relevant parts of this matter, such as compliance with fire protection regulations, are regularly checked externally in accordance with national requirements.

We support a flexible, diverse and casual work environment, which stimulates change and motivates our people. We have designed **the work and life program** around our people because we know that they will spend the majority of their life at work.

This program includes several benefits which include (but are not limited to):

- First-aid training, incl. certification
- Labor safety and labor security
- Vision care
- Fitness-center discount program

In addition, our employees have access to the company doctor and several inoculation offerings.

Further benefits of the work and life program were described in the previous chapter already.

Different statutory rules across the globe require the company to have coherent actions and reporting in place. It is the management layer's responsibility to implement and indemnify the agreed or legally required working conditions on a day-to-day basis. Regular management training on labor law is provided to secure the knowledge and further educate our team and line managers.

In addition, the general first-aid and safety training is mandatory for all employees. This is repeated on a yearly basis. Participation is tracked and documented electronically.

Employees facing specific risks at work receive dedicated training on a regular basis. The attendance is mandatory and is documented in personal files. All eligible employees (e.g., those working in certain labs) have to attend trainings on:

- Laser safety
- Electrostatic Discharge (ESD)
- Special chemical training

Being a high-tech company, more than 90% of our workforce fulfill office-related jobs. Consequently, and due to the care we take, the risk of accidents at work is relatively low. This is confirmed by the regional statistics that are provided in the following table.

Description (G403-1, G403-2, G403-3)	Region		
	Europe	Americas	APAC
A. The level at which each formal joint management-worker health and safety committee typically operates within the organization.	A. Site level (all major sites, small branch offices may not have such committees, in accordance with local legal requirements)	A. Site level B. 100 %	A. Site level (Emergency Response Committee in Shenzhen)
B. Percentage of workers whose work, or workplace, is controlled by the organization, that are represented by formal joint management-worker health and safety committees.	B. 90 %		B. 100 %
A. Types of injury, injury rate (IR), occupational disease rate (ODR), lost day rate (LDR), absentee rate (AR), and work-related fatalities, for all employees, with a breakdown by region and gender.	A. <b>For UK:</b> 3 injuries: 5 cuts (1 female, 4 male) 0 lost days 0 fatalities <b>For Germany:</b> Number of occupational accidents – 3 (female) Number of commuting accidents – 2 (1 female, 1 male) 19 lost days <b>For rest of Europe (Poland + Netherlands):</b> Number of commuting accidents: 3 + 1	A. 1 slips/falls; 1 splinter in finger 5.6 lost days B. 0 fatalities, 0 slips/falls C. Yes, accidents are logged in OSHA report and filed according	A. 0 occurrences
B. Types of injury, injury rate (IR), and work-related fatalities, for all workers (excluding employees) whose work, or workplace, is controlled by the organization, with a breakdown by region and gender.			
C. The system of rules applied in recording and reporting accident statistics.	B. – C. <b>For rest of Europe:</b> Accidents are reported to a first aider and then logged in the Accident Book <b>For Germany:</b> In addition to the report to the first aiders, worse accidents are reported to HR to fill out an accident report form that has to be sent to the health protection agency. If employees are on sick leave for more than 3 days, we have to inform the German employer's liability insurance association. In 2022, three accidents were sent to the German employer's liability insurance association.		
Workers with high incidence or high risk of diseases related to their occupation	None	None	None

## Social engagement/volunteerism

G413-1

All major ADVA sites (i.e., with the exception of small, local sales offices), covering >90% of total headcount, have local community engagement and development programs in place which are run by each site's local HR department.

This includes development programs and events that address local communities' or institutions' (like children's homes) needs. Our employees regularly join volunteer teams in the related events. These volunteer programs help others and also allow our volunteers to develop their own skills and make contacts.

Due to Covid-19, and similar to 2020/2021, fewer events took place in 2022 than before. Nonetheless, ADVA was able to organize 20 bigger CSR events globally. Of these, the organization of the summer party at a local children's home in Benshausen near Meiningen and the call for donations for victims of the Ukraine war at many ADVA sites deserve to be mentioned the most.



## GRI environmental standards

G305-6, G305-7, G306-1, G306-2, G306-3, G306-4, G306-5, G2-27

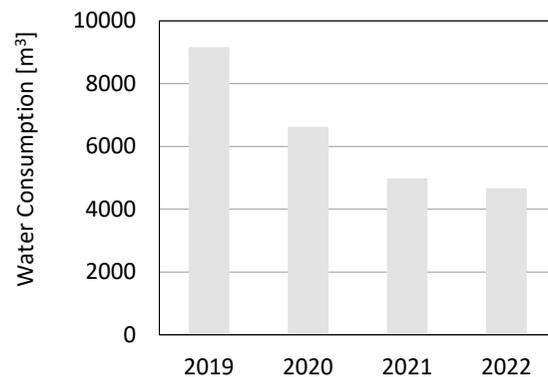
### Environmental compliance

ADVA runs an environmental management system (EMS) in accordance with ISO 14001, which is recertified every year. In addition, major sites are covered by an energy management system (EnMS) according to ISO 50001, with identical recertification. The last surveillance audit in Q4/2022 showed only minor deviations. Corresponding corrective actions have already been initiated. Further information on the management approach can be found in Part 2 of the report on [page 74](#).

Material aspects in the EMS context have been described in the chapter [Sustainability strategy](#) in Part 2 of the report and under [Relevance for EMS and EnMS](#).

Apart from running buildings and a car fleet, the group does not produce any dedicated air emissions or discharges to water.

The water consumption of the group is shown in the following diagram.



Water consumption over the last four years

No significant amounts of NO<sub>x</sub>, SO<sub>x</sub> and other particles are emitted. Likewise, ozone-depleting substances (ODS) are not critical. ADVA is screening its sites and its suppliers for the use of ODS and neither we nor our suppliers use them.

In 2022, the consumption of hazardous substances at our sites in Meiningen, Gdynia and Neuchâtel was ~330 liters. This amount mainly consisted of Isopropyl Alcohol, plus some further cleaning agents and glues. A respective number of empty containers were transported inland.

Therefore, the remaining EMS aspect relates to waste generation and treatment. Waste production and treatment for 2022 is stated in the table below, together with the water consumption and its related GWP. Plastics, cardboard and e-waste (WEEE) all go into the respective recycling streams.

Waste and water amount and GWP 2022 (2021)

Waste disposal	Weight [t]	GWP [tCO <sub>2</sub> e]
Cardboard	135	2.9 (2021: 2.7)
Waste incineration	90.3	1.9 (2021: 2.0)
Plastic	8.3	0.2 (2021: 0.2)
E-scrap	18.4	0.4 (2021: 0.3)
Water consumption	Volume [m³]	GWP [tCO <sub>2</sub> e]
Water	4,650	2.0 (2021: 2.1)

Two relevant EMS targets relate to life-cycle assessment (LCA), as described under [Relevance for EMS and EnMS](#) and [Portfolio lifecycle assessment](#) in Part 2 of the report. These are ≥90% portfolio coverage and highest confidence of the LCA results. Both targets were achieved in 2022.

## Resource and energy efficiency

G302-1, G302-4

As pointed out in the [materiality analysis](#), the most relevant resources aspect for the group refers to the energy consumed. This primarily affects the purchased electricity. This particular area is covered by our ISO 50001 Energy Management System and by the Scope-2 target within our SBTi<sup>2</sup> commitment. For the EnMS, further information on the management approach can be found on [page 74](#).

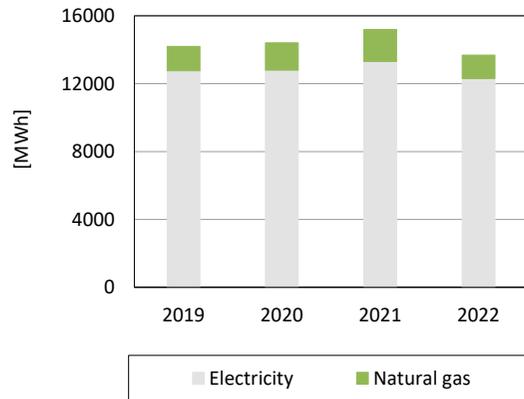
<sup>2</sup>Glossary: page 87

A small fraction of the energy consumed by the group relates to natural gas. This applies to five ADVA sites (out of 38) only.

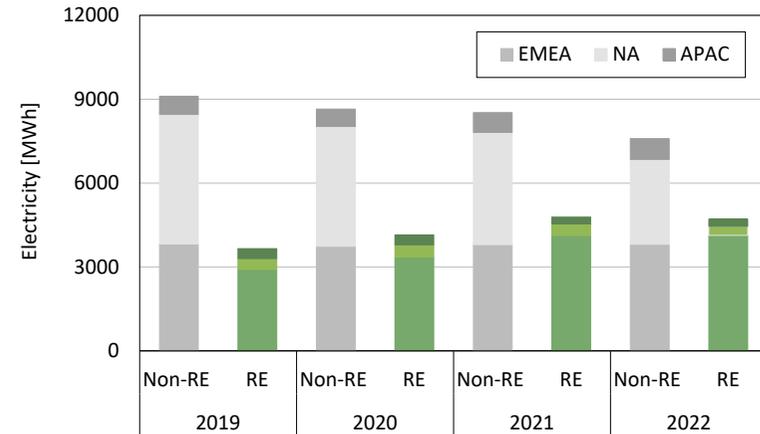
No dedicated cooling or steam consumption is in place.

The two following figures show the development of energy consumption (natural gas plus purchased electricity) and the mix of renewable and non-renewable energies (information from our electricity providers and data from regional networks) over the last four years.

In 2022, energy consumption decreased by ~7% compared to 2021.



Energy consumption of all major ADVA locations



Share of renewable (RE) and non-renewable (non-RE) energy in electricity purchased from ADVA and depending on the region

The EnMS aims to reduce energy consumption by 1.5% per year. However, the EnMS in particular covers locations with large laboratories. Since these laboratories show increasing energy consumption, following the increasing bitrates of the Internet, the energy consumption of the respective sites tends to increasing as well. Increasing laboratory consumptions results because parts of the Internet have to be mapped on small scale in the laboratories (compare [ICT and its impact](#)). Therefore, an intensity metric must be used that takes the increasing bitrates of

the Internet into account. This increase can be derived, e.g., from sources like the Cisco VNI. In addition, advances in the energy efficiency of ICT devices must be considered for the metric. This improvement can be derived for our products, refer to [Product energy efficiency and Scope-3 emissions](#) in Part 2. With the resulting intensity metric, the EnMS reduction target was met.

## CE, RoHS, REACH, Conflict minerals

All ADVA products are CE certified. Regarding the restriction of hazardous substances (RoHS), all products of the group are fully compliant with the Directive 2011/65/EU and the Delegated Directive 2015/863. This is ensured by respective engagement with the related components suppliers and contract manufacturers.

We also file the RoHS exemptions in our internal databases. This allows fast identification and reaction in cases where certain specific exemptions expire.

In addition, ADVA reports all relevant data to the ECHA SCIP database. To do this, we systematically evaluate the material declarations of the components that we use in our products in order to be able to record substances of very high concern (SVHCs). In 2022, a limited number of components and hence, products, did contain SVHCs above the threshold of 0.1 % [w/w]. The respective products are listed in SCIP.

Regarding the main conflict minerals (cassiterite, wolframite, coltan, gold ore, cobalt and mica), the group follows the due-diligence and supply-chain traceability requirements of the Dodd-Frank Wall Street Reform and Consumer Protection Act and the Conflict Mineral Law of the US Securities and Exchange Commission (SEC). Total supply-chain coverage was ~60 % in 2022, caused by incomplete or missing answers. We are working on substantial improvement of this coverage. Tracking is done with IntegrityNext, our tool for sustainability and risk-related supply chain management.

In 2019, we decided to intensify the work in the area of material declarations for the components we have installed. This was one of the recommendations that we extracted from our collaboration in the Fraunhofer Experts Forum. Material declarations indicate the respective weight percentage of all substances contained in the purchased components. This information can be important for REACH regulations (Registration,

Evaluation, and Authorization of Chemicals). They can also be used for component LCA if, for example, there are no data records in the databases (GaBi, ecoinvent) for certain components.

At the end of 2022, the coverage of purchased components with material declarations was 78 %. Our goal is to extend this approach in the future also to the Adtran portfolio and to increase the filling rate of the material declarations to >90 % in the medium term and to keep it at a high level despite fluctuations in the components. We consider this to be sensible, especially with regard to the upcoming REACH regulations, which are expected to become more stringent in the next few years.

## CO<sub>2</sub> emissions (Scope 1-3)

G302-1, G302-5, G305-1, G305-2, G305-3, G305-5

The group's GHG<sup>☺</sup> emissions for 2022 are summarized in this table.

<sup>☺</sup>Glossary: page 87

ADVA GHG inventory for 2022 (2021)

	Category	Consumption 2022	GWP 2022 [tCO <sub>2</sub> e]	GWP 2021 [tCO <sub>2</sub> e]
Scope 1	Natural gas	1,358 MWh	247	369
	Owned transport	4,144,039 km	690	639
	<b>Total Scope 1</b>		<b>937</b>	<b>1,008</b>
Scope 2	Purchased electricity* **	12,300 MWh	5,393	5,158
	<b>Total Scope 1 plus Scope 2</b>		<b>6,330</b>	<b>6,166</b>
Scope 3	Capital goods	10,803 kEUR	3,919	4,623
	Purchased goods			
	Production-related		42,798	36,997
	Non-production-related (other than paper)	1,616 kEUR	365	282
	Purchased paper	4.3 t	3.1	2.3
	Fuel- and energy-related activities	1,210 MWh	326	283
	Transportation and distribution			
	Inbound	24,538,379 t-km	5,809	5,126
	Outbound	5,220,720 t-km	3,881	2,879
	Waste disposal			
	Cardboard	135 t	2.9	2.7
	Plastic	8.3 t	0.2	0.2
	Waste incineration	90.3 t	1.9	2.0
	E-scrap	18.4 t	0.4	0.3
	Business travel			
	By air	5,157,650 (p)km	906	208
	By car	149,650 km	30	9.3
By train	169,798 (p)km	0.0	0.0	
Employee commuting		1,300	900	
Use of sold products	778 GWh	261,341	205,455	
End-of-life treatment of sold products		420	292	
	<b>Total Scope 3</b>		<b>321,105</b>	<b>257,062</b>

\* Electricity consumption of all major ADVA sites covering >90% of total headcount.

\*\* In 2022, the location-based Scope-2 emissions were 6,217 tCO<sub>2</sub>e.

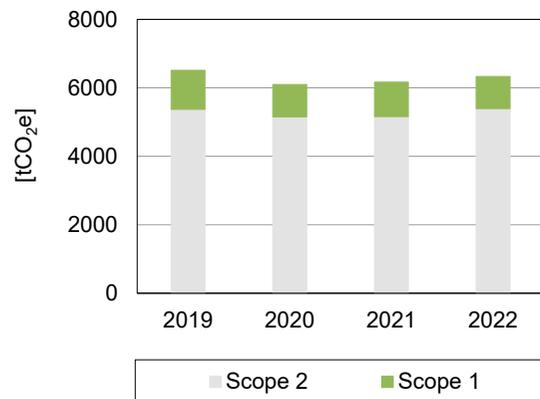
ADVA reports all GHGP<sup>2</sup> categories that are relevant for the group. GHG emissions are reported on the basis of operational control, and Scope-2 data is market-based.

<sup>2</sup>Glossary: page 87

We do consider the relevant GHG other than CO<sub>2</sub>.

Owned-transport emission (Scope 1), purchased-electricity emissions (Scope 2) and use-of-sold-products emissions (Scope 3) are addressed by our SBTi participation, see [Carbon emissions \(Scope 1-3\)](#) in Part 2.

The development of the total ADVA Scope-1 and Scope-2 GHG emissions is shown in the following diagram.



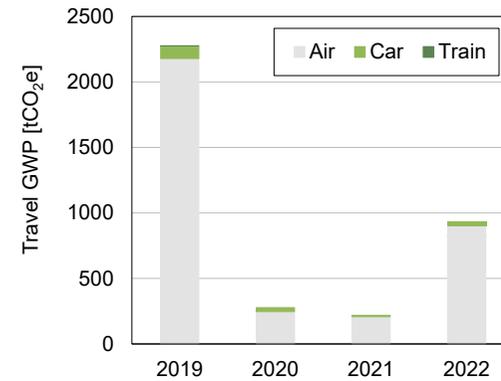
Scope-1/2 emissions development over the last four years

Emissions from freight transport are addressed in the next chapter.

For business travel and commuting, there is certain overlap with the Scope 1, owned-transport (car fleet) emissions, which cannot be fully eliminated due to some limited data ambiguity. Regarding the group's total GWP, this, however, leads to a negligible error of 1-2‰.

For both Scope-3 contributions (travel, commuting), the group runs several emissions-reductions initiatives. These include

- Home-office arrangement. In 2022, this was again relevant due to Covid-19. Similar to 2021, this saved approximately 55% commuting for the



Travel emissions development over the last four years

entire group in 2022, compared to pre-Covid-19 years.

- Video conferencing. This is used, where possible, to avoid business travel. It holds in particular for journeys that are done only to participate short meetings. In total, it reduces business-travel emissions as well as cost. This was again of particular importance in 2022, as many physical business meetings were still replaced by virtual online meetings due to Covid-19. Accordingly, video conferencing is also one of the basic requirements for using the home office (in addition to a stable corporate and worldwide VPN). In 2022, business travel emissions fell below 40% of the pre-Covid value.

- Subsidy for local public transport. This is available at certain ADVA locations. It helps to encourage employees to use public transport (and thus stabilizes/increases the share of public transport in commuting).

In total, these measures helped to reduce, or at least to stabilize, the related emissions.

The travel-related emissions of the last four years are reported in the diagram above.

## End-to-end delivery

G305-3

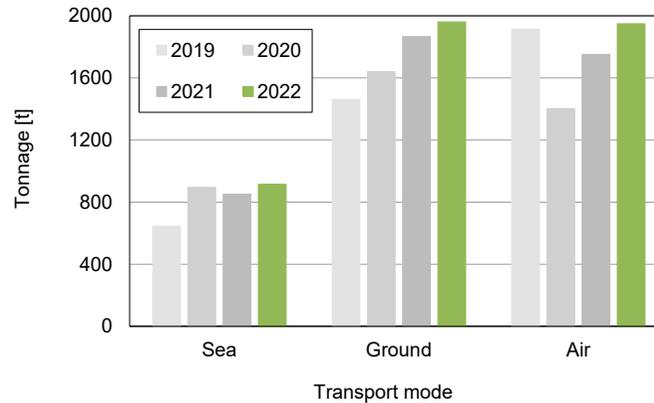
This chapter contains relevant environmental aspects from the perspective of both, the end-to-end value chain as well as the products' complete lifecycle. These have an impact on carbon emissions and resource efficiency.

The main aspects in this segment are transport distances, modes and emissions, and packaging.

### Transport mode and emissions

Freight transport – inbound plus outbound – is a main contributor to the GWP, as seen from the previous chapter. Transport emissions are determined by three parameters, the transport mode (including the associated emission factors), and distances and tonnage. The transport parameters can only be influenced to a limited extent if there is strong competitive pressure. They are largely determined by the location of the supply chain and customer requirements for delivery times.

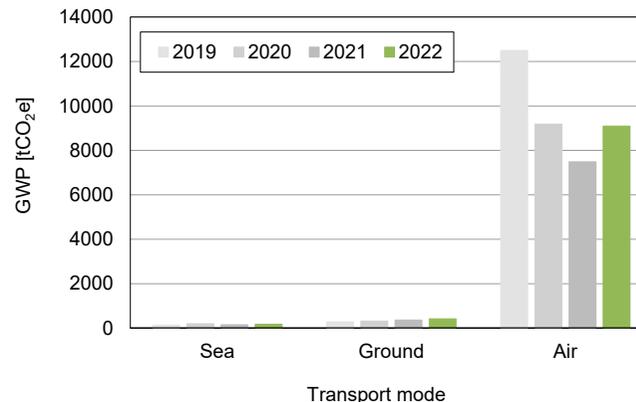
The freight-split development over the last four years is displayed in the following diagram.



Development of transport modes over time

The GWP resulting from transport is shown in the next diagram. The underlying transportation emission factors are

listed below. These factors were taken from the ecoinvent database, version 3.9.1 (2022).



Transport-related GWP

Global transportation emissions factors. The land-freight factor is a weighted average of EU and rest-of-world figures.

#### Emissions factors 2022 (2021) [kgCO<sub>2</sub>e/(t·km)]

See freight	Land freight	Air freight
0.0102 (0.0094)	0.565 (0.520)	0.795 (0.728)

In 2022, further parts of the supply chain were relocated back from Asia to Europe. In particular, this applies to our *TeraFactory* in Meiningen, which was almost finished in 2022 and started first pilot operation. We expect noticeable effects on the emissions savings made possible by this in 2023 at the earliest.

At the same time, work aimed at reducing air freight was continued. Here it was possible for the first time to replace parts of the air freight with rail transport.

## Packaging optimization

G301-2, G301-3, G305-3

In addition to the actual transport, packaging also has a significant environmental impact. Its improvement concerns the reduction of greenhouse-gas emissions and the avoidance or reduction of certain materials. Emissions caused by packaging can be reduced by optimizing the size and weight of the packaging, as well as through reusability. The reduction in materials relates specifically to foams and plastics. According to lifecycle assessments, avoiding them and replacing them with cardboard can lead to emission savings.

As already described in the last sustainability reports, we have improved a lot of packaging in terms of size and reusability in recent years. Size plays a role here, as optimization can reduce transport emissions and costs.

The trend to reduce plastic in packaging also continued in 2022. This means complete avoidance or reduction of plastic or avoiding single-use plastic. Together with our packaging suppliers, we were able to develop plastic-free packaging for sensible products that can withstand the G-force or fall tests that are required by NEBS (Network Equipment Building System) in the US. So far, plastic has been used, especially for heavier products, as a mechanical shock absorber for these tests. We plan to extend the usage of the new packaging to several products with similar size and form factor and hence, larger numbers of products.

*New plastic-free packaging that can withstand NEBS fall tests*



## Circular economy: resource availability and cooperation in the value chain

### Management of material topics

#### G3-3

In accordance with our [materiality analysis](#) and the resulting [strategy](#), the key aspects with priority 1 are those that relate to CO<sub>2</sub> emissions and their reduction. Emissions are followed, with priority 2, by the aspect of circular economy (CE), which enables better resource efficiency. In addition, CE has potential for CO<sub>2</sub> savings in the GHGP Scope 3 category of product-related purchased goods.

CE is pursued at several levels at ADVA. On the one hand, there are CE processes for material reuse in reverse logistics. These are part of regular returns and thus of the business lifecycle process (BLCP). Second, CE-related ecodesign guidelines are implemented in the Environmental Requirements (formerly the Ecodesign Guide), which are part of the hardware development process. Finally, improved CE business models are being explored.

An example for the first process is the used-products buy-back that was conducted in 2022. It aimed at retrieving some semiconductor elements and thus, at improving supply of these components during the semiconductor shortage.

All processes and management approaches include the employees responsible for this. In all three cases, responsibility at the highest level lies with the CTO.

For the area of circular-economy, two targets have been set related to the supply chain. These targets were followed in 2022, and they are valid for the next couple of years. First, the quota of suppliers answering in IntegrityNext shall be further increased. A similar target holds for the number of material declarations for the components that we purchase from the respective suppliers.

For both targets, 100% is hard to achieve in practice. Therefore, both are mid-term targets, and we strive for an increase year over year. The number of answers in IntegrityNext can be increased by improving the automation in

that tool. Material declarations will be continued to be requested from the suppliers. Alternatively, they can be purchased from commercial data bases.

Both targets have clear relation to CE. Material declarations are necessary for extended lifetime or reuse of components. These declarations enable to determine whether the substances that are contained in the components were regulated only after the component's production, e.g. by complements to the REACH regulation. Material declarations can also help in recycling, e.g., through identifying the presence of hazardous substances. Supplier profiles (in IntegrityNext) are part of the necessary due diligence regarding the supply chain. This helps to ensure that the supply chain is compliant regarding relevant matters (e.g., human rights, corruption). This, in turn, is the basis for any cooperation as required by CE. Moreover, more CE-specific questions can later be added to IntegrityNext.

At year-end 2022, the portion of material declarations was at 78%. In IntegrityNext, 75% of our suppliers had a profile, which covered 98% of our supply-chain spending.

Furthermore, a general cost-reduction goal applies to the BLCP.

Both, the implementation and use of the Environmental Requirements and the investigation and implementation of new CE business models will be followed in 2023 and beyond. Since this will also have to be extended to the complete company after the merger, no numeric goals have been formulated here.

The management approaches are checked at least once a year through external assessments (CDP, EcoVadis, TIA) and audits (ISO 9001/TL 9000 audits, validation of the sustainability report) as well as accompanying internal audits and analyses. Correspondingly, measures are taken in the event of a revaluation of the facts.

So far, our management approaches have proven to be effective.

## Resource availability and business models

Since circular economy (CE) is a material aspect for us, we decided in 2017 to take part in the EU Horizon 2020 research project C-SERVEES. The project aimed to strengthen the CE business in the EEE sector (electrical and electronic equipment). It ended officially in October 2022.

A brief description is available under [c-serveesproject.eu/](https://c-serveesproject.eu/). Project results are available, in the form of the respective deliverables, under this link.

In 2022, we continued and finished our analyses regarding optimum ICT-products lifetime. These analyses aimed at answering the question whether ICT devices should be given an extended lifetime, which is a common requirement in CE, or should be replaced by more energy-efficient successor models after a certain period of use. We developed a relatively simple metric that helps answering this question and confirmed its usability for a broad range of ICT devices. This work has also been published externally at conferences, and it was discussed in ITU-T standardization in later 2022.



Further details on this work can be found in the public C-SERVEES Deliverables D4.3, D4.4 and D4.5. These deliverables are available under the link stated above.

In addition, further publications on these topics are planned for 2023.

In 2022, no numerical performance figures for circular economy were determined and tracked. This is attributed to the unfinished status of the merger with Adtran. However, the increase of service revenue, which is part of our strategic goals and which is also relevant part of certain PSS (product-service systems, i.e., CE business models) was followed in 2022 successfully.

## Supply-chain management

G308, G414

In order to prevent and mitigate negative environmental and social impacts in the supply chain, we conduct regular supplier self-assessments via IntegrityNext.

Our product-related suppliers are evaluated according to a range of environmental criteria such as environmental protection, energy management, RoHS, REACH and carbon footprint, and on various social criteria including human rights, labor law, health and safety, Conflict Minerals (including Mica and Cobalt), supply-chain responsibility, diversity and inclusion, and combating bribery and corruption.

At year-end 2022, the number of suppliers assessed for environmental and social impact was 318 and 314, respectively.

No suppliers have been identified as having significant actual or potential negative environmental impact. However, it is common in IntegrityNext for suppliers to be reported as non-compliant because, e.g., ISO certificates or the CMRT have expired. Accordingly, no actions were taken to improve suppliers or to terminate business relationships.

The same applies to social impact of our suppliers.

Risk assessment related to our supply chain revealed one potential environmental risk. In the lowest tier of the supply chain, raw-materials production, there is a risk of water pollution in gold mining. This risk results if illegal gold mining using mercury is done.

We are preparing measures/actions to get an improved view of the lower levels of our supply chain.

## Value chain and circular processes

G301-2, G301-3, (G305)

Circular economy (CE) has the target to reduce the amount of raw material, energy and waste that is associated with the production of any products and services. In addition to the longest possible service life (see also the explanations in the previous chapter), savings can also result from the reuse of parts or components. The latter must be supported by appropriate processes. This can be found in our business lifecycle process (BLCP).

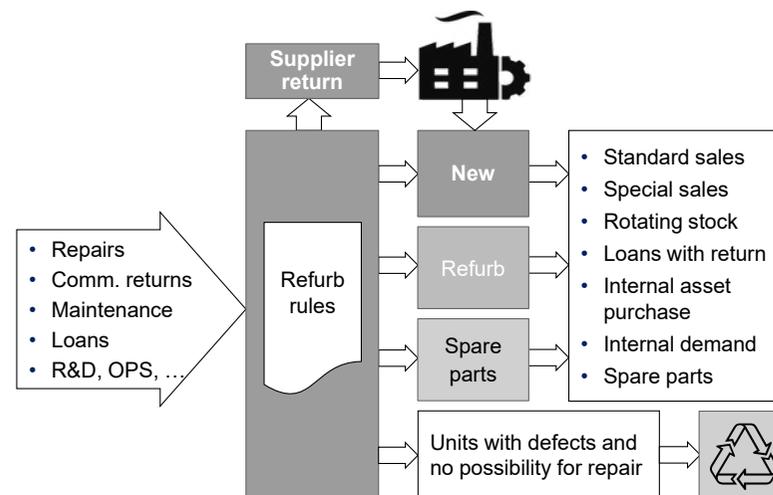
At our large logistics location in Meiningen, processes for analysis, reprocessing, reuse and recycling have been implemented for devices that are returned for various reasons. All these devices are analyzed for possible reuse. All systems or components without the possibility of reuse are professionally recycled by a nearby contract WEEE recycler, which also minimizes truck-roll mileage.

The processes include the creation and digital management of corresponding stocks for different components. These are filled, among others, from the returns. Correspondingly, there are stocks for new, refurbished or spare parts or

parts with very slow life cycles. All stocks are checked regularly in order to optimize the use of materials. This is done through order changes or modifications, and the main goal is to avoid scrapping. The check considers the respective material values, our inventory segmentation reporting is used as the basis.

The various component stocks allow cooperation with other participants in the value chain. In this way, components can be sold back to their suppliers depending on their potential for reuse (supplier return). In other cases, components can be sold to our CMs (Contract Manufacturers) if there is a need there or if there is better use. The process is illustrated in the picture below.

In 2022, we successfully implemented a *buy-back* scheme with certain large customers. This way, we were able to get back certain semiconductor components and reuse these in our value chain. For the related components, this helped reducing the problems of the semiconductor shortage which was ongoing in 2022.



Process for the return of products and their analysis for further parts recycling. Recovered components are allocated to various stocks (new, refurbished, spare parts), sold to their manufacturers or to CMs, or recycled if they are completely unusable.

## Combating corruption and bribery

### Management of material topics

G3-3, G2-25

Integrity determines our actions. We strive to meet our ethical standards, which are anchored in our values and documented in our [Group Code of Conduct](#). All employees must comply with these standards. The related aspect of corruption and bribery among our own employees is rated as material. The same applies to corruption and bribery related to certain business partners.

The group's **compliance management system (CMS)** is supported by a central compliance department located in Munich, Germany, and six regional compliance officers (RCOs) that support compliance in addition to their regular function in the company. The RCOs strengthen ADVA's local culture of compliance, erase any potential boundaries that prevent employees from reporting concerns, and contribute their specific functional expertise to the group's CMS. Their activities are coordinated by ADVA's chief compliance officer who reports to the CFO and the supervisory board.

Whenever employees have questions or suggestions related to compliance or suspect incidents of non-compliance, they are encouraged to speak up. Besides a variety of clearly defined and actively communicated internal points of contact, an external ombudsman and an externally operated [Ethics and Compliance Helpline](#) enable confidential and anonymous reporting.

Our compliance activities are evaluated and assessed both internally as well as externally (TIA, EcoVadis, specific customers or the group's auditors). Depending on the type of review, different timelines do apply. While some of the reviews are conducted annually and/or continuously, others may apply only once in several years. Whenever there are material findings, corrective actions are taken.

The aim of our CMS is the **complete avoidance** of corruption and bribery in the entire company. Accordingly, the CMS is applied to all employees and at all locations.

It is therefore also ADVA's aim to train all employees on a regular basis. The implementation of this takes place based on a defined process and is supported and tracked by ADVA's HR department.

Since no confirmed cases of corruption or bribery have been reported or corresponding allegations have been made now for several consecutive years, we consider our management approach to be expedient.

Our commitment to compliance extends to our sales partners, distributors and service providers ("business partners"). In order to enable precise and **risk-based due diligence** for these business partners before entering into a business relationship, certain business partner categories and corresponding financial thresholds were defined.

Based on this, a three-step approach ensures effective risk reduction. Firstly, a risk-based due diligence is carried out for new business partners and updated periodically for existing business partners. Then, detailed framework agree-

ments with robust compliance obligations are negotiated with all new business partners. Finally, risk-based monitoring enables the corresponding compliance risks to be further reduced.

Apart from non-disclosure agreements (NDAs), ADVA's aim is to not enter into a contractual relationship without first completing the necessary due-diligence activities.

Like all internal processes, business-partner due diligence is also subject to regular internal assessments. This is also coordinated by the Chief Compliance Officer, so that in turn the CFO is responsible at the highest level.

We buy a wide variety of products and services, including hardware components for our system solutions, as well as expert services to manufacture, maintain or dispose of our products. Accordingly, we have a broad supplier base. We therefore see risks in our supply chain for both, environmental and employee matters.

As a material aspect, the supply chain is managed with various processes. This includes processes for risk analysis and evaluation of new suppliers, for (re-) auditing, contract templates and finally a compliance management system. Some of these processes are also described in more detail in the following chapter.

Accordingly, various goals were set for this area, such as a response rate for the supply-chain management software IntegrityNext or an increase in the number of material declarations for the components we procure.

These processes and management approaches include the employees responsible for this and the responsibility at the highest level on the part of the CTO.

The management approaches are checked at least once a year through external assessments (EcoVadis, TIA) and audits (ISO audits, validation of the sustainability report) as well as accompanying internal risk analysis. Measures

are taken in particular in the event of – imminent – deviations from the goals, but also in the event of a revaluation of the aspects. This includes analyses of causes (if key figures are not achieved) as well as the identification and implementation of improvement measures.

Based on the processes outlined here, we introduced a new software tool for supply-chain management in 2019 that specifically addresses risks in the supply chain in the areas of compliance and sustainability. One goal of this software, IntegrityNext, is to improve the scalability of our supply chain management on sustainability topics and the associated risk reduction. IntegrityNext works together with existing tools. It essentially contains two different modules. On the one hand, there is a tailor-made assessment module. This includes questions important for ADVA and can be expanded if necessary. Second, the tool includes the worldwide screening of a nine-digit number of Internet posts per day. The latter are filtered and correlated

so that early detection, e.g., of serious compliance violations, can be provided with a high degree of security.

In 2022, the number of product-related material suppliers recorded by IntegrityNext was again increased. At the end of the year, 75 % of these suppliers were recorded. This covered 98 % of the purchasing volume. Moreover, 100 % of the product-related suppliers are recorded by the aforementioned social-media monitoring.

The processes and measures outlined here apply company-wide and for the entire supply chain. There is a certain focus on such suppliers with high delivery volumes.

So far, our management approaches have proven to be effective. Massive violations of conformity could not be determined.

## Compliance management system

G2-26, G205-2, G206-1, G415-1

Ensuring compliance requires an organizational framework based on applicable laws and regulations, international standards and industry best practices. While these may deviate from country to country, they are very similar in terms of the required CMS. Considering this, we implemented a CMS in particular consisting of:

- A corporate culture characterized by integrity, accountability, transparency and a strong “tone from the top” (“Leadership”)
- Periodic identification of the company’s compliance risks (“Risk Assessment”)
- Proportionate risk mitigating processes (“Documented Procedures”)
- Adequate training and communication of all compliance elements and measures as well as respective processes (“Training and Communication”)

- Means for in-person as well as anonymous reporting of potential compliance violations including clear internal reporting lines, an external ombudsman and a third-party Ethics and Compliance Helpline (“Reporting and Whistleblowing”)
- Proportionate responses to compliance violations in line with our **principle of zero tolerance** (“Investigations and Response”)
- Continuous improvement of the CMS based on identified weaknesses (“Monitoring and Auditing”)

This understanding is acknowledged and documented by all employees when signing the company’s compliance acknowledgments and supported by in-person compliance trainings. Documentation of the written agreement is done via an electronic personnel management system. At the time of this report, this covered 90 % of all active employees.

Several live **compliance training** courses were conducted. These follow ADVA’s rolling training plan with the aim of regular training for all employees. In 2022, the number of trained employees in live trainings was 586 employees. In addition, a web-based training on the ADVA Group Code of Conduct was rolled out in the second half of the year. At the end of 2022, in total 689 employees have completed the web-based training. With the live training and web-based training, 1,275 employees were trained. In the previous year 2021, compliance live trainings were held for 987 employees.

The training courses took place primarily via the Meta Compliance online platform. Participation is tracked and documented as for all mandatory training courses.

With regard to corruption, there was no confirmed incident at the time of writing this report and no such allegation has been made against the company.

## Business partner due diligence

With regard to the fight against corruption and bribery, the following types of business partners are to be considered:

- Sales reseller and sales agents
- Customer service provider
- Logistics service provider
- Marketing/event service provider
- Organizations or associations

These business partners go through our due-diligence process which is standardized and semi-automated as far as possible. The due-diligence process typically includes a first high-level risk assessment on the basis of predefined criteria, an internal feedback loop and a rigid questionnaire, which has to be completed and signed by the concerned business partner’s management.

A total of 62 new and existing business partners went through the due diligence process in the reporting period.

In 2022, this resulted in no business partner rejected due to compliance risks (2021: 1).

## Compliance in the supply chain

To ensure conformity, especially with environmental, employee and human-rights matters, we took multiple actions:

**Our Code of Conduct and Supplier Code of Conduct.** Our Code is derived from our values and sets forth the ethical standards that every employee of ADVA needs to comply with. Our commitment extends to our business partners and we strive to work with companies that operate under similar principles. In addition to our Code of Conduct, our [Supplier Code of Conduct](#) addresses specific points for our suppliers and is modeled on the framework of the Responsible Business Alliance (RBA, formerly EICC<sup>2</sup>). We do not tolerate any violations of the ILO labor standards.

<sup>2</sup>[Glossary: page 87](#)

**Risk assessment for new suppliers.** In order to ensure compliance with our Supplier CoC, ADVA has implemented a supplier assessment process. It intends to uncover risks and non-compliances and to address them. This process consists of a supplier survey, a risk assessment performed by us, and finally on-site supplier audits. Despite Covid-19 and the still existing travel restrictions, five on-site audits were carried out in 2022. Our risk assessment includes the type of product or service as well as the location of the business partner. Consequences in the case of persistent serious violations can lead to termination of the supplier relationship.

**Screening, qualification and contracting.** ADVA implemented screening, qualification and contracting processes for strategic suppliers and other selected business partners. Our measures in-

clude standardized questionnaires, technical and operational support, and contracting according to pre-defined master purchasing agreements that require compliance with our ethical values, applicable laws or regulations.

**Audits and monitoring.** In addition to new suppliers, already existing suppliers are periodically newly evaluated. The respective period depends on the suppliers' relevance and any specific risks that have been identified. In 2022, one supplier was re-audited on site against sustainability aspects.

Based on the audit results, non-conformities were found, further specific improvements were required, but no business relationships were terminated. However, corrective measures from the previous audits were followed up. For this we use a supplier corrective-action tracker.

The actions and processes described here consider environmental matters as well as those of employees and human rights in the supply chain. The latter includes **modern slavery**. ADVA tries to ensure that modern slavery does not occur in any part of our business or our supply chain. The actions and processes described above are used to address slavery and human trafficking in areas where they can occur. This is also done in compliance with the requirements of the Modern Slavery Act of the United Kingdom of 2015, the California Transparency in Supply Chains Act of 2010 (SB 657) and similar laws.

The current company declaration on modern slavery can be viewed on our website at <https://www.adva.com/en/about-us/sustainability>.

## Part 2 – Consolidated non-financial report according to HGB

### About this non-financial report

#### Report obligation and content

G3-2

As described in the beginning, the sustainability report at hand is divided into two different parts.

Part 2 covers a consolidated separate non-financial company report in accordance with the German Commercial Code (HGB) according to Sect. 315b Para. 3. It is referred to hereinafter as “non-financial report”. This non-financial report consolidates the reports of ADVA Optical Networking SE as the parent company as well as of the remaining parts of the group. All quantitative and qualitative statements hold, without any restriction, for the parent company and all subsidiaries. This results since all material processes, e.g., risk management, and material initiatives, e.g., emissions reduction, relate to the entire group indiscriminately.

This non-financial report is compiled in accordance with Sects. 315c, in conjunction with 289c to 289e, HGB and Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable in-

vestment, and amending Regulation (EU) 2019/2088 (hereinafter “EU Taxonomy Regulation” or “Taxonomy Regulation”) and aims at meeting the obligations of the German CSR Directive Implementation Act.

No framework has been used to the full extent since usage of the CSRD, together with the ESRS, is already under preparation.

#### Report boundaries

G2-1, G2-3

This non-financial report follows our annual reporting structure and covers the period from January 1, 2022, to December 31, 2022. It contains data relating to ADVA Optical Networking SE including all wholly-owned subsidiaries. Together, these are referred to, collectively, as “we”, “us”, “our”, “the company”, “the group”, “ADVA” or “ADVA Optical Networking” hereinafter.

We report annually. The last sustainability report, which contained the non-financial report, was published in February 2022.

#### Material matters

G3-1

The non-financial report is based on a materiality analysis. The identified material matters are discussed with regard to the related strategy, the most important initiatives, risks, opportunities and the achieved results.

#### Specific amounts reported in annual financial statement

Within this sustainability report, there are no relations to specific amounts reported in the group’s annual financial statements.

#### Report validation

G2-5

The non-financial report is subject to a voluntary limited-assurance audit by PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft (PwC) in accordance with ISAE 3000 (Revised) to verify that its disclosures comply with relevant legal requirements. More information on the assurance can be found in the independent auditor’s remarks in the independent assurance report on [page 85](#). The first part of this report is not subject to the assurance audit.

The respective details on the GRI indices are not required for the non-financial reporting according to HGB and are not part of the voluntary audit according to ISAE 3000 (Revised). This holds true also for GRI indices references in Part 2 of this sustainability report which serve both for the orientation of the reader and for the consistency of the reporting.

*The GRI indices are marked in the respective chapter headings.*

All references to information outside the annual report is continuative information, not part of the non-financial report and not subject to the assurance audit.

## Summary of our business model

G2-6

ADVA develops, manufactures and sells solutions for a modern telecommunications infrastructure. As such, the group's products enable communication between people globally by constituting substantial parts of the backbone and the backhaul and access parts of one of today's most important and critical infrastructures.

ADVA has a globally distributed supply chain. Production focuses on Asia, the EU and North America. In addition to procurement and production, there are important process-based activities in the areas of DevOps (development and operations), sales and marketing, quality assurance, IT, compliance and sustainability. A more detailed description of the business model can be found in our [Annual Report 2022](#) on pages 30-39.

Our products for communication infrastructures address the UN sustainability goal No. 9, *Industry, innovation and infrastructure*. Among other functionalities, they have encryption capabilities and mechanisms for restoring communication links. In this way, we address key social aspects and contribute to security against eavesdropping and physical failure of the telecommunications infrastructure.

In addition, the telecommunications infrastructure is an important enabler for massive emission savings in other sectors such as energy networks, the transport sector or building technology. Our products thus indirectly serve the UN sustainability goals 7 and 11, *Affordable and Clean Energy* and *Sustainable Cities and Communities*. The UN Sustainable Development Goal 13, *Climate action*, is also efficiently supported by the considerable enabled emission-savings potential.

The group's addressable market encompasses several applications for fiber-optic transmission technology, Ethernet access technology and solutions for network virtualization. Further, ADVA delivers solutions for network synchronization and monitoring, and the software

that is required for save and secure networks operations. These markets are geographically distributed on all continents, with a focus on Europe and North America.

In some cases, we serve our customers directly, but the majority of our customers are served through OEM partners and value-added resellers (VARs). As an infrastructure-equipment provider, our customers are network and data-center operators and large enterprises with own telecommunications infrastructure.

The business models range from the pure sale of the products via the sale of the products together with associated maintenance contracts to the operation of products. The latter is still a relatively

small business area. It is a strategic company goal to expand the service share of sales.

The demand for the group's infrastructure solutions is driven by the global ICT (information and communication technology) trends cloud computing, mobility (previously 3G and 4G, now 5G, in the future 6G), IoT/M2M (internet of things, machine-to-machine), industry 4.0, big data and high-performance computing (HPC) as well as intelligent power grids and smart cities and buildings. In addition, we assume that the demand for ICT infrastructure solutions through both climate change mitigation and adaptation will tend to *increase* as a result of the Greening-by-ICT effects that are enabled. In 2020-2022, the demand has also slightly increased due to Covid-19.

ADVA operates 38 sites in 25 countries. The group runs major sites in Germany, Poland, the United Kingdom, the USA, Israel, and China.



SDGs addressed by ADVA

Starting 2023, the business model may change as the intended merger with Adtran Inc. in Huntsville, Alabama, US, may lead to a significant extension of the business area by the end-user-access segment. This would happen in the form of Adtran's solutions for passive optical networks (PON). Moreover, only very little portfolio overlap exists, therefore no extensive portfolio consolidation results.

Following the merger, which was first announced in September 2021, Adtran Holding is the majority shareholder since July 2022. Therefore, Adtran and ADVA could take a stronger market position in the US, in Europe and in APAC. The year 2022 was affected by intensive discussions and preparations in all departments and on all levels. At yearend 2022, these preparations were already well advanced, and no significant critical aspects resulted.

In the future, the ESG area shall be further strengthened. An extended focus shall be put on product ecodesign enabling maximum energy efficiency and optimized product lifetime. Moreover, the ISO 50001 energy management system shall be extended to Adtran, which would be a substantive extension. In addition, in Q3/2022, both companies independently but in a coordinated way committed to Net-Zero targets. These targets shall be submitted jointly to the SBTi in 2023. Finally, many improvements, e.g., in ESG-related supply-chain management and in product lifecycle assessments, are planned.



## Material matters, risks and opportunities

### Relationship between the various analyzes

The German commercial code (HGB) defines matters that the non-financial report shall cover. In addition, company-specific matters can be defined. Together, reporting shall cover all information required for understanding the business trend, the company development and results, and the impact of the company's activities on the matters. Innovation and the goal to make our customers successful are the foundation of ADVA. It is our motto to create a networked and sustainable future together with our customers. We summarize this with **Connecting, Extending and Assuring the Cloud**. Our open transmission technology enables our customers to provide the cloud and mobile communications services that are vital for today's society and to create new, innovative and sustainable services.

The global ICT sector is one of the few industrial sectors that **enables overproportionate reductions of greenhouse gases** in other sectors (see also [ICT and their effects](#)). Despite this important positive net balance, it makes little sense to reduce sustainability to this one aspect. Instead, a holistic view and essentially complete reporting are required.

In order to determine the aspects that are to be reported, the group relies on the analytical tools and processes of its risk management system. A materiality analysis is then carried out in order to also identify and prioritize the non-financial aspects. This approach and the related results are described in the following chapters [Sustainability risks and opportunities](#) and [Materiality analysis](#).



## Sustainability risks and opportunities

G2-16, G2-23, G201-2

The CSR Directive Implementation Act requires the disclosure of non-financial information on material matters. This also includes disclosures of the related risks that are connected to the business activities and relationships as well as the products and services and that very likely have, or will have, serious negative impact on the material matters as defined in Sect. 289c Para. 2 of the German HGB.

ADVA has impact on, and is potentially impacted by, different sustainability matters. This includes both, risks and opportunities. The assessment of non-financial risks and opportunities in particular is closely linked to the materiality analysis.

The risk assessment was expanded from the end of 2021, in particular in order to be able to better map non-financial risks and opportunities. Until then, risks and opportunities were assessed mainly based on their financial impact. This took place according to the (net) likelihood of occurrence and by their (net) potential impact. A risk or opportunity is considered major if its expected **net impact on the group's pro forma operating income exceeds EUR 3 mil-**

**lion in terms of ADVA's three-year business plan.** The time horizon of the group's risk management system follows the defined strategic goals and currently extends to three business years after goal setting and approval by the group's supervisory board.

The effect was that material non-financial risks were captured and mitigated, but as part of other, already existing aspects. Hence, they were covered by the risk assessment, but were hardly apparent.

Now, non-financial risks and opportunities have also been included in risk management. This required a corresponding definition and, in particular, a clear widening of the time horizon. Non-financial risks and opportunities affect ADVA's standing if they occur. You can thereby have a major influence on sales and profitability in the medium to long term. The identification, tracking and evaluation of these risks and opportunities in ADVA's risk management system is based on the qualitative criteria of materiality and relevance. These are set regularly by a team of evaluators led by the Head of Global Sustainability.

Non-financial risks and opportunities are recorded, tracked and mitigated both in the matters predefined by the German Commercial Code (HGB) and in the company-specific matters. The assessment looks at both, their influence on ADVA's business and ADVA's influence on the matters. A time horizon of 2050 is considered in general. This means that in many cases, the financial impact within the next 10 years cannot be sensibly estimated.

Details on the group's risk management system, the underlying processes and responsibilities and a summary of all identified major risks and opportunities can be found in our [Annual Report 2022](#).

**Based on the analytical tools and processes described, no risks were identified for 2022 in accordance with Section 289c Paragraph 3 No. 3 and 4 of the German Commercial Code, which are very likely to have or will have serious negative effects on the matters as defined in the German Commercial Code.**

ADVA considers six (see next table) of the 16 (2021: 14) risks listed in the annual report at the end of 2022 (2021: five) to be sufficiently relevant also with regard to sustainability aspects that they should be mentioned in the non-financial report.

Global warming, or climate change, is among the risks with an ultimately unknown time horizon. It can lead to unprecedented consequences for regional, national and global ecosystems and economies. *We therefore regard global warming as the singularly greatest risk that can be observed today.* This risk is one of the non-financial risks and concerns one of the environmental matters. It primarily addresses emissions and their reduction. The aspect of global warming also has some associated opportunities.

The second non-financial risk is that of the circular economy. This is a company-specific matter. It encompasses the aspect of resource availability and the value chain.

A further non-financial risk is represented by new regulations. Examples include the REACH Regulation with its frequent complements and regional divergency and the upcoming supply-chain acts and reporting obligations that cover the entire value chain.

For reasons related to emissions, we also consider the (financial) risk of wrong product strategy here. One aspect of this is the risk of not adequately weighting and not pursuing ecodesign. Energy efficiency in particular plays a role here, as this in turn has an impact on the resulting product emissions. Thus, the aspect of product strategy/energy efficiency falls into the environmental matter.

Finally, in the context of the materiality analysis, the cyber risk and the risk of the loss of knowledge and skills play a role. Both are listed as financial risks in the risk assessment. The cyber risk or IT

security is an independent matter. Loss of knowledge and skills belongs to employee matters. This primarily affects the aspect of employee satisfaction.

There were no material risks relating to the matters of combating corruption and bribery or respect for human rights. Regarding our supply chain, these topics are monitored with our tool IntegrityNext. In the reporting period, no incidents came to our knowledge. The same is true internally. For the reporting period, no incidents are known. The aspect of bribery/corruption at sales partners is listed in the risk assessment but is not material according to Section 289c of the German Commercial Code (HGB) due to our maximum impact rating.

Therefore, the matters of *combating corruption and bribery* and *respect for human rights* were rated lower in our assessments regarding potential negative impact, compared to the other matters listed. Both matters are therefore reported in Part 1 of this report.

The six risks are summarized on the following page.

Besides sustainability-related risks, solid progress in the field of sustainability can also lead to positive impact and related opportunities. A very notable positive effect relates to carbon emissions abatement, which is enabled by the respective use of our products. This effect, known as *Greening-by-ICT*, is predicted to over-compensate emissions caused by the ICT sector by a factor of almost 10 (see the chapter [Portfolio lifecycle assessment](#) and [ICT and its impact](#)). The Greening-by-ICT effect is one of the few known mechanisms for considerable global CO<sub>2</sub> savings.

Our work in the area of sustainability also supports increased positive awareness and reputation with related potential effects on business. One example of this is our EcoVadis rating, which potential business partners can request. Another important example is our participation in the [Science Based Targets initiative](#) (see the [Sustainability strategy](#) chapter in this report), where we already got first positive feedback and interest in our respective work by several stake-

holders. So far, the business impact, in terms of added (pro-forma) EBIT, was not quantifiable. However, we expect this to grow over time.

Moreover, the group's opportunities may extend into the segment of sustainability-related supply-chain management, e.g., in cases where the group supports some of its suppliers in achieving better related performance. This would not only help the respective suppliers, it would also lead to potentially better relationships.

*Influence of the risks on the HGB or ADVA-specific matters and sustainability aspects*

Risk* (acc. to annual report)	Strategic Company goal	Impact on the respective matter	Aspects
Climate change	Operational Excellence	<b>Environmental matters.</b> Climate change is seen as the most important environmental concern. Insufficient support on the way to climate neutrality can ultimately have consequences that cannot be fully assessed, from extreme weather to impairment of supply chains and migration. The aspect of emissions is addressed through product efficiency and our own emissions.	CO <sub>2</sub> emissions (see <a href="#">pp. 75</a> )
Circular Economy	Innovation	<b>Matter: circular economy.</b> Negative influences in the area of circular economy (CE) arise from customer expectations/ requirements that may not be met, the temporary violation of more stringent CE regulations or poor resource efficiency and thus poor availability. Furthermore, it cannot be ruled out that, due to design, products are poorly suited for future circular economy business models within the value chain.	Resources, value chain (see <a href="#">pp. 45</a> )
New regulations	Operational Excellence	<b>New regulations.</b> The constantly increased number of new regulations leads to increased effort. This is particularly true for poorly coordinated regulations and for regulations that are updated or complemented too frequently or that only have regional coverage.	REACH (see <a href="#">pp. 38</a> )
Wrong product strategy	Innovation	<b>Environmental matters.</b> Wrong product strategy may result in relevant ecodesign aspects, especially energy efficient or design to recycling, being only insufficiently considered. This may negatively impact our competitiveness, including the increasingly important topic of ecodesign, and it may lead to higher emissions.	Product efficiency, emissions (see <a href="#">pp. 75</a> )
Cyber risk	Operational Excellence	<b>Matter: Information security.</b> Loss or unintentional publication of business data has various negative influences. These include the breach of confidentiality agreements, possible legal consequences, damage to the image (up to and including loss of customers), loss of intellectual property and possibly blackmail.	Confidentiality, Integrity, Availability (see <a href="#">pp. 83</a> )
Loss of knowledge and skills	People	<b>Employee matters.</b> The loss of knowledge and skills is caused by dissatisfied employees and their fluctuation. In some cases it can lead to both, major operational and innovation problems. It must be addressed via actions regarding the aspect of employee satisfaction.	Employee satisfaction (see <a href="#">pp. 79</a> )

\* The definition of risks follows the principles of ADVA's risk management system as outlined in the annual report. The six risks listed here are not material according to Sect. 289c Para. 2 of the German HGB.

## Materiality analysis

G2-23, G3-2, G3-3

A materiality analysis is required for reporting according to HGB. The basis of our materiality analysis is our risk assessment. This includes the requirements of the German Commercial Code and GRI with regard to business relevance and the effects of ADVA on the matters according to the CSR Directive Implementation Act.

As part of the materiality analysis, participants from different departments conduct an annual assessment of the aspects identified in accordance with an internal process definition. Further departments then receive the analysis for review and comments, after which the analysis is submitted to the board for approval.

The evaluations concern both dimensions of the analysis, business relevance and impact on the matters. We conduct a combined internal and external analysis for business relevance.

The external analysis considers factors of relevance that are external to the reporting entity, i.e., factors where the reporting entity has limited or no control on.

These include, among others:

- The most relevant environmental, economic and social determining factors – like global warming – including related legislation (e.g., the climate agreement)
- Governmental funding and initiatives
- New technical needs (in ICT, e.g., in data centers) and innovations and developments (e.g., in recycling)
- General economic framework (e.g., exchange rates, inflation, trade wars, energy cost)
- Media perception and support
- Respective strategy, actions and performance of the competition

In the external analysis, the perspectives of relevant interest groups are also used to evaluate the aspects examined. Interested parties are listed in Part 1 of this report, in the chapters [Context analysis](#) and [Stakeholder engagement](#).

The internal analysis considers all relevant strengths and weaknesses of the reporting entity. It contains factors like:

- Technological and organizational competence (governance)
- Resources availability
- Business aspects – customers' satisfaction, stickiness and expectations, new opportunities, competitive advantages
- Financial aspects – cost, prices, potential savings

The annual materiality-analysis process also includes the inclusion of new aspects or questioning of old aspects. This led, for example, to a changed rating for circular economy. For this purpose, important topics from the GRI sub-categories, aspects from the ISO context analysis an relevant ADVA-specific topics are checked and, if necessary, selected for evaluation. For 2022, we also considered aspects of the upcoming ESRS.

The respective evaluation criteria (as listed above) are also assessed and changed or supplemented if necessary.

Finally, the threshold for rating aspects material/non-material in the related graphic representation is defined. We changed this in 2021. Materiality is given if the threshold value is exceeded in *one* of the dimensions (relevance for ADVA's business, ADVA's influence on the matters). For graphical representation, this means that the non-material area in a two-dimensional diagram is given by the rectangle on the lower left. Up to 2020, we considered the double materiality reservation, which led to a different threshold in the diagram. For the 2022 analysis, the thresholds in the diagram was maintained for comparability.

The current list of aspects used in the materiality analysis is shown in the table below. The essential facts are highlighted in **bold**.

In our analysis, the environmental aspect of emissions and climate change clearly stands out from the other essential aspects. It is followed by the matters energy management, Covid-19/mobile working and information security.

List of assessed aspects in 2022

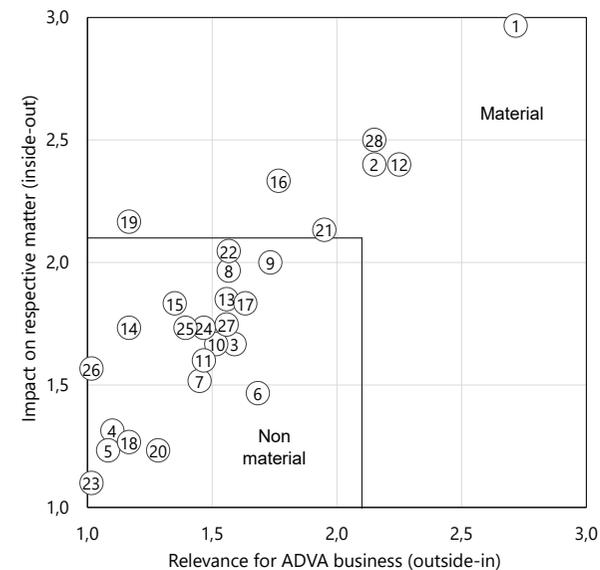
	Aspects	#
Environment	<b>GHG emissions/climate change</b>	<b>1</b>
	<b>Energy management</b>	<b>2</b>
	Waste management	3
	Pollution (air, water, soil)	4
	Biodiversity and ecosystems	5
	Packaging & transportation	6
	Raw material and circular economy	7
Regulatory and Compliance	(German) supply chain act	8
	REACH, RoHS, WEEE, CM, ...	9
	Reporting (CSRD, ESRS, TCFD, ...)	10
	Taxes (transparency, compliance)	11
Employees	<b>Covid-19, mobile working</b>	<b>12</b>
	Occupational health and safety	13
	Work-life balance	14
	Harassment and discrimination	15
	<b>Fair remuneration</b>	<b>16</b>
	Training & education	17
	Diversity & inclusion	18
Social	<b>Merger with Adtran</b>	<b>19</b>
	Affected communities	20
	<b>Infrastructure (ICT-specific)</b>	<b>21</b>
	Value-chain cooperation/engagement	22
	End users	23
Combating corruption and bribery	Internal Bribery and Corruption	24
	Bribery/Corruption with sales partners	25
Respect for human rights	Combating modern slavery	26
	Harassment and discrimination	27
Information security	<b>Confidentiality, Integrity, Availability</b>	<b>28</b>

The following graph shows the materiality of these aspects. Material aspects lie outside the lower left rectangle, as indicated. They are also highlighted in the table above.

The materiality analysis shows clear continuity compared to previous years. Emissions continue to have the highest priority. The aspects energy, infrastructure, Covid-19, remuneration and information security are rated material again. Therefore, two changes result. Related to employee matters, the aspect of the merger with Adtran was rated material in addition. Unlike the previous years, the

crossover theme circular economy/value chain is not rated material. However, the aspect value chain (aspect no. 22) is very close to the materiality threshold. Therefore, we report this aspect, together with further non-material aspects in Part 1 of this report.

The material aspects presented here are reported hereinafter.



Graphic representation of the materiality analysis 2022

## Sustainability strategy

ADVA's sustainability strategy is based on the material aspects. In our materiality analysis, the emissions aspects, which belong to the environmental matters, are rated higher than other aspects. Emissions are obviously related to global warming. Energy management is also related to emissions and global warming.

**Due to this clear result, we have a long-term focus in our sustainability strategy with priority 1 on reducing emissions, including product energy efficiency and the resulting reduction in emissions. In 2022, we underlined this with our SBTi Net Zero commitment.**

This focus is underlined by numerical targets. These targets are described under [Carbon emissions](#) (Part 2) and [Portfolio lifecycle assessment](#), respectively.

The activities against global warming are complemented by priority-2 activities on the other material aspects. These cover non-environmental topics.

The aspect of employee satisfaction must be mentioned here. The employee termination rate was above the announced 5% target in 2022 again. Together with the Covid-19 situation and the announcement of the merger with Adtran this has led to particular attention to the topic of employee satisfaction.

In 2022, we also continued the awareness campaign in the area of information security. Together with the other IT security measures, this led to zero severe security breaches in 2022. The relevance of the information-security matter was also underpinned by the carve-out of Adva Network Security GmbH in the context of the merger with Adtran.

Finally, the infrastructure aspect has to be mentioned. Our main goal in 2022 here was to maintain our supply availability with least disruption, despite Covid-19 and the semiconductor shortage.

In our materiality analysis, the crossover theme circular economy and value chain tightly missed material status. This, however, did not have an impact on major initiatives in this area. This applies to the exchange of product-related information. We therefore continued two initiatives in 2022 that include the collection of sustainability-related supplier data and product-related material declarations. The latter are also important in the circular-economy context, e.g., in recycling, in order to be able to track and guarantee compliance with chemical-substances requirements for our products. Both initiatives will continue in the future.

Moreover, our EU Horizon-2020 research project [C-SERVEES](#) came to a successful end in October 2022. It aimed at boosting circular economy in the electrical and electronics industry. For ADVA, this can, e.g., be done by intensifying so-called product-service systems (PSS). We plan to revisit this theme in 2024 the latest. Earlier revision of targets is regarded difficult due to the Adtran-ADVA merger.

The initiatives and targets are summarized in the table below.

## Sustainability aspects, main targets, detail-targets and initiatives in the three pillars of the Triple Bottom Line

Aspect	Key objectives	Targets in more detail	Key initiatives/activities	Status
<b>Emissions and climate change</b>	Decrease of the global ADVA CO <sub>2</sub> footprint	Three SBTi (1.5°C) targets, ISO 50001 reduction target, Two ISO 14001 LCA targets	Adtran-ADVA alignment of SBTi targets Getting SBTi Net Zero targets approved (common Adtran-ADVA targets!)	Started  Starts early 2023
<b>Employee satisfaction</b>	Reducing turnover rate	Turnover rate <5%	Initiative for employee satisfaction and lowering the termination rate	Started
<b>Information security</b>	Ensure awareness of the information security topic	>80 % of all employees shall participate in the trainings on IT security in 2022	Creation of intranet-based training courses on IT security aspects, invitations to participate, tracking of participation	Ongoing
<b>Infrastructure</b>	Maintain supply availability, despite semiconductor shortage and Covid-19	No numerical targets	Organization of spatial/temporal separation of employees with mandatory presence Partial buy-back of equipment	Ongoing Started
<b>Circular economy (CE) and value chain</b>	Increase/scaling CE business Improving cooperation in the value chain	Implementation of PSS Increase of the supplier response rate in IntegrityNext to > 80 % Increase in the fill rate of the material declarations to > 80 %	Extend maintenance and take-back Forced use of the IntegrityNext tool Continued compilation of material declarations	Started Ongoing Ongoing

## Assessments and performance

G3-3

Regular assessments are a relevant control mechanism for the management approaches in the material sustainability areas.

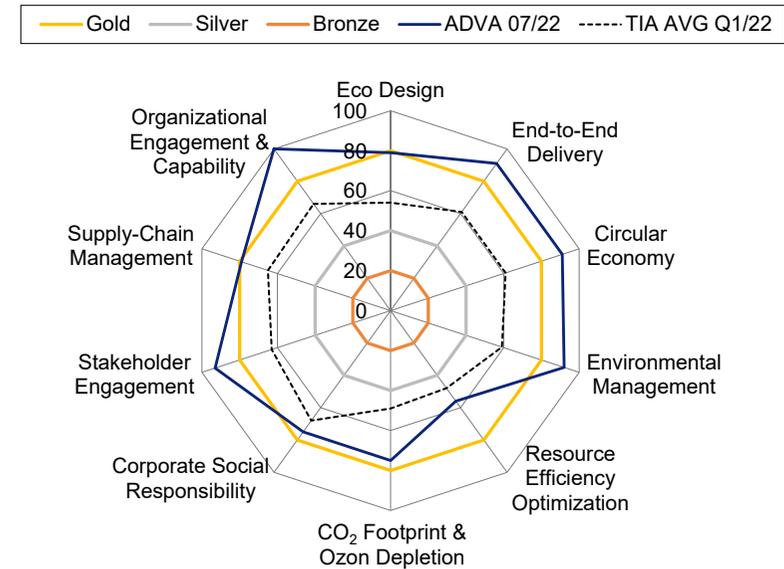
One relevant assessment tool covering the area of sustainability is used by the Telecommunications Industry Association (TIA) Sustainability Initiative. This initiative ties in with the QuEST Forum Sustainability Initiative, which already used the tool and the related model. The model is therefore of relevance for companies working in telecommunications.

We reported about the model in the recent reports repeatedly. ADVA started using it in 2013. The model divides the area of sustainability into 10 segments, which cover environmental, social, organizational and finally business topics.

The TIA sustainability model is supplemented by the **TIA Sustainability Assessor**, a web-based tool that supports companies' (self) assessments in sustainability.

The latest self-assessment results for ADVA showed our **sixth consecutive Gold rating** averaged across the segments of the TIA sustainability model. The last rating is shown in the following diagram, split into the 10 different segments of the TIA model. For comparison, the *average* value of all TIA assessments in Q1/2022 is also shown.

The TIA assessment gives an overview on the performance in the different sustainability segments. Per segment, it comprises less than 10 questions. The TIA assessment should therefore be supplemented at least in certain relevant areas by more detailed assessments of global organizations.



ADVA's 2022 Assessor sustainability ranking result



Such more detailed assessments are also requested by some of our large customers. These requests lead to in-depth assessments of our carbon emissions by the *Carbon Disclosure Project* (CDP), and of environment and several CSR compliance matters by *EcoVadis*. Several of our customers have access to the results on either of the platforms. The number of these customers is slowly increasing over time. This is to be regarded as very positive, as it reduces the effort for (largely redundant) proprietary assessments.

In 2022, we achieved **EcoVadis Gold rating** after two **platinum** ratings in 2020 and 2021. With our overall score we are in the top-2% of companies rated by EcoVadis in the Manufacture of communication equipment industry. The assessment areas included environment, labor & human rights, ethics, and sustainable procurement.

Furthermore, we were **rated A minus in the CDP climate-change assessment** in 2022 (2021: *B*, 2020: *C*, 2019: *B*, 2018: *B minus*). The assessment consisted of the CDP Climate Change questionnaire and the Supply Chain module. Both, the EEE industry and global average for 2022 were at *C* level.

In line with our materiality analysis, the aspect related to deforestation is not included in our CDP assessments.

Toward year-end 2022, ADVA won its second Layer123 award after 2017. This time, the award category was Sustainability. Our participation was based on energy efficiency of latest WDM products.

## EU Taxonomy Regulation report

The EU Taxonomy Regulation is a classification system for sustainable economic activities. It aims at mobilizing private capital spending that is required to achieve climate neutrality in the period toward 2050.

ADVA is obliged to release a non-financial group report in accordance with section § 315b paragraph 3 of the German Commercial Code (HGB). For the business year 2022, we report for the second time how and to which extent our operations relate to economic activities that can be classified as ecologically sustainable according to the EU Taxonomy Regulation. This includes statements on the alignment with the Taxonomy requirements.

Article 8 of the EU Taxonomy Regulation requires, as far as applicable, the disclosure of expenses (CapEx, OpEx) or income that are linked to activities, products or services that are related to climate-change mitigation or adaptation activities of the reporting company or enable these in other areas (e.g., other NACE sectors).

### Our economic activities

ADVA has assessed all its business activities according to the delegated act regarding the climate-change targets of the EU Taxonomy Regulation. This was done using the respective activity descriptions and the potentially applicable NACE-sector methodologies provided in the Taxonomy Regulation documents. Here, it is to be noted that ADVA cannot be assigned to NACE sector *J*, ICT, since electronic manufacturers are explicitly excluded from sector *J*.

A similar analysis based on recommendations of the Platform on Sustainable Finance has also been performed for the environmental target of [circular economy](#) in Part 1, which is still due.

The detailed analysis of our economic activities has shown that, based on our business model, none of them fall under the delegated act on the climate targets of the EU Taxonomy Regulation and **are not Taxonomy-eligible and compliant, respectively**. Regarding the eligibility criteria of the European legislator, we refer to Part 1 of the [EU Taxonomy Regulation report](#). The reporting is based on the proportion of sustainable investments (CapEx) and operating

expenses (OpEx) in the sense of the EU Taxonomy, which can be assigned to the first environmental objective of climate protection. There are no capital or operating expenses that may have a significant impact on climate change adaptation. The eligible investments and operating expenses relate exclusively to goods and services.

Activities that *are* eligible are discussed hereinafter. In addition, we report circular-economy-related activities. For the reporting period, these are not yet eligible, however, this will presumably happen in 2023.

### Accounting Policy

Article 8 of the EU Taxonomy Regulation defines three key performance indicators (KPI): revenue KPI, OpEx KPI and CapEx KPI, respectively. These KPIs are derived according to Annex I of the delegated act regarding article 8 of the EU Taxonomy Regulation and, at balance sheet date, on the basis of the International Financial Reporting Standards (IFRS) of the International Accounting Standard Board (IASB), also considering the interpretations of the IFRS IC (IFRIC).

### CapEx KPI

The CapEx KPI is defined as CapEx eligible and compliant to the Taxonomy Regulation (numeraire), divided by our total CapEx (denominator). For the numeraire, please see the explanations hereinafter.

The denominator of the CapEx KPI comprises the ingress in tangible and intangible assets in the business year before write-off and revaluation. This includes revaluation and depreciation for the business year 2022 without changes of the fair value. The denominator comprises the ingress to fixed assets (IAS 16), intangible assets (IAS 38) and the usufruct of immovable property (IFRS 16). More detail on our accounting procedures for our capital expenditures can be found in the notes section of our [Annual Report 2022](#) under note 4, recognition and measurement.

Our total CapEx can be aligned with our consolidated financial statement, refer to the notes section of our [Annual Report 2022](#), note 13, fixed assets.

It is the sum of all ingress of tangible and intangible assets and usufruct of immovable property.

For the numerator, we have identified the following activities as eligible for the Taxonomy:

- Investments in our vehicle fleet, which are accounted for as rights of use in accordance with IFRS 16 (activity 6.5. “Transportation with motorcycles, cars and light commercial vehicles”)
- Investments in buildings that we, as a lessee, also account for as rights of use in accordance with IFRS 16 or, as owners, under land and buildings (activity 7.7 “Acquisition and ownership of buildings”).

The Taxonomy conformity of these investments could not be conclusively assessed because not all verifications from the respective suppliers that confirm that Taxonomy-aligned products have been purchased were available.

### Revenue KPI

The portion of economic activities that are eligible and compliant to the Taxonomy Regulation, related to our total revenues, is calculated as that part of the net revenue that results from products and services in the context of economic activities that are eligible and compliant to the Taxonomy Regulation (numeraire), divided by the net revenue (denominator). The denominator of the revenue KPI is based on our consolidated net revenue in accordance with IAS 1.82(a).

More details on our accounting procedures for our consolidated net revenue can be found in the annex of our [Annual Report 2022](#) in the explanations to the profit and loss statement under paragraph 21, revenues.

Our consolidated net revenue can be aligned with our consolidated financial statement, refer to the profit and loss statement in the chapter IFRS consolidated income statement of our [Annual Report 2022](#), revenues.

No eligible revenue was identified.

### OpEx KPI

The OpEx KPI is defined as OpEx that is eligible and compliant to the Taxonomy Regulation (numeraire), divided by our total OpEx (denominator).

The denominator comprises direct, non-capitalized cost. These cost result from R&D activities, asset-renovation activities, short-term rental agreements, *maintenance and repair*, and all other direct cost related to ongoing service of tangible assets. These include:

- Expenditures for R&D that are captured in the income statement for the reporting period as operating expense (refer to the income statement in our [Annual Report 2022](#), chapter IFRS consolidated income statement, research and development expenses, and note 22, selling and marketing, general and administration and research and development expenses). In accordance with our consolidated financial statement (IAS 38.126), this comprises all non-capitalized expenses that can directly be assigned to research and development activities.

- The amount of non-capitalized lease was derived according to IFRS 16. It contains expenses for short-term or immaterial lease (refer to the notes section of our [Annual Report 2022](#), note 13, fixed assets).
- Maintenance and repair cost as well as other direct expenses in the context of daily service of tangible assets were compiled on the basis of the maintenance and repair cost assigned to our internal cost centers. The respective cost items can be found within different items of our profit and loss statement. This includes production cost (service in operations), distribution cost (servicing logistics), and administrative expenses (e.g., service of IT systems). This also includes building restoration.

No eligible OpEx was identified.

We see no risk of duplicate counting of the economic activities stated.

## ADVA's KPIs

According to the explanations in the preceding chapter, our economic activities in 2022 are to a small part eligible for the EU Taxonomy Regulation, see the following table.

ADVA is not involved in any activities regarding nuclear power or natural gas as energy sources. Therefore, we refrain from reporting the related specific tables.

Reporting template: Proportion of turnover from products or services associated with Taxonomy-aligned economic activities – disclosure covering year 2022

Economic activities	NACE code	Proportion of turnover [kEUR]	Proportion of turnover [%]	Substantial contribution criteria						DNSH criteria						Minimum safeguard (Y/N)	Taxonomy-aligned proportion of turnover for year 2022 [%]	Taxonomy-aligned proportion of turnover for year 2021 [%]	Category enabling activity (E)	Category transitional activity (T)
				Climate-change mitigation [%]	Climate-change adaptation [%]	Water and marine resources [%]	Circular economy [%]	Pollution [%]	Biodiversity and ecosystems [%]	Climate-change mitigation (Y/N)	Climate-change adaptation (Y/N)	Water and marine resources (Y/N)	Circular economy (Y/N)	Pollution (Y/N)	Biodiversity and ecosystems (Y/N)					
A. Taxonomy-eligible activities																				
A.1. Environmentally sustainable activities (Taxonomy-aligned)																				
	C	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	0	0	-	-

Reporting template: Proportion of turnover from products or services associated with Taxonomy-aligned economic activities – disclosure covering year 2022

Economic activities	NACE code	Proportion of turnover [kEUR]	Proportion of turnover [%]	Substantial contribution criteria						DNSH criteria						Minimum safeguard (Y/N)	Taxonomy-aligned proportion of turnover for year 2022 [%]	Taxonomy-aligned proportion of turnover for year 2021 [%]	Category enabling activity (E)	Category transitional activity (T)
				Climate-change mitigation [%]	Climate-change adaptation [%]	Water and marine resources [%]	Circular economy [%]	Pollution [%]	Biodiversity and ecosystems [%]	Climate-change mitigation (Y/N)	Climate-change adaptation (Y/N)	Water and marine resources (Y/N)	Circular economy (Y/N)	Pollution (Y/N)	Biodiversity and ecosystems (Y/N)					
Turnover of Environmentally sustainable activities (Taxonomy-aligned) (A.1)	C	0	0	0	0	0	0	0	0	-	-	-	-	-	-	0	0	-	-	
A.2. Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)																				
None		0	0																	

Reporting template: Proportion of turnover from products or services associated with Taxonomy-aligned economic activities – disclosure covering year 2022

Economic activities	NACE code	Proportion of turnover [kEUR]	Proportion of turnover [%]	Substantial contribution criteria						DNSH criteria									
				Climate-change mitigation [%]	Climate-change adaptation [%]	Water and marine resources [%]	Circular economy [%]	Pollution [%]	Biodiversity and ecosystems [%]	Climate-change mitigation (Y/N)	Climate-change adaptation (Y/N)	Water and marine resources (Y/N)	Circular economy (Y/N)	Pollution (Y/N)	Biodiversity and ecosystems (Y/N)	Minimum safeguard (Y/N)	Taxonomy-aligned proportion of turnover for year 2022 [%]	Taxonomy-aligned proportion of turnover for year 2021 [%]	Category enabling activity (E)
Turnover of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)	C	-	0																
Total (A.1 + A.2)																			
B. Taxonomy-non-eligible activities																			
Turnover of Taxonomy-non-eligible activities (B)		712,100	100																
Total (A + B)		0	0																

Reporting template: Proportion of CapEx from products or services associated with Taxonomy-aligned economic activities – disclosure covering year 2022

Economic activities	NACE code	Proportion of CapEx [kEUR]	Proportion of CapEx [%]	Substantial contribution criteria						DNSH criteria						Minimum safeguard (Y/N)	Taxonomy-aligned proportion of CapEx for year 2022 [%]	Taxonomy-aligned proportion of CapEx for year 2021 [%]	Category enabling activity (E)	Category transitional activity (T)
				Climate-change mitigation [%]	Climate-change adaptation [%]	Water and marine resources [%]	Circular economy [%]	Pollution [%]	Biodiversity and ecosystems [%]	Climate-change mitigation (Y/N)	Climate-change adaptation (Y/N)	Water and marine resources (Y/N)	Circular economy (Y/N)	Pollution (Y/N)	Biodiversity and ecosystems (Y/N)					
A. Taxonomy-eligible activities																				
A.1. Environmentally sustainable activities (Taxonomy-aligned)																				
	C	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	0	0	-	-

Reporting template: Proportion of CapEx from products or services associated with Taxonomy-aligned economic activities – disclosure covering year 2022

Economic activities	NACE code	Proportion of CapEx [kEUR]	Proportion of CapEx [%]	Substantial contribution criteria						DNSH criteria					Minimum safeguard (Y/N)	Taxonomy-aligned proportion of CapEx for year 2022 [%]	Taxonomy-aligned proportion of CapEx for year 2021 [%]	Category enabling activity (E)	Category transitional activity (T)
				Climate-change mitigation [%]	Climate-change adaptation [%]	Water and marine resources [%]	Circular economy [%]	Pollution [%]	Biodiversity and ecosystems [%]	Climate-change mitigation (Y/N)	Climate-change adaptation (Y/N)	Water and marine resources (Y/N)	Circular economy (Y/N)	Pollution (Y/N)					
CapEx of Environmentally sustainable activities (Taxonomy-aligned) (A.1)	C	0	0	0	0	0	0	0	0	-	-	-	-	-	-	0	0	-	-
A.2. Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)		3,303	4.34																
None		0	0																

Reporting template: Proportion of CapEx from products or services associated with Taxonomy-aligned economic activities – disclosure covering year 2022

Economic activities	NACE code	Proportion of CapEx [KEUR]	Proportion of CapEx [%]	Substantial contribution criteria						DNSH criteria						Minimum safeguard (Y/N)	Taxonomy-aligned proportion of CapEx for year 2022 [%]	Taxonomy-aligned proportion of CapEx for year 2021 [%]	Category enabling activity (E)	Category transitional activity (T)
				Climate-change mitigation [%]	Climate-change adaptation [%]	Water and marine resources [%]	Circular economy [%]	Pollution [%]	Biodiversity and ecosystems [%]	Climate-change mitigation (Y/N)	Climate-change adaptation (Y/N)	Water and marine resources (Y/N)	Circular economy (Y/N)	Pollution (Y/N)	Biodiversity and ecosystems (Y/N)					
CapEx of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)	C	3,303	4.34																	
Activity 6.5 Transportation with motorcycles, cars and light commercial vehicles		804	1.06																	
Activity 7.7 Acquisition and ownership of buildings		2,499	3.28																	
Total (A.1 + A.2)		3,303	4.34																	
B. Taxonomy-non-eligible activities																				
Turnover of Taxonomy-non-eligible activities (B)		72,816	95.66																	
Total (A + B)		76,120	100																	

Reporting template: Proportion of OpEx from products or services associated with Taxonomy-aligned economic activities – disclosure covering year 2022

Economic activities	NACE code	Proportion of OpEx [kEUR]	Proportion of OpEx [%]	Substantial contribution criteria						DNSH criteria						Minimum safeguard (Y/N)	Taxonomy-aligned proportion of OpEx for year 2022 [%]	Taxonomy-aligned proportion of OpEx for year 2021 [%]	Category enabling activity (E)	Category transitional activity (T)
				Climate-change mitigation [%]	Climate-change adaptation [%]	Water and marine resources [%]	Circular economy [%]	Pollution [%]	Biodiversity and ecosystems [%]	Climate-change mitigation (Y/N)	Climate-change adaptation (Y/N)	Water and marine resources (Y/N)	Circular economy (Y/N)	Pollution (Y/N)	Biodiversity and ecosystems (Y/N)					
A. Taxonomy-eligible activities																				
A.1. Environmentally sustainable activities (Taxonomy-aligned)																				
	C	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	0	0	-	-

Reporting template: Proportion of OpEx from products or services associated with Taxonomy-aligned economic activities – disclosure covering year 2022

Economic activities	NACE code	Proportion of OpEx [kEUR]	Proportion of OpEx [%]	Substantial contribution criteria						DNSH criteria					Minimum safeguard (Y/N)	Taxonomy-aligned proportion of OpEx for year 2022 [%]	Taxonomy-aligned proportion of OpEx for year 2021 [%]	Category enabling activity (E)	Category transitional activity (T)
				Climate-change mitigation [%]	Climate-change adaptation [%]	Water and marine resources [%]	Circular economy [%]	Pollution [%]	Biodiversity and ecosystems [%]	Climate-change mitigation (Y/N)	Climate-change adaptation (Y/N)	Water and marine resources (Y/N)	Circular economy (Y/N)	Pollution (Y/N)					
OpEx of Environmentally sustainable activities (Taxonomy-aligned) (A.1)	C	0	0	0	0	0	0	0	0	-	-	-	-	-	-	0	0	-	-
A.2. Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)																			
None		-	0																

Reporting template: Proportion of OpEx from products or services associated with Taxonomy-aligned economic activities – disclosure covering year 2022

Economic activities	NACE code	Proportion of OpEx [kEUR]	Proportion of OpEx [%]	Substantial contribution criteria						DNSH criteria					Minimum safeguard (Y/N)	Taxonomy-aligned proportion of OpEx for year 2022 [%]	Taxonomy-aligned proportion of OpEx for year 2021 [%]	Category enabling activity (E)	Category transitional activity (T)
				Climate-change mitigation [%]	Climate-change adaptation [%]	Water and marine resources [%]	Circular economy [%]	Pollution [%]	Biodiversity and ecosystems [%]	Climate-change mitigation (Y/N)	Climate-change adaptation (Y/N)	Water and marine resources (Y/N)	Circular economy (Y/N)	Pollution (Y/N)					
OpEx of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)	C	-	0																
Total (A.1 + A.2)																			
B. Taxonomy-non-eligible activities																			
Turnover of Taxonomy-non-eligible activities (B)		220,000	100																
Total (A + B)		0	0																

An appreciation of our economic activities in the context of climate change and circular economy can be found in the [Addition to the EU Taxonomy Regulation report](#) in Part 1.

## Environmental matters: emissions and climate change

### Management of material topics

#### G3-3

According to our [Sustainability materiality analysis](#) and the resulting [strategy](#), the most material (priority-1) aspects are those that relate to carbon emissions and their reduction. This includes direct (Scope 1 according to the Greenhouse-Gas-Protocol, GHGP) emissions, emissions from energy consumption (Scope 2, Scope 3), and ecodesign. The latter influences the dominant Scope-3 emissions, namely sold-products use-phase emissions and production emissions. Production emissions are dominated by the emissions embedded in the purchased components.

The high priority of the emissions-related aspects is reflected in our SBTi commitment and the official approval of our targets, which adds long-term stability to our sustainability strategy. Currently, we do not expect a change of this long-term focus on emissions.

As highest-priority aspects, they are managed with dedicated processes (provisioning, update and application of the Environmental Requirements as part of the hardware development process, portfolio-wide lifecycle assessments) and management systems (ISO 14001

EMS, ISO 50001 EnMS). These processes and management approaches include assignment of dedicated staff, and the highest governance responsibility by the CTO and CFO, respectively.

The high prioritization of the emissions aspect is also shown by the definition and tracking of targets, as already mentioned above. The latter comprise the three SBTi targets, the ISO 50001 reduction target, and two LCA-related targets. In 2020, the high prioritization was expressed through the tightening of our SBTi targets to support a maximum global warming of 1.5°C. The base year 2016 was retained from the previously existing 2°C targets. The SBTi targets are pursued by the CDP on an annual basis. The emission figures relevant for the SBTi are also an integral part of a regular management review. There, they are supplemented by important current topics if necessary.

For other environmental areas such as water or waste, no externally communicated targets have been defined. This is due to the fact that the group's impact in these areas is significantly lower compared to GHG emissions. However, both areas are continuously monitored and reported in Part 1 of this report.

The management approaches are evaluated externally, at least, on a yearly basis, through assessments (CDP, EcoVadis, TIA) and audits (ISO audits, validation of this report) and accompanying internal audits and analyses. Corrective actions are taken in particular in cases of deviations from the targets (e.g., the ISO 50001 reduction target) and when aspects have undergone new internal rating. This comprises root-cause analyses (in cases of deviations from targets) and the identification and implementation of improvement actions. As an example, we started analyses in 2021 regarding the feasibility of further tightening our SBTi targets. Such goals run in the EU also under the *Fit-for-55* package of measures, they include science-based net-zero goals. As a result, ADVA committed to SBTi Net Zero targets in 2022.

In particular, the aspect of emissions applies company-wide and across all product families. This includes the acquisitions made in recent years. This also applies to the Environmental Management System. Only ISO 50001, which is also relevant for the SBTi Scope-2 target, refers to five large locations with ICT laboratories. This covers more than 40 % of the total electricity consumption.

So far, our management approaches have proven to be effective. It is planned to start the SBTi Net Zero targets implementation, i.e., their official approval in early 2023. This shall take place under Adtran's name and cover the complete merged company. In further preparation of this, Adtran also committed to Net Zero Near-Term targets in 2022.

## Carbon emissions (Scope 1-3)

G305-1, G305-2, G305-3, G305-5

Following our emissions-reductions focus, ADVA committed to the [Science Based Targets initiative](#) (SBTi) in late 2016, as one of the first 200 companies worldwide. In the SBTi, we have three reduction targets related to the Scopes 1, 2 and 3 of the Greenhouse Gas Protocol (GHGP). These targets support a maximum of 1.5°C of global warming and are officially approved by the SBTi.

The SBTi emission-reduction targets have runtimes of 16 years. The base year is 2016, the starting year was 2017, and the target year is 2032. The targets will define the focus of the sustainability strategy – emission reduction – for this period.

**These Scope-1 and Scope-2 targets** aim at reductions of 67% over the target runtime in absolute terms. The Scope-1 target refers to the company's car fleet and the natural-gas consumption. The reductions are to be enabled by less consumption per car, less mileage, and possibly smaller pool size. For the Scope-2 target, we are pursuing a higher proportion of renewable energies, such as in the electricity mix consumed. This is supported by our ISO 50001 activities.

**The group's Scope-3 target** relates to sold-products use-phase emissions. This is our largest GHG contribution (see the chapter [Carbon emissions](#) Part 1), and consequently deserves attention. Our target is to massively increase the energy efficiency of our products such that absolute sold-products use-phase emissions are reduced by 3% in the target year 2032 (base year: 2016). This may seem to lack ambition, but it has to counteract the exponential Internet bandwidth increase and the related ICT network-segment energy consumption which, in general, is forecasted to

not decrease (see the chapters ICT and its impact as well as Portfolio lifecycle assessment).

The emissions related to the SBTi targets are reported yearly, together with further Scope-3 emissions, to the Carbon Disclosure Project (CDP). These additional Scope-3 emissions cover, e.g., emissions from business travel, transportation and employee commuting. GHG emissions are reported on the basis of operational control. We use provider-specific (marked-based) data for Scope-2 emissions. We do consider the relevant GHG other than CO<sub>2</sub>.

The electricity-related carbon emissions heavily depend on the emission factors that apply for the respective sites or areas. This mainly relates to Scope-2 (purchased electricity), and Scope-3 (use of sold products).

A small fraction of the energy consumed by the group relates to natural gas (Scope 1). The averaged emissions factor of natural gas in 2022 was **0.182 kg-CO<sub>2</sub>e/kWh** (2021: 0.196 kgCO<sub>2</sub>e/kWh).

Since 2021, we exclusively use market-based emission factors for Scope 2. The emission factor for electricity purchased in 2022 and averaged across all our sites was **0.438 kgCO<sub>2</sub>e/kWh** (2021: 0.388 kgCO<sub>2</sub>e/kWh).

Based on our customer base, a weighted emission factor of **0.336 kgCO<sub>2</sub>e/kWh** was used to assess the emissions of the products sold (Scope 3) in 2022 (2021: 0.347 kgCO<sub>2</sub>e/kWh). This factor is lower than our location-related emissions factor, as some large customers have already completely switched to renewable energy for operating their networks. We have made assumptions to the best of our knowledge about the future relative share of these customers and the regional forecast of the development of emissions.

The GHGP Scope 1 and Scope 2 emissions as well as material Scope 3 emissions greenhouse gas emissions of our company are summarized in the table below.

## Material GHG emissions for 2022 (2021)

GWP [tCO <sub>2</sub> e]	Category	2022 (2021)
<b>Scope 1</b>	Car fleet DACH, UK*	446 (377)
	Car fleet DACH, UK, Israel*	638 (-)*
	Car fleet total	690 (639)
	Natural gas	247 (369)
<b>Scope 2</b>	Purchased electricity**	5,393 (5,158)
<b>Scope 3</b>	Use of sold products	261,341 (205,455)
	Production-related purchased goods	42,798 (36,997)

\* In 2021, validated for Germany, Austria, and Switzerland ("DACH") and UK.  
In 2022, validated for DACH, UK and Israel. This now covers 92% of the total car-fleet emissions.

\*\* Electricity consumption of all major ADVA sites, which is covering >90% of our total headcount.  
The compilation of market-based data is described further above.

In 2022, car fleet emissions in the DACH region compared to the previous year slightly increased (2022: 376, 2021: 327). We attribute this to an increased number of electric or hybrid vehicles in our car fleet. On the other hand, the mileage of the vehicles was slightly increased in 2022, compared to 2021.

Scope 2 emissions slightly increased in 2022, compared to 2021. They are clearly below the emissions of the base year 2016, but above the SBTi target. This is attributed to the electricity consumption of sites with large laboratories. Our target is to address this in 2023, for example by switching further sites to renewable energy. This will be done in the Adtran-ADVA merger context.

Scope 3 emissions from the use of sold products increased in 2022, compared to 2021. This is attributed to the all-time record sales in 2022, together with the ever-increasing bit rates of our products. In accordance with our SBTi Scope 3 target, we will continue our work on product energy efficiency.

The second-biggest emissions contribution results from production-related purchased goods. These are the emissions embedded in the components and (sub-) modules the group purchases. They result from the production of the components, including the extraction of raw materials and any related logistics. These emissions are not addressed explicitly by our SBTi participation and tar-

gets. However, we are pursuing emission reductions through appropriate product ecodesign. This comprises actions that address emission-intensive components with the target to reduce their impact. These actions are enabled by portfolio lifecycle assessment (LCA) efforts, see the [Portfolio lifecycle assessment](#) chapter. Emissions from production-related purchased components can further be positively impacted by circular-economy methods.

Emissions from production-related purchased components are calculated via LCA.

Current achievements of our SBTi targets are provided in the table below.

## Status of ADVA's SBTi targets

	2016* Base	2032 Target	2022 Target	2022 Status
	GWP [tCO <sub>2</sub> e]	[%]		GWP [tCO <sub>2</sub> e]
<b>Scope 1</b>	1,162	422	869	937**
<b>Scope 2</b>	5,511	1,969	4,122	5,393
<b>Scope 3</b>	322,000	234,627	318,136	261,341

\* The emission figures for the year 2016 are not covered by the voluntary audit of the non-financial report (Part 2).

\*\* The *total* owned-transport emissions are not covered by the voluntary audit of the non-financial report, see previous table.

## Product energy efficiency and Scope-3 emissions

G302-3, G302-5

The use-phase dominance in LCA in general and GWP in particular is the main guidance for our ecodesign. We are improving the power efficiency (measured in W/Gbps, watts per Gigabits-per-second) with every new product or modules.

However, our WDM and a substantial part of the Ethernet products are also affected by the **ICT trend of exponentially increasing bitrates**. This trend can be derived from well-known references like the Cisco Visual Network Index (VNI, see [vni-wp.html](http://vni-wp.html)).

For WDM systems, the increase of bitrate so far has been somewhat faster than the increase of energy-efficiency. This means that WDM system generations *tend to consume increasing power over time*. Therefore, any emissions reductions must be enabled by **highest-possible efficiency supported by improving electricity emissions factors**. This is common to telecommunications core-network equipment today, it can be seen, e.g., for core IP routers as well.

Highest product power efficiency is the most relevant emissions-related aspect for ADVA. Our WDM transponders started at ~9 W/Gbps more than 20 years ago.

They have now reached benchmark-setting efficiency of ~0.2 W/Gbps. At year-end 2022, we released our first self-developed coherent 100-Gbps WDM pluggable. Pluggables have somewhat less functionality compared to transponders, but in turn have significantly lower power consumption.

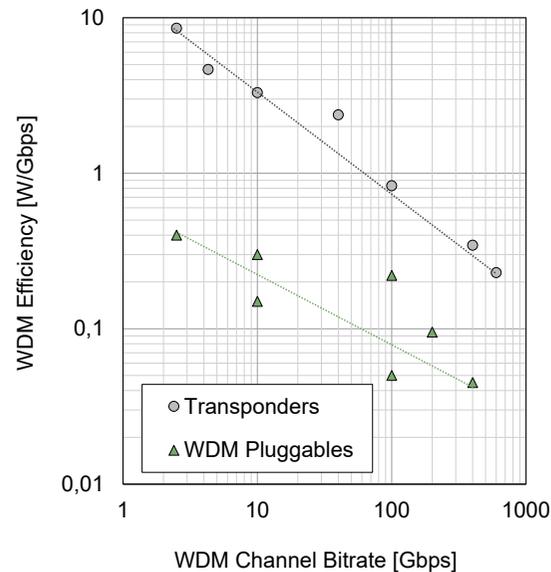
The development of the power efficiency of our WDM transponders and WDM

pluggables over bitrate and system generations is shown in the following diagram.

Power efficiency currently is the most relevant emissions-related equipment parameter for WDM and certain other ICT equipment. Usage of this equipment, however, can enable GHG abatement outside the ICT sector which is potentially substantially higher than the

one caused by the respective ICT usage itself. This effect is referred to as **Greening-by-ICT**. Hence, ICT can be regarded as one of the few enablers of decreasing global GHG emissions. According to [GeSI Smarter2030](https://www.geos.com/insights/geos-smarter2030), the ICT-enabled GHG abatement is almost 10x higher than the ICT GHG footprint itself.

The target for the next two to three years is to assess the power efficiency of the combined Adtran-ADVA portfolio and to decide on a common way for optimum portfolio power-efficiency improvements. One example of this is a new pluggable transceiver intended for intra-data-center applications, which might go down in power consumption as low as 8 W for an aggregate bitrate of 1.6 Tbps (Terabit-per-second).



Development of WDM per-channel power efficiency over bitrate and time. The transponder starting bitrate (2.5 Gbps) roughly corresponds with 1998, the latest bitrate (600 Gbps) corresponds with 2020.

## Portfolio lifecycle assessment

According to our combined materiality, context and end-to-end emissions analyses, ecodesign is one of ADVA's most material aspect. It can potentially enable the group's highest emission savings and also constitutes substantial opportunities through competitive advantages.

In ADVA, ecodesign is a formalized process. Here, the **Environmental Requirements** (formerly called Ecodesign Guide) were integrated into the hardware development process. These ecodesign guidelines cover the most relevant environmental product aspects, in particular **energy efficiency and circular economy**. The latter considers used (raw and secondary) materials and especially recycling. According to the internal assessment of the environmental requirements by the relevant development departments, we consider these to be sufficient to ensure the necessary results with regard to energy efficiency and design for circular economy.

Ecodesign must be guided by lifecycle assessments (LCA) covering the (commercially) largest portion of the portfolio. LCA shall consider the entire product life, from production via distribution and use to end of life. Consequently, ecodesign should consider these phases as well.

For about six years, ADVA performs lifecycle assessments, which almost cover the entire portfolio. This is done in accordance with ISO 14040/44 and ETSI ES 203 199 with the openLCA software and theecoinvent and GaBi databases.

LCAs enable relevant product and portfolio optimizations. These in turn help achieving emission-reduction and other targets:

- Portfolio GWP optimization, in particular identification of those products with the highest global warming potential (GWP) reduction potential
- GWP lifetime optimization. This refers to the maximum lifetime a product should be given, and beyond which replacement with a more efficient successor product becomes **GWP net positive**. This holds for individual products and is independent from the portfolio GWP optimization. This lifetime optimization is relevant for the EU Taxonomy Regulation's Do-No-Significant-Harm requirement.
- Identification of (emission) contributions that follow the use phase in relevance. This is particularly important when products are already operated with renewable energy and shall be further improved.

When using emission factors like the one for today's average EU electricity mix, the LCA of our products is clearly dominated by the use phase. This refers to GWP and other environmental impact (called midpoints in LCA). This dominance holds as long as the related energy consumption is not yet fully based on carbon-neutral energy sources.

If the latter is the case, the next product phases relevant to the GWP must be improved. These can be identified from LCA. In all of our products, the production phase and the carbon embedded in the used components are next most important.

Due to the relevance of LCA, **two related targets** have been defined in 2019:

1. ≥90 % of the commercially relevant product portfolio shall be covered by LCA. This is a moving target since the portfolio is continuously changed or complemented.
2. The level of confidence in LCA (i.e., its correctness) shall be as good as possible. This is to be supported by related due diligence.

These targets are also relevant in the context of ISO 14001.

In 2022, the first target was achieved. ~96 % of the commercially relevant total portfolio was covered by LCA.

The LCA confidence-level target was further followed in 2022. Our LCAs lead to consistent results for different products that have similar use modes. In addition, external references are known that confirm the relative ratios of the relevant lifecycle phases of our LCA results, and the use-phase dominance. These references include reports and white papers from large manufacturers of ICT equipment. Hence, still no indication was found that would point into the direction of structurally wrong LCA results.

## Employee matters: The Covid-19 situation, employee satisfaction and the Adtran merger

### Management of material topics

G3-3

Important sustainability matters fall into the area of corporate social responsibility (CSR). The associated activities and results complement our sustainability strategy with its primary focus on emissions. With regard to the triple bottom line (business-environment-people), the aspects affecting people are covered.

For ADVA, CSR includes social and employee matters as well as respect for human rights. This also covers important parts of the ILO labor and social standards, for example. The corresponding measures and statements about our employees can be found in this chapter and in the chapter [Corporate social responsibility](#) in Part 1. If employees in our supply chain are affected, this is described in the chapter [Compliance in the supply chain](#).

Dedicated management measures have been defined and implemented specifically for the area of employee matters and the ILO labor and social standards. This includes internal processes, allocation of responsibilities, definition of targets and evaluation on a half-yearly basis. Most employee and some social

matters are followed up by the HR department. The aspects of occupational health and safety are followed by Facilities. Accordingly, the responsibility at the highest level lies with the CEO or CFO, respectively.

In contrast to the environmental area (ISO 14001, ISO 50001), we do not pursue an externally certified management system such as ISO 45001 for employee matters. However, aspects like compliance with national preventive fire protection regulations are audited externally regularly.

Employee matters are regularly assessed in employee satisfaction surveys (Employee Satisfaction Survey, ESS). Our target is to do this every two years. This happened since 2011, with the exception of 2017, when the ESS was skipped due to massive restructuring and 2022, when the ESS was skipped due to preparations of the merger with Adtran. 2020 saw an ESS with focus on Covid-19 and mobile working. Our future plan is to get back to the regular biennial mode. This is likely to happen after the merger with Adtran is finished.

ESS cover more than 10 categories, including internal communication, training, inclusion and benefits and pay. This allows the identification of critical aspects and the regular review of the management approach. Critical aspects result in dedicated initiatives under the supervision of the relevant board of directors.

Regarding employee satisfaction, one of the strategic goals of ADVA has been defined, a maximum of 5% for the voluntary attrition rate (also refer to the next chapter [Covid-19, employee satisfaction and the Adtran merger](#)).

The employee matter is supported by a related software tool, Workday, which was introduced in late 2020. It replaced an older tool that could not support the GDPR requirements sufficiently. Amongst others, Workday contains modules for the employee trainings offered and for career support.

Processes and results in the CSR area are also externally assessed annually in the TIA assessment (occupational safety matters) and in the EcoVadis assessment (labor and human rights). In addition, compliance with labor and human

rights is checked in an increasing number of web-based assessments and external on-site audits that are carried out on behalf of customers. Any necessary improvement measures are then taken based on the respective results of these assessments.

The feedback from the external assessments have essentially confirmed our management approach.

The management approach for CSR aspects applies company-wide. There is no restriction to large locations (such as in the EnMS).

Material aspects are presented hereinafter.

## Covid-19, employee satisfaction and the Adtran merger

2022 was the third year of the Covid-19 pandemic. For ADVA, this meant that a significant proportion of our employees continued to work mobile, i.e., from home. We introduced this principle in April 2020 for those employees whose presence in the company was not absolutely necessary. Mobile work was accompanied by intense contacts with the respective employees via video chats and tele-conferencing with the aim of ensuring that contact was as frequent and regular as possible.

The long duration of the mobile-working initiative led, in November 2022, to the *New Work Program*. Effective immediately, it allow employees, whose presence in the office is not absolutely necessary to chose between three work models: working in the office, mobile working, or a hybrid of both.

Furthermore, the (voluntary) termination rate represented a challenge for ADVA also in 2022. A maximum termination rate of 5 % is part of our strategic company goals since 2011. This relates to all employees. That target was not met in 2022 for the second consecutive year, the rate was around 5.6 % (2021: 6.1 %). We consider this to be an important indicator of employee satisfaction. Accordingly, the churn rate has resulted in a series of analyses and measures. The analyses are based, on the one hand, on the last two employee satisfaction surveys (the last regular one from 2019 and the dedicated query on mobile working from 2020), individual feedback and a comparison of key figures with other high-tech companies. The transfers of employees to the carved-out Adva Network Security GmbH did not contribute to the attrition rate.

Mitigation of the attrition rate, which started in 2021 already, comprises pay adjustments in several countries. For parts of R&D, an LTI program (long-term incentives) with 18 months runtime was instantiated. At year-end 2022, an improvement regarding the attrition rate could be seen.

Moreover, at year-end 2022, a lump-sum payment was granted to all employees because of the high inflation and increased energy cost. In addition, the average yearly pay raise was increased owing to the influence of inflation.

Further changes of the Variable Pay Plan are planned for the beginning of 2023.

Next to Covid-19 and general employee satisfaction, 2022 was distinguished by the merger with Adtran. This merger was regularly addressed in townhall and breakfast meeting as well as in many meetings on departmental level, in order to answer related questions and tackle any uncertainty. Moreover, since March 2022, a multitude of virtual section meetings took place between Adtran and ADVA. These meetings intended the preparation of the merger on section level. They also led to mutual confidence and team building.

The measures (New Work program, salary adjustments, information on the merger) pursue the qualitative goal of creating a positive working environment and thus achieving the highest possible level of employee satisfaction.

## Social matters: infrastructure

### Management of material topics

#### G3-3

For ADVA, corporate social responsibility covers social and employee matters as well as respect for human rights. These matters are followed up with appropriate processes by our human-resources department (employee concerns) and compliance department (respect for human rights), respectively. These report to the CEO and CFO, respectively. The social matters considered in the materiality analysis, on the other hand, tend to represent cross-sectional topics that cannot be assigned to a single department and ultimately to a single member of the board.

The infrastructure aspect relates to ADVA's core business. ADVA is an ICT infrastructure supplier. In this respect, important internal processes and procedures are in place to support this aspect and, in particular, to meet changing customer expectations. This includes cooperation with customers as well as, e.g., special product functionalities that result from the use in the ICT infrastructure.

Responsibility at highest governance level lies with the CTO.

Under the non-financial view on social matters, no quantitative targets have been formulated for the infrastructure aspect. A general target for customer satisfaction has been defined, which also holds for infrastructure customers. This target is a Net Promoter Score (NPS) of 50% or better.

As a cross-cutting aspect, infrastructure is therefore best covered by the ISO 9001 and TL 9000 quality standards. These are externally audited annually. Regarding the aspect at hand, the last audits did not reveal any severe negative results.

These audits or parts of them are supplemented by external assessments such as the EcoVadis assessment. Corresponding management approaches and processes apply company-wide.

We regard our management approaches as constructive. Despite the fact that we marginally missed our NPS target of 50% in 2022 with an actual score of 41% (2021: 48%), and despite both, Covid-19 and the semiconductor crisis, we were able to achieve and maintain very good customer relationships. Moreover, our company maintained its status as approved vendor for critical infrastructure in 2022 by the German Bundesamt für Sicherheit in der Informationstechnik, BSI (Federal Office for Information Security).

New targets will be defined after completion of our merger with Adtran.

## ICT infrastructure

ADVA develops, produces and sells solutions for the telecommunications infrastructure. Our products enable communication between people all over the world by forming a reliable part of today's important communication infrastructure. We consider this an important social aspect and address it with special product functions.

The ICT sector is one of the critical infrastructures. This became evident worldwide since 2020 with Covid-19. This impression was clearly reinforced again in 2021 with the flood disaster, especially in parts of Germany, where also parts of the telecommunications infrastructure were destroyed.

Covid-19 led to a further increase in the use of the Internet and a corresponding increase in the volume of data. This was also due to the increased use of mobile working. However, many work processes could be maintained through mobile working. This would not have been possible without the ICT infrastructure.

Similar to 2020 and 2021, it was an critical concern of our network-operator customers in 2022 that ADVA was able to ensure the upkeep of the ability to deliver, especially under the Covid-19 and semiconductor-shortage conditions. This was also one of our relevant targets for this period.

Consequently, ADVA has implemented a number of successful measures during this time, in particular in our site in Meiningen. This included a generous implementation of mobile working for departments in which presence is not absolutely necessary. In cases where presence was required, a concept of spatial and temporal separation of the related employees was implemented. This led to the nonappearance of site closures and only a small number of proven infected employees. Overall, ADVA was able to maintain its ability to deliver. We plan to maintain these measures throughout the further course of the pandemic.

The flood disaster of July 2021 in Western and Central Europe showed how important climate change adaptation is for the infrastructure. Regarding our products, e.g., protection-switching or restoration concepts can help to bypass interrupted fiber-optic cables. For a long time, such concepts have been part of several product functions that increase the reliability of our ICT infrastructure solutions. Our target is to support the related customer requirements also in the future.

Another important aspect of the ICT infrastructure is the need to protect it against cyber-attacks. The number of these attacks has been increasing for years, and since ICT plays a key role in industry, administration and authorities, countermeasures are required. Again, ADVA addresses this with product functions that include, for example, advanced encryption technologies. These technologies are continuously enhanced with the target to always representing the state of the art.

For these and other reasons, including our internal security management, ADVA was also generally approved as a supplier by the BSI (Federal Office for Information Security) in 2021 already. Our WDM technology can therefore be used for transmission in public authority networks with security classification classified information – only for official use (VS-NfD).

## Information security

### Management of material topics

G3-3

Every day we process sensitive information in order to fulfill our duties to our customers, contractors, employees, service providers, government agencies and other third parties. Protecting against unauthorized access and unauthorized modification of this information is therefore of vital importance to ADVA and is reflected in our product lifecycle, our business processes and systems. Further goals of our activities in the area of information security concern the availability of the data relevant for our business processes as well as compliance with legal regulations.

Information security was included as a new material matter in 2020 and will remain as such also for 2022. This is in continuation of 2021 and is derived from the risk and materiality analyses. The aspect at risk is the confidentiality or the loss of business data. This can lead to the breach of confidentiality agreements, the corresponding possible legal consequences, loss of trade secrets, damage to image and even loss of customers. Other potentially important aspects include the integrity and availability of data, information and systems.

Our information security management system (ISMS) enables and coordinates activities in all relevant business processes, up to the product lifecycle process. This affects various departments, and highest-level responsibility lies with the CFO.

Further development of these activities is a continuous process and requires both, organizational and technical actions. This includes, for example, further training and instructions.

A regular management review is part of the ISMS in order to guarantee a continuous exchange and to inform about the current status, open topics and further steps.

The ISMS is subject to both, internal and external audits. These take place internally on a voluntary basis every year. External audits also take place annually as part of the ISO-9001/TL-9000 audits. The certification of the ISMS according to ISO 27001 has been analyzed in 2022. It is targeted for 2023, following the merger with Adtran. Adtran is already certified according to ISO 27001.

As an area that is given a greatly improved process landscape, the definition of suitable goals and key figures is still not fully completed. A target of 90% for employees to participate in the awareness campaign has already been defined in 2020. In 2022, this target was retained. The result for 2022 can be found in the following chapter [Information security awareness campaign](#).

In 2023, we will continue to focus on raising employee awareness, further improvements to the infrastructure, our data security and the area of secure development processes. Further targets can only be developed after the full merger with Adtran and the implementation of a common ISO-27001-certified ISMS.

The measures and processes for information security apply company wide. In contrast to ISO 50001, for example, small offices and employees in the home office are also considered, as these are associated with at least the same risks.

In 2022, as in the previous year, there were no significant incidents in the area of information security according to own rating.

In summary, we consider the year 2022 as positive in the area of information security. This approach will be continued over the next few years. In addition to our own employees, this can also relate to information security aspects relating to our products.

As part of our merger activities with Adtran, the group of employees working on advanced encryption technologies and our approval by the German Federal Office for Information Security (BSI) was spun off the company in later 2022. This group includes employees from R&D, product management and operations. This was a requirement of the BSI. It ensures that national German security requirements will also be fulfilled in the future.

## Information security-awareness campaign

In 2020, an awareness campaign was started with the aim of raising our employees' awareness of information security aspects – confidentiality, integrity, availability – and creating awareness of where they are exposed to risks in their daily handling of data and IT, or even where they are generating risks themselves. In 2022, we again added several topics, e.g., related to smishing (SMS phishing) and physical security.

The campaign consisted of a series of animated training courses that also included basic comprehension queries. The goal of regular participation of 90% of all employees was defined. In 2022, 85% of all employees have taken at least one of the 9 available courses and 75% of all employees have completed at least 5 courses.

In the New Hire Campaign, new employees get first information on the information-security matter. The New Hire campaign consists of a webinar and a starter package, which in turn consists of videos, interactive exercises and short tests. The completion rate of this starter package in 2022 was at 90%.

## Post-Quantum security and resilience

The aspects of confidentiality and availability are not only relevant for our internal data handling. They are also addressed through corresponding functionalities of our products so that these products can offer our customers improved information security with regard to these aspects.

The aspect of confidentiality is addressed in our products using the latest encryption technology. Our WDM technology can, thanks to approval by the German Federal Office for Information Security (BSI), be used for transmission with the security classification VS-NfD (classified – for official use only). Several encryption options are available, which include post-quantum-secure mechanisms.

To also ensure availability during data transport, our products have several protection and restoration mechanisms, for example to prevent the complete transmission interruption in the event of a fiber failure.



## Independent Practitioner's Report on a Limited Assurance Engagement on Non-financial Reporting

### To ADVA Optical Networking SE, Meiningen-Dreißigacker

We have performed a limited assurance engagement on the Combined Separate non-financial group report of ADVA Optical Networking SE, Meiningen-Dreißigacker, (hereinafter the "Company") for the period from 1 January to 31 December 2022 (hereinafter the "Combined Separate Non-financial Group Report").

Not subject to our assurance engagement are the external sources of documentation or expert opinions mentioned in the Combined Separate Non-financial Group Report.

### Responsibility of the Executive Directors

The executive directors of the Company are responsible for the preparation of the Combined Separate Non-financial Group Report in accordance with §§ (Articles) 315c in conjunction with 289c to 289e HGB ("Handelsgesetzbuch": "German Commercial Code") and Article 8 of REGULATION (EU) 2020/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18. June 2020 on establishing a framework to facilitate sustainable investment and amending Regulation (EU) 2019/2088 (hereinafter the "EU Taxonomy Regulation") and the Delegated Acts adopted thereunder, as

well as for making their own interpretation of the wording and terms contained in the EU Taxonomy Regulation and the Delegated Acts adopted thereunder, as set out in section "EU Taxonomy Regulation report" of the Combined Separate Non-financial Group Report.

This responsibility includes the selection and application of appropriate non-financial reporting methods and making assumptions and estimates about individual non-financial disclosures of the Company that are reasonable in the circumstances. Furthermore, the executive directors are responsible for such internal controls as the executive directors consider necessary to enable the preparation of a Combined Separate Non-financial Group Report that is free from material misstatement whether due to fraud or error.

The EU Taxonomy Regulation and the Delegated Acts issued thereunder contain wording and terms that are still subject to considerable interpretation uncertainties and for which clarifications have not yet been published in every case. Therefore, the executive directors have disclosed their interpretation of the EU Taxonomy Regulation and the Delegated Acts adopted thereunder in section "EU Taxonomy Regulation report" of the Combined Separate Non-financial Group

Report. They are responsible for the defensibility of this interpretation. Due to the immanent risk that indeterminate legal terms may be interpreted differently, the legal conformity of the interpretation is subject to uncertainties.

### Independence and Quality Control of the Audit Firm

We have complied with the German professional provisions regarding independence as well as other ethical requirements.

Our audit firm applies the national legal requirements and professional standards – in particular the Professional Code for German Public Auditors and German Chartered Auditors ("Berufssatzung für Wirtschaftsprüfer und vereidigte Buchprüfer": "BS WP/vBP") as well as the Standard on Quality Control 1 published by the Institut der Wirtschaftsprüfer (Institute of Public Auditors in Germany; IDW): Requirements to quality control for audit firms (IDW Qualitätssicherungsstandard 1: Anforderungen an die Qualitätssicherung in der Wirtschaftsprüferpraxis - IDW QS 1) – and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards

and applicable legal and regulatory requirements.

### Responsibility of the Assurance Practitioner

Our responsibility is to express a conclusion with limited assurance on the Combined Separate Non-financial Group Report based on our assurance engagement.

We conducted our assurance engagement in accordance with International Standard on Assurance Engagements (ISAE) 3000 (Revised): Assurance Engagements other than Audits or Reviews of Historical Financial Information, issued by the IAASB. This Standard requires that we plan and perform the assurance engagement to obtain limited assurance about whether any matters have come to our attention that cause us to believe that the Company's Combined Separate Non-financial Group Report, other than the external sources of documentation or expert opinions mentioned in the Combined Separate Non-financial Group Report, is not prepared, in all material respects, in accordance with §§ 315c in conjunction with 289c to 289e HGB and the EU Taxonomy Regulation and the Delegated Acts issued thereunder as well as the interpretation by the executive directors disclosed in

section “EU Taxonomy Regulation report” of the Combined Separate Non-financial Group Report.

In a limited assurance engagement the procedures performed are less extensive than in a reasonable assurance engagement, and accordingly a substantially lower level of assurance is obtained. The selection of the assurance procedures is subject to the professional judgement of the assurance practitioner.

In the course of our assurance engagement, we have, amongst other things, performed the following assurance procedures and other activities:

- Gain an understanding of the structure of the sustainability organization and stakeholder engagement
- Inquiries of the executive directors and relevant employees involved in the preparation of the Combined Separate Non-financial Group Report about the preparation process, about the internal control system relating to this process and about disclosures in the Separate Non-financial Group Report
- Identification of likely risks of material misstatement in the Combined Separate Non-financial Group Report

- Analytical procedures on selected disclosures in the Combined Separate Non-financial Group Report
- Reconciliation of selected disclosures with the corresponding data in the consolidated financial statements and combined management report
- Evaluation of the presentation of the Combined Separate Non-financial Group Report
- Evaluation of the process to identify taxonomy-eligible and taxonomy-aligned economic activities and the corresponding disclosures in the Combined Separate Non-financial Group Report
- Inquiries on the relevance of climate-risks

In determining the disclosures in accordance with Article 8 of the EU Taxonomy Regulation, the executive directors are required to interpret undefined legal terms. Due to the immanent risk that undefined legal terms may be interpreted differently, the legal conformity of their interpretation and, accordingly, our assurance engagement thereon are subject to uncertainties.

## Assurance Opinion

Based on the assurance procedures performed and evidence obtained, nothing has come to our attention that causes us to believe that the Combined Separate Non-financial Group Report of the Company for the period from 1 January to 31 December 2022 is not prepared, in all material respects, in accordance with §§ 315c in conjunction with 289c to 289e HGB and the EU Taxonomy Regulation and the Delegated Acts issued thereunder as well as the interpretation by the executive directors disclosed in section “EU Taxonomy Regulation report” of the Combined Separate Non-financial Group Report.

We do not express an assurance opinion on the external sources of documentation or expert opinions mentioned in the Combined Separate Non-financial Group Report.

## Restriction of Use

We draw attention to the fact that the assurance engagement was conducted for the Company's purposes and that the report is intended solely to inform the Company about the result of the assurance engagement. Consequently, it may not be suitable for any other purpose than the aforementioned. Accordingly,

the report is not intended to be used by third parties for making (financial) decisions based on it. Our responsibility is to the Company. We do not accept any responsibility to third parties. Our assurance opinion is not modified in this respect.

Munich, 7 March 2023

PricewaterhouseCoopers GmbH  
*Wirtschaftsprüfungsgesellschaft*

Hendrik Fink <i>Wirtschaftsprüfer</i> [German public auditor]	ppa. Felix Wandel <i>Wirtschaftsprüfer</i> [German public auditor]
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## Glossary

### E

#### Ecodesign

Systematic (product) design measures that reduce or minimize the environmental product footprint. These measures are based, amongst others, on lifecycle assessment.

#### EICC (Electronic Industry Citizenship Coalition)

The EICC is a nonprofit coalition of electronics companies committed to supporting the rights and wellbeing of workers and communities worldwide affected by the global electronics supply chain. EICC members commit and are held accountable to a common code of conduct. In 2017, the EICC became the Responsible Business Alliance (RBA).

#### ETSI ES 203 199 (2015)

A European standard from the European Telecommunications Standards Institute on a methodology for environmental lifecycle assessment of ICT goods, networks and services.

#### EU Taxonomy Regulation

The Taxonomy Regulation (EU) 2020/852 is an EU regulation that defines criteria whether business activities are eligible for being rated as ecologically sustainable. It affects companies that are obliged to publish a non-financial report.

### G

#### GeSI (Global e-Sustainability Initiative)

In collaboration with major ICT companies, GeSI is a leading source of impartial information, resources and best practices for achieving integrated social and environmental sustainability through ICT.

#### GHG (greenhouse gas)

GHG are gases that are responsible for the effect of global warming. The most relevant GHG are water vapor, carbon dioxide, methane, nitrous oxide, ozone and several chloro- and hydrofluorocarbons.

#### GHGP (Greenhouse Gas Protocol)

Through the GHGP, World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) work with businesses to help companies measure, manage, report and reduce their carbon emissions. More: [ghgprotocol.org](https://www.ghgprotocol.org).

#### GRI (Global Reporting Initiative)

GRI is an international independent organization that helps businesses, governments and other organizations understand and communicate the impact of business on critical sustainability aspects such as climate change, human rights, corruption and many others.

### I

#### ISO 14001:2015

A standard developed and published by the [International Organization for Standardization](https://www.iso.org) (ISO). It defines an environmental management system (EMS) for the manufacturing and service industries.

#### ISO 14040/ISO 14044

Two standards that fall into the area of environmental management and lifecycle assessments. ISO 14044 replaces the former standards ISO 14041 to 14043.

#### ISO 22301:2019

This standard defines the structure and requirements to implement an effective system for maintaining business continuity.

#### ISO 27001:2017

An ISO standard for information security management systems (ISMS) and their requirements.

#### ISO 50001:2018

An ISO standard that supports organizations and companies in setting up a systematic energy management system (EnMS).

#### ISO 9001:2015

Defines the requirements for a quality management system. Organizations use the standard to demonstrate the ability to consistently provide products and services that meet customer and regulatory requirements.

### N

#### NFV (network functions virtualization)

NFV is a network-architecture concept that uses the technologies of server virtualization for virtualizing network-node functions, i.e., to implement them, where applicable, in software. It aims at accelerating product development and reducing the reliance on specific hardware. The concept can lead to a certain level of dematerialization. If implemented properly, it can also lead to better network (node) utilization and therefore, better energy efficiency.

## O

**OSI (Open Systems Interconnection stack/model)**

The OSI model is a conceptual model that characterizes and standardizes the communication functions of an ICT system without regard to its underlying internal structure and technology, aiming at interoperability of diverse systems. Originally, the model partitioned ICT systems into seven abstraction layers. The model is a product of the [Open Systems Interconnection](#) project at the ISO, it is standardized as ISO/IEC 7498-1.

## R

**REACH (Registration, Evaluation, Authorization and Restriction of Chemicals)**

A regulation issued by the European Union addressing the production and use of chemical substances and the potential impact of these substances on human health and the environment.

**RoHS (Restriction of Hazardous Substances)**

A directive issued by the European Union regarding the restriction of specific hazardous substances used for the production and processing of electronic devices and components.

## S

**SBTi (Science Based Targets initiative)**

The SBTi is a partnership between the Carbon Disclosure Project, UN Global Compact, the World Resources Institute and the World Wide Fund for Nature. It aims at helping companies determining how much they must cut emissions to support the restriction of global warming to within 2°C compared to pre-industrial temperatures. Find out more under [sciencebasedtargets.org/](https://sciencebasedtargets.org/).

## T

**TIA (Telecommunications Industry Association)**

TIA is the leading trade association representing the global information and communications technology (ICT) industry through standards development, policy initiatives, business opportunities, market intelligence and networking events. TIA enhances the business environment for companies involved in ICT and the greening of technology. In 2018, TIA merged with the QuEST Forum. (QuEST Forum was the producer of the telecommunications quality standard TL 9000.) TIA is accredited by ANSI. For more information, please refer to [www.tiaonline.org](http://www.tiaonline.org).

**TL 9000**

In 1998, QuEST Forum developed the TL 9000 quality management system (QMS) to meet the supply-chain and operational-quality requirements of the global ICT industry. TL 9000 is built on ISO 9001.

## W

**WDM (wavelength division multiplexing)**

WDM is a standardized technology used for maximizing the fibers' transport capacity. It uses different laser wavelengths per fiber, each carrying individual information.

**WEEE Directive 2012/19/EU**

A directive issued by the European Union improve the environmental management of WEEE (waste electrical and electronic equipment) and to contribute to a circular economy. To enhance resource efficiency, it focuses at the improvement of collection, treatment and recycling of electronics at the end of their life. Amongst others, it features the wheelie bin.

## Corporate information

G2-1

### Corporate headquarters

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### ADVA on the web

More information about ADVA, including solutions, technologies and products, can be found on the company's website at [www.adva.com](http://www.adva.com).

The PDF file of this sustainability report as well the previous GRI reports are located on the ADVA website and can be downloaded at <https://www.adva.com/en/about-us/sustainability>.

## GRI content index

GRI	Disclosure	Reference (page)	Comments
<b>GRI 1: Foundation</b>			
	Publish a GRI content index	pp. 90	
	Provide a statement of use		This report was prepared based on the GRI Standards 2021.
<b>GRI 2: General disclosures</b>			
<b>The organization and its reporting practices</b>			
	2-1 Organizational details	<a href="#">6, 89</a>	ADVA Optical Networking SE is a European stock corporation ("Societas Europaea")
	2-2 Entities included in the organization's sustainability reporting		This report covers all entities covered in the financial statement (annual report).
2	2-3 Reporting period, frequency and contact point	<a href="#">6, 50</a>	From January 1, 2022 to December 31, 2022, Annual
	2-4 Restatements of information		None
	2-5 External assurance	<a href="#">50</a>	
<b>Activities and workers</b>			
			For further information: <a href="http://www.adva.com/en/about-us">www.adva.com/en/about-us</a>
	2-6 Activities, value chain and other business relationships	SR22: <a href="#">pp. 6, 28, 51</a> AR22: <a href="#">32</a>	More than 580,000 modules and systems were shipped in 2022
2		AR22: <a href="#">pp. 34</a>	In 2022, ADVA had a globally dispersed supplier base, with a certain center in Asia. Total number of relevant suppliers, ranging from components suppliers to contract manufacturers, is in the range of 80. This also includes logistics suppliers. No significant changes.
	2-7 Employees		
	2-8 Workers who are not employees		
<b>Governance</b>			
	2-9 Governance structure and composition	SR22: <a href="#">9, 11</a> AR22: <a href="#">pp. 13</a>	
	2-10 Nomination and selection the highest governance body		
2	2-11 Chair of the highest governance body	AR22: <a href="#">pp. 13</a>	
	2-12 Role of the highest governance body in overseeing the management of impacts	SR22: <a href="#">11, pp. 14</a> AR22: <a href="#">pp. 71</a>	

GRI	Disclosure	Reference (page)	Comments
2-13	Delegation of responsibility for managing impacts		
2-14	Role of the highest governance body in sustainability reporting		
2-15	Conflicts of interest		
2-16	Communication of critical concerns	SR22: <a href="#">9, 54</a> AR22: <a href="#">73</a>	
2-17	Collective knowledge of the highest governance body		Collective knowledge is also maintained via feedback by the department leaders.
<sup>2</sup> 2-18	Evaluation of the performance of the highest governance body		
2-19	Remuneration policies	AR22: <a href="#">pp. 60</a>	
2-20	Process to determine remuneration		Performance-based, no consultants, Shareholder involvement via AGM
2-21	Annual total compensation ratio		On-target earnings: targeted base salary plus variable pay ratio, full-time and part-time employees (excluding apprentices) are included with full-time equivalent compensation. The overall compensation ratio (ADVA globally) in 2022 was 9.1 (2021: 9.5). The percentage decrease was 3.8% (compare for 2022 and 2021).
<b>Strategy, policies and practices</b>			
2-22	Statement on sustainable development strategy	<a href="#">4</a>	
2-23	Policy commitments		
2-24	Embedding policy commitments		
<sup>2</sup> 2-25	Processes to remediate negative impacts		
2-26	Mechanisms for seeking advice and raising concerns		
2-27	Compliance with laws and regulations		No known fines of non-compliance with laws and regulations concerning the provision and use of products and services.
2-28	Membership associations		
<b>Stakeholder engagement</b>			
<sup>2</sup> 2-29	Approach to stakeholder engagement	<a href="#">14, pp. 26</a>	
2-30	Collective bargaining agreements		0 %
<b>GRI 3: Material Topics</b>			
3-1	Process to determine material topics	<a href="#">50</a>	
<sup>3</sup> 3-2	List of material topics	<a href="#">50, 57</a>	Inclusion of EU Taxonomy Regulation report as part of the NFR
3-3	Management of material topics	<a href="#">pp. 12, 26, 57, 61</a>	

GRI	Disclosure	Reference (page)	Comments
<b>GRI 200: Economic</b>			
<b>Economic performance</b>			
	3-3	Management of material topics	Please refer to the chapters <i>Business overview</i> and <i>Risk report</i> in AR22
	201-1	Direct economic value generated and distributed	AR22: <a href="#">46</a>
200	201-2	Financial implications and other risks and opportunities due to climate change	SR22: <a href="#">pp. 54</a> AR22: <a href="#">pp. 73</a>
	201-3	Defined benefit plan obligations and other retirement plans	Does not apply. ADVA has no defined retirement program.
	201-4	Financial assistance received from government	AR22: <a href="#">99</a> , <a href="#">114</a> , <a href="#">132</a>
<b>Market Presence</b>			
	3-3	Management of material topics	Please refer to the chapters <i>Business overview</i> and <i>Risk report</i> in AR22
200	202-1	Ratios of standard entry level wage by gender compared to local minimum wage	Not applicable globally
	202-2	Proportion of senior management hired from the local community	<a href="#">6</a> 90 %, from director level, regional catchment area
<b>Indirect Economic Impacts</b>			
	3-3	Management of material topics	Please refer to the chapters <i>Business overview</i> and <i>Risk report</i> in AR22
200	203-1	Infrastructure investments and services supported	ADVA is one of the largest employers in Meiningen, Germany.
	203-2	Significant indirect economic impacts	<a href="#">17</a>
<b>Procurement Practices</b>			
200	3-3	Management of material topics	
	204-1	Proportion of spending on local suppliers	~30 %
<b>Anti-corruption</b>			
	3-3	Management of material topics	<a href="#">12</a> , <a href="#">43</a> , <a href="#">51</a>
200	205-1	Operations assessed for risks related to corruption	AR22: <a href="#">pp. 71</a> All significant operations are regularly assessed.
	205-2	Communication and training about anti-corruption policies and procedures	<a href="#">48</a>
	205-3	Confirmed incidents of corruption and actions taken	No confirmed incidents of corruption have occurred in 2022.
<b>Anti-corruption behavior</b>			
200	3-3	Management of material topics	<a href="#">43</a> , <a href="#">pp. 51</a>
	206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	<a href="#">48</a> Antitrust is an important part of ADVA's compliance framework and covered within the company's code of conduct. No known cases of violations do exist.

GRI	Disclosure	Reference (page)	Comments
<b>Tax</b>			
200	207-1, -2, -3	Approach to tax; Tax governance, control, and risk management; Stakeholder engagement and management of concerns related to tax	Rated not material in the materiality analysis
<b>GRI 300: Environmental</b>			
<b>Materials</b>			
	3-3	Management of material topics	<a href="#">pp. 12, pp. 51, 59</a>
300	301-1	Materials used by weight or volume	~75% renewable for both packaging and products; ~25% non-renewable for both packaging and products
	301-2	Recycled input materials used	<a href="#">42, 45</a>
	301-3	Reclaimed products and their packaging materials	<a href="#">42, 45</a>
<b>Energy</b>			
	3-3	Management of material topics	<a href="#">12, pp. 14, pp. 51, 59</a>
300	302-1	Energy consumption within the organization	<a href="#">pp. 37</a>
	302-2	Energy consumption outside of the organization	Scope 3 emissions are reported, not energy consumption (see GRI 305-3).
	302-3	Energy intensity	<a href="#">77</a> ADVA shows absolute energy consumption
	302-4	Reduction of energy consumption	<a href="#">pp. 37</a>
	302-5	Reductions in energy requirements of products and services	<a href="#">39, 77</a>
<b>Emissions</b>			
	3-3	Management of material topics	<a href="#">12, pp. 14, pp. 51, 59</a>
300	305-1	Direct (Scope 1) GHG emissions	<a href="#">39, 75</a>
	305-2	Energy indirect (Scope 2) GHG emissions	<a href="#">39, 75</a>
	305-3	Other indirect (Scope 3) GHG emissions	<a href="#">39, pp. 41, 75</a>
	305-4	GHG emissions intensity	ADVA shows absolute energy consumption
	305-5	Reduction of GHG emissions	<a href="#">39, 75</a>
	305-6	Emissions of ozone-depleting substances (ODS)	None
	305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	<a href="#">36</a>

GRI	Disclosure	Reference (page)	Comments	
<b>Effluents and waste</b>				
	3-3	Management of material topics	<a href="#">pp. 12, pp. 51, 59</a>	
300	306-1	Waste generation and significant waste-related impacts	<a href="#">36</a>	
	306-2	Management of significant waste-related impacts	<a href="#">36</a>	
	306-3	Waste generated	<a href="#">36</a>	
	306-4	Waste diverted from disposal	<a href="#">36</a>	
	306-5	Waste directed to disposal	<a href="#">36</a>	None
<b>Supplier environmental assessment</b>				
	3-3	Management of material topics	<a href="#">pp. 12, pp. 51, 59</a>	
300	308-1	New suppliers that were screened using environmental criteria	100 %	
	308-2	Negative environmental impacts in the supply chain and actions taken	No specific occurrences	
<b>GRI 400: Social</b>				
<b>Employment</b>				
	3-3	Management of material topics	<a href="#">pp. 12, 28</a>	
400	401-1	New employee hires and employee turnover	<a href="#">28</a>	This is not tracked by gender and age group.
	401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	<a href="#">pp. 32</a>	Note some of these benefits are also available to temporary or part-time employees.
	401-3	Parental leave		191 employees took parental leave. 184 employees returned to work after parental leave ended.
<b>Labor/management relations</b>				
400	3-3	Management of material topics	<a href="#">pp. 12, 28</a>	
	402-1	Minimum notice periods regarding operational changes		2 weeks to 12 months, depending on region and type of change.
<b>Occupational health and safety</b>				
	3-3	Management of material topics	<a href="#">pp. 12, 28</a>	
400	403-1	Workers representation in formal joint management-worker health and safety committees	<a href="#">pp. 33</a>	
	403-2	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	<a href="#">pp. 33</a>	
	403-3	Workers with high incidence or high risk of diseases related to their occupation	<a href="#">pp. 33</a>	
	403-4	Health and safety topics covered in formal agreements with trade unions		ADVA has an occupational safety committee (Arbeitssicherheitsausschuss, ASA) with participation of employees. This committee meets on a quarterly basis. Amongst others, it conducts internal site audits.

GRI	Disclosure	Reference (page)	Comments
<b>Training and education</b>			
	3-3	Management of material topics	<a href="#">pp. 12, 28</a>
	404-1	Average hours of training per year per employee	<a href="#">31</a> This is not tracked by gender and employee category.
400	404-2	Programs for upgrading employee skills and transition assistance programs	<a href="#">31</a>
	404-3	Percentage of employees receiving regular performance and career development reviews	100%
<b>Diversity and equal opportunity</b>			
	3-3	Management of material topics	<a href="#">pp. 12, 28</a>
400	405-1	Diversity of governance bodies and employees	<a href="#">28, 32</a>
	405-2	Ratio of basic salary and remuneration of women to men	This is not tracked. The ratio is not influenced by gender, but rather by the assignment to different departments.
<b>Non-discrimination</b>			
	3-3	Management of material topics	<a href="#">28, pp. 51</a>
400	406-1	Incidents of discrimination and corrective actions taken	No incidents
<b>Freedom of association and collective bargaining</b>			
	3-3	Management of material topics	<a href="#">28</a>
400	407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	None. This is addressed by our Group CoC and Supplier CoC as stated in the main report. It is validated by self and supplier audits.
<b>Child labor</b>			
	3-3	Management of material topics	<a href="#">28, 79</a>
400	408-1	Operations and suppliers at significant risk for incidents of child labor	<a href="#">28, 31</a> None. This is addressed by our Group CoC and Supplier CoC as stated in the main report. It is validated by self and supplier audits.
<b>Forced or compulsory labor</b>			
	3-3	Management of material topics	<a href="#">28, 81</a>
400	409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	<a href="#">28, 31</a> None. This is addressed by our Group CoC and Supplier CoC as stated in the main report. It is validated by self and supplier audits.
<b>Local communities</b>			
	3-3	Management of material topics	<a href="#">81</a>
400	413-1	Operations with local community engagement, impact assessments, and development programs	<a href="#">32, 35</a>
	413-2	Operations with significant actual and potential negative impacts on local communities	None

GRI	Disclosure	Reference (page)	Comments
<b>Supplier social assessment</b>			
	3-3	Management of material topics	<a href="#">28, pp. 43, 49</a>
400	414-1	New suppliers that were screened using social criteria	100%
	414-2	Negative social impacts in the supply chain and actions taken	No respective suppliers (with negative impact) are known, following regular assessments and due diligence.
<b>Public policy</b>			
400	3-3	Management of material topics	<a href="#">46</a>
	415-1	Political contributions	<a href="#">48</a> None
<b>Customer health and safety</b>			
400	3-3	Management of material topics	During the development phase, all products are subject to H&S assessments according to the given standards (TL, ISO, REACH, RoHS ...) and certification requirements (CE, UL, WEEE, (laser) safety ...). H&S is continuously monitored across all products and services, and appropriate actions are taken if needed.
	416-1	Assessment of the health and safety impacts of product and service categories	
	416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	None
<b>Customer Privacy</b>			
400	3-3	Management of material topics	<a href="#">83</a>
	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	In 2022, no substantiated complaints have been identified. Certification according to ISO 27001 is under preparation (planned for 2023).
SR22: <a href="#">Sustainability report 2022</a>			
AR22: <a href="#">Annual report 2022</a>			