ADVA™
Optical Networking

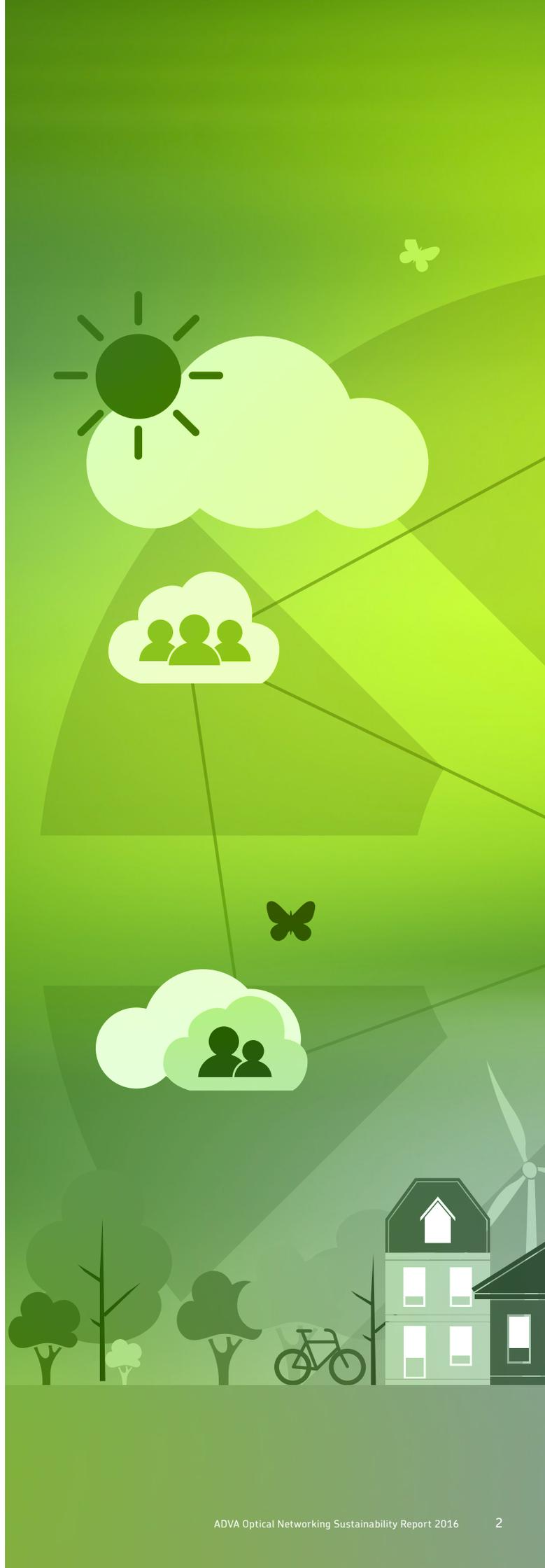# Green Light for Sustainability

ADVA Optical Networking Sustainability Report 2016

CONTENTS

Sustainability and Why We Care About It

At ADVA Optical Networking, we take holistic sustainability seriously. We have adopted a mindset of The Triple Bottom Line – planet, people, and profit – to support sustainable growth worldwide. Sustainability in our world means protecting the environment, enriching our people and growing our businesses. We take responsibility for creating sustainability with our business practices, through the actions of our employees, in relationships with our business partners and in the products and solutions we design.

Our drive for sustainability is not a recent development. Since our beginnings in the 1990s, we have focused on our impact on employees, communities, suppliers and the environment. Back then, the latter primarily meant carbon-dioxide emissions. A couple of years ago, ADVA Optical Networking adopted a broader, holistic view of sustainability – because it better fits today's sustainability needs.

Consistently improving sustainability performance is getting more and more important, for the people, the planet, and for sustainable business. Our customers want us to demonstrate this every day. They have their sustainability goals, driven by their investors, their legislation, or set by themselves, and these help them to define and improve their branding. Therefore, our focus on doing better in the different areas of sustainability also helps our business partners. Moreover, since our joint brandings are at stake, we cannot simply pretend to be sustainable by greenwashing our performance.

Our commitment to sustainability also opens the way to several cost-reduction mechanisms as we move further towards a true circular economy. With that in mind, we are working with customers to reduce surplus inventories, implement just-in-time delivery and take back products for reuse, repurpose or recycling with the intention to conserve natural resources and reduce emissions.

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

Kenneth Boulding

CEO Statement G4-1

Social and environmental practices are important to ADVA Optical Networking because they support sustainable success for our business partners, our company and the planet while helping to maintain a healthy quality of life well into our future.

We follow a Triple Bottom Line approach to support both our people and our business partners' people, unburden our planet and increase our profits in a sustainable way. Since our products drive our environmental impact, we are always innovating – creating better, smaller and more efficient products that help our customers reduce their carbon footprint.

When you consider the vast telecommunications industry landscape, it might seem implausible that a relatively small company can make a difference. We are doing just that. We have implemented formal environmental requirements that drive new product designs to deliver ever-increasing functionality at the lowest cost to the planet and its natural resources.

It is ingrained in our nature as a company to do more with less. In 2016, we improved almost all areas of our holistic sustainability approach. This helps ADVA Optical Networking compete successfully and win against industry titans on a daily basis.

To be clear, this engagement is not fully altruistic. Of course, we focus on increasing revenues and building profits. Our goal is enduring business success. Over the long run, sustainable practices are the only way to save resources and many of the related cost.

I take full responsibility for driving ADVA Optical Networking forward with a balanced focus on the Triple Bottom Line. We design, produce and sell the best technology. Our solutions are transforming our customers' networks. However, we understand business success is not just about making the best technology. In order to realize our true leadership potential, we must take the extra steps along the way to ensure our business success is enduring, the success of our people and the wellbeing of our natural world.

This just makes sense – good business that results in the greater good for our world and our business partners.

Brian Protiva
Chief Executive Officer

About This Report G4-18; G4-19; G4-32

This report is based on the Global Reporting Initiative (GRI) in accordance with the GRI fourth generation of guidelines (G4) at a core level.

Report Boundaries
The 2016 report is ADVA Optical Networking's third stand-alone Sustainability Report. The previous edition, Sustainability Report 2015, was validated externally by Quality Austria in December 2016. The external Assurance Statement can be viewed on our Sustainability webpage. We have decided to validate our Sustainability Report biennially. The actual report at hand covers the period from January 1, 2016, to December 31, 2016. It contains data relating to ADVA Optical Networking SE plus 16 wholly-owned subsidiaries (referred to, collectively, in this report as "we", "us", "our", "the company", "the group", "ADVA Optical Networking", or "group companies"). For the complete list, please refer to our Annual Report 2016, page 104.

Report Format
As part of our commitment to reduce our corporate carbon footprint, our Sustainability Report and our previous GRI indexes are available as electronic copies in PDF format only.

Report Content
This report provides an overview of our sustainability program and the focus areas that are of the greatest importance to our stakeholders and have major influence on our business success.
Our reporting has been changed from absolute to intensity measures.

Our sustainability webpage presents additional general information on our sustainability programs, provides access to specific policies and includes an index that points readers toward relevant GRI indicators.

Identified Material Aspects
Our materiality analysis approach and the identified material aspects are explained in the chapter: Stakeholder Engagement.

To provide feedback or to ask questions please contact Sustainability@advaoptical.com

About ADVA Optical Networking G4-4

ADVA Optical Networking develops, manufactures and sells networking solutions for a modern telecommunication infrastructure. Its products are based on fiber-optic transmission technology combined with Ethernet functionality and intelligent software for network management and virtualization. Furthermore, the portfolio includes timing and synchronization solutions for networks.

With 1,764 employees at year-end 2016 located in 38 different sites and representations around the globe and an international ADVA Works Council without trade union ties, teamwork is what makes ADVA exceptional.

You can find more about ADVA Optical Networking here: ADVA Annual Report 2016

- Headquarter
- Office
- Representative

ADVA Optical Networking's addressable market encompasses several applications for optical transmission technology, Ethernet access technology and solutions for network virtualization and synchronization. The demand for the group's solutions is driven by the global megatrends "cloud" and "mobility", fueling the demand for universally available bandwidth.

Fiber Optic Transport

Optical fiber is the optimum physical medium to transmit large amounts of data over long distances. The bandwidth-over-distance capabilities of fiber by far exceed those of any other physical medium such as copper or wireless technologies. Therefore, fiber-optic transport is the unchallenged foundation for all high-speed networks. ADVA Optical Networking's optical transmission solutions are based on wavelength division multiplexing (WDM). With WDM, multiple data streams are transmitted simultaneously over a single optical fiber by assigning each stream to an individual wavelength (i.e., color) of laser light. Every wavelength (more than 100 in total) can carry a different application such as voice, video, data or storage traffic. Combining (i.e., multiplexing) these wavelengths at one end of the fiber, transmitting them over distance and then separating (i.e., de-multiplexing) them at the far end maximizes the fiber capacity and makes transmission more efficient. WDM supports all data protocols and transmission speeds, and is the natural foundation for all high-capacity networks.

Ethernet

Ethernet is the dominant data-link protocol for today's networks supporting a multitude of communication applications. ADVA Optical Networking provides Ethernet-optimized transmission solutions for fiber-based networks used to interconnect enterprises and mobile network base stations with carrier networks. Ethernet is also one of the key protocols used to carry applications in high-speed optical networks for data backhaul and the interconnection of routers.

Software

The importance of software in networking technology is increasing rapidly. On the one hand, network operation is automated by means of intelligent software, which increases user friendliness and simplifies network control and maintenance. On the other hand, more and more network functions are virtualized (network function virtualization, NFV). 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. The acquisition of Overture in 2016 significantly expanded the technology portfolio of ADVA Optical Networking in the area of NFV software.

Synchronization

Reference sources that deliver stable frequency and time-of-day information are crucial to the effective transmission of digital signals. Especially in mobile networks, the availability of highly accurate synchronization and timing information is crucial for network-capacity increase and therefore, best end-user experience. With a complete end-to-end solution portfolio sold under the Oscilloquartz brand, ADVA Optical Networking can offer a smooth evolution across multiple generations of synchronization technologies.

Company Key Facts

- Employees
  1,764 worldwide as of December 31, 2016.

- Quality and Environmental Commitment
  ADVA Optical Networking is TL9000, ISO9001, ISO14001, ISO22301 and ISO50001 certified.
  We also perform Life-Cycle Analyses (LCA) according to ISO14040/14044.

- Public Listing
  ADVA Optical Networking is stock-listed as ADV in the Prime Standard segment at Frankfurt Stock Exchange and a member of the TecDAX®.

ICT Technology and Its Global Impact

ADVA Optical Networking products are part of the global internet, or ICT sector. As such, they are part of a sector who contributes approximately 2% of global GHG emissions. On the other hand, this same sector potentially enables GHG emissions abatement that is seven times higher than its own emissions. This is sometimes also referred to as Green-by-ICT.

The global ICT sector can be split into three areas: data centers, networks, and end-user devices. The networks segment in turn splits into two approximately equally large parts, wireline and wireless networks. ADVA Optical Networking products, including DCI solutions, mainly fall into the wireline networks category (the ICT data center segment mainly consists of servers, switches and storage).

The relative and absolute impact of the wireline networks segment on global ICT greenhouse gas emissions can be derived from the following picture. It shows that in particular the networks segment is predicted to grow significantly over the next couple of years, highlighting the need to continue to optimize the impact of related products.

Within the (wireline) networks sector, ADVA Optical Networking ranks amongst the top 10 in the optical networking and access switching sub-segments. Since the wireline networks segment also contains access networks, routing and switching, the total impact of our products to this sub-segment is <1%.

A brief description of our main products was given before. More details in particular on the energy efficiency of our products (which is the major parameter influencing GHG emissions) can be found in the Eco Design chapter.
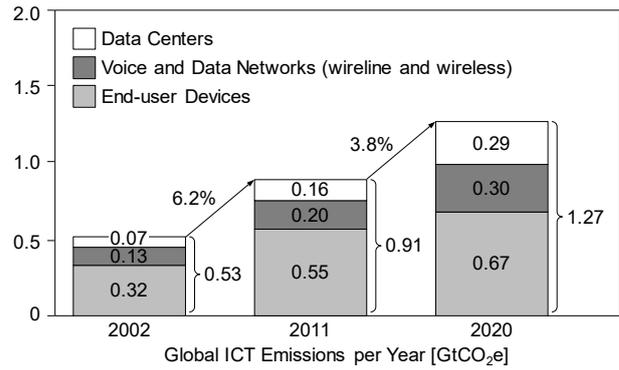
*Global ICT Scope-1 to Scope-3 emissions
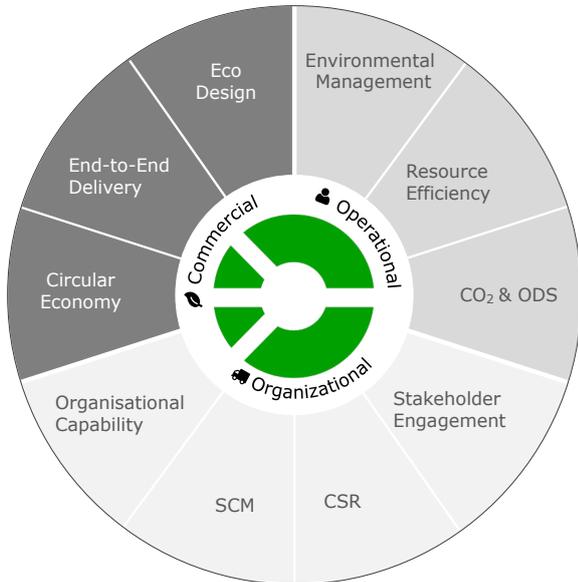[GeSI SMARTer 2020, 12/2012]*

Mission

🌍 HOLISTIC VIEW OF SUSTAINABILITY

Sustainability Strategy

ADVA Optical Networking's sustainability program is based on a holistic model covering the broad variety of all related aspects. It is shown in the following diagram:

The sustainability model used in the QuEST Forum Sustainability Initiative G4-14

Besides being used for sustainability assessments by large operators like British Telecom, the model is applied also by QuEST Forum, the body which defines TL9000 as the telecommunication industry's version of the international quality standard ISO9001. It covers 10 sustainability segments and is organized into three superordinate segments. These three super segments are referred to as Operational, Organizational, and Commercial.

The **Operational** super segment covers aspects which are mainly related to the (production) sites of the reporting company. Details are defined in the three segments Environmental Compliance, Resource Management, and CO_2 (and ozone depletion). These segments consider the planet aspect of the Triple Bottom Line, they can be considered, e.g., by compliance with the ISO standards ISO14001 and ISO50001, and CO_2 emissions reporting according to the greenhouse gas protocol (GHGP).

The **Organizational** super segment contains the aspects that are related to people and business partners. The segments Stakeholder Engagement and Supply Chain Management describe the sustainability-related interactions with several (groups of) business partners. The segment Corporate Social Responsibility (CSR) covers the Triple-Bottom-Line aspect of people.

The **Commercial** super segment is Circular Economy. Circular Economy aims at a drastic reduction of raw-material intake as well as of the resulting waste. This includes engaging all relevant business partners in the related business models (e.g., leasing, take-back). The basic concept behind Circular Economy is longevity. This is the combination of extended product lifetime, product second life (through refurbishment),

parts reuse, and optimized recycling. Products, or relevant parts of them, are to be kept in closed-loop usage as long as possible. Therefore, a relevant loop closure in Circular Economy is optimized recycling. This aims at getting back close to 100% of all valuable materials from waste electrical and electronic equipment (WEEE) in best available purity (also as close to 100% as possible). Such recycling must be supported by product eco design that in particular eases disassembly and avoids certain materials and material composites. These recycling capabilities must be complemented by business schemes that support the take-back of the related products, e.g., leasing models.

In 2016, the sustainability model has been complemented in a joint effort by British Telecom and the QuEST Forum Sustainability Initiative by introducing a web-based tool called Assessor, which supports straightforward sustainability assessments. Its use in ADVA Optical Networking's supply-chain management has started in late 2016 and supports increased transparency and robust reporting on sustainability related aspects. It also helps developing our suppliers' sustainability performance and strategy, if required. In addition, the group itself is regularly rated using the Assessor tool. The latest results of 2016 showed a strong "High Silver" ranking across all segments of the described sustainability model. This is demonstrated in the following figure: G4-15
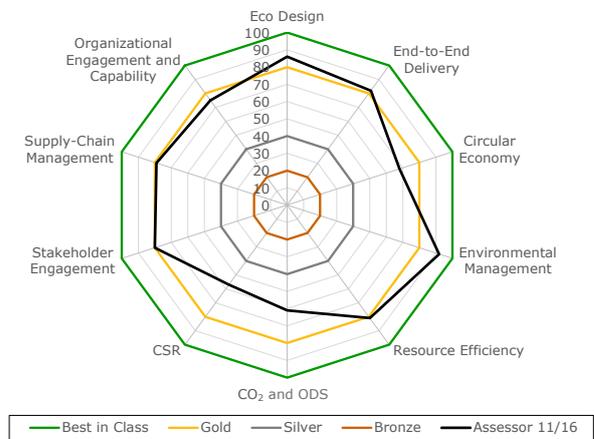
Assessor sustainability ranking results as of November 2016

Furthermore, the group is regularly assessed regarding its sustainability performance by large customers and independent bodies like the Carbon Disclosure Project (CDP). In order to further strengthen the group's sustainability efforts and achievements, ADVA Optical Networking joined the Science Based Targets initiative (SBTi) in late 2016 as one of the first 200 companies worldwide. SBTi is a joint initiative by CDP, UN Global Compact, the World Resources Institute and the WWF. Its key aim is to support the restriction of global warming to within two degrees Celsius compared to pre-industrial temperatures. The group's target will be defined throughout the year 2017. It will aim at emissions reductions of our major GHGP Scope-3 contributor, the use-phase emissions of our products. This will be tackled through respective eco design.

Mission

Since its foundation in 1994, ADVA Optical Networking has grown into a mid-sized corporation with subsidiaries and affiliates around the world. In line with our mission to be "the trusted partner for connecting, extending and assuring the cloud" we develop, produce, install and service products that are incremental for the optical networks of hundreds of telecommunication and internet service providers, international corporations and research and government institutions.

Sustainability has become a ubiquitous requirement worldwide. This is true for all our relevant stakeholders and business partners. It is reflected by our sustainability strategy and actions. Moreover, it led to our holistic sustainability approach. This approach allows us to maintain and support sustainable business and growth in the sense of the Triple Bottom Line, thus unburdening the planet, appreciating people, and increasing profit.

Regarding the planet, the most critical aspects are global warming and resource scarcity. This is reflected by our actions targeting environmental compliance, resource efficiency, and GHG emissions reduction.

In the people segment, the respective stakeholder groups must be considered regarding their relevant sustainability requirements. This holds for our employees, our shareholders and investors, our business partners and, last but not least, our communities. This area traditionally has been served under the term corporate social responsibility. Under the more holistic view, this is complemented by sustainability-related supply-chain management and stakeholder engagement.

Finally, profit itself ought to be sustainable. This leads to the renunciation of the linear take-make-use-dispose economy and a change toward the concept of circular economy, including the preparation of its large-scale implementation. Here, new business models must be considered. These business models have to be supported by optimized product designs, logistics, and manufacturing. That's where our holistic view on sustainability comes full circle.

Sustainability Strategy

The aim of our sustainability strategy is to develop the different aspects of sustainability, in the sense of the Triple Bottom Line, approximately equally well. This consideration of the different sustainability aspects is mandated by relevant groups of stakeholders and as such, is reflected in the sustainability materiality analysis. It has to be noted though, that in the QuEST Forum sustainability model, the different segments have different weight (e.g., product eco design has highest weight, whereas end-to-end logistics or stakeholder engagement have lower weight).

Within the segments (and considering the segments' weight), we identify and concentrate on the most relevant aspects/contributors, those with the highest impact on improvement in the respective segment. These are GHG emissions (in particular product use-phase / Scope-3 emissions), followed by preparation of – larger-scale – circular economy processes and business, and the improvement of some specific people and partners aspects. This also addresses the fact that these are the areas where our performance is still relatively lower, compared to the other segments (refer to the radar chart in the previous chapter).

Reduce intensity–related GHG emissions by 10% at the end of 2019, compared to 2016.

At the time being, GHG emissions are one of the most relevant aspects of sustainability, driven by the criticality of global warming. This is reflected by the fact that two segments of the sustainability model are related to GHG emissions (obviously, CO_2 and Ozone depletion, and eco design, given that GHGP Scope-3 product emissions are a relevant driver of the reporting entity's total GHG emissions). Due to the outstanding GHG-emissions relevance, we attribute the only numerical sustainability-strategy KPI to it. The goal here is to achieve 10% reduction of our total global CO_2 footprint by (the end of) 2019, compared to 2016. This reduction goal considers the relevant contributors of GHGP Scope-1 to Scope-3 emissions.

It is intensity-related, i.e., emissions are normalized to company growth. According to the discussion in the Eco Design chapter, the dominant products use-phase emissions must also be related to the exponential internet bit-rate growth. The GHG-emissions-related strategy and KPI are underpinned by our participation in the Science Based Targets initiative (see the preceding chapter and the respective section under the Stakeholder Engagement chapter).

The two other strategic initiatives relate to circular economy, and people and partners, respectively. Regarding circular economy, the strategic goal is its preparation for broad-scale application. We already follow certain circular economy processes (refer to the respective chapter in this report). However, a massive shift from linear to circular economy requires further strategic consideration, e.g., with respect to the related business models. No numerical KPIs have been set here. Instead, successful implementation of the required steps in a timely manner is the goal. Deadline, as for all sustainability-related strategic initia-

tives, is end of 2019. Finally, strategic initiatives relate to the segment of people and partners. This specifically addresses improvements in sustainability-related supply-chain management (see the introduction of the Assessor tool that is described in several chapters of this report). It also addresses diversity (supplier diversity, employee diversity). Further strategic considerations relate to the segment of corporate social responsibility. Here, several complements to our ongoing activities that address our staff are under planning and implementation. Again, no numerical KPIs have been set here.

No specific KPIs, e.g., related to water or waste have been defined since we are a systems integrator with no particular wastewater or other waste impact. The goal here is intensity-related year-over-year reduction. This can be followed in the sustainability reports.

The sustainability strategy has been publicly communicated as part of the CTO's strategy slides.

| Category	Key Objectives	Key Initiatives/Activities	Status
CO_2	Decrease Intensity-related ADVA global CO_2 footprint	Participation in the SBTi and be committed to set company-wide emissions targets based directly on climate science	Started
		Work with CDP, QF on related (e.g., TEER) aspects	Started
		Improve at least sites *or* transport (logistics partners)	Started
Circular Economy	Prepare Circular-Economy business	Internal calculation of costs and benefits	Started
		Select first partners for reverse logistics, reuse, and lead customers and projects	Started
		Improve recycling capabilities, in particular by applying the Design Guide and LCA	Started
People & Partners	Consider People & Partners	Improve Sustainability SCM (SSCM) by Assessor roll-out and direct audits	Started
		Complement Procurement (diversity)	Started
		Complement our own CSR by relevant standards, and integration of Sustainability into ESS	Started
Closed Initiatives/ Activities*	Stay in constant dialogue with all stakeholders and let their collective voice guide our Sustainability efforts	Investor Relation Survey in preparation	Done
		Part of the Quest Forum Sustainability Initiative	Ongoing Activity
		CDP engagement	Ongoing Activity
	Institutionalize DfR3** to maximize reuse and recycling potential of new products	Design Guide written and internal review started	Done and fully implemented in our Product Life Cycle Process

* Activities/Initiatives are fully implemented in our process landscape a/o daily business and were not listed in the future reporting

** Design for Reduce, Reuse, Recycling

ETHICS AND COMPLIANCE

Business Partner Compliance
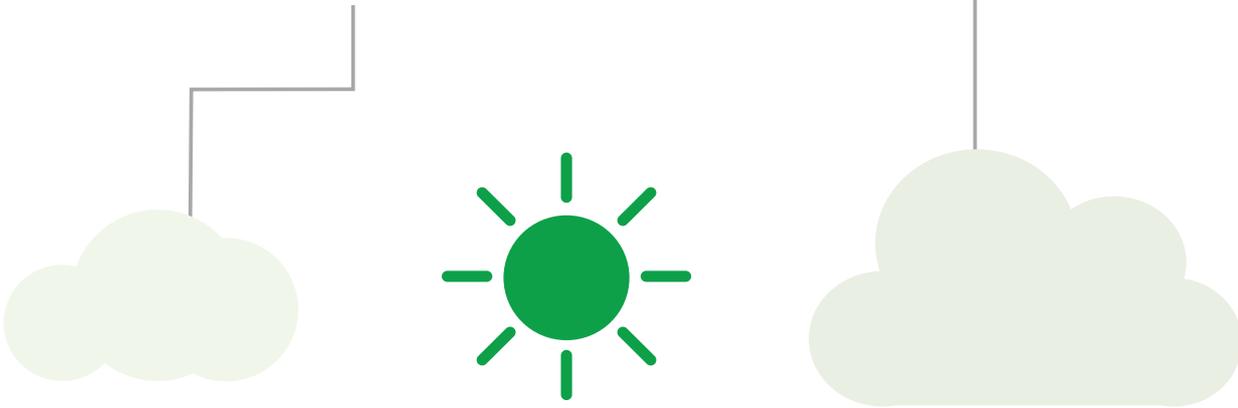
Our Values

Our Values G4-56; G4-SO4

Our sustainable success is based on strong core values, modelled by the top and demonstrated by example. All (line) managers are aware of their respective responsibilities. Specific leadership principles foster such understanding. Taken together, the following core values and leadership principles (collectively: "Values") support sustainability in everything we do.

Teamwork. We embraces open communication and collaboration. We are committed to promote an inclusive work environment that values diversity of people and thought. With 1,764 employees at year-end 2016 located in 38 different sites and representations around the globe and an international ADVA Works Council without trade union ties, teamwork is what makes ADVA exceptional.

Excellence. We are striving towards excellence in whatever we do. This includes our commitment to consistently exceed customer expectations. In order to measure our respective success, annual surveys are conducted measuring the group's "net promoter score". Throughout the last years, continuous improvements were achieved and is shown in the detailed overview/table on of this report.

Accountability. Our strategic goals "Growth and Profitability", "Innovation", "Operational Excellence" and "People" are the cornerstones of our corporate development.

They are tied to specific performance indicators and updated on an annual basis. Meaningful departmental, team and employee objectives support the achievement of our strategic goals and are reviewed and updated every six months.

Motivation. The group strives to engage and motivate its employees. Besides anonymous satisfaction surveys, regular breakfast meetings with a member of ADVA's board are organized and allow for a personal discussion of areas of concern. Resulting action items are followed up with by the board. This amongst others translated into seven employee career path videos that were published within 2016.

CREATE
OUR FUTURE

⟳ Motivation

BEING THE BEST
IS A HABIT
NOT A SKILL

⟳ Excellence

COMMIT
AND THEN
MAKE IT HAPPEN

⟳ Accountability

COMMON GOALS
ONE TEAM

⟳ Teamwork

Teamwork
Excellence
Accountability
Motivation

ADVA™
Optical Networking

Integrity & Honesty. Compliance with applicable laws and regulations and the adherence to the company's ethical standards and principles ("Compliance") is essential for establishing trust with our customers, suppliers, partners and colleagues. Our commitment to integrity and honesty translates into our Group Code of Conduct and a clear and precise allocation of responsibilities for ensuring compliance.

Decisiveness. Timely and informed decision making is essential for keeping up with our industry's ever increasing pace of innovation. To ensure continuous personal development, we implemented a holistic management training program which is mandatory for all concerned employees. In 2016, 12 trainings were conducted under this program counting 270 participants.

Respect. The group takes on an active role in the local communities that we are operating in. This includes humility in our manners and respect and courtesy when treating others. The same applies also internally and regardless of the level of hierarchy involved. In 2016, the importance of respect for employee motivation was emphasized by dedicated posters.

VALUE PEOPLE DRIVE ENGAGEMENT
↪ Respect

MAKE DECISIONS MOVE FORWARD
↪ Decisiveness

TRUST UNLOCKS OUR TRUE POTENTIAL
↪ Integrity & Honesty

Integrity & Honesty
Decisiveness
Respect

ADVA™
Optical Networking

ADVA Optical Networking's Compliance Management System

G4-SO4; G4-SO6; G4-SO7; G4-SO8

Our values are the cornerstone of who we are. They translate into the ADVA Group Code of Conduct ("Code") which sets forth the ethical standards that every employee, manager, director and officer of the company (collectively "Employee/-s") needs to comply with. Ensuring compliance requires an organizational framework based on applicable laws and regulations, international standards and industry best practices. While such may deviate from country to country, they are very similar in terms of the required compliance management system ("CMS"). Taking this into account, we implemented a CMS in particular consisting of:

- A corporate culture characterized by integrity, accountability and transparency ("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")

The group's CMS is supported by a central compliance department located in Munich, Germany. Within 2016, six regional compliance officers ("RCO/-s") where added that support compliance in addition to their regular function at the company. The RCOs helped to further strengthen our local culture of compliance, to erase any potential boundaries preventing employees from reporting concerns, and to contribute specific functional expertise to the group's CMS. Their activities are coordinated by ADVA Optical Networking's chief compliance officer who reports to the chief executive officer 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 and an externally operated Ethics and Compliance Helpline enable confidential and anonymous reporting.

Any employee is eventually responsible for his/her own actions. This understanding is acknowledged and documented by all employees when signing the company's compliance acknowledgements and supported by in-person compliance trainings. At the time of this report, 99% of all employees had committed in writing to comply with the group's code and all group-wide policies. This was supported by provisioning 12 compliance trainings with 270 participants only within 2016.

Business Partner Compliance

Our commitment to compliance extends to our suppliers, service providers and intermediaries ("business partners"). As we could be exposed to substantial legal as well as reputational risks in this area, a two-step approach ensures effective risk mitigation. First, risk-based due diligence is exercised for any (new) business partner. Second, robust contracting and continuous monitoring aims to further mitigate our related risks. Business partners provide a broad variety of different services. The risk of unethical behavior differs accordingly and may involve corruption, labor law violations, product compliance concerns or other unwanted conduct. In order to allow for a targeted and risk-based due diligence prior to entering into a business relationship, specific business partner categories and proportionate financial thresholds were defined. As for anti-corruption, relevant types of business partners in particular include:

- Sales reseller and sales agents

- Customer service provider

- Logistics service provider

- Marketing/event service provider

- Organizations or associations

In order to ensure robust and standardized evaluations, we implemented a tool-based due diligence process which is semi-automated as far as possible. This 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. Besides non-disclosure agreements (NDAs), no contractual relationship is entered into without prior closure of the required due diligence activities.

ADVA Optical Networking is subject to the 2015 Modern Slavery Act ('the Act') and must report annually on the steps that we have taken during the financial year to ensure that slavery and human trafficking are not taking place in our supply chains or in our own business.

ADVA Position on Slavery and Human Trafficking

At ADVA Optical Networking ("ADVA"), we are committed to running our business responsibly. We strive to live up to our ethical standards embodied in our values and documented in our Group Code of Conduct ("Code"). Our efforts are supported by periodic training sessions for all employees and a dedicated team with clearly allocated responsibilities within the areas of compliance, sustainability and corporate social responsibility. In addition, we actively encourage all individuals to report any perceived deficiency either to our ombudsman or via our Ethics and Compliance Helpline.

Our standards include certain policies and practices to address slavery and human trafficking issues. This aligns with the United Kingdom Modern Slavery Act of 2015, the California Transparency in Supply Chains Act of 2010 (SB 657) and other laws or regulations that require businesses to be transparent about the efforts they have undertaken to eradicate slavery and human trafficking within their supply chain.

ADVA takes multiple actions to ensure that slavery and human trafficking does not occur within our supply chain, including the following:

- **Our Code and Supplier Code of Conduct**

  Our Code derives from our values and sets forth the ethical standards that every employee, manager, director and officer of ADVA needs to comply with. We strive to work with business partners that operate under similar principles. In addition to our Code, our Supplier Code of Conduct addresses specific issues for our strategic suppliers and is modelled on the EICC's framework. We do not tolerate any form of forced or compulsory labor.

- **Risk Assessment**

  Risk profiling helps us effectively assess our focus with regard to all different types of business partners, including strategic suppliers. Our analysis in particular depends on the type of product, service or the business partner's location.

- **Screening, Qualification and Contracting**

  ADVA implements screening, qualification and contracting processes for strategic suppliers and other selected business partners. Our measures include 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.

- **Auditing and Monitoring**

  ADVA utilizes online assessment and auditing tools to evaluate strategic suppliers. In addition, clear and specific key performance indicators help us to continuously evaluate our strategic suppliers' performance and to drive improvements where required. Furthermore, on-site audits are conducted where needed.

ADVA's focus on eradicating slavery and human trafficking is part of a larger effort of supply chain transparency and accountability.

Ethical conduct does not simply happen. It is the product of a corporate culture based on integrity and accountability which is modelled by the top management and demonstrated by example. Constant re-enforcements and improvements are required. This statement describes the key measures for preventing slavery and human trafficking in our supply chains as applicable for the period Jan 1st to Dec 31st, 2016. It has been approved by the management board of ADVA Optical Networking SE.

Brian Protiva
Chief Executive Officer

December 2016

ORGANIZATIONAL SUPER SEGMENT

Stakeholder Engagement

Sustainability Supply Chain Management

Sustainability–Related Organization

Corporate Social Responsibility

Sustainability–Related Organization

To maintain and further strengthen the group's focus on sustainability, a dedicated sustainability department directly reports to the chief technology officer. The team sets the ADVA Optical Networking sustainability strategy in close cooperation with the respective peers in other departments (HR, Legal, OPS, and R&D). It acts as primary point of contact (e.g., for CDP queries), coordinates activities and provides content in the form of collateral, dissemination (at conferences, etc.) and contributions to (research) projects. It also answers sustainability assessments and provides the related reporting and input to respective tender sections or similar requests for information on the group's sustainability strategy, efforts, and performance. The team also actively participates in the QuEST Forum Sustainability Initiative.

A view on the sustainability-related organizational structure is given below.

The sustainability department is the central point of contact for external sustainability-related queries. Whatever responses are compiled in cooperation with the peers of the respective other departments. Examples include the cooperation with sales in answering sustainability sections in tenders or RFIs, or the compilation of the sustainability report, where input from several departments is required.

The sustainability department is responsible for defining the group's sustainability strategy including the necessary steps to be taken shorter to longer term. It creates internal awareness for the different aspects of sustainability, provides training, and engages externally with various groups of stakeholders (part of which are, of course, also served by other departments). It is also responsible for collecting (again, together with the related peers) all sort of tracked sustainability data, and is in charge of the related reporting and assessments. Further responsibilities include the ownership of life-cycle analyses, and the respective feedback into R&D and other departments.

Finally, the global sustainability committee is responsible for decisions on proposals, which have been submitted in our Global Sustainability Challenge (see the CSR chapter). It also has an advisory capacity on certain aspects and questions regarding sustainability, where it meets on demand.
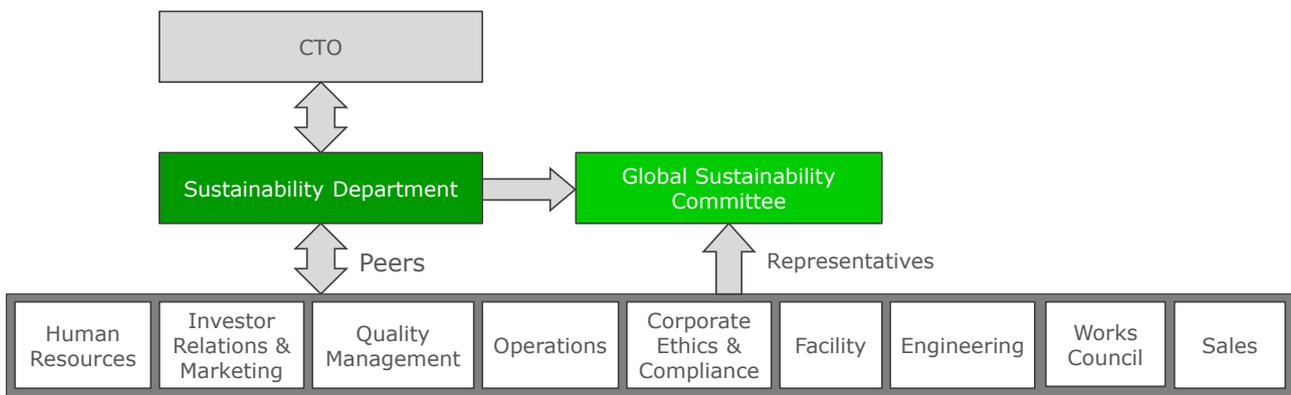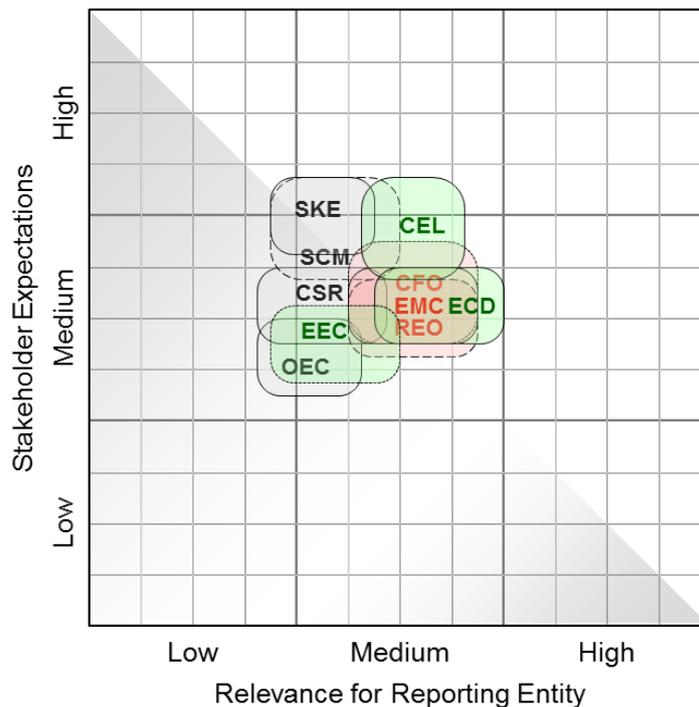
Stakeholder Engagement *G4-25; G4-26; G4-27*

Stakeholder engagement is relevant in the sustainability context as it helps with identifying stakeholders' expectations and updating the focus on sustainability-related activities. As such, it is necessary as one of the main input sources for the sustainability materiality analysis.

A materiality analysis can be displayed in a two-dimensional diagram. The ordinate axis displays the stakeholders' expectations with regard to sustainability performance, strategy, etc. of the reporting entity. The x-coordinate summarizes two aspects, an external (or environmental) analysis, plus an internal analysis covering the reporting entity's strengths and weaknesses.

In 2016, we conducted a survey, asking investors on their expectations regarding ADVA's sustainability efforts and performance. The survey revealed two interesting aspects of investors' expectations. First, the two areas of social responsibility and environmental consciousness were ranked equally important by the survey participants. (Social responsibility and environmental consciousness largely correspond to the organizational and operation super segment of the sustainability model, respectively, the latter being complemented by eco design.) Second, the participants were asked where they ranked sustainability (both, social and environment) against product price, quality, and feature richness. Here, sustainability was ranked third.

The survey confirmed our approach to execute the 10 sustainability segments approximately equally well, (compare with the results diagram in the section Holistic View on Sustainability). Like any stakeholder feedback, the survey was also used as input for our sustainability materiality analysis. The update of this analysis is shown in the figure below:

REO	Resource Efficiency Optimization
EMC	Environmental Management Certification
CFO	Carbon Footprint and Ozone Depletion
SKE	Stakeholder Engagement
CSR	Corporate and Social Responsibility
SCM	Supply Chain Management
OEC	Organizational Engagement and Capability
ECD	Ecological Design
EEC	End to End Coverage
CEL	Circular Economy Life Cycle

Sustainability Materiality Analysis 2016

BT Assessor Tool–Implementation in our Supply Chain

The Assessor tool has already been briefly described in the section Holistic View on Sustainability. Originally, the tool was developed by British Telecom and epi Consulting. In 2016, it was also adopted by the QuEST Forum Sustainability Initiative for assessments of the performance of the participating members in all 10 segments of the sustainability model. The tool consists of sets of questions for each of the 10 sustainability segments. Answers comprise multiple choice, editable text, or attachments of supporting documentary. After completion of an assessment, the respective party gets the results (a radar chart as shown at the beginning of this report), together with recommendations for the next steps that are required in order to improve the result. The complete assessment tool is bilingual (English, Mandarin), due to the large number of Chinese (components) suppliers. Our customized start page is shown below:

As a beta tester and early user of the tool, ADVA provided feedback during the introductory phase to the developers of the tool. In later 2016, we were also one of the first vendors to implement the Assessor in our supply chain, as a tool for relatively simple, web-based sustainability assessments and to support and accompany the respective suppliers' sustainability development. This implementation started with the selection of first (trial) suppliers and respective trainings. This process is ongoing and over time more and more suppliers will be added.

Adva Sustainability Assessor

Are you ready and capable of becoming a supply chain sustainability leader?

Sustainability has become a ubiquitous requirement worldwide. This is true for all our relevant stakeholders, ranging from our customers and investors to our suppliers, logistics partners and the involved people and communities. Our sustainability strategy and efforts reflect the fact that we take responsibility related to sustainability. This assessment tool is a part of these efforts. It is intended to create sustainable benefits for all stakeholders involved in the end-to-end supply chain and end-products' life cycle.

To describe the state of these efforts, and to enable dedicated improvements, we use a holistic sustainability approach which covers all relevant aspects of the Triple Bottom Line – Planet, People, and Profit. This approach is used by large customers as well as organizations like the QuEST Forum. Using the related assessment tool for both our suppliers and ourselves helps us to provide a consistent overview on where we are and how we contribute to the complete end-products' life cycle.

Ultimately, this will allow end-to-end optimization and the market entry into sustainable circular economy business.

Continue to assessment   >

可持续发展已成为全球无处不在的要求。这是我们所有的利益相关者，从我们的客户和投资者对我们的供应商，物流合作伙伴及参与人员和社区如此。我们的可持续发展战略和努力反映了我们采取与可持续性相关责任的事实。这个评估工具是这些努力的一部分。它的目的是创造参与终端到终端的供应链和最终产品的生命周期的所有利益相关者可持续的效益。
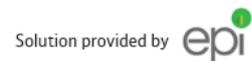
为了描述这些努力的状态，并启用专用的改善，我们使用它涵盖了三重底线的所有相关方面的整体可持续发展的方法 - 地球，人，和利润。这种方法是由大客户以及像QuEST论坛组织使用。使用我们的供应商相关的评估工具和我们自己帮助我们提供我们所处一致的概述，以及我们如何将整个终端产品的生命周期做出贡献。

最终，这将允许终端到终端的优化和市场进入可持续发

继续评估   >

In partnership with BT

Solution provided by epi

Science Based Targets initiative

In late 2016, ADVA Optical Networking joined the Science Based Targets initiative (SBTi), as one of the first 200 companies worldwide. The SBTi is a partnership between the Carbon Disclosure Project, UN Global Compact, the World Resources Institute and the World Wildlife Fund. It aims at helping companies determine how much they must cut emissions to prevent the worst impacts of climate change. Carbon-reduction targets adopted by companies to reduce GHG emissions are considered "science-based" if they are in line with the level of decarbonization required to keep global temperature increase below two degrees Celsius compared to pre-industrial temperatures, as described in the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR5). Targets must cover a minimum of five years and a maximum of 15 years from the date of announcement of the target.

ADVA OPTICAL NETWORKING HAS COMMITTED
▶ to set company-wide emissions targets based directly on climate science.

According to the SBTi eligibility criteria, an ambitious and measureable GHGP Scope-3 target is also required when Scope-3 emissions cover a significant portion of a company's overall emissions. Since this is the case for ADVA Optical Networking (as can be derived from the Resource Management chapter), our plan is to define a GHG reduction target mainly related to Scope 3 in 2017.

Active Participation at Workshops and Conferences

In September 2016, ADVA Optical Networking participated the Electronics Goes Green (EGG) 2016 conference in Berlin. EGG is one of the large European conferences on "green" electronics. It takes place alternately with the CARE Innovation conference in Vienna. We participated the conference with two contributions on sustainability aspects of WDM equipment and WDM eco-design trade-offs, respectively.

In autumn 2016, ADVA Optical Networking was also invited to participate a workshop on responsible supply-chain management. The workshop was organized by the consulting companies UPJ and econsense, and was sponsored by the German Federal Ministry of Labor and Social Affairs. It took place in Leipzig, Germany. The workshop specifically focused on sustainability supply-chain management for small and medium enterprises. We contributed with a presentation and related discussions on our activities and experience regarding the workshop topic.

Excellent Customer Satisfaction Rating *G4-PR5*

For 2016, ADVA Optical Networking's Net Promoter Score[1] was +60% (a +19% increase in 2016 compared to the 2015 score of +41%). This result underlines the company's focus on customer satisfaction and its commitment to continuous improvement. The development of customer satisfaction is shown in the table below.

NPS – Net Promoter Score[1]	2016	2015	2014	2013
Overall	**60%**	**41%**	**40%**	**21%**
1/8 Technology & Innovation	38%	20%	8%	-5%
2/8 Product Quality & Reliability	48%	24%	20%	11%
3/8 Fault Correction	60%	32%	34%	4%
4/8 Proposals	70%	59%	63%	34%
5/8 Order Management	70%	59%	69%	45%
6/8 Shipping & Invoicing (6R)	67%	57%	63%	34%
7/8 Project/Prog/Account Mgm.	76%	62%	64%	43%
8/8 Technical Services	73%	44%	47%	30%

[1] The Net Promoter Score is obtained by asking customers a single question on a 0 to 10 rating scale: "How likely is it that you would recommend our company to a friend or colleague?" Based on their responses, customers are categorized into one of three groups: promoters (9–10 rating), passives (7–8 rating), and detractors (0–6 rating). The percentage of detractors is then subtracted from the percentage of promoters to obtain a Net Promoter Score.

Sustainability Supply Chain Management

G4-12; G4-EN32; G4-LA15; G4-HR4; G4-HR5; G4-HR6

Sustainability-related supply-chain management requires close cooperation with our suppliers. It is an example of stakeholder engagement with one relevant group of business partners. In order to assess compliance with our Supplier Code of Conduct, which is based on the EICC Code of Conduct, ADVA Optical Networking has implemented a supplier assessment process intended to uncover risks and address them. This process consists of a supplier survey that documents compliance on every aspect of our supplier code of conduct, a risk assessment performed by us and finally on-site supplier audits. This process is currently being complemented by the introduction of the Assessor tool into the supply chain.

Process and Documentation Updates

The group's Supplier Code of Conduct (CoC) is a relevant part of our supply-chain management. As such, it needs to be kept updated with regard to the evolving sustainability requirements. In 2016, we started to update our Supplier CoC in several aspects. Since the group also has a general CoC, part of the update related to further alignment between the two codes of conduct, in order to better avoid duplications. Then, our Supplier CoC will be aligned with the latest version of the EICC CoC as of 2015. This requires some minor additions to our Supplier CoC. Finally, some specific sustainability-related supply-chain management aspects were added. This includes dedicated additions regarding slavery and diversity (see respective subchapter here – this is also aligned with the EICC CoC). When the new version of the group's Supplier Code of Conduct is finalized, it will be published on our Sustainability webpage.

Furthermore, we have also adapted our Supplier Qualification process and the related documentation. This includes requirements for supplier diversity, modern slavery, conflict minerals, labor practices and environmental policy.

Assessor

The Assessor tool has already been introduced in the chapters Stakeholder Engagement and Holistic View on Sustainability. The usage of this tool in our supply chain has several advantages. First, the group itself is also using the Assessor for own (self-) assessments. Hence, the group and its suppliers are treated in the same way, which is also consistent with the QuEST Forum Sustainability Initiative approach. Then, as an online tool, the Assessor helps in the sustainability management of a large number of suppliers. It can be used by the respective suppliers alone, or with online support from our SCM or sustainability teams. Finally, it gives the suppliers valuable direction on where they are in terms of their sustainability performance, and where to focus in order to achieve any improvements. Introduction of the tool into our supply chain started in 2016. It is an ongoing process, over time more and more suppliers will be integrated.

Supplier Diversity

Supplier diversity is another topic which came up again and had to be addressed in 2016. Diversity suppliers are defined as certified small businesses or minority-, women-, persons with disabilities-, Vietnam era and service disabled veteran-owned business enterprises (MWD-VBEs). Related requirements are set forth in the United States Government Federal Acquisition Regulations (FAR) 19.704 and FAR 52.219-9. These regulations require that any subcontracting plans include goals, expressed in terms of percentages of total planned subcontracting dollars, for the use of small business, MWDVBEs, and historically underutilized businesses zones (HUBZones) small businesses. Consequently, they are adopted by our large USA-based customers. This led to several related group activities in 2016. First, we updated our internal supplier-base assessment regarding certified compliance with any of the diversity definitions. We then continued the related reporting to large US customers. Finally, we complemented our supplier qualification process by dedicated consideration of the diversity compliance status. Over time, this aims at increasing the diversity supplier base.

Anti-Slavery Statement

The topic of slavery and human trafficking also came up again in late 2015 and 2016, fueled by the UK Modern Slavery Act 2015 and the (older) California Transparency in Supply Chain Act. These transparency acts require that organizations prepare a slavery and human trafficking statement for each financial year. This shall state the steps taken to ensure that slavery and human trafficking is not taking place in any of its supply chains, and in any part of its own business. The statement must be signed by a board member and (if applicable) be published on the company's website. In 2016, we prepared the first annual statement and put it on our website. It is also featured on page 16 of this report. As part of the related actions, we also complemented our process landscape (supplier qualification, Supplier CoC) by dedicated slavery and human-trafficking considerations.

More information on the two transparency acts can directly be found online under www.legislation.gov.uk/ukpga/2015/30/contents/enacted and under www.leginfo.ca.gov/pub/09-10/bill/sen/sb_0651-0700/sb_657_bill_20100930_chaptered.pdf.

Conflict Minerals

The most commonly mined conflict minerals are cassiterite, wolframite, coltan, and gold ore, which are extracted in Eastern Congo. The Dodd-Frank Wall Street Reform and Consumer Protection Act requires companies to verify and disclose their sources of cassiterite, wolframite, and coltan. In addition, the US Securities and Exchange Commission (SEC) issued the Conflict Mineral Law. It asks for independent third-party supply chain traceability audits and reporting of audit information to the public and SEC.

ADVA Optical Networking follows these US requirements and audits its suppliers accordingly. We have requested information from all of our component suppliers with regard to their compliance. The majority of them answered, mostly positively. Some replies are still open, and some of our suppliers did not yet have the respective information. In total, we successfully assessed ~50% of our suppliers (i.e., got answers). Therefore, this is ongoing work.

Ozone-Depleting Substances

Ozone-depleting substances (ODS) are critical due to their ozone-depleting and global-warming potentials. Most of them have been replaced in the recent years by less critical substances, but some of them are still in use (e.g., in cooling sprays). In 2016, we verified that our own sites are ODS-free. Full ODS elimination requires related supply-chain management. Consequently, we also checked our main suppliers regarding use of ODS. These also did not use any ODS anymore. Regarding the complete supplier base, this process is ongoing due to the large number of suppliers. Similar to related engagement processes – conflict minerals, RoHS, REACH – the collection of answers is a time-consuming process since not all components suppliers are able to respond completely or timely. So far, no ODS usage was identified.

RoHS/REACH

Regarding the restriction of hazardous substances (RoHS), all products of the group are fully compliant with the directive 2011/65/EU. This is ensured by respective engagement with the related business partners (components suppliers). In addition, we also file the RoHS exemption in our internal databases. This allows fast identification and reaction in cases where certain specific exemptions expire.

Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) is required according to Regulation (EC) No 1907/2006. The regulation applies to manufacturers or importers of substances, if the respective substances amount exceeds 1 t/a. Since the group does not manufacture or import such amount of substances, it does not fall under the registration and authorization obligations of the regulation. Instead, the group collects the data on the substances composition of the components it uses. Further actions would become necessary in cases where any substances used in any of these components were moved from the REACH candidates list into Annex XIV of the REACH Regulation. In such cases, the respective substances become subject to authorization and should be replaced. The group has been collecting the respective components data from its supplier now for several years. Due to the high number of components and the slow and often incomplete feedback, the substances composition is known for ~50% of all components the group is using. This percentage increases over time, hence data collection is ongoing.

Corporate Social Responsibility `G4-LA12`

Labor and Human Rights

ADVA Optical Networking is an equal opportunity employer and has an on-going commitment to the creation of a workplace free of discrimination and harassment. No one should be held in slavery or servitude. The company is committed to a zero-tolerance policy. We also expect our suppliers to follow ADVA's Supplier Code of Conduct.

ADVA's Group Code of Conduct

ADVA's Supplier Code of Conduct

ADVA Optical Networking 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 published December 2016. ADVA's Position on Slavery and Human Trafficking

International labor standards are an essential component for ADVA to ensure equitable and sustainable growth for all employees.

The labor standards are:

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

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

Employee Diversity `G4-6; G4-10`

We continuously work on improving the female/male split in the group's management layer as well as the overall ADVA workforce.

Our average employee age is between 30-50 and we employ 45 nationalities at 30 company sites as of December 31, 2016. 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. Our sophisticated human resource information system (HRIS) provides detailed reporting functionalities and helps us to ensure diversity going forward. We

as a company are committed to giving equal opportunities and to hiring and employing people with disabilities. Quotas ensure either a certain percentage of people with disabilities in our employment base or a penalty payment to the government. Moreover, we cooperate with Lebenshilfe in Germany to integrate people with disabilities in supportive roles.

On December 31, 2016, ADVA Optical Networking had 1,764 employees, including 21 apprentices (prior year: 1,524 including 16 apprentices).

On average, ADVA Optical Networking had 1,731 employees during 2016, up from 1,491 during 2015. Furthermore, there were 19 and 22 temporary employees working for ADVA Optical Networking at year-end 2016 and 2015, respectively.

During 2016, the increase in employees largely relates to the group's expansion in Poland and to the acquisition of Overture Networks Inc. headquartered in Research Triangle Park, NC, USA with maintained offices in Westford, MA, USA and Bangalore, India in January 2016.

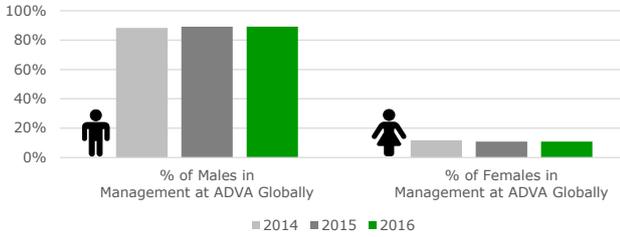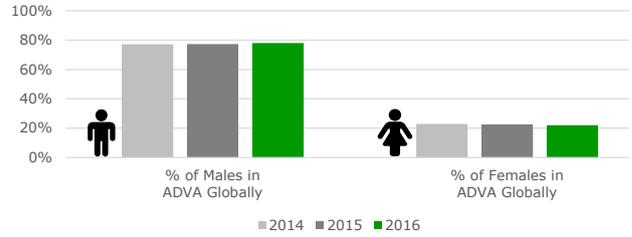| 2016 Total per Country		2016	2015	Change
Europe	Germany	497*	484	13
Europe	Austria	3	3	0
Europe	Switzerland	49	56	-7
Europe	Italy	10	8	2
Europe	Spain	3	3	0
Europe	France	17*	16	1
Europe	Poland	298	271	27
Europe	Finland	8	7	1
Europe	Sweden	3	3	0
Europe	United Kingdom	114	108	6
Africa	South Africa	6	5	1
North America	USA	412	309	103
South America	Brazil	4	4	0
Asia	China	138	137	1
Asia	Hong Kong	5	4	1
Asia	Japan	7	6	1
Asia	India	88	14	74
Asia	Singapore	14	12	2
Asia	United Arab Emirates	1	–	1
Asia	Israel	66	58	8
	Total	**1743**	**1508**	**235**

*without apprentice

Facts and Figures G4-LA1

We continuously work on improving the female/male split in the group's management layer as well as our overall workforce.
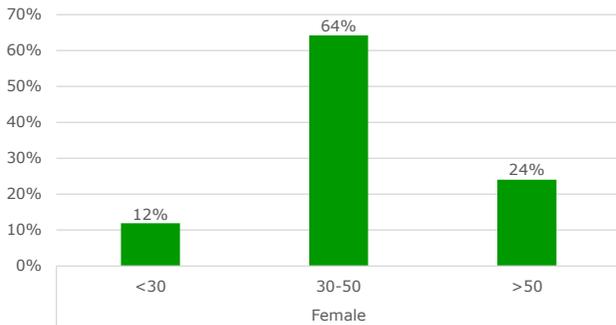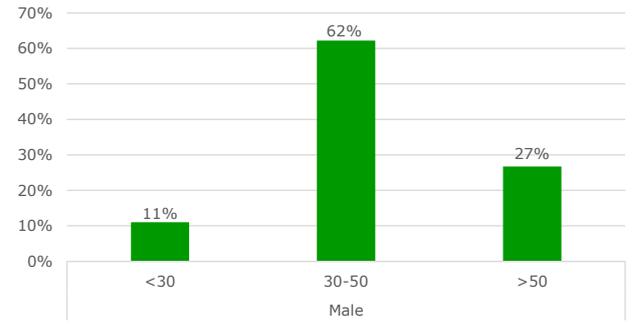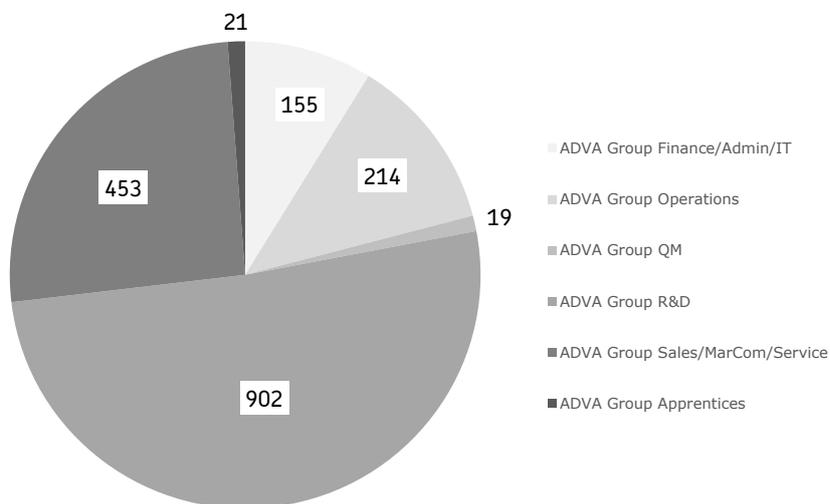
Gender Split 2016 in Management

- % of Males in Management at ADVA Globally
- % of Females in Management at ADVA Globally
- 2014 ■ 2015 ■ 2016

Gender or Male/Female Split 2016

- % of Males in ADVA Globally
- % of Females in ADVA Globally
- 2014 ■ 2015 ■ 2016

Age Group Split 2016

<30	30-50	>50
12%	64%	24%

Female

Age Group Split 2016

<30	30-50	>50
11%	62%	27%

Male

Employees Overview per Function 2016

21 · 155 · 214 · 19 · 453 · 902

- ADVA Group Finance/Admin/IT
- ADVA Group Operations
- ADVA Group QM
- ADVA Group R&D
- ADVA Group Sales/MarCom/Service
- ADVA Group Apprentices
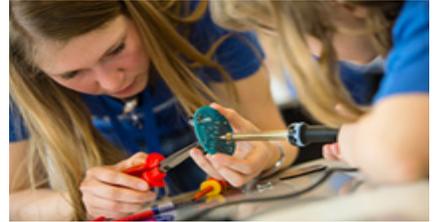
Girls' Day 2016

As a telecommunication systems provider, ADVA Optical Networking works in the field of electronic engineering. Historically, gender distribution has been quite asymmetric in this domain (see the chart on the right which displays the German data for women in engineering – based on VDI nachrichten 26/2014). The ratio of women in engineering is barely 25% and so it is practically impossible to achieve gender parity in our technical departments. On the other hand, the company is committed to increasing the percentage of women working in our company. One of the ways this is achieved is by engaging with girls at schools regarding engineering studies. In recent years, we have been doing this, and in April 2016, nine schoolgirls aged 11 to 16 participated our Girls' Day in Meiningen and in Munich. The Girls' Day is organized by Kompetenzzentrum Technik-Diversity-Chancengleichheit e.V. (competency center technology, diversity, equal opportunities) and supported by the Federal Ministries of Education and Research and of Family, Senior Citizen, Women, and Youth, respectively.
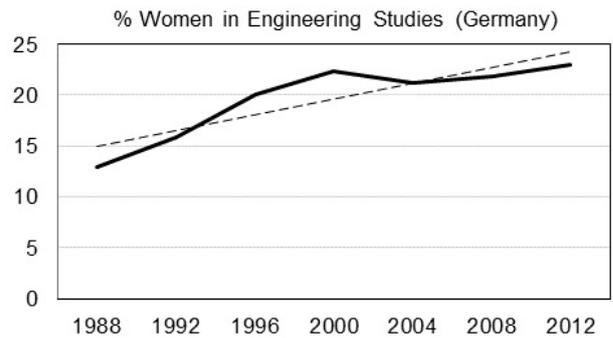
In Meiningen, our Girls' Day focused more on "classic" electronics, featuring a little do-it-yourself electronics project, measurements at transceiver equipment and a general overview on our factory and R&D in particular. Our Munich Girls' Day was more focused on IT, offering the opportunity to construct a website, and giving an overview on computers, data centers, and the related networks.

Global Idea Bank &
Global Sustainability Challenge Update

During 2016, the Global Idea Bank received a total of 100 new ideas, 19 of these have already been implemented and a further 39 are in progress.

In addition to the Global Idea Bank, we also launched the Global Sustainability Challenge.

We believe there are great ideas out there and the group is interested in employees' ideas and suggestions for improvement. These are important to us because they could help improve our business and enable the company to become greener and more sustainable.

Overview submitted ideas in 2016
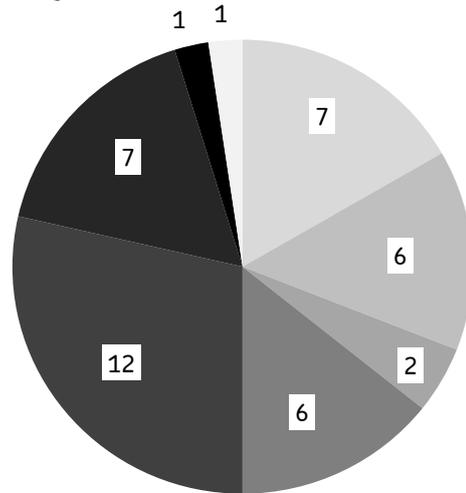
Categorie	Number of ideas
Car Sharing	7
Waste reduction/Reusable packaging	6
Water reduction	2
Paper savings	6
Electricty reduction (light sensor, solar, presence detectors...)	12
Energy savings (IT equipment)	7
Automatically swich off	1
Fairtrade products	1

ADVA™
Optical Networking

Let's Go Green!

Take Action and Submit Your Sustainable Idea Today

Global Sustainability Challenge

We believe there are great ideas out there –
let's take on the challenge together!

What is a sustainable idea?

Ideas to make ADVA greener, more cost-effective and sustainable by lowering our carbon footprint, saving energy and reducing waste.

What's in it for you?

- Helping to make the world a greener place
- Free sustainable gift for each new credible idea received
- Points awarded if your idea is implemented *

*In-line with Global Idea Bank points reward process

Health & Safety *G4-LA2; G4-LA5; G4-LA6; G4-LA7*

Being a high-tech company, more than 90% of our work-force fulfill office-related jobs. The risk of accidents at work is minimal. Different statutory rules across the globe challenges the company to have coherent reporting in place. This helps to ensure that employees facing specific risks at work receive dedicated training on a regular basis. The attendance is mandatory and is documented in personal files.

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

It is the management layer's responsibility to implement and indemnify the set 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, all eligible employees have to attend trainings on:

- labor safety and labor security (e.g., first aider)
- laser safety
- ESD and special chemical training

The program comprises several categories, including, among others, health benefits, time-off offerings, and training & development and company events (group off-sites, team building activities). Our employees have access to the company doctor and regular eye examinations.

GRI indicators	Description	Region		
		Europe	**Americas**	**APAC**
G4-LA5	a) Report the level at which each formal joint management-worker health and safety committee typically operates within the organization. b) Report the percentage of the total workforce represented in formal joint management-worker health and safety committees.	a) Departmental managers and mixture of first aiders and fire marshals. b) Approximately 7%	a) Regional and site level b) 400 employees in the USA	a) An emergency response team b) 20%
G4-LA6	a) Report types of injury, injury rate (IR), occupational diseases rate (ODR), lost day rate (LDR), absentee rate (AR) and work-related fatalities, for the total workforce (that is, total employees plus supervised workers), by Region and Gender b) Report types of injury, injury rate (IR), occupational diseases rate (ODR), lost day rate (LDR), absentee rate (AR) and work-related fatalities for independent contractors working on-site to whom the organization is liable for the general safety of the working environment, by Region and Gender c) Report the system of rules applied in recording and reporting accident statistics	a) Two accidents reported No lost days or reportable instances Male → Cuts caused by packaging b) None c) Accident reported to First Aider who attends and treats then logged in the Accident Book.	a) 3 injuries in 2016 and no fatalities Two female and one male b) Two days away from work and no fatalities Females -Two days away from work c) OSHA reporting	No work injury & high risk of occupational disease in 2016
G4-LA7	Report whether there are workers who are involved in occupational activities who have a high incidence or high risk of specific diseases.	None	None (N/A)	

Training & Development   G4-LA10

Career Development
ADVA Optical Networking has a career development program designed especially for our employees.

Career development is an organized planning method used to match our needs with the career goals of our employees. Formulating a career development plan helps us do our jobs more efficiently and it benefits both ADVA Optical Networking and our employees.

Career development involves employees managing their careers either within or between organizations. It also includes learning new skills and making improvements to help in their careers. At ADVA Optical Networking, we know that this is an ongoing, lifelong process and we strive to help our people achieve more in their careers.

Together with the employee's manager, they can set goals and objectives for their own personal career growth and plan their own career development.

Expertise Development Module (EDM)
ADVA Optical Networking wants to identify and develop employees with the potential to develop into "Top Experts" in their field. ADVA Optical Networking has designed the Expertise Development Module (EDM) for this purpose.

Leadership Development Module (LDM)
The Leadership Development Module (LDM) is a program designed by group's HR and Senior Management team to identify and develop employees that have the potential to become the future leaders of ADVA Optical Networking.

The Referral Program
ADVA Optical Networking's Referral Program is in place to recognize and compensate our employees for referring candidates to work at the company. We are growing fast, not only in terms of sales revenue, but also in terms of people.

Spot Award Program
Spot awards can be granted by each Vorstand member "on the spot" throughout the year to recognize employees for outstanding contributions or efforts. Either a team member or manager can nominate employees.

Anniversary Award Program
ADVA Optical Networking acknowledges and celebrates all employees' employment anniversaries and has a program in place to do so. The Global Anniversary Award Program has been in place since May 1, 2010 so that we can recognize employees who reach their landmark anniversary years at the company. The program is designed to celebrate and acknowledge each employees anniversary as they reach a milestone year.

ADVA University

ADVA Optical Networking is committed to sponsoring a state-of-the-art education, development and training program just for our employees that also includes an e-learning program. ADVA Optical Networking has an excellent e-learning program that includes technical training for our employees (E-learning on the Learning Management System (LMS)).

The ADVA University Portal is structured to be a single point of reference for all of our employees' training needs. We are committed to offering comprehensive on-the-job training, as well as specific continuing education opportunities in order to advance personal and professional development. These needs are identified, documented and reviewed semi-annually within an electronic performance appraisal and competency management system.

Through our general development program, the company offers courses on various topics that are regularly requested, including language classes, standard office software know-how and the improvement of communication, presentation, conflict management and project management skills. Based on the employee's individual development plan, which is agreed annually and regularly reviewed with their manager, we offer specific training courses tailored to meet employees' needs. These courses include technical training, which are mostly conducted internally by our own technical experts.

Previously, we launched a global in-house management-training program known as the Management Training Program (MTP). This customized initiative includes sixteen active modules and is targeted at all leaders who have people-management responsibilities.

The company offers a set of different courses according to experience and knowledge levels, which helps managers, understand how to maximize both individual and team performance. With these three components, we feel that there is a solid foundation from which the company can utilize our employees' skills and continue their development.

Social Engagement/Volunteerism G4-SO1

ADVA Optical Networking employees can join our volunteer teams and help others and/or volunteer their time to work on behalf of others for a particular cause. Our volunteer programs help not only promote good quality of life, but they also allow our volunteers to develop their own skills, meet others, make contacts and have fun.

Volunteering takes on many forms and is performed by a wide range of people. Our volunteers serve on an "as-needed" basis, such as in response to natural disaster, marathons or runs for the cure of illnesses, and the needs of our communities.

Events per Region

■ APAC ■ EMEA ■ NA
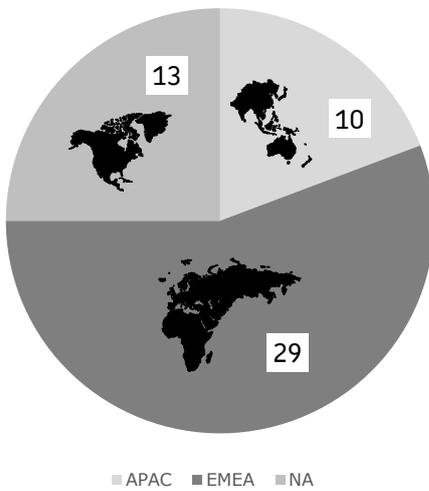
Types of Events

Donations and Collections

- 23 events where we collected and donated to charitable causes
- 130 participants
- € 4885 raised

Runs & Walks

- 12 events
- 100+ participants
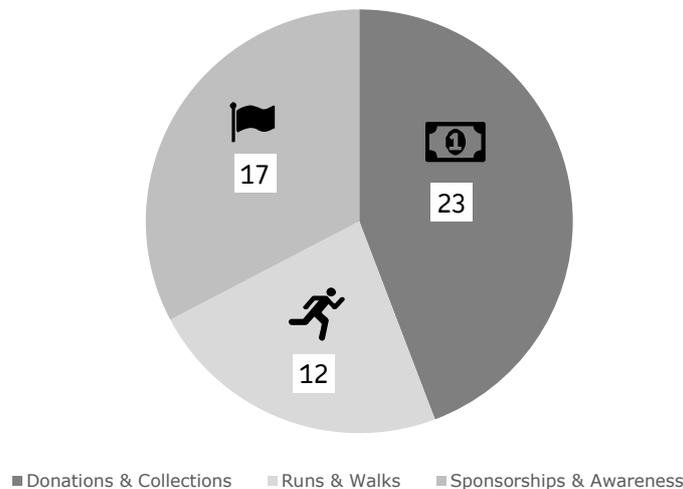- € 2700 raised

Sponsorships and Awareness

- 17 events where we sponsored specific causes or raised awareness
- 260 participants
- € 2900 raised

ADVA Overall

- 52 initiatives
- 490+ participants
- €10485 raised
- 800 Volunteered hours

Types of Events

■ Donations & Collections ■ Runs & Walks ■ Sponsorships & Awareness

OPERATIONAL SUPER SEGMENT

Carbon Emissions

Resource Efficiency

Environmental Management

Environmental Management

G4-EN23; G4-EN31; G4-PR3

In 2016, ADVA Optical Networking achieved recertification in accordance with the international telecommunications quality management practices TL 9000/ISO9001, the unified set of quality system requirements and metrics designed specifically for the telecommunications industry. The company also underwent its triennial extensive assessment according to the ISO 14001 standard for general environmental management and was successfully recertified as well.

In 2016, as part of ADVA Optical Networking's purchase of Overture, the company acquired facilities located in Raleigh, USA and Bangalore, India.

India was included in the company's TL 9000 certification. Oscilloquartz, the time and frequency synchronization wing of ADVA Optical Networking, was also fully integrated into the company's quality management certification, including its new premises in Neuchâtel, Switzerland.

As part of ADVA Optical Networking's long-standing commitment to the environment and energy efficiency, the company volunteered to be audited according to the energy management standard ISO 50001, which operates in combination with the ISO 14001 environmental management system.

ADVA Optical Networking was found to meet the full framework of energy efficiency requirements and so successfully achieved the new certification.

Apart from running office buildings, the group does not produce any dedicated air emissions or discharges to water. Therefore, relevant performance under environmental compliance relates to waste production and treatment. Waste production and landfill disposal over time is shown in the following diagram. Note that plastics, cardboard and e-waste (WEEE) all go into respective recycling.
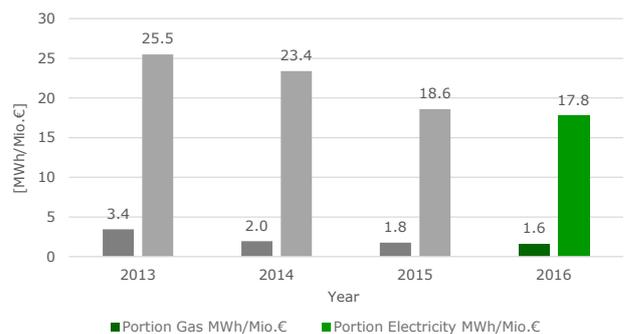
Resource Efficiency   G4-EN3; G4-EN5; G4-EN6

The group makes efforts to reduce energy and water consumption globally, despite company growth. Metering is constantly improved to identify electricity consumers. However, efficiency improvements are also limited sometimes, especially for buildings that are not owned by the group. The following diagrams present the developments of energy consumption and water usage over recent years. Note that the parameters displayed (electricity, natural gas) are normalized against the group's yearly revenue.
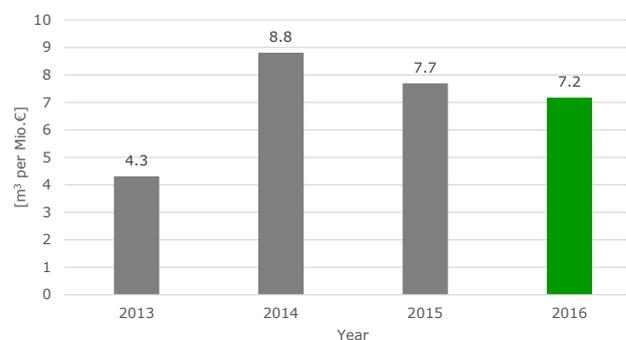

Intensity–Related Waste Disposal (Global Sites)

Legend: Cardboard ■ Waste to Landfill + Thermal recycling ■ E-scrap ■ Plastic
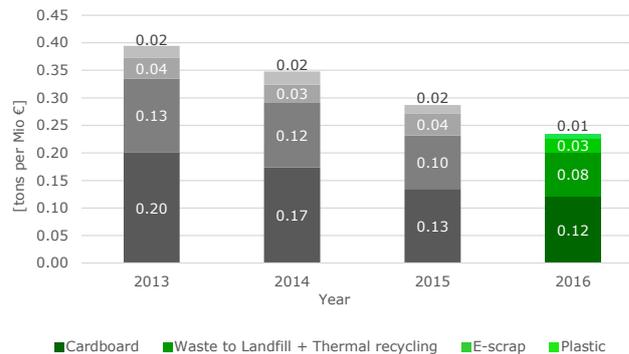
Intensity–Related Energy Consumption (Global Sites)

Legend: ■ Portion Gas MWh/Mio.€ ■ Portion Electricity MWh/Mio.€

Intensity–Related Fresh Water consumption (Global Sites)

Carbon Emissions (Scope 1, 2 & 3)

G4-EN18; G4-EN19

Over the recent years, the group has steadily improved its tracking with regard to contributions to CO_2 emissions. In 2016, the group tracked, and was able to report, contributions that fall into the GHG Protocol's scopes 1 to 3, see table below.

Employees commuting is average data. The Use of sold product data is based on a seven-year forward life expectancy and the associated emission factors.

Total GHG emissions will vary over time due to the expansion and the growth of our organization within recent years. It is therefore useful to use reporting measures that take these fluctuations into account, while accurately monitoring GHG emission intensity. In 2016, the CO_2 value per full-time employee was 2.87tCO_2e. "

2016	Source/Category	Units	Consumption	Units	CO_2e
Scope 1	Natural Gas	MWh	871	tCO_2e	150
	Owned transport (ADVA Car Fleet)	km	3,596,484	tCO_2e	482
	Total Scope 1			tCO_2e	632
Scope 2	Purchased Electricity[1]	MWh	10,106	tCO_2e	4,412
	Total Scope 2		10,106	tCO_2e	4,412
Scope 3	Transportation and distribution (Inbound)	tonne km	12,761,895	tCO_2e	4,297
	Waste disposal[2]				
	Cardboard	tons	78	tCO_2e	1.5
	Waste to Landfill/Thermal Recycling	tons	56	tCO_2e	11.1
	E-scrap	tons	17	tCO_2e	0.4
	Plastic	tons	9	tCO_2e	0.1
	Business Travel				
	By Air	(p)km[4]	23,483,489	tCO_2e	3,067
	By Car	km	387,562	tCO_2e	94
	By Train	(p)km	144,085	tCO_2e	1
	Employee Commuting[3]			tCO_2e	3,000
	Transportation and distribution (Outbound)	tonne km	3,328,728	tCO_2e	2,070
	Use of sold products	GWh	588.3	tCO_2e	280,000
	End-of-life treatment of sold products			tCO_2e	1,100
	Purchased paper	tons	7	tCO_2e	6,0
	Total Scope 3			**tCO_2e**	**293,648**
	Total all Scopes			**ktCO_2e**	**299**

[1] Consumption of ADVA own facilities and leased facilities
[2] Tons of Waste produced
[3] Overlap of Employee Commuting, Travel and Car Fleet numbers. No clear demarcation possible
[4] (p)km = passenger kilometers

Intensity–Related CO_2e per Revenue (Scope 1&2)
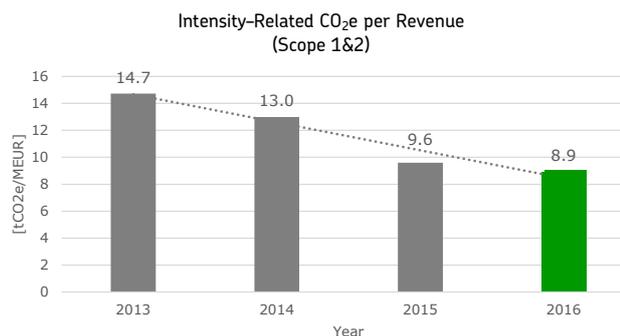
Overview of Emission Factors* Used for Calculation

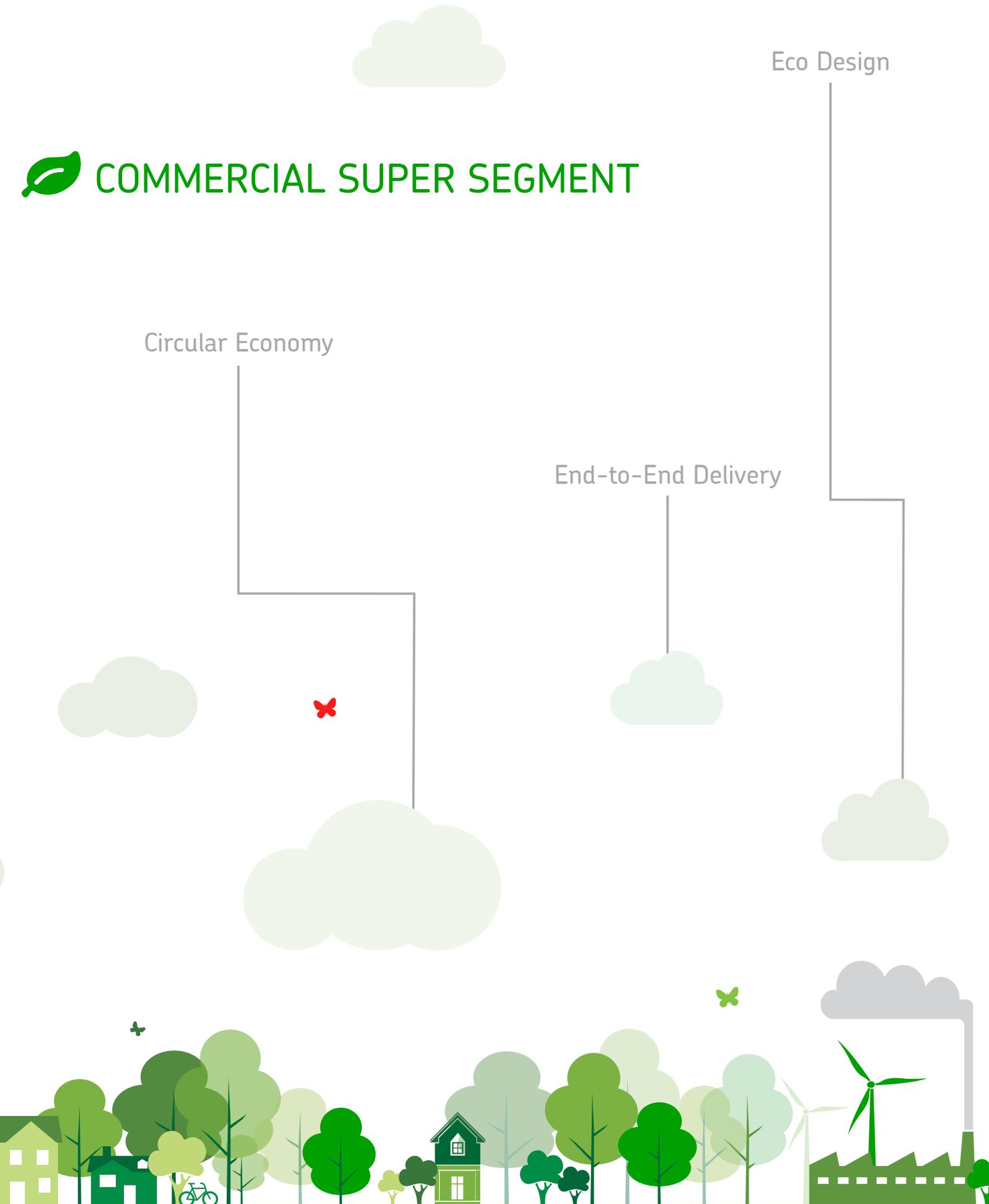| Region	2013	2014	2015	2016
EMEA	0.503	0.494	0.485	0.476
NA	0.537	0.538	0.536	0.536
APAC	1.148	1.144	1.140	1.136

*Source: Values from local provider and ecoinvent 3.3, el. medium voltage database

🍃 COMMERCIAL SUPER SEGMENT

Eco Design

Circular Economy

End-to-End Delivery

End-to-End Delivery G4-EN30

The main aspects in the end-to-end sustainability segment are logistics and packaging.

Logistics are a main contributor to the end-to-end segment. In 2016, the group continued its efforts to reduce its transport-related environmental impact, i.e., reduce where possible airfreight. All goods transported are checked for alternative methods, be it sea freight, trucks or railway (in particular, we are investigating newly established railway connections between China and Europe).

The freight split for 2015 and 2016 is shown in the following diagram. Logistics contributions to GHG emissions have also been stated in the previous chapter.

Freight Split in 2016
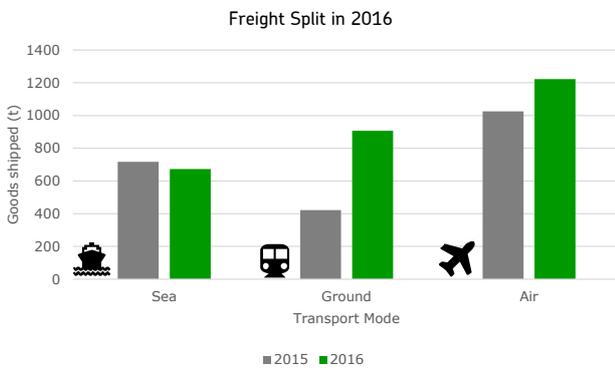
Logistics become more important if products are delivered independently from each other, that is, without being bundled for transport. In outbound logistics, which are often ground-based, this leads to independent and often uncoordinated truck rolls. In 2015, we started implementing an outbound logistics concept for a large customer, called ADVAnced Logistics. In 2016, we extended its rollout. This concept is based on close cooperation with suitable logistics business partners (where suitability refers to the availability of a dense network of (small) logistics hubs/stations). It aims at optimizing logistics such that truck rolls, associated CO_2, time and consequently cost are saved. The logistics scheme can also be used for reverse logistics. This allows quick take-back of products, increased repair and refurbishment rates and thus prepares for larger-scale circular economy. It can be implemented for other customers and in other areas as well.

The other area of consistent sustainability improvement work in logistics relates to the packaging the group uses. Optimizing our packaging addresses CO_2 reductions and avoidance of certain materials (either unwanted or scarce materials, thus addressing another circular-economy aspect). These reductions typically also translate to reduced

cost in packaging or logistics. Packaging has been optimized regarding its form factor, in order to fit standard pallets size most efficiently. Then, the amount of renewable materials (cardboard) has been increased, thus replacing most foam and plastics. Finally, we introduced reusable packaging for the majority of our products. Since after several use cycles, the packaging may not look brand-new anymore, we attach, when necessary, a sticker which explains the look. It is shown here:

ADVA re-usable packaging

Carbon-Footprint-Optimized Shipping of DWDM Equipment

In 2016, we implemented an ordering, packaging and shipping process, which offers carbon footprint optimization. Historically, all modules of a WDM order were packaged individually and shipped together. The new process offers the possibilities to either ship fully assembled shelves (modules already placed in the correct slots of the shelves), or to place as many modules in the shelves as possible, thus optimizing cost, freight volume, packaging/waste and carbon footprint. The process started in 2016 and savings will be reported in future sustainability reports.

Circular Economy G4-PR3

Circular economy has been explained earlier in the context of the QuEST Forum sustainability model (chapter Holistic View on Sustainability). The concept is necessary to reduce the amount of raw material and energy that is associated with any products and services. The main savings are projected to result from extended lifetime (incl. second life where applicable), full or partial parts reuse and finally optimized recycling. The latter must avoid downcycling by recovering close to 100% of all precious materials in best-achievable quality and purity. This obviously needs to be supported by respective eco-design aspects.

Circular economy is inherently based on business models that support keeping products in closed loops. This includes take-back and business schemes like leasing. As described earlier, this needs to be supported by (reverse) logistics that are optimized regarding CO_2 footprint and cost (refer to ADVAnced Logistics in the End-to-End chapter).

In the recent years, we implemented a number of smaller take-back and recycling processes especially in the UK (as one of our strongest business areas), and a large-scale refurbishment and recycling process in our main site in Meiningen, Germany, called Supplier Sale. In the UK, we implemented, on a daily-business basis, several smaller-scale processes (ranging to hundreds of related products per year) that address refurbishment and recycling. This does include third-party equipment. The processes also cover the circular economy business aspects of take-back and leasing (e.g., equipment leased for London Olympic Games in 2012).

In addition to these customer-specific processes, we implemented a refurbishment/parts reuse/recycling process for equipment sent back to our site in Meiningen. Reasons for equipment being sent back include (but are not restricted to) commercial and maintenance returns. Altogether, they cater for substantial amounts of sent-back equipment. A process overview is shown in the following chart.

All equipment sent back is analyzed for potential parts reuse and refurbishment. This includes selling substantial amounts of components back to their suppliers. Systems or components without possibility for reuse are professionally recycled by a contract WEEE recycler (located close to Meiningen, thus also minimizing truck-roll mileage). Depending on the degree of reuse potential, the components are sold back (supplier sale, new) or get into respective stocks for new, refurbished or spare parts, as per the above picture.

The process resembles significant parts of the closed circular-economy loops. Since all equipment sent back is analyzed for reuse, the process ensures that reuse is extended to the maximum and that WEEE scrap going to landfill is minimized.

As part of our strategic sustainability initiatives (see the respective chapter), we started the preparation for larger-scale circular economy business. Amongst others, this includes in-depth investigation into the related aspects of reusability, ageing, and cost.
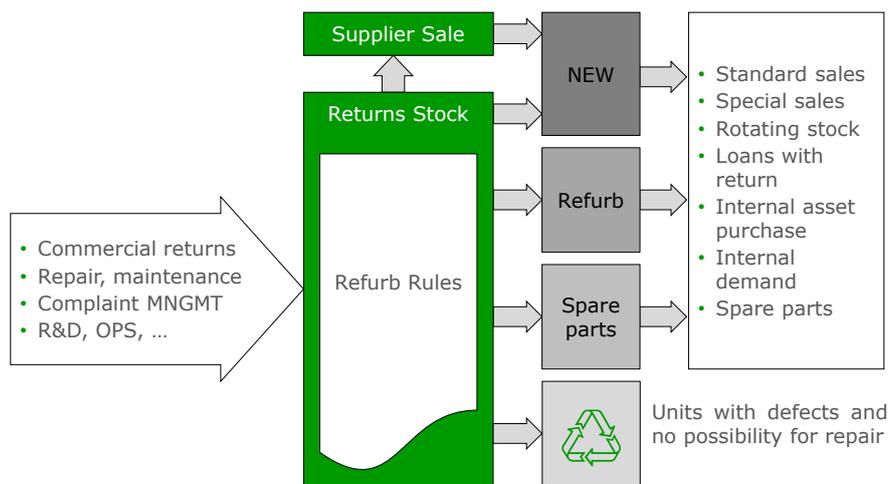
Supplier-Sale Refurbishment and Reuse Process

Eco Design G4-EN27; G4-PR3

In the QuEST Forum sustainability model, product eco design is the segment with the highest weight. For ICT networks equipment, this weight is correct since the equipment belongs to the class of energy-related products (ErP) according to the European Eco Design Directive 2009/125/EC. This means that the respective products have relevant influence on energy usage. In many cases of network equipment, the entire product environmental footprint is even dominated by the use-phase energy consumption.

This footprint is calculated by life-cycle analysis (LCA, e.g., according to ISO14040/14044), which considers all phases of the entire product life. This ranges from extraction of raw materials via production and distribution to the use phase and finally the product end of life (i.e., re-use, recycling or landfill). Consequently, eco design must consider the aspects of material usage/composition, size/weight, energy efficiency, and design for reuse and recycling.

The first LCA of ADVA Optical Networking products date back a couple of years. Meanwhile, after 2016, LCA cover a substantial part of our product portfolio (approximately, the commercially most relevant 90%). All LCA consistently show that several environmental-impact factors – most notably CO_2 and ozone depletion – are clearly dominated by the products' use phase. This is true for WDM equipment as well as Ethernet equipment. The common reason behind this is that this equipment is typically used in telecommunications networks for quite a long time and in 24/7 always-on mode (since deactivation would cause network outages). In particular the WDM equipment, but also substantial parts of the Ethernet portfolio, have long lifetimes, often approaching 10 years. For WDM equipment, this means that it typically supports several generations of client equipment. Thus, the circular economy requirement of longevity is achieved for many WDM installations.

A WDM LCA example is given in the following diagram. This analysis has been done for a typical configuration of our FSP 3000 product, an amplified multi-channel DWDM transport system. For this LCA, a product lifetime of eight years has been considered (which is typical for WDM). It shows that CO_2 (global warming), several ecotoxicity aspects, acidification and abiotic resource depletion are dominated by the products' use phase. All other life-cycle phases are summarized in the light-gray "Other" bars.
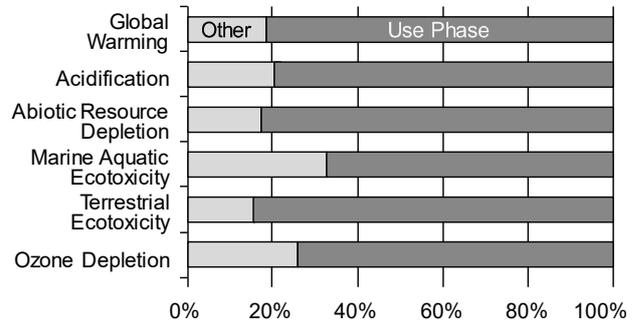

Simplified WDM LCA showing the use-phase dominance on environmental impact

The dominance of the use phase is related to the energy consumption of the products (which is integrated over a substantially long lifetime). It holds as long as the related electricity is not yet fully based on carbon-neutral renewables. (This also means that the use-phase dominance will diminish once substantial amounts of electricity are based on renewables.) The above diagram has been simplified in that environmental parameters are displayed where the use phase has very strong impact (≥75%). Some parameters like eutrophication or human toxicity are less influenced by use-phase energy consumption (40…50%).

The use-phase dominance to date is the main guideline for our WDM eco design focus. Since use-phase energy consumption clearly is the main environmental-impact driver, we are constantly reducing the energy consumption to the best achievable extent. As a result, the energy efficiency of our WDM products (measured in watts per Gbit/s) increased strongly. However, this is accompanied by the ICT trend of exponentially increasing bit rates. Since this bit-rate increase is faster than the energy-efficiency increase, WDM generations tend to consume increasing energy over time. This is despite the fact that all measures are taken to increase efficiency. In other words, to date, no technologies are known that would allow over-compensation of the bit-rate increase. This is a common trend in telecommunications today, it can be seen, e.g., for core IP routers as well. This is shown in the following figure for our WDM equipment and for (third-party) core routers.
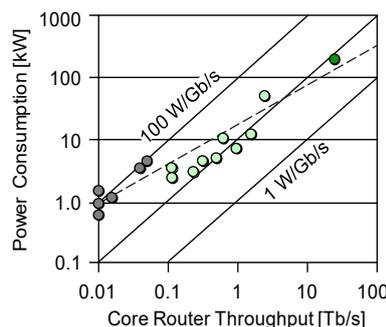


Development of core-network-equipment energy efficiency
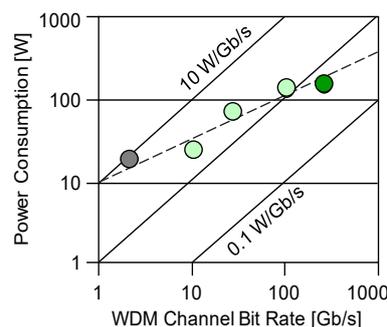
The figure shows energy consumption in dependence of router throughput (left diagram, data taken from Vereecken et al., IEEE COMMAG, Vol. 49, No. 6, 2011) and WDM channel-card bit rate (right diagram, based on own data). In both cases, the x-axis also represents the time axis. In the case of our WDM equipment, efficiency developed to less than 0.4W/(Gbit/s). At the end of 2016, this was best practice in energy efficiency in WDM transport.

The trend of bit-rate increase outpacing gains in energy efficiency is ubiquitous in the global ICT networks segment. It means that currently, no technologies are known that would allow decreasing the total energy consumption of transport WDM equipment (or core routers, or several other classes of ICT network equipment) from generation to generation. This must be considered when evaluating and rating improvements of any related eco-design efforts. For the Science Based Targets initiative, this means that no absolute Scope-3 GHG emissions reductions can be achieved or realistically promised. Hence, a metric in analogy to intensity metrics must be applied here. The related eco design must aim at undercutting the trend curves shown in the above figure, thus limiting emissions growth (rather than reducing total emissions).

Between 1996 and 2016, WDM channel bit rates increased on average at a CAGR of ~34%. This can be derived from the picture above, considering that WDM channel rates of 2.5Gbit/s were introduced commercially around 1996. In this period, total global IP traffic also grew at CAGR of 34% and higher, according to the Cisco VNI 2016. Toward 2020, IP-traffic growth is projected to have CAGR of ~22% [The Zettabyte Era: Trends and Analysis, Cisco White Paper, June 2016]. On the other hand, the GHG emissions in the ICT network segment have a CAGR of ~4% only, see the following picture [GeSI SMARTer 2020]. These numbers again show that efficiency has been improved drastically (and cannot cope with bandwidth or traffic growth).

Global Voice and Data Networks Emissions per Year [GtCO$_2$e]
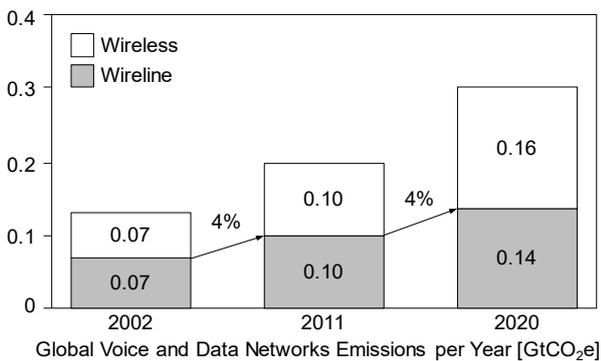
Wireline network-segment GHG emission growth
[GeSI SMARTer 2020]

It must also be noted that ICT enables GHG abatement outside the ICT sector which is substantially higher than the ICT energy consumption itself. Hence, ICT – including the energy-consumption-critical network segment – can be regarded as one of the few enablers of decreasing global GHG emissions.

In 2015, we started dedicated product design considerations that reduce raw-material intake and support the recycling of the related products. In 2016, this work was integrated into our processes, in the form of the first released version of a product eco design guide (internally called DfR3, Design for Reduction, Reuse, and Recycling). The design guide was complemented by a simple checklist which helps designers using the guide. In 2016, the design guide was used in first projects on new products or modules.

The DfR3 guide splits into two parts, one focused on energy efficiency, the other looking at different aspects that lead to design for circular economy. The energy-efficiency part summarizes those steps in a process document which has been outlined earlier. It contains high-level guidance regarding components, save modes, thermal design, and others. This ensures that energy efficiency will be considered automatically for all new modules and products. The circular economy part splits into several chapters. These address the following areas of circular-economy-related product design:

- Principles for lifetime and upgrades
- Principles for mechanics
- Material efficiency
- Principles for printed circuit boards
- Principles for plastic parts
- Safe design (RoHS)
- Communication design (labelling, etc.)

In addition, basic design guidance for product packaging is included as well.

As a process document, the design guide is subject to yearly review and, where necessary, change or completion. Currently, we are working on the implementation of improved feedback loops that are necessary for attempts to quantify the effects of the design-guide usage.

Glossary/Appendix

CWDM (Coarse Wavelength Division Multiplexing)

CWDM is a standardized technology that uses up to 18 different wavelengths for data transmission over a single fiber. It uses a coarse wavelength grid of 20 nm spacing, enabling simple optical components technology. This makes CWDM systems cost-effective, but also limits their total capacity.

DWDM (Dense Wavelength Division Multiplexing)

DWDM is a standardized technology that is based on a dense wavelength grid, which requires high-precision optical components. Typically, up to 192 wavelengths spaced at 50 GHz or less are used for data transmission over a single fiber, thus maximizing the bandwidth per fiber.

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.

FSP (Fiber Service Platform)

The Fiber Service Platform is ADVA Optical Networking's comprehensive product portfolio that provides carriers and enterprises with innovative connectivity solutions for access, metro and long-haul networks.

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 issues such as climate change, human rights, corruption and many others.

ICT Ecology Guideline Council

The ICT Ecology Guideline Council is composed of the five Japanese industry organizations: Telecommunications Carriers Association, Telecom Services Association, Japan Internet Providers Association, Communications and Information Network Association of Japan and ASPSaaS-Cloud Consortium. The object of the council is to take further industry-wide measures to prevent global warming by creating, disseminating and promoting the Ecology Guideline for the ICT Industry.

ISO 14001

A standard developed and published by the International Organization for Standardization. This standard defines, establishes and maintains an environmental management system for the manufacturing and service industries.

ISO 14040 / ISO 14044

Two standards developed and published by the International Organization for Standardization. ISO 14044 replaces the former standards ISO 14041 to 14043. The standards fall into the area of environmental management, they define life-cycle assessments.

ISO 50001

The ISO 50001 is a worldwide standard of the International Organization for Standardization (ISO), which is to support organizations and companies build a systematic energy management.

ISO 22301

This International Standard specifies requirements for setting up and managing an effective Business Continuity Management System (BCMS).

QuEST Forum

Is a global association of companies dedicated to impacting the quality and sustainability of products and services in the ICT industry. QuEST Forum is the producer of the telecommunications quality standard TL9000. For further information: http://www.questforum.org/

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 production and processing of electronic devices and components.

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 Wildlife Fund. It aims at helping companies determining how much they must cut emissions to support the restriction of global warming to within two degrees Celsius compared to pre-industrial temperatures. Find out more on the Science Based Targets initiative under http://sciencebasedtargets.org/.

TEER (Telecommunications Energy Efficiency Rating)

TEER is a guideline to measure / calculate the energy efficiency (or energy consumption) of telecommunications equipment at a given functionality (e.g., throughput). Relevant standards and guidelines are the Ecology Guideline for the ICT Industry Version 7 (available online under http://www.tca.or.jp/information/pdf/ecoguideline/guideline_eng_7.pdf), the ANSI ATIS-0600015 series or ECEC1.2.

TL9000

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

WEEE (Waste Electrical and Electronic Equipment)

A directive issued by the European Union regarding the return and recycling of electrical and electronic equipment waste.

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ADVA Optical Networking on the Web

More information about ADVA Optical Networking, including solutions, technologies and products, can be found on the company's website at www.advaoptical.com.

The PDF file of this sustainability report, as well the previous GRI Summary reports are located on the ADVA Optical Networking website and can be downloaded at www.advaoptical.com/en/about-us/corporate-responsibility.aspx.

ADVA ™
Optical Networking