

ASML HOLDING NV
Form 20-F
February 06, 2019

United States
Securities and Exchange Commission
Washington, D.C. 20549
Form 20-F
ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d)
OF THE SECURITIES EXCHANGE ACT OF 1934
for the fiscal year ended December 31, 2018
Commission file number 001-33463

ASML HOLDING N.V.
(Exact Name of Registrant as Specified in Its Charter)

THE NETHERLANDS
(Jurisdiction of Incorporation or Organization)

DE RUN 6501
5504 DR VELDHOVEN
THE NETHERLANDS
(Address of Principal Executive Offices)

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2650 W Geronimo Place
Chandler, AZ 85224, USA
(Name, Telephone, E-mail, and / or Facsimile number and Address of Company Contact Person)

Securities registered or to be registered pursuant to Section 12(b) of the Act:

	Title of each class	Name of each exchange on which registered
Ordinary Shares (nominal value EUR 0.09 per share)	The NASDAQ Stock Market LLC	

Securities registered or to be registered pursuant to Section 12(g) of the Act:

None
(Title of Class)

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act:

None
(Title of Class)

Indicate the number of outstanding shares of each of the issuer's classes of capital or common stock as of the close of the period covered by the annual report.

421,097,729 Ordinary Shares
(nominal value EUR 0.09 per share)

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.
Yes (x) No ()

If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934.
Yes () No (x)

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the

Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes (x) No ()

Indicate by check mark whether the registrant has submitted electronically

every Interactive

Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or an emerging growth company.

See definition of "large accelerated filer," "accelerated filer," and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer Accelerated filer Non-accelerated filer Emerging growth company

If an emerging growth company that prepares its financial statements in accordance with U.S. GAAP, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing:

U.S. GAAP International Financial Reporting Standards as issued by the International Accounting Standards Board Other

If "Other" has been checked in response to the previous question, indicate by check mark which financial statement item the registrant has elected to follow.

Item 17 Item 18

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act)

Yes No

Name and address of person authorized to receive notices and communications from the Securities and Exchange Commission:

James A. McDonald

Skadden, Arps, Slate, Meagher & Flom (UK) LLP

40 Bank Street, Canary Wharf London E14 5DS England

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A definition or explanation of abbreviations, technical terms and other terms used throughout this Integrated Report that require explanation can be found in the chapter Definitions. In some cases numbers have been rounded for readers' convenience.

This report comprises regulated information within the meaning of articles 1:1 and 5:25c of the Dutch Financial Markets Supervision Act (Wet op het Financieel Toezicht).

On November 22, 2016, we acquired 100 percent of the issued share capital of HMI. Financial information presented in our Integrated Report includes HMI from November 22, 2016 onwards.

On June 29, 2017, we completed the acquisition of a 24.9 percent interest in Carl Zeiss SMT Holding GmbH & Co. KG, which owns 100 percent of the shares in Carl Zeiss SMT GmbH. We record the results from the interest in Carl Zeiss SMT Holding GmbH & Co. KG using a one-quarter time lag as the results are not available in time to record them in our concurrent period.

In this report the name 'ASML' is sometimes used for convenience in contexts where reference is made to ASML Holding N.V. and / or any of its subsidiaries and / or any equity method investments, as the context may require. The name is also used where no useful purpose is served by identifying the particular company or companies.

Special Note Regarding Forward-Looking Statements

In addition to historical information, this Integrated Report contains statements relating to our future business and / or results. These statements include certain projections, business trends and other matters that are "forward-looking" within the meaning of the Private Securities Litigation Reform Act of 1995. You can generally identify these statements by the use of words like "may", "will", "could", "should", "project", "believe", "anticipate", "expect", "plan", "estimate", "forecast", "potential", "intend", "continue" and variations of these words or comparable words. They appear in a number of places throughout this Integrated Report and include statements with respect to our expected trends and outlook, corporate priorities and strategy, including the potential pursuit of merger and acquisition activities in the future bookings, expected financial results and expected semiconductor industry trends and opportunities, including expected sales, EUV revenue, gross margin, capital expenditures, R&D and SG&A expenses, cash conversion cycle, target effective annualized tax rate, opportunity, the new wave of semiconductor devices and the expected introduction of the first set of such devices in 2019 and expected customer demand in specified market segments including memory, logic and foundry, expected annual revenue opportunity and potential in 2020 and for 2025, the expected impact of the fire experienced by one of our suppliers including the expected timing of recovery of financial impact, expected trends in the lithography system market, trends in DUV systems revenue and expected future DUV sales and Holistic Lithography and installed based management revenues, expected semiconductor market growth and growth in worldwide factory capacity, statements with respect to customer demand and the commitment of customers to High NA machines and to insert EUV into volume manufacturing by ordering systems and investing in preparation for high-volume production, statements with respect to Holistic Lithography roadmaps and roadmap acceleration, including the expected introduction of higher productivity systems in 2019 (including the expected shipment of NXE:3400C and expected timing thereof) and the expected benefits, statements with respect to commitments for systems sales orders, including expected timing of recognition of anticipated revenues and expected timing of shipment of first High NA systems, ASML's commitment to secure system performance, shipments, and support for volume manufacturing, including availability, timing of and progress supporting EUV ramp and improving consistency, statements with respect to the expected benefits of EUV, including year-on-year cost reduction and system performance, and of the introduction of the new DUV system and expected demand for such system, the expected benefits of HMI's e-beam metrology capabilities, including the expansion of ASML's integrated Holistic Lithography solutions through the introduction of a new class of pattern fidelity control, the expected enhancement of pattern fidelity metrology, statements with respect to the expected benefits of the imec collaboration, including roadmap acceleration and potential for printing of even smaller nanoscale devices, statements with respect to ASML's applications business, expected lower attrition rate in the near future, customer, partner and industry roadmaps, including shrink roadmaps and continued semiconductor process scaling, the development of High NA and its benefits, including offering at least 10 more years of development opportunity, the expected benefits of the indirect interest in Carl Zeiss SMT GmbH, statements with respect to DUV competitiveness, strategy alignment with international standards such as United Nations Sustainable Development Goals, statements with respect to the intention to keep driving innovation into the next decade and beyond, expected growth of our service business, expected shipments of systems, planned shipments of EUV tools, productivity of our tools and systems, including EUV productivity targets and goals, and system performance, expected industry adoption of EUV, supply chain and service capabilities, expected integration of use of supplier information in sourcing decisions, the development of EUV technology and EUV industrialization, the number and timing of EUV systems expected to be shipped, expected use of EUV systems in high-volume manufacturing and revenue recognition, enabling of high-volume manufacturing of next generation chips and higher performance chips at lower cost, shrink being a key driver supporting innovation and providing long-term industry growth, lithography enabling affordable shrink and delivering value to customers, expected industry trends and expected trends and opportunities in the business environment, including the expectation that semiconductor end-market growth will be fueled by innovation drivers such as 5G connectivity, artificial intelligence, autonomous driving and big data, the continuation of Moore's law and the expectation that EUV will continue to enable Moore's law and drive long term value for ASML beyond the next decade, dividend policy, our proposed dividend and intention to repurchase and cancel shares, including statements with respect to the share repurchase plan for 2018-2019, our expectation to continue to return cash to our shareholders through share buybacks

and dividends and statements with respect to the expected impact of accounting standards, and statements with respect to the memorandum of understanding (MOU) executed with Nikon to settle litigation proceedings, including the expectation to enter into a definitive cross-license and settlement agreement and the terms of such agreements. These forward-looking statements are not historical facts, but rather are based on current expectations, estimates, assumptions and projections about the business and our future financial results and readers should not place undue reliance on them. Forward-looking statements do not guarantee future performance, and actual results may differ materially from projected results as a result of certain risks, and uncertainties. These risks and uncertainties include, without limitation, those described under Management Board Report - Risk Factors. These forward-looking statements are made only as of the date of this Integrated Report. We do not undertake to update or revise the forward-looking statements, whether as a result of new information, future events or otherwise.

ASML INTEGRATED REPORT 2018

Message from our CEO

Dear stakeholders,

This has truly been a milestone year for ASML: 2018 has seen extraordinary growth, building on the heights of recent years. Our technology breakthroughs have helped us increase the performance of our newest generation of chip-making systems, which will allow customers to start high-volume production of next-generation chips. This will create huge value, helping technologies such as artificial intelligence, 5G connectivity, the Internet of Things and augmented reality to become part of everyday life and to solve some of society's major challenges.

Our record net income of EUR 2.6 billion in 2018 underscores our growth path. With net sales of EUR 10.9 billion, we have nearly reached our initial sales target for 2020. Overall, we have a solid foundation to take us into the next decade, allowing us to update our target for 2020 to net sales of EUR 13 billion, based on a moderate market scenario.

ASML's entire suite of products and services performed well in 2018, advancing the execution of our roadmap of our Holistic Lithography solutions. In line with our projections, we made progress in EUV profitability and continued to strengthen our DUV and Applications businesses. With EUV, all systems sold and shipped to customers meet the specifications that are able to support high-volume manufacturing.

Highlights in the DUV business include significant progress in the introduction of the TWINSCAN NXT:2000i, while in Applications, we adopted YieldStar 375 in 3D NAND manufacturing. We also made breakthroughs in implementing multi-beam technology, as part of our inspection and metrology product offering, which is a result of the synergy of pattern verification improvements in stage hardware and computational lithography software for the identification of critical inspection areas.

To support the industry driver of shrink well into the next decade, we accelerated our 0.33 NA EUV and are on track with our High NA EUV program, with major customers already committing themselves commercially to this technology. This is an indication that our strategy resonates with our customers and other stakeholders.

While helping the semiconductor industry to continue to realize Moore's Law, we seek to contribute to realizing the United Nations Sustainability Development Goals that aim to protect the planet and end poverty, and will further align our 2019-2025 strategy with these goals. Our technological breakthroughs in 2018 enhance the energy efficiency of our products, as well as address challenges related to aging populations, healthcare and the energy transition, among others. Advanced chips use significantly less power than older-generation chips. Reuse of parts was also a critical focus area for us in 2018, and we are continually improving ways to reduce waste and extend the lifespan of our lithography systems.

We believe we are an integral part of the communities in which we operate, and this is key to our sustainable business model. We invest in these communities not only to make them more attractive for people to live and work in, but also to create strong ecosystems. ASML volunteers help local schools improve their technology and science education, to prepare the younger generations for a digitalized world. We support universities, research institutes and startups, as well as the ASML Foundation's global education projects.

Of course, 2018 was not without its challenges. Geopolitical shifts are taking place, new global trade blocs are forming, and we are seeing signs of protectionism. We can only keep progressing through an open and global innovation model, and protectionism will hinder innovation. We strongly favor the free flow of people, trade and knowledge, while at the same time respecting ownership of that knowledge.

As we expand around the globe, recruiting and onboarding the right people, and seamlessly integrating them into our culture, also presents a challenge. We achieved successes here in 2018, creating 4,000 jobs and filling them with the best and brightest people, as well as providing a dynamic, nurturing workspace where our talent pool can learn and grow.

We are very pleased Roger Dassen joined us as our CFO. He brings to the position deep financial expertise and broad managerial experience. Roger succeeded Wolfgang Nickl, who left ASML at the end of April. Additionally, we are delighted to welcome Christophe Fouquet to the Board of Management, where he will lead business line EUV utilizing his extensive technology and business experience.

Looking ahead, we see yet more growth, with potential for net sales of EUR 15 billion in a low market scenario and net sales of EUR 24 billion in a high market scenario for 2025. The path is clear: we have the technology, people, customers, suppliers and partners. We will keep driving innovation for the good of all our stakeholders, and to help

solve society's challenges into the next decade and beyond.

Peter Wennink

President and Chief Executive Officer

Dated: February 5, 2019

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ASML Integrated Report 2018

All information disclosed in this Management Board Report is provided as a supplement to, and should be read in conjunction with, our Corporate Governance and Consolidated Financial Statements.

Board of Management

Peter T.F.M. Wennink (1957)

Term expires 2022

President, Chief Executive Officer and Chairman of the Board of Management

Mr. Wennink joined ASML in 1999 and was appointed as Executive Vice President, CFO and member of our BoM at the 1999 AGM. Mr. Wennink was appointed as President and CEO in 2013.

Mr. Wennink has an extensive background in finance and accounting. Prior to his employment with ASML, Mr. Wennink worked as a partner at Deloitte Accountants B.V., specializing in the high-technology industry with an emphasis on the semiconductor equipment industry.

Mr. Wennink is a member of the Dutch Institute of Registered Accountants, a member of the supervisory board of the Eindhoven University of Technology, and a member of the Advisory Board of the Investment Committee of Stichting Pensioenfonds ABP (Dutch pension fund for government employees). Mr. Wennink further serves on the board of the FME-CWM (the employers' organization for the technology industry in the Netherlands).

Martin A. van den Brink (1957)

Term expires 2022

President, Chief Technology Officer and Vice Chairman of the Board of Management

Mr. Van den Brink joined ASML when the company was founded in 1984. Mr. Van den Brink held several positions in engineering and from 1995 he served as Vice President Technology. Mr. Van den Brink was appointed as Executive Vice President Product & Technology and member of the BoM at the 1999 AGM. Mr. Van den Brink was appointed as President and CTO in 2013.

Mr. Van den Brink earned a degree in Electrical Engineering from HTS Arnhem (HAN University), and a degree in Physics (1984) from the University of Twente, the Netherlands.

Mr. Van den Brink was awarded an honorary doctorate in physics by the University of Amsterdam, the Netherlands, in 2012.

Roger J.M. Dassen (1965)

Term expires 2022

Executive Vice President and Chief Financial Officer

Mr. Dassen joined ASML in June, 2018 and was appointed as Executive Vice President and CFO and member of our BoM at the 2018 AGM.

Prior to joining ASML, Mr. Dassen was the Global Vice Chairman and member of the Executive Board of Deloitte Touche Tohmatsu Limited. Before that Mr. Dassen was the CEO of Deloitte Holding B.V.

Mr. Dassen earned a Master's degree in Economics and Business Administration (1988), University of Maastricht; a post-master in Auditing (1990), University of Maastricht; and a PhD in Business Administration (1995).

Mr. Dassen is a professor of auditing at the Free University of Amsterdam and serves as a member of the supervisory board of The Dutch National Bank.

Frits J. van Hout (1960)

Term expires 2021

Executive Vice President and Chief Strategy Officer

1 Mr. Van Hout joined ASML in 1984 and rejoined ASML in 2001, after an eight-year absence. He was appointed as Executive Vice President and Chief Marketing Officer and became a member of our BoM at the 2009 AGM. Mr. Van Hout served as Executive Vice President and Chief Program Officer from July 1, 2013 and was appointed Executive Vice President and Chief Strategy Officer effective April 1, 2018. Prior to his BoM membership, Mr. Van Hout served as ASML's Executive Vice President Integral Efficiency, Senior Vice President Customer Support and held various other positions.

1 Mr. Van Hout served as CEO of the Beyeler Group and held various management positions at Datacolor International from 1992 until 2001.

1 Mr. Van Hout earned a Master's degree in Theoretical Physics (1981), University of Oxford; and a Master's degree in Applied Physics (1984), Eidgenössische Technische Hochschule, Zürich.

1 Mr. Van Hout is a member of the Board of the Stichting Brainport, the Eindhoven Region Economic Development Board.

Christophe D. Fouquet (1973)

Term expires 2022

Executive Vice President EUV

1 Mr. Fouquet joined ASML in 2008 and was appointed as Executive Vice President EUV and became a member of our BoM at the 2018 AGM.

1 Mr. Fouquet has held several positions at ASML, including Executive Vice President Applications, which he has held from 2013 until 2018. Prior to joining ASML, Mr. Fouquet worked at semiconductor equipment peers KLA Tencor and Applied Materials.

1 Mr. Fouquet earned a degree in Physics at the Institut Polytechnique de Grenoble.

Frédéric J.M. Schneider-Maunoury (1961)

Term expires 2022

Executive Vice President and Chief Operations Officer

1 Mr. Schneider-Maunoury joined ASML in December, 2009, as Executive Vice President and COO and was appointed to our BoM at the 2010 AGM.

1 Prior to joining ASML, Mr. Schneider-Maunoury served as Vice President Thermal Products Manufacturing of the power generation and rail transport equipment group ALSTOM. Previously, Mr. Schneider-Maunoury was general manager of the worldwide Hydro Business of ALSTOM.

1 Mr. Schneider-Maunoury also held various positions at the French Ministry of Trade and Industry.

1 Mr. Schneider-Maunoury is a graduate of Ecole Polytechnique (1985) and Ecole Nationale Supérieure des Mines (1988) in Paris.

The Role of Lithography Lithography is the critical process step in the production of microchips. Our systems are essentially projection systems, comparable to a slide projector, using laser light to lay out the transistors - the 'brain cells' of a microchip. The light is projected using a so-called mask (also known as a reticle), containing the blueprint of the pattern that will be printed. A lens or mirror focuses the pattern onto the wafer - a thin, round slice of semiconductor material - which is coated with a light-sensitive material. When the unexposed parts are etched away, the pattern is revealed. Because lithography patterns the structures on a microchip, lithography plays an important role in determining how small the features on the chip can be and how densely chip makers can pack transistors together.

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Faster, smaller, greener

Our guiding principle is continuing Moore's Law towards ever-smaller, cheaper, more powerful and energy-efficient semiconductors. The long-term growth of the semiconductor industry is based on the principle that the power, cost and time required for every computation on a digital electronic device can be reduced by shrinking the size of transistors on chips. One of the main drivers of shrink is the resolution that our systems can achieve. This, in turn, is mainly determined by the wavelength of the light that is used and the numerical aperture of the optics. A shorter wavelength - like a finer brush used for painting - can resolve smaller features. A larger numerical aperture can focus the light more tightly, which also leads to smaller resolution. The industry has gone through a series of technology transitions where it shortened the wavelength of the light from 365 nm (i-line) to 193 nm (ArF) in the DUV part of the spectrum. Currently ASML is helping customers to transition to 13.5 nm (EUV), which again allows lithography systems to resolve smaller features.

Leading-edge chip makers have routinely produced chip features with geometries of between 20 nm and 10 nm, compared to typical geometries of 10,000 nm in the early 1970s. The number of transistors on the most advanced microchips has increased from several thousand to over 6 billion.

This trend was first observed by Intel co-founder Gordon Moore in 1965. Moore stated that chip makers could double the number of transistors in - and boost the performance of - a typical microprocessor every year, while maintaining the same cost. He later adjusted this to every 2 years. The trend has held for more than 50 years. The semiconductor industry continues to realize Moore's Law, and our customers' roadmaps require lithography-enabled shrink beyond the next decade, which is the time frame the industry has always used to plan its roadmap. In 2018, major chip makers were investing in and preparing for high volume-production with EUV. We expect the first commercial chips with EUV layers to be on the market in 2019.

Our Company

It is hard to imagine the world without microchips. They are at the heart of the devices that we use to work, travel, stay healthy and be entertained - from smartphones to cars, from MRI scanners to industrial robots. Delivering new functionalities, better performance and lower cost with each generation, advances in chips have spawned new products and transformed industries. New technologies and trends, such as artificial intelligence, 5G connectivity, augmented reality and the Internet of Things, result in additional demand for semiconductor chips to generate, transfer, store, analyze and apply vast amounts of data.

As one of the world's leading manufacturers of chip-making equipment, ASML provides its customers with tools - hardware, software and services - to create the patterns that define the electronic circuits on a chip. As we improve our products, our customers can increase the value and reduce the cost of chips for their customers.

We are a global company with 23,247 employees and achieved total net sales of EUR 10.9 billion during 2018, resulting in a net income of EUR 2.6 billion. Our thousands of engineers work in multi-disciplinary teams and with a network of suppliers and technology partners, innovating to maintain our technology leadership. We set ourselves ambitious goals and take pride in the impact we have on the world around us.

A short company history

Our company was founded in 1984 in Eindhoven under the name of ASM Lithography. By 1985 we had grown into a company of more than 200 employees and moved to Veldhoven, where we have been headquartered ever since. In 1991, we launched our PAS 5500, which became a major success for ASML and continues to be in use today. After we incorporated as 'ASM Lithography Holding N.V.' in the Netherlands on October 3, 1994, we became a public company in 1995 with listings on NASDAQ and Euronext Amsterdam.

We continued our growth and technological advancement by acquiring the Silicon Valley Group in 2001, whose site in Wilton, Connecticut, in the US, is now a major R&D and manufacturing center. That same year we introduced our TWINSCAN system which, using 'dual-stage' technology, exposes one wafer while the next wafer is already being measured, maximizing performance and productivity. In 2001, we changed our name to ASML Holding N.V.

In 2007, we acquired Brion, a US company specialized in computational lithography for ICs, which became a cornerstone of our Holistic Lithography product strategy. In 2013, we acquired Cymer, a manufacturer of light sources in the US, to accelerate the development of the next-generation lithography technology, EUV. In 2016, we acquired HMI in Taiwan to further enhance our Holistic Lithography product portfolio. In 2017, we acquired a 24.9 percent indirect interest in Carl Zeiss SMT GmbH in Germany, to facilitate the further development of our EUV systems.

Industry Trends and Opportunities

The exponential increase in data generation, transfer and storage is being complemented by new data analysis techniques and applications, which together are fueling industry growth and a new wave of semiconductor devices. These new drivers include technologies and applications such as 5G connectivity, Internet of Things (IoT), virtual assistants, autonomous driving, augmented and virtual reality, big data and artificial intelligence.¹ 5G connectivity enables speeds up to 1,000 times faster than 4G mobile networks, supporting several of these new applications. We expect the first of these semiconductor devices will be introduced in 2019. Artificial intelligence is being enabled by the increasing processing capability of advanced semiconductors, reinforced by new classes of devices that are designed to support these applications, both at the edge in mobile devices, such as Neural Processing Units (NPU), and in the cloud, with devices such as Google's Tensor Processing Unit (TPU).

The importance of semiconductors in enabling these new applications is reflected in the move by leading technology companies like Google, Amazon and Microsoft to join companies like Apple, Samsung and Huawei in designing their own advanced ICs. These new growth engines complement the maturing smartphone, PC, laptop and tablet semiconductor market segments, which continue to refresh product offerings with more advanced ICs, to process and store more data and offer these new applications. This is expected to translate into semiconductor end-market growth, which in turn drives investments in technology upgrades and growth in worldwide factory capacity in all segments, especially at the leading-edge nodes.

To address these market requirements, our customers continue to invest in developing more advanced semiconductor processes to enable more powerful, energy-efficient, cost-effective logic and memory ICs. For further information on these markets, see Management Board Report - Business Strategy - Our markets. Industry and customers' roadmaps indicate a path for continued semiconductor process scaling beyond the next decade. We are addressing this trend by extending the accuracy and productivity of our TWINSCAN XT and NXT lithography systems while in parallel maturing TWINSCAN NXE lithography to the point where it can be used for high-volume IC manufacturing. To secure the tighter accuracy requirements for the more advanced processes we continue to develop enhancements to our YieldStar optical metrology systems and associated feedback and control software. This has been further strengthened with the acquisition of HMI in 2016 to provide higher resolution e-beam metrology and inspection capability. Beyond technology and productivity our customers continue to focus on cost and quality of our products and services. To address this, we are investing in programs to enhance quality and drive lean processes in our development, manufacturing, field service and supply chain operations. See Management Board Report - Operations - Operational excellence and Management Board Report - Operations - Quality.

We believe these industry trends offer continued strong business opportunities for ASML for the coming 10 years and beyond. For a broader overview of trends, risks and opportunities in our industry and global environment, see Management Board Report - Materiality Assessment.

We also follow developments regarding international guidelines, such as the United Nations Sustainable Development Goals, which aim to end poverty, protect the planet and ensure prosperity for all. We support this ambition and aligned our strategy with certain United Nations Sustainable Development Goals. See also Management Board Report - Materiality Assessment - Sustainable Development Goals.

1. Source: BI Intelligence, CCS Insights, Gartner.

Business Strategy

How we create value

ASML creates economic value with strong financial performance; social value by enhancing the welfare of our employees, suppliers, customers and the communities we operate in; and environmental value by improving the energy efficiency of chips.

Our value chain

Geared towards providing long-term value to our customers and other stakeholders, our value chain consists of our R&D partners, our supply chain and our manufacturing and service activities, as shown below:

Creating value

We use input from stakeholders and trends in our industry and society to develop our strategy, our products and services. As such, we aim to create long-term value for our customers and other stakeholders.

For details on the value we created in the past year, see Management Board Report - Products and Technology, People, Partners and Operations for our social and environmental impact and Management Board Report - Financial Performance for our economic impact. For the topics most relevant to our stakeholders see Management Board Report - Materiality Assessment and Non-Financial Statements - Stakeholder Engagement. For details on our value creation over the past five years see Highlights.

Our vision and mission

We see a world in which semiconductor technology is everywhere and helps to tackle society's toughest challenges. We contribute to this goal by creating products and services that let our customers define the patterns that ICs are made of. We continuously raise our products' capabilities, which allows our customers to increase the value and reduce the cost of chips. By helping to make chips cheaper and more powerful, we make semiconductor technology more attractive for a larger range of products and services. This enables progress in fields such as healthcare, energy, mobility and entertainment.

Our strategy

We are a focused supplier of Holistic Lithography solutions, including patterning, metrology & inspection products and services, to IC manufacturers, providing high-performance hardware and software. This allows our customers to increase the value and capability of their microchips, while reducing their cost. We work with long-term partners to share the risk and reward of inventing, designing and manufacturing our high-end, market-leading technology. We set targets to get our innovations into the hands of our customers faster, while enhancing the value and reliability of our products with well-integrated software and services.

In determining our strategy, we carefully consider the input and interests of all of our stakeholders. See Management Board Report - Materiality Assessment. We also analyze the risk and opportunities based on the industry and global trends, and set strategic and corporate priorities, which aim to create value for all of our stakeholders. Our strategic priorities remain unchanged for 2019 and focus on the successful industrialization of EUV, securing our DUV competitiveness, building a leadership position in Holistic Lithography extension, and aligning the plan for the introduction of High NA with our customers and key technology providers.

The strategic priorities are translated into Corporate Priorities that guide our entire company.

The following table demonstrates how the execution of Corporate Priorities addresses our key risk areas and supports the themes material to our stakeholders in creating value for them.

	Corporate Priority 1:	Corporate Priority 2:	Corporate Priority 3:	Corporate Priority 4:	Corporate Priority 5:
Corporate Priorities	Execute the product and installed base services roadmap in Holistic Lithography	Deliver quality products and services that consistently meet or exceed the expectations as agreed with customers, reinforced by an ASML quality culture	Drive the patterning ecosystem with customers, suppliers and peers in target market segments	Improve return on investments for ASML and its stakeholders, with a focus on cost of ownership and cost awareness	Develop our people and processes to support the growth of the organization towards a EUR 13 billion revenue company by 2020
Related material themes ¹	<ul style="list-style-type: none"> • Innovation • Knowledge management 	<ul style="list-style-type: none"> • Sustainable relationships with customers • Operational excellence 	<ul style="list-style-type: none"> • Sustainable relationships with suppliers • Sustainable relationships with customers • Innovation 	<ul style="list-style-type: none"> • Financial performance 	<ul style="list-style-type: none"> • Employee safety • Business ethics & compliance • Talent management • Sustainable relationships with our people • Business risk & continuity
Key related risks ²	<ul style="list-style-type: none"> • Rapid and complex technological changes • Ability to execute our R&D programs 	<ul style="list-style-type: none"> • Product industrialization 	<ul style="list-style-type: none"> • Supplier dependency • Rapid and complex technological changes • Product industrialization 	<ul style="list-style-type: none"> • Success of new product introductions • High cyclicality of the semiconductor industry • Competition • High % of net sales derived from few customers • Revenues derived from a small number of products • Global trade issues 	<ul style="list-style-type: none"> • Attraction and retention of adequately skilled people • The growth of our organization • Use of hazardous substances
Related KPIs	<ul style="list-style-type: none"> • R&D expenses • Technology Leadership Index • Technical Competence and Functional 	<ul style="list-style-type: none"> • Customer Loyalty Survey Score 	<ul style="list-style-type: none"> • Supplier Relationship Satisfaction Survey Score • VLSI Survey Results 	<ul style="list-style-type: none"> • Total net sales • Gross margin • EPS • Cash flow • ROAIC 	<ul style="list-style-type: none"> • Employee engagement • Employee attrition rate (overall, high performers) •

	Ownership			Promotion rate of
	•maturity			•high performers
	Number of			Recordable
	technical training			incident rate
	hours			
	Affordable		•Employment	
	technology		creation	
	•Knowledge		•Affordable	
	creation &		technology	
Related	•sharing	• Affordable technology	•Knowledge creation	• Employment
impact	Resource	• Financial performance	& sharing	creation
areas ³	•efficient chips		•Resource efficient	• Employee welfare
	Financial		chips	• Financial
	•performance		•Financial	performance
			performance	

1. See Management Board Report - Materiality Assessment.

2. See Management Board Report - Risk Factors.

3. See Management Board Report - Business Strategy - How we create value.

In terms of our sustainability focus, we began a refresh of our Corporate Responsibility Strategy in 2018, covering the period 2019-2025. We revised our corporate responsibility priorities, identifying five main priority areas: People, the Circular Economy, Climate & Energy, Responsible Supply Chain, and the Innovation Ecosystem. This strategy contributes to a number of the United Nations Sustainable Development Goals. The Industry, Innovation and Infrastructure (SDG 9) goal is connected to the core of our company, as innovation is our lifeblood and the engine that drives our business. We also contribute towards the Quality Education (SDG 4), Decent Work and Economic Growth (SDG 8), Responsible Production and Consumption (SDG 12) and Climate Action (SDG 13) goals.

We are in the process of finalizing how this new strategy will be implemented (including performance indicators and quantitative 2025 targets), and will begin reporting on the new strategy in 2019.

Our markets

Our main customer groups are memory and logic chip makers. Memory chips can store a large amount of data in a very small area. They are used in an increasing variety of electronic products like smartphones, high-performance computing, automotive or personal computers, and other communication devices. There are two main classes of memory: NAND and DRAM. With NAND chips, information can be stored even when the device is powered off. DRAM memory is used to improve the performance of the electronic product. These DRAM and NAND chips are made in dedicated memory-chip factories.

Logic chips process information in electronic devices. They are produced by two groups of manufacturers. The first group designs and manufactures logic chips and is referred to as Integrated Device Manufacturers (IDM). The second group is made up of contract manufacturers known as foundries. Foundry manufacturers do not design chips, but produce chips for other companies.

Over the past 20 years, the chip market has grown at an average of five percent per year, however the growth drivers have changed over time. In the 1990s, the introduction and adoption of Personal Computers (PCs), both “desktops” and later “laptops” fueled chip demand. In the first decade of this century, the market driver transitioned from PCs to smartphones. PCs and smartphones have in turn fueled a new market driver, data-centers, where data from PCs and smartphones is routed, stored, and processed with extensive use of DRAM, NAND and specialized logic chips. A new category of end-point devices, beyond PCs and smartphones, has emerged over the last five years classified as the Internet of Things (IoT), which includes devices such as security cameras, home and industrial devices, and autonomous vehicles, that are exponentially adding to the growth in data being transmitted, processed and stored. The combination of increasing data together with more powerful processing capability from more advanced logic chips is enabling the application of artificial intelligence techniques, such as machine-learning and deep-learning, leading to whole new set of applications and services. These new applications in-turn are fueling new growth drivers at the edge, such as smart assistants, and in data centers, such as real-time language translation.

Long-term growth opportunity

On November 8, 2018, we presented our view of long-term growth opportunity, updated our outlook for 2020, and extended our outlook to 2025. We also updated our long-term business and financial analysis, reflecting an annual revenue opportunity of around EUR 13 billion in 2020, based on a moderate market scenario.

For 2025, we have modeled our potential revenue scenarios within the context of different business sensitivities. We recognize our potential growth opportunity is sensitive to market growth, and potential annual revenue for 2025 between EUR 15 billion in a low market scenario and EUR 24 billion in a high market scenario.

Our revenue potential is primarily based on organic growth. We continuously review our product roadmap and have, from time to time, made focused acquisitions / equity method investments to enhance the industrial value of our product offering. Based on such reviews and the assessment of clear potential product and value synergies, we may also evaluate and pursue focused merger and acquisition activities in the future. Within this growth ambition, we expect to continue to return significant amounts of cash to our shareholders through a combination of share buybacks and growing dividends.

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Our products

We sell Holistic Lithography solutions which integrate our three categories of products: DUV lithography, EUV lithography, and Applications. We believe that our customers get the best-possible performance from their chip-making systems by considering the whole chip-creation process, from design to volume manufacturing. We provide services that make sure our systems are installed effectively and efficiently, and there is superior support and training to create the best-possible manufacturing processes for our customers. We also have services to upgrade and refurbish our systems, helping our customers extend their systems' lifespan and enhance our customers' capital efficiency.

We offer TWINSKAN (N)XT (DUV) systems for imaging wafers. The DUV range consists of systems that operate at a specific wavelength of the light source, varying from the so-called i-line (365 nm) to KrF (248 nm) and ArF (193 nm). Although these systems are usually referred to as dry systems, the DUV range is completed with ArF immersion lithography systems that provide imaging capability down to a resolution of 38 nm. In these systems, a film of water is placed between the wafer and the projection lens. This film acts as an extra lens, which results in smaller features compared with the previous generation of dry systems. We pioneered this technology and have extended it over multiple generations to enhance the precision of the feature placement to enable so-called multiple patterning technology. This technique has enabled our customers to produce integrated circuits down to the 7nm logic node and 10 nm class DRAM nodes.

Our next-generation lithography systems, TWINSKAN NXE (EUV), are equipped with an entirely new EUV light-source technology and a new optical technology that uses reflective mirrors rather than traditional lenses. The shorter wavelength of this light (13.5 nm) results in a higher resolution for the manufacturing of denser and faster chips. The EUV platform can produce ICs of 13 nm resolution and smaller. We are developing the future generation of EUV lithography systems due early in the next decade, using High NA technology. Customers are already committing to this technology. In April 2018, ASML received its first orders for these future-generation systems. Three customers placed initial orders for the research-level High NA systems, for an aggregate four tools initially, plus options for another eight volume systems. The initial research-level systems are targeted to start shipping in 2021. With this technology, the semiconductor industry will be able to produce higher-performance microchips at lower costs. The higher numerical aperture optics will make it possible to further reduce critical dimensions in the lithography process. The current EUV systems have an optical system with a numerical aperture of 0.33, whereas the new optics will have a numerical aperture of 0.55, enabling several generations of geometric chip scaling. We have complemented our scanner products with a rapidly expanding Applications portfolio of software and metrology & inspection products. This portfolio helps our customers get optimal use from and control over semiconductor scanner performance, which provides faster start-to-chip production. This results in better patterning at higher resolutions, and higher product yields. Our solutions offer cost-saving opportunities for our customers. The addition of HMI's e-beam technology to our existing portfolio extends our control scope. New process control opportunities, built on the same unique and proven approach, will give our customers additional value. This approach - pattern fidelity metrology - allows us to guide the e-beam inspection system to the most critical areas, based on the predictive model, on the wafer to increase the effective productivity. We are extending this technology even further with a multi-beam design. In 2018, we demonstrated the first proof of concept of multiple e-beams to further improve productivity of e-beam metrology, and expand the application opportunity in high-volume production. The biggest new opportunity is in the extension of overlay control to a comprehensive control of pattern fidelity. See our lithography systems overview below.

Managing our installed base systems

We develop and sell product options and enhancements designed to increase throughput, and improve patterning and overlay. This allows for optimal cost of ownership over the lifespan of our systems. We have developed field upgrade packages, which allow our DUV and EUV scanners to be upgraded from one model to another in the field. Customers are able to migrate these systems in production from one process technology node to another. This lets them meet tighter lithography requirements for increasingly advanced processes. In addition, our Mature Products and Services business refurbishes used lithography equipment, and offers associated services. Upgrades and refurbishments help our customers extend their systems' lifespan and get the best value from their capital. They also support our circular economy approach.

We support our customers with a broad range of applications, services, and technical support products to maintain and enhance our systems' performance. We also offer our customers OnPulse contracts on DUV sources, providing on-site support from certified service engineers and continuous real-time light-source monitoring.

We expect our service business, which is critical to our overall success, to continue to grow. We aim to deliver a complete and cohesive service product offering designed to keep our customers' systems operating continuously and competitively. Our service business strategy makes customer value and satisfaction a priority, while seeking to optimize our total net sales and gross margin. Our Installed Base Management product portfolio, and its wide range of service and upgrade product offerings, is structured in line with the life cycle of our customers' technology nodes and is intended to offer the best-possible value proposition for customers.

Innovation drives our business

Innovation is ASML's lifeblood and the engine that drives our business. As the markets of artificial intelligence, 5G connectivity, augmented reality and the Internet of Things expand, consumers across the world are using ever-more powerful and sophisticated devices that are increasingly interconnected. These developments drive demand for microchips, which in turn drive demand for the chip-making systems that produce smaller, faster, cheaper, more powerful and energy-efficient microchips. We can only meet this demand by consistently and continuously advancing our technology.

Our innovations in 2018 helped us improve our DUV technology. This allowed us to meet our goal of continuing to offer competitive chip-making systems using 'dry' and 'immersion' lithography technology. Due to improvements and innovations, we succeeded in further increasing the number of wafers processed per day for most of our DUV systems. We shipped 206 TWINSCAN DUV systems in 2018. We also shipped 17 of our latest TWINSCAN NXT:2000i immersion systems, which are used on the most advanced nodes. While bringing new technology to the field, we also managed to ramp time-to-yield, hitting a performance level of >150 hours Mean Time Between Interruption (MTBI) in 15 weeks. This is almost 40 percent faster than the previous model, NXT1980i, and is enabled by a more mature platform achieved through continuous improvements.

Continuous improvements helped us move our EUV technology to the high-volume production stage in 2018. We demonstrated production capability of >145 wafers per hour, up from 125 wafers per hour in 2017, and are working towards 92 percent production time (availability) with consistent performance. We shipped 18 EUV systems in 2018 of which 17 were NXE:3400B EUV systems. The NXE:3400B showed improved performance on a customer site, where the customer ran over 1,000 wafers per day over a period of more than six weeks. On some days, more than 1,500 wafers were produced. At another customer site, we saw a peak performance of more than 2,000 wafers per day. These performances were representative of a significant number of successes for our NXE:3400Bs. Through innovations and improvements, we are committed to accelerating our roadmap, providing our customers with a system with more than 35 percent higher productivity, the NXE:3400C, which is capable of producing 170 wafers per hour. This has a planned delivery date for the second half of 2019.

Since the acquisition of HMI, we shipped multiple ePfm5 systems, a pattern fidelity metrology tool that offers our customers enhanced capabilities for detecting patterning defects. We enabled customers to substantially improve accuracy in chip patterning by implementing HMI's metrology technology and Brion's metrology software and machine-learning technology. The ePfm5 device is based on single-beam technology, which will be guided to the critical areas (known as areas of interest) based on our computational lithography model. In 2018, we also achieved significant breakthroughs in multi-beam technology, showing our first 3x3 image on a proof of concept system. This

will further enhance pattern fidelity metrology.

There was large-scale adoption of YieldStar 375 among all major memory makers in 2018. The unique, large spot multi-wavelength measurement mode has proven to be accurate and robust compared to alternative methods. Memory makers have seen significant overlay performance improvements after adopting YieldStar.

We continued efforts to develop High NA, the next generation of EUV optics. We are confident we have the ability to apply this technology at a scalable model in coming years. High NA will offer a higher numerical aperture, making it possible to further reduce critical dimensions in the lithography process. We have received the first four orders for High NA systems from three customers and we also sold options to buy eight more systems.

We measure innovation based on an internal KPI we call the Technology Leadership Index. This index comprises three objectives: a) DUV performance enabling memory 1x and 7/5 nm logic nodes, b) Enable on product performance, and c) Drive economics and extendibility of EUV. See Products and technology objectives in the table towards the end of this chapter.

Another important indicator of our focus on innovation is the amount we spend on R&D. In 2018, we spent EUR 1,575.9 million or 14 percent of total net sales on R&D, compared to EUR 1,259.7 million or 14 percent of total net sales in 2017, and EUR 1,105.8 million or 16 percent of total net sales in 2016, which underscores our commitment to investing in R&D.

How we manage innovation

We manage innovation based on ‘roadmaps’ - the semiconductor industry’s standard term for product-development planning. Our marketing organization first assesses our customers’ needs, the required functionality of our systems, and the deadline for these requirements. This ‘marketing roadmap’ of customer requirements includes detailed system specifications and functionalities. Our product organization then puts together a ‘product roadmap’. This outlines the specifications and functionalities of the new types of system that are feasible to produce and that meet our customers’ demands.

At the same time, we draw up a ‘technology roadmap’, identifying what technology we need to build in the system as described in the product roadmap. From our integrated roadmap we create further detailed roadmaps for each of our main product groups: DUV, EUV and Applications. Roadmaps typically look five years ahead. We adjust them when required, depending on changing customer needs or unexpected technological breakthroughs or challenges.

We also invest in innovation by conducting research with a longer-term view. Run by our Research department, this research aims to create technological solutions our D&E experts can tap into when they develop new systems or improve existing models. Our research teams collaborate with a wide network of technology partners, such as universities and other research institutions.

We manage our innovation efforts through our Product Generation Process. Our CTO is responsible for R&D at board level. Our Executive Vice-President Development and Engineering and our Senior Vice-President Technology report to the CTO.

ASML’s ‘open innovation’ concept

The concept of ‘open innovation’ helps us sustain our pace of invention. This means we develop our technology in close collaboration with partners inside and outside our company, sharing the rewards and the risks. This way of working gives us easy access to leading-edge knowledge and skills across a wide range of technologies. Our partners can also use these in other markets.

Researchers from ASML, the Advanced Research Center for Nanolithography, Tata Steel and Vrije Universiteit Amsterdam cooperate to develop new techniques for imaging surfaces based on lensless microscopy. To support our lithography business, we also have a close and long-standing partnership with Carl Zeiss AG, and with Cadence Design Systems, as part of our holistic patterning strategy.

ASML and world-famous research and innovation hub, imec, announced the next step in their extensive collaboration. Together, we expect to accelerate the adoption of EUV lithography for high-volume production, including the latest available equipment for EUV. Additionally, we will explore the potential of the next-generation High NA EUV lithography to enable printing of even smaller nanoscale devices.

In 2018, our annual ASML Technology Conference was one of the largest of its kind with delegates spread across four locations. Participants included external technology experts and representatives from our customer base, such as the COO of IBM Research. This year’s conference was centered around the theme of ‘Moore to explore’, which discussed the view that EUV industrialization does not mean the end for Moore’s Law. Rather, it signals a new departure for further exploration within EUV, with High NA offering at least 10 more years of development opportunity. Matching this with the potential for further innovation in DUV and Applications shows that we still have many challenges ahead of us.

Knowledge management

Our major investment in R&D means it is crucial for us to share and protect our inventions and knowledge.

Knowledge management is a key focus area for us. In 2018, it enabled ASML to rapidly grow the organization and to effectively onboard many new employees.

To maintain our technological leadership and pace of innovation, we need to develop the right knowledge and share it quickly and efficiently. We share our knowledge internally and externally, with partners such as suppliers and customers. Faster access to knowledge spurs faster development, allowing problems to be solved more quickly. It also makes our investments in knowledge creation more effective and efficient.

Our ambition is to ensure that the right knowledge is available to the right people at the right time. This means we must acquire or develop the required competencies at an early stage, maintaining a knowledge pipeline that allows us to build the system functions we need. This process is facilitated by our Technical Training Center. Our line managers regularly assess the technical competencies we need, varying from software programming to laser physics, and take steps to fill capability gaps where necessary.

Our 'MyLearning' management system, which covers the activities of all our training centers, helps our employees and their managers decide what courses to attend to develop their skills and competencies. The system provides information on training hours, and the kinds of training our employees are receiving. It also helps employees design their individual Development Action Plans. See also Management Board Report - People - Talent management. The number of technical training hours per full-time D&E

employee increased to 31.4 in 2018 from 18.2 in 2017. This increase is due to a significant influx of new employees, who received additional onboarding training, and the successful introduction of several new training programs. In 2018, we continued with the Onboarding Success Planner, which is a series of trainings to be followed in an employee's first year. The purpose of the Onboarding Success Planner is to help speed up the learning curve of the large number of new employees we need to onboard to be able to implement our many new product-development programs.

To gauge the effectiveness of our knowledge management, we measure our Technical Competence maturity and Functional Ownership maturity. Technical Competence maturity measures the capabilities and spread of technical competencies among our people, as well as the extent to which they are embedded in our processes and operations. We have identified over 80 different competencies that are relevant to our technology. Functional Ownership maturity measures the level of required knowledge among our teams of experts about the system functions they are responsible for. A system is divided into about 90 distinct functions, and responsibility for each function is assigned to a function owner and his/her team.

We score the maturity KPIs on a scale of 1 to 5. Levels 1 and 2 cover the basic requirements, showing that teams are establishing links with departments they cooperate with, setting individual targets, etc. Levels 3, 4 and 5 are more advanced, reflecting mechanisms to gather and process feedback, make processes predictable, and ensure they function well at customers' sites.

In 2019, we will reassess the present competence function framework to bring it to the next level. The current framework and metrics will remain in place until we have completed this reassessment and defined new metrics. While continuing to build and maintain a solid knowledge base, in 2018 we focused on raising the maturity level of our employees in terms of their technical and functional knowledge. For Functional Ownership we paid particular attention to using feedback from customers, e.g. feedback loops. In terms of Technical Competence and Functional Ownership, we met our targets to achieve an average maturity score of 3.8 in 2018. See Products and technology objectives in the table near the end of this chapter.

We have roadmaps in place for system functions. These plans are updated on a regular basis. We have mechanisms to process feedback from customers and co-development partners, helping to reduce the recurrence of technical function issues.

Protecting our intellectual property

We rely on intellectual property rights such as patents, copyrights and trade secrets to protect our proprietary technology. We aim to acquire ownership rights on technology developed by us or for us or, alternatively, to have license rights in place with respect to such technology.

In our management of our intellectual property rights, we focus on protecting ASML's intellectual property and respecting the intellectual property of others. Preservation of intellectual property and other assets is one of our Business Principles and part of our Code of Conduct.

As of December 31, 2018, we had approximately 12,000 patents and patent applications across the main equipment and chip-manufacturing countries around the world and covering various fields of our business, including about 300 new patent applications which may be extended to other countries in the coming years.

See also Management Board Report - Risk Factors - Failure to adequately protect the intellectual property rights upon which we depend could harm our business and Defending against intellectual property claims brought by others could harm our business.

Product stewardship

While putting continuous effort into innovation and effectively managing and protecting our knowledge, we also strive to make sure our products are manufactured and can be operated responsibly. Our commitment to product stewardship means that we work to make our manufacturing processes and systems more environmentally friendly, improving their resource efficiency.

As we brought our EUV systems to the point of high-volume production in 2018, we began exploring how we can achieve energy savings for these systems. Together with a supplier, we looked into how to redesign the pre-vacuum systems for our EUV systems in a way that they use less energy. At year-end, we had not concluded this investigation. We continued research, in partnership with suppliers, into increasing the recycling rate of the H₂ used in our systems.

We also continued exploring the possibility that some sections of the EUV system can operate at higher temperatures. This will allow us to reduce energy used for cooling purposes in these systems at our customers' sites. We support the circular economy concept - a model for industry moving from the linear model of 'Take, Make, Dispose' to one where we extract the maximum value from resources we use, and then recycle and regenerate products at the end of their lives. We believe this is essential to ensuring the future success and competitiveness of the semiconductor equipment industry. To this end, we have incorporated the circular economy into our Business Principles. We are committed to playing our part, not only by enhancing energy efficiency and the efficient use of other resources and materials, but also by refurbishing systems, remanufacturing parts ('As-new' program), and upgrading systems to a higher performance level while in use 'in the field', to extend their lives. Our systems have a modular design, which allows for reuse and upgrades. About 45 percent of the weight of a typical NXT system consists of a fixed architecture that can be kept when upgrading the system. See Graphic: ASML NXT system: Modular upgradeable design, in this section.

Extending our
systems' lifetime

Our Mature
Products and
Services
business
refurbishes older
lithography
systems and
offers associated
services. A
well-maintained
ASML
lithography
system has a
useful life that is
measured in
decades.
Typically, an
ASML
lithography
system will be
used in a
leading-edge
Fab for many
years, and will
then be given a
second life with,
for example, a
manufacturer
that makes
specialized
devices, such as
accelerometers,
radio frequency
chips, thin-film
heads for hard
disk drives, or
LEDs, which
require
relatively less
sophisticated
chips. The vast
majority of the
systems we have
previously sold
are currently still
operational in

our customers'
factories.

In 2018, we upgraded dozens of our older-generations NXT systems, and began upgrades to some of our EUV systems. Due to the new software and hardware, we can significantly extend the lifespan of a significant part of our systems currently in use at our customers' production locations.

We also further engaged with our customers around the introduction of 'As-new' modules into our mainstream manufacturing. 'As-new' modules (segments of our systems) are those suitable for multiple product life cycles. They are returned from the field and, after a thorough re-qualification process, restored to an as-new condition. Their performance level is equal to that of new ones. In 2018, we continued a pilot project launched in 2016 to explore how we can effectively use 'As-new' parts and modules in new systems. In collaboration with our customers and suppliers, we aim to increase the number of 'As-new' parts used in the future.

By working to make the production of computer chips cheaper and more powerful, we also fuel the development of new electronic applications. This poses a challenge for our entire industry, as these new applications may use more energy and need potentially scarce resources. For us, it emphasizes the importance of working with all relevant stakeholders in the value chain to make our industry more sustainable, and of contributing to this process through research and innovation.

RoHS and REACH

We are committed to complying with EU guidelines for handling hazardous materials and chemicals, the so-called RoHS directive and the REACH regulation, even though the products we manufacture are currently excluded from the RoHS directive. We aim to, whenever possible, reduce and eliminate use of hazardous substances and replace non-compliant parts with RoHS-compliant alternatives.

Product safety and compliance

Our products must be safe to work with, starting at the design stage. Our engineers develop systems that meet international safety regulations. We require product designers to pay attention to nine risk areas we have identified, and to alert risk experts if they believe their design might pose a safety risk. This lets us address any potential safety issue at an early stage.

Our products and non-commercial tools comply with all relevant legislation, including EU safety regulations and SEMI S2, the semiconductor industry guidelines. A third party verifies our compliance with SEMI S2. In 2018, a report confirming SEMI S2 compliancy was available for each and every product type we shipped. See Non-Financial Statements - Non-financial Indicators - Products and technology - Product Stewardship.

Products and technology objectives

Theme	Objective	Target year	How we did
Innovation	Realize the following as part of our Technology Leadership Index: a) DUV performance enabling memory 1x and 7/5 nm logic nodes.	2018	See Innovation drives our business above.
	b) Enable on product performance. c) Drive economics and extendibility of EUV.		
Innovation	Realize the following as part of our Technology Leadership Index: a) Enable 3 nm node and the installed base products & services roadmap without compromise to quality	2019-2020	
	b) Enable on product performance c) Drive economics and extendibility of EUV.		
Knowledge management	Maintain the Technical Competence and Functional Ownership maturity score at a level of 3.8. ¹	2018-2020	See Products and technology KPIs in the table below - we achieved a maturity score of 3.8 for Technical Competence and 4.1 for Functional Ownership.
	Realize 17.5 hours of technical training hours per FTE (D&E employees).	2018	See Products and technology KPIs in the table below - the number of training hours was 31.4, exceeding our 2018 target.
Product stewardship	Annual reduction of RoHS non-compliant parts by 15%.	2016 and beyond	In 2018, we have assessed that 91.6% of the parts in scope are RoHS compliant (with 0.8% non-compliant and 7.6% unknown).

We have therefore reduced the RoHS non-compliant parts by 21%, thus exceeding our annual target of 15% reduction. We will continue to investigate unknown parts and further reduce the RoHS non-compliant parts.

Technical Competence maturity measures the capabilities and spread of technical competencies among our people, as well as the extent to which they are embedded in our processes and operations. Functional Ownership maturity¹ measures the level of required knowledge among our teams of experts about the system functions they are responsible for.

Products and technology KPIs

KPI	2016	2017	2018
R&D expenses (in million EUR)	1,105.8	1,259.7	1,575.9
Technical Competence maturity score ¹	3.4	3.7	3.8
Function Ownership maturity score ¹	3.6	4.0	4.1
Number of technical training hours per FTE	15.9	18.2	31.4
Sales of lithography systems (in units) ^{2,3}	154	197	224

1. Measured on a scale from 0 to 5, with 5 being the top score.

2. Lithography systems do not include metrology and inspection systems. See Management Board Report - Financial Performance - Operating results - Total net sales and gross profit.

3. As of January 1, 2018, ASML has adopted the new Revenue Recognition Standard (ASC 606) and Lease Standard (ASC 842). The comparative numbers have been adjusted to reflect this change in accounting policy.

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Talent management

Attracting and retaining talent is crucial to maintaining our fast pace of innovation and essential to our long-term success as a company. Highly skilled people with a technical background are scarce in the labor market and competition to recruit talented people is growing. The complexity of our products means new and existing employees face a steep learning curve. As such, we put significant effort into onboarding newly hired people. To enhance their performance, we need them to be familiar with our technologies and ways of working in a short time. We are continuously looking to grow our talented and highly skilled professionals through tailor-made training and development programs. This allows for continuity in our workforce as we are able to retain our employees' knowledge, skills and competencies. In 2018, we succeeded in hiring the people we need to support ASML's strong growth, as we hired approximately 3,500 new payroll employees and 1,900 temporary employees.

To attract talent, we focus on two areas:

Internal talent - We assess the development potential of our employees for new roles and identify candidates for critical positions. Employees discuss their career ambitions with managers, jointly considering next steps. Employees can pursue opportunities themselves or be approached within the organization. We also have internal career fairs where people can learn more about internal career opportunities.

External talent - We cooperate closely with universities in Europe, the US and Asia to attract highly talented staff, including offering internships and scholarships. For positions that we cannot develop or fill internally, we scan the labor market for the skills we need, and run targeted recruitment campaigns.

Developing our people is crucial for the sustained success of our business. Every year, our employees' personal targets and development plans are aligned with our business targets through our People Performance Management process. Our MyGrowth program, established in 2018, lets employees assess their strengths and potential gaps in their competencies. It also helps guide them in deciding how to fill these gaps through development actions. This is part of our process to identify what action we need to take to achieve short-term goals, as well as longer-term career development. Together, managers and employees define individual Development Action Plans.

Our company enjoyed even stronger growth in 2018 than in the previous year. We had to set ambitious recruitment targets to support this growth and make sure we have the skilled people we need. As in previous years, we were successful in meeting our recruitment objectives. We exceeded the target we set at the beginning of the year, and adjusted to our shifting hiring needs. We view our recruitment and employee development efforts as an ongoing process. We continuously seek to improve and professionalize, responding to changing business requirements and developments in the labor market. In 2018, we bolstered the governance structure of our global talent acquisition, adding the position of Head of Recruitment Asia and increasing our recruitment capacity in all countries. To support recruitment, we train line managers to improve their interviewing and selection skills. 'Buddies' are also an important part of our onboarding approach. We aim to ensure that each newcomer is assigned a buddy to help him or her find their way at ASML and in their new job. In addition, we introduced a 'New at ASML' intranet site. Managers can get the information they need here, and are guided through a structured process to onboard different categories of new employees. It is also a useful resource for buddies and new employees.

Our attrition rate, i.e. the number of employees leaving the company, increased slightly to 4.7 percent in 2018 (2017: 4.4 percent). We attribute this mainly to the global shortage of technically skilled people. Our attrition rate is still significantly below the industry benchmark, and we do not expect a significant change in this regard. The attrition rate of our best people ('high performers') was 2.2 percent in 2018 (2017: 1.8 percent). We also measured the extent to which high performers move to higher-level positions. This promotion rate was 40 percent (compared to an overall promotion rate of 14 percent), indicating that our best people were over-proportionally promoted and so able to further develop themselves. We fast-track the careers of our most promising managers through our Potentials Acceleration programs, with 331 people participating in 2018. We also deployed a new management development curriculum to support development of leaders at all levels. In total, more than 1,200 managers attended training in this curriculum in 2018.

Succession management is an essential part of building a pipeline of talent. Our efforts here ensure we have the talent ready to replace managers and employees as they are promoted or if they choose to leave the company. Building on our strong process for this purpose, we completed assessments of about 9,000 employees in 2018 to determine their potential to take over more senior positions. This was up from around 7,200 employees in 2017. We have succession

plans in place for more than 300 senior positions. Two potential successors were identified in most of these cases. We also support technical studies through scholarships. In 2018, 53 students entered our ASML Technology Scholarship program. To build relationships with people before they enter the labor market, we increased the number of internships we offer. In the US, we secured positions on the advisory boards of several universities. This helped us contribute to defining the skills and competencies these institutions could include in the curriculum they offer students. In 2018, our scholarship program was also made available to students in the US, which is expected to increase our total number of scholarships in 2019.

For further information, see Non-Financial Statements - Non-financial Indicators - People - Talent Management.

Sustainable relationship with our people

We strongly believe building sustainable relationships motivates our people to develop themselves, make the most of their talents, and perform to the best of their ability. This serves to boost our productivity, innovative strength and competitiveness.

Employee engagement and employability are the cornerstones of a sustainable relationship with our employees. To us, engagement is the dedication our employees have for their jobs and ASML. Engaged employees feel their efforts make a difference, and they are therefore motivated to go the extra mile. Employability is our employees' capacity to sustain and improve their performance over time and adjust to change.

To build an engaged and enabled workforce, we have our Place to Work, Meet, Learn and Share framework. Our aim is to create an inspiring and safe work environment. This must be beneficial to our employees' personal development and help them strike a good work-life balance. There are three dimensions to the Place to Work, Meet, Learn and Share framework: Our employees (People), our campuses and buildings (Bricks), and IT innovation to improve collaboration and work processes (Bytes).

In 2018, we launched discussions on improvements to our locations in Veldhoven. This aims to improve mobility management in the area, including traffic to and from our premises. To contain travel time and costs, we use Microsoft Surface Hubs, which offer teleconferencing and presentation tools. They have made our interactive design sessions and remote training more efficient. This enables our employees to be more productive and engaged. In Asia, we opened several buildings for our employees that meet all the latest standards, creating a pleasant work environment.

We have also continued our program to convert our offices into activity-based working environments, promoting more interaction and providing the facilities our employees need. In 2018, we added more than 1,800 flexible workplaces. Overall, we now have more than 6,750 flexible workplaces worldwide.

As we adhere to an 18-month cycle for our employee survey, me@ASML, we did not conduct one in 2018. The previous survey showed an average engagement level of 7.0, which was slightly below our target. We aimed to achieve the same level as our peer group benchmark of 7.2. We also began the process of making several changes to the survey. We intend, for example, to add sector-specific surveys for employees in different company units. This will let us gain greater insight into specific developments, such as the integration of acquired businesses, or how newly hired employees view our onboarding processes. We also aim to introduce pulse surveys, as a way of getting feedback on certain topics more quickly. To make our processes more efficient and to help us better learn from each other, we discuss employee feedback from our survey feedback sessions at a team level. In 2018, we continued with these sessions.

Promoting diversity and inclusion

We believe a diverse and inclusive workforce helps us develop new solutions and ideas. Different voices and points of view are necessary to drive our innovation. We maintained our high level of diversity in terms of culture and nationality, employing people of 123 different nationalities in 2018 (up from 115 in 2017). In 2018, about half of our newly hired staff in the Netherlands were non-Dutch. As a result of our continuous efforts to recruit and retain women, our percentage of female employees increased from 11 percent in 2010 to 16 percent in 2018. Gender diversity is, however, still an area where we need to improve. In 2018, more than 40 percent of our scholarship grants in the Netherlands were awarded to women. To increase our future talent pool and get young women interested in technology, ASML supports initiatives in the Netherlands such as Girlsday, where girls aged 10-15 are given the opportunity to learn more about technology. We support similar initiatives in the US and Asia. In 2018, we appointed our first female Fellow. We award this title to experts in our R&D department who have made outstanding contributions to our technology.

We subscribe to the 'Declaration of Amsterdam', a call to action for employers, unions and governments to implement concrete changes that ensure progress in matters affecting LGBTI people. The declaration is an initiative by Workplace Pride, an Amsterdam-based international non-profit organization that strives for greater worldwide acceptance of LGBTI people in the workplace. In November 2018, only a year after becoming a member of Workplace Pride, ASML's LGBTI employee network, Pink ASML, was recognized for its hard work and achievement by receiving the Most Engaged Network Award at the Workplace Pride Foundation Leadership Awards. Pink ASML aims to highlight the increasing importance of LGBTI inclusion in the tech industry. Demonstrating our support for

LGBTI rights, one of our board members joined our 'Pink ASML' employee group in attending the 2018 Gay Pride Canal Parade in the Netherlands, riding an ASML-branded boat through the canals of Amsterdam. We take a position in public discussions on diversity and immigration, making it clear that ASML strongly believes in offering jobs to people regardless of their gender, sexual orientation, religion or nationality. We oppose legislation that limits people's right to travel freely, based on such criteria.

We promote diversity and inclusion through efforts to integrate people with disabilities in our workforce. We pay particular attention to people with autism, hosting lectures and promoting discussion to enhance awareness and accommodate the integration of those with autism, and other minorities in our company. For more information on our diversity and inclusion performance data, see Non-Financial Statements - Non-financial Indicators.

Fair remuneration

We want our remuneration to be fair and balanced, so that it is no distraction from the motivation and engagement our employees experience from their job content, and from working at ASML as a Great Place to Work. In our remuneration policies, we strive for global consistency, while respecting what is common practice in local markets. We want our employees to work together towards shared company goals, and we believe that they are key to the success of our company and deserve to share in this success.

Every year we analyze paid salaries for any gender disparity and, in 2018, as in previous years, we found no major differences in these salaries. See Non-Financial Statements - Non-financial Indicators for details on gender payment. We continuously review how our remuneration compares to the market benchmark for technology professionals in every region where we operate. Where necessary, we make changes to our remuneration policies and levels. In 2018, we implemented adjustments we made to our remuneration policies the previous year for our operations in all regions. This is to make sure we align with our overall corporate remuneration philosophy. In 2018, remuneration at Cymer and HMI was fully aligned with ASML's current remuneration policies and practices.

At ASML, where we strive for salaries that are competitive in each market and where we have a predominantly highly educated workforce with relatively high levels of remuneration, we are confident that we meet adequate 'living wage' requirements, meaning that employees earn salaries that meet their basic needs.

Human rights and labor relations

We believe that human rights, as defined by the United Nations in its Universal Declaration of Human Rights, are a common standard that all employers should uphold. We support the principles laid down in the OECD Guidelines for Multinational Enterprises and those in the International Labor Organization's Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy. In the spirit of these principles, we support our employees' right to organize in labor unions and to collectively negotiate fair wages and working conditions. We believe these rights must be respected for all ASML employees at our locations worldwide.

We want to provide fair labor conditions and social protection for all our employees, regardless of whether they are on a fixed contract or a flex one. In the Netherlands, we negotiate with and consult labor unions and our company's Works Council, our employees' representative body. As required by Dutch law, our BoM must seek the non-binding advice of the Works Council before taking certain decisions, such as those related to a major restructuring or a change of control. Some decisions directly involving employment matters that apply either to all employees or certain groups of employees may only be taken with the Works Council's approval. In the event the Works Council does not agree with a particular decision, and the BoM still wishes to proceed, the BoM must suspend any further action while the Works Council determines whether to appeal to the Enterprise Chamber of the Amsterdam Court of Appeal.

We strive to comply with the relevant legislation in every country we operate in. In the US, for instance, we aim to comply with all state and federal laws and regulations regarding labor practices and employees' rights to organize. This means we do not interfere with, restrain, or influence employees who want to organize themselves in a labor organization for collective bargaining purposes. In Taiwan, where we have several business operations, all employees, except those working in government administrative organizations, can form unions. ASML seeks to comply with all relevant legislation, such as the Taiwanese Union Act and the Law Governing Collective Bargaining Agreements. In Korea, the Labor-Management Council (LMC) is a consultative body that aims to promote welfare and cooperation between employers and employees under the Promotion of Worker Participation and Cooperation Act. The LMC discusses ways to enhance productivity, improve working environments, address employee grievances, promote workers' welfare, and other matters. LMC representation for ASML consists of 20 members (10 members each for employer and employees), and holds council meetings at least every three months.

At ASML, the principle of free choice of employment is respected. It applies to every employee in every country we operate in. We adhere to the Responsible Business Alliance Code of Conduct and expect our suppliers to adhere to this code, as well as other human rights principles. See Management Board Report - Partners - Sustainable relationships with suppliers. Our policy stipulates that compliance with human rights standards and other Responsible Business Alliance standards should be included in our supplier agreements.

Protecting privacy

In the countries where we operate we aim for compliance with the legal requirements regarding the protection of our employees' privacy, as well as the privacy of our customers and suppliers, and that of their employees. In Europe

especially, legislation on these matters is developing fast. As such, we are implementing ASML's binding corporate rules, or Privacy codes, on employee data as well as customer, supplier and other business partner data. We are also developing a program to increase privacy awareness globally within our company. We have a Privacy Officer who reports to our Senior Vice President Corporate Legal.

Our flexible labor model

The flexible labor model in the Netherlands consists of employees on fixed or flex contracts. This model allows us to adapt to semiconductor market cycles, including providing support for potential 24 / 7 production activities as and when this is needed. Globally, 14 percent of our employees were flex workers at year-end 2018.

We work with three categories of flex employees: those hired to fill gaps in our fixed workforce and who will be offered a fixed contract after one year; those hired to temporarily increase our operational capacity, with flex contracts of a maximum of two years; and those with skills we need temporarily and who can stay on a flex contract for a maximum of three years. In 2018 there were 1,200 flex employees who received a fixed employment contract.

Overtime

We pay constant attention to protecting our employees from working overtime during peak periods. The nature of our business means employees often need to work significant amounts of overtime, taking responsibility for finishing projects on time. It is our policy to follow local rules regarding working hours. However, we apply our own company standards when these are stricter. Our company standards are based on Responsible Business Alliance norms.

Due to high customer demand and job vacancies, there is still significant overtime. This applies particularly to Dutch employees who are temporarily working at an ASML or a client location abroad.

As overtime remains an important attention point for management, we keep monitoring the use of overtime and take appropriate measures to manage the situation. We continue to raise awareness about our standards.

Community involvement

As a global technology leader and employer, ASML plays an active role in the communities we operate in. By fostering close community ties, we learn more about the world around us and raise awareness of our business, our industry and our interests. Our involvement is also a way for us to fulfill our leadership role, as the community can benefit from our success and position.

Our community relations program, which falls under the remit of our CEO, is built on three pillars:

Making local communities we operate in attractive places to live for our employees and their families by event sponsoring and our government engagement. In 2018, for example, ASML played a significant role in engaging the Dutch government to invest EUR 130 million in the Brainport / Eindhoven area. Local authorities and the business community will invest EUR 240 million, which amounts to a total investment into the region of around EUR 370 million. This is the first phase of a broader initiative: the Brainport National Action Agenda. ASML is a key partner. Funding will be made available for a significant number of initiatives linked to making the region a more attractive place to work and live for internationals as well as locals.

Promoting and providing technical education in local communities. For the sixth consecutive year, ASML sponsored the annual Mechatronics competition at Cornell University, in the US. The competition entails about 180 students in 60 teams of three designing and developing autonomous robots that compete against each other. Each year, ASML develops its own robot to compete against the students. ASML volunteers, divided into three teams, held their own internal competition before the winning team traveled to Cornell to challenge the students.

Giving back to communities by supporting local charities and global education projects (through the ASML Foundation). One of the key activities, launched in October 2018 and due to run until 2021, is ASML's partnership with PLAN International to promote girls in technology. Titled 'STEM - Girls Can Do It', the project will focus on young people in rural China, near ASML's offices in Chengdu and Xi'an. The aim is to promote more gender-balanced STEM education. The project will expose about 1,200 young people, of which 70 percent are girls, to technology, science, engineering and math, and teach them coding and programming. Employees from the local ASML offices intend to participate as role models.

The total amount ASML spent on charities, community involvement, organizations, and its own ASML Foundation in 2018 was around EUR 1.8 million.

A key part of our community focus is education, particularly technology education and upskilling. As the rate of technological advancement speed ups, we are increasingly faced with a critical skills shortage. With technology now ever-present, more companies than ever, including non-technical companies not traditionally needing these skills, are seeking the expertise of engineers and data specialists.

There is a recognized shortage of data experts, with skills such as machine learning and artificial intelligence increasingly in demand. Digital expertise is the most critical skill of the 21st century. At ASML, we believe it is

important to start educating young people as we are involved in co-creating this new age. We have a responsibility to prepare people for an increasingly digital future. We are looking into opportunities to get more closely involved in education to address the shortage of tech teachers. To this end, ASML, along with many other regional partners, signed the Brainport Talent & Skills Agreement in 2018.

This focus on technology education has a direct impact on developing communities. With digital expertise being in such high demand, lack of skills means those without them will lose out on opportunities.

Our headquarters at Veldhoven is also based in a region where there is significant emphasis on education, through the Brainport initiative. In one of our many activities in 2018, we played a part in developing a program with our Brainport partners to expose teachers to technology upskilling. They spent time at ASML, among other companies, and were able to take their leading-edge technology learnings back to share in their classrooms.

The following table provides an overview of some of our community programs and what they have achieved.

Pillars	Key programs	Results
Making local communities we operate in attractive places to live for our employees and their families	<p>Together with our partners in the Brainport Eindhoven region and key public stakeholders in The Hague, we developed the Brainport National Action Agenda, which invites the Dutch government to</p> <ul style="list-style-type: none"> invest more in our high-tech region. An important part of this is creating a pleasant environment to live in, as we need to be able to attract talented employees from all over the world. <p>Through our sponsorship program, we support several local organizations, such as The Hub and the Expat Center in</p> <ul style="list-style-type: none"> Eindhoven, the Netherlands. We also support local events such as the Veldhoven Tasting food festival in Veldhoven, the Netherlands, Habitat for Humanity in San Diego, California, in the US, and Community Food events in San Diego and Wilton, Connecticut, in the US. 	<p>The Dutch government has recognized the unique and valuable contribution of the Brainport Eindhoven region. In collaboration with the new government, the Brainport National Action Agenda will be developed further, moving a step closer</p> <ul style="list-style-type: none"> towards realization. <p>We provided funds to the PSV Eindhoven football club, the Muziekgebouw concert hall in Eindhoven, and are the main sponsors of the Eindhoven marathon, in which more than 500 ASML</p> <ul style="list-style-type: none"> employees participate. For ASML, mastering light is key, and in 2018 and into 2019, we sponsored the GLOW light art exhibition in Eindhoven and Nanjing, in China. For the first time, the light festival in Nanjing gave us an opportunity to blend our own light exhibition and a traditional Chinese light festival.
Promoting and providing technical education in local communities	<ul style="list-style-type: none"> We run an intensive technology promotion program to boost interest in technology among young people and increase the local and regional talent pool. As such, we also raise awareness of career prospects in a sector offering many development opportunities. 	<ul style="list-style-type: none"> The ASML Foundation financially supports Science Camp Korea. The three-year program provides science education to vulnerable children in disadvantaged areas close to ASML's headquarters. Around 65 ASML employees teach a self-developed science program. In the Netherlands, we organized Girlsday and the Dutch Technology Week. At the Night of the Nerds during Dutch Technology Week, around 4,500 children between 14 and 19 got the opportunity to experience the world of technology and innovation, featuring the latest digital, technological and media developments from ASML and other companies. We have seen several high-tech hardware startups thrive and some scale up to become more mature businesses. We organized two Get in the Ring events, attracting startups from all over the world.

and coaching support rather than financial contributions.

Five winners were selected and will get support from ASML to develop their activities.

- We grant ASML Makers Awards to help develop good ideas into concrete prototypes and prototypes into products that can be produced locally.

- At least four ideas that won an ASML Makers Award were brought to the next level, and one has been made ready for market introduction and production. ASML supports Eindhoven University of Technology's research activities in the new and highly innovative field of integrated or smart photonics with an annual donation of EUR 122,000 for 5 years, ending in 2021.

Giving back to communities by supporting local charities and global education projects

- ASML employees in the Netherlands completed a total of 5,434 hours of volunteer work in 2018.

- Since 2015, we have been supporting Stichting Leergeld in the Netherlands, which helps students from low-income backgrounds pay for the technical and safety equipment they need for technical studies at MBO schools in the Brainport region.

- Our volunteer work policy allows ASML employees to do eight hours of volunteer work annually during working hours.

- In 2018, we began to support the Boys & Girls Club Silicon Valley through the ASML Foundation. There is a wide income gap in Silicon Valley between people working in tech and those outside the industry. Studies show that children from high-income families outperform those from low-income areas. With its focus on STEM, the after-school program aims to bridge this gap.

- We provide financial support to projects related to education for underprivileged children and teenagers, mostly through the ASML Foundation.

- We have a cooperation with Close the Gap, and donate about 100 refurbished laptops annually for their programs in developing countries. We also donate about 230 laptops annually to local charities.

The ASML Foundation

The ASML Foundation focuses on the UN’s fourth Sustainable Development Goal: to ensure inclusive and quality education for all and promote lifelong learning.

The ASML Foundation aims to increase the self-sufficiency of disadvantaged children through educational initiatives that develop their talents and help unlock their potential. Although closely linked to our company, the ASML Foundation operates independently. The ASML Foundation supported 24 projects in 17 countries and committed over EUR 1.4 million. The Foundation is our charity of choice.

The ASML Foundation mainly supports projects in the regions where ASML operates: Asia, Europe and the US. These projects address the specific needs in that region. In the US for example, projects mainly focus on preventing school drop-outs in underprivileged areas, and the promotion of STEM, especially for girls. Projects in Asia differ per country. In developing areas of Asia, for example, projects focus on education for girls to prevent child marriages, and on vocational training for young people to increase their self-sufficiency. In China, the focus is on STEM for girls in rural areas. In Europe, and the Netherlands specifically, the foundation focuses on education for disadvantaged children, and children lacking in education, that suits their specific needs.

We encourage our employees to support the ASML Foundation, either financially or through volunteer work. For more information, see www.asmlfoundation.org.

People objectives

ThemeObjective	Target year	How we did
Talent management 2018 focus areas:		
a. Secure Workforce Management and Workforce Planning to support future growth.		Our headcount targets are translated into people plans and specific hiring plans including related competences. Due to additional demand during the year, the initial planned number of hires in 2018 has now been exceeded.
b. Execute recruitment strategy by implementing the new Applicant Tracking System, focused communication strategy on labor market and deploying a strengthening selection process.	2018	The new Applicant Tracking system went live at the the start of 2018. Specific labor market campaigns helped to exceed the initially planned hiring number. The selection process has been strengthened through global training of line managers and an extension of the existing assessment deployment.
c. Strengthen onboarding activities on a global scale by further roll-out of our pre-onboarding app, developing a social onboarding program and further deploying of the buddy program.		Our pre-onboarding app has been deployed to all sites. The pre-onboarding app was deployed in Europe and the US in 2018, and will also be deployed in Asia. The buddy program, including documentation and training, was also launched throughout the company.
Attrition rate of high performers < overall employee attrition.	2017 - 2020	See People KPIs in the table below - our attrition rate of high performers is 2.2%, lower than our overall attrition rate of 4.7%.
Promotion rate of high performers > overall promotion rate.	2017 - 2020	See People KPIs in the table below - our promotion rate of high performers is 40%, well above the overall promotion rate of 14%.

2019 focus areas:

- a. Secure quality of hires
- b. Secure effectiveness of new hires
- c. Secure internal leadership pipeline 2019
- d. Define and deploy a global Culture & Values Framework

People KPIs

KPI	2016	2017	2018
Average engagement score me@ASML survey ¹	7.0	7.0	n/a
Employee Attrition (in %)	3.9	4.4	4.7
Attrition rate of high performers (in %)	1.7	1.8	2.2
Promotion rate of high performers (in %)	35	37	40

1. Measured on a scale from 0 to 10, with 10 being the top score. No survey was held in 2018.

ASML Integrated Report 2018

Sustainable relationships with our customers

Our priority is to give our customers the best-possible products and services. We work closely with them to make sure we understand their needs, priorities and challenges. The high cost of new chip-making equipment and factories is a major incentive for building partnerships, sharing knowledge and risks, and aligning our investments in innovation with those of our customers. This is reflected in the commitments made in 2018 by three of our leading customers to ASML's High NA EUV development program for future delivery of up to 12 systems.

Staying close to our customers

Our sales teams market and sell our products directly to our customers, without agencies or other intermediaries. Our account managers, field and application engineers, and service and technical support specialists are located throughout Asia, the US and Europe. In addition to the establishment of industrial sites in Linkou and Tainan, Taiwan, in 2017, we created a new training site in China in 2018. These sites are supplementary engines to drive our long-term growth, providing customer support and training, logistics, refurbishment, technology and application development. The new site in China is a training center to develop worldwide talent for our workforce, clients and customers.

To support and sustain our partnerships with customers, we have a system of customer meetings in place. These take place regularly with our biggest customers, who collectively account for the vast majority of our revenue and the semiconductor equipment market. These meetings include our Executive Review Meetings, at which members of our senior management team and BoM discuss business and general issues with customers, Technology Review Meetings, at which our senior technology experts and CTO discuss technology plans and requirements with customers. These meetings are an opportunity for customers to set out a roadmap for their technology requirements, such as shrinking chip size, and Operational Review Meetings, to review topics related to the operational activities of our customers. These meetings help align our future product plans with our customers' goals, and also help to identify and close gaps. Besides these important planning sessions, we also hold numerous face-to-face meetings between our BoM and customer representatives to discuss business.

Our Voice of the Customer program allows our employees to hear firsthand about our customers' needs and challenges. This is especially important for employees who do not usually have direct access to customers. To reach as many of our people as possible, the program uses different channels of communication: live presentations and Q&As with senior customer representatives; recorded customer interviews; online articles, and personal engagement with customer representatives who are based near our offices in Veldhoven. In 2018, eight of our customers had representatives that were based near Veldhoven. To share feedback with an even bigger audience at ASML, we expanded our Voice of the Customer program in 2018 by adding customer feedback briefings. Our account teams used company gatherings, such as our ASML Day, as an opportunity to share this feedback. This generates more ideas from employees, and helps us act on the feedback and make improvements.

Based on customer feedback, we focused on communication in 2018, with our teams working on enhancing frequency of communication with customers. This was done, for example, by increasing the number of points of contact with customers, holding more regular meetings, and, in some cases, hosting quarterly reviews with ASML teams from sectors beyond account management. We aim to keep in close contact with customers and update them on improvements and solutions.

According to an annual customer survey conducted by research specialists VLSI, we ranked 3rd (2017: 3rd) on the list of best suppliers of chip-making equipment with a score of 9.1 out of 10.0 (2017: 9.0).

Customer Loyalty Survey

In 2018, we held our biennial Customer Loyalty Survey, which asks our customers to rate our performance. It presents them with multiple-choice questions on the most important areas of improvement for our account teams and business lines. The survey is one of our most important tools for gauging customer satisfaction and receiving feedback. Along with our Voice of the Customer program, it helps us define our improvement priorities for the coming year. Once these areas have been identified, ASML teams come together regularly to track progress. They report back to customers with their findings. For the first time, HMI and Brion were included in the Customer Loyalty Survey. Our latest survey, in September 2018, resulted in a satisfaction score of 73.3 percent. Our next survey will be held in September 2020.

Through our Customer Loyalty Survey, customers asked that we focus on quality improvements, product performance in a high-volume manufacturing environment, and timely solutions for install-base problems. In 2018, we continued using feedback from the survey to improve our service. Our account teams fine-tuned their priorities, and stepped up efforts to proactively inform customers about any expected issues so as to find solutions at an earlier stage. We also continued our efforts to make sure customers receive spare parts at the right time and of the right quality, so reducing downtime in their chip-making operations.

Cost of ownership

Our customers look to us to deliver cost-effective solutions with improved cost of ownership over time to enable the introduction of more advanced process technologies that enable more powerful microchips with lower cost per function, and for a given microchip design to enable cost reduction over time. We aim to deliver this first by introducing new technology that allows the device to shrink cost effectively, for example with EUV that enables smaller features with fewer process steps than with multiple patterning, secondly by introducing higher productivity on our systems to reduce the cost to process a wafer, and lastly by providing upgrades and services to our installed base systems to enhance their output and operating life cycle. In 2018, we showed continued progress with our EUV technology, bringing our systems to the point of high-volume production. See also Management Board Report - Products and Technology - Innovation drives our business. We also continued our program to upgrade our DUV immersion scanners, which enables customers to reuse their installed base, and through our Brion software, allowed them to take advantage of a faster and more efficient patterning process, so helping to reduce the overall cost of ownership. In 2018, the integrated sales teams of ASML and HMI served our customers with our holistic lithographic solution, including accurate patterning information metrology.

Sustainable relationships with suppliers

We rely heavily on our suppliers to develop, manufacture and deliver innovative parts for our systems, on time and with the right quality. It is our strategy to develop and manufacture those parts and modules that are unique for lithography in house, both from a manufacturing and a development competence perspective. If this does not prove possible, supplier partnerships are established and well maintained. Contract manufacturers or Original Equipment Manufacturing suppliers are mainly responsible for delivering modules and / or parts that require non-unique manufacturing. It is crucial that we build a world-class supplier network. One of our major priorities is to work with our suppliers to reduce the total cost of ownership of our systems, while meeting our challenging quality standards. We conduct risk assessments for all key suppliers every year, evaluating risk areas such as our suppliers' financial health, change of ownership, potential for supply disruptions (e.g. as a result of natural hazards), and situations where we depend on a single supplier for certain parts or modules. For product-related suppliers, we conducted 190 risk assessments in 2018 covering more than 90 percent of spend. As suppliers operating in the same industry or market are typically exposed to similar risk, we evaluate suppliers' risk and performance within the context of the supply market category, so enhancing efficiency. Whenever necessary, we mitigate risks by adjusting our sourcing strategy. Our risk assessment includes monitoring of critical raw materials. As our suppliers purchase and process most of the raw materials we require for our products, we have limited exposure to price volatility of these materials. Due to a fire at one of our suppliers of electronics components and modules, work in progress and part of the inventory was lost. Due to the integral cycle time of around one quarter for these modules, we expect ASML's first-quarter sales to be negatively impacted by approximately EUR 300 million, which we expect to largely recover in the second quarter, with the remainder expected to be recovered in the second half of 2019.

We also require our suppliers to meet standards regarding quality, logistics, technology, cost and sustainability. In 2018, we continued our quality program with suppliers. Quality metrics were improved and we introduced Supplier Quality Mission Statements to emphasize both ASML's and suppliers' commitment to achieving quality improvements. We rolled out a new version of the ASML supplier profile, our approach to supplier management and development. This provides an enhanced knowledge base to improve supplier performance dialogue. Supplier capability management is further improved by the implementation of a single framework for supplier assessment and development, allowing ASML to communicate process requirements and compliance expectations clearly to suppliers. We regularly evaluate our risk assessment and supplier profile methodology, and will continue to invest in evolving the norms underpinning the supplier profile to better meet industry requirements. Improvement initiatives for 2019 include further embedding of product safety requirements and information security improvements, including continued focus on GDPR compliance.

Partnership with Carl Zeiss SMT GmbH

Carl Zeiss SMT GmbH is our single supplier, and we are their single customer, of optical columns for lithography systems. Carl Zeiss SMT GmbH is capable of developing and producing these items only in limited numbers and only through the use of manufacturing and testing facilities in Oberkochen and Wetzlar, Germany.

In 2018, 28.3 percent of our aggregate cost of system sales was purchased from Carl Zeiss SMT GmbH (2017: 26.6 percent; 2016: 27.6 percent).

Our relationship with Carl Zeiss AG is structured as a strategic alliance pursuant to several agreements executed in 1997 and subsequent years. These agreements define a framework in all areas of our business relationship. The partnership between ASML and Carl Zeiss AG is run under the principle of 'two companies, one business' and is focused on continuous improvement of operational excellence. Pursuant to these agreements, ASML and Carl Zeiss AG have agreed to continue their strategic alliance until either party provides at least three years' notice of its intent to terminate.

In 2017, we completed the acquisition of a 24.9 percent indirect interest in Carl Zeiss SMT GmbH for EUR 1 billion. We also agreed to support Carl Zeiss SMT GmbH's R&D expenses, capital expenditures and other supply chain investments pertaining to High NA technology over six years, beginning in 2016. The main objective of this partnership is to facilitate the further development of our EUV lithography chip-making systems. See Consolidated Financial Statements - Notes to the Consolidated Financial Statements - Note 10 Equity method investments.

Sustainability criteria

The sustainability criteria that we cascade to our suppliers are based on the Responsible Business Alliance (RBA, formerly known as Electronic Industry Citizenship Coalition) Code of Conduct. This code covers, among other things, standards for human rights, anti-corruption and bribery, and for sound environmental practices. Compliance with the Responsible Business Alliance Code of Conduct is a prerequisite for doing business with us, and we actively pursue our suppliers' adherence to this code. The requirement to meet human rights and other ethical RBA standards is included in our long-term product-related supplier contracts, along with the right to audit RBA compliance. We conduct supplier audits to address risks identified in our regular risk assessments. These audits also help ensure suppliers deliver what we expect. Our objective is to conduct a review of the sustainability efforts of our business-critical suppliers. To further align our efforts with international RBA guidelines we have replaced ASML's own sustainability survey with the RBA self-assessment survey as offered by the RBA platform. We expect the results in the course of 2019 at which point we can tailor supplier interventions. We aim to audit our suppliers' sustainability performance according to a perceived level of risk. If a supplier does not conform to the required standards, it is our policy to discuss mitigating measures.

Responsible Business Alliance

Responsible Business Alliance members commit and are held accountable to a common Code of Conduct and utilize a range of Responsible Business Alliance training and assessment tools to support continuous improvement in the social, environmental and ethical responsibility of their supply chains. The Responsible Business Alliance used to be known as the Electronic Industry Citizenship Coalition and was renamed in 2017. See also www.responsiblebusiness.org.

Supplier Relationship Satisfaction Survey

We have been conducting an annual Supplier Relationship Satisfaction Survey since 2015, which has helped us set priorities to improve how we collaborate with our suppliers. Based on feedback from our 2016 Supplier Relationship Satisfaction Survey, we made our supplier meeting setup more structured and transparent to improve meeting effectiveness and to facilitate involvement of senior management. In 2018, we further strengthened our supplier management approach by implementing category management, meaning we categorize suppliers based on the supply market in which they operate, thereby improving the effectiveness of our sourcing organization.

After revising the survey questions in 2017, we again focused the survey on the critical questions, while still capturing key trends. We recalibrated the scores for multi-year comparison. The weighted average satisfaction scores for 2018 were 81 percent for product-related and 77.6 percent for non-product related suppliers. These ratings represented 1.3 percent increase for product related suppliers and a 2.7 percent increase for non-product related suppliers, compared to 2017, see Partners KPIs in the table near the end of this section.

Across non-product related suppliers, most individual topics faced an increase in rating compared to 2017. The business relationship with our suppliers is, in particular, highly valued. It is important that we continue to improve what we communicate towards our suppliers and with what frequency. We believe that close collaboration with our suppliers, and increasing transparency on future roadmaps and strategies during regular business review meetings, will make this happen.

For product related suppliers, the overall rating score increased for almost all individual topics. Insights into our long-term roadmap and collaboration between ASML and suppliers were especially highly rated. It is important that we continue to improve on the effectiveness and communication of our supplier performance management system. We changed the way we measure performance in 2018, and started the roll out to our critical suppliers. In 2019, we will further integrate the use of supplier

performance information in our sourcing decisions. We believe that using the new supplier profile during regular business review meetings, together with clear communication on objectives, will help to make our collaboration with suppliers more effective.

One way in which we strengthen our relationship with suppliers is our Supplier Day in Veldhoven. In 2018, this brought together some 130 representatives from about 90 product-related suppliers from across the globe to participate in workshops and attend presentations by our senior management, including our CEO and CTO. Workshops and presentations were centered around the theme of 'Sustaining Growth', translating our priorities into concrete tasks that we need to complete, as well as the contribution from our suppliers needed to meet these targets. In 2018, we also facilitated a Supplier Day for our non-product related suppliers, bringing together around 65 representatives from approximately 55 suppliers. These Supplier Days offer our suppliers the opportunity to familiarize themselves with our business strategy and targets. Additionally, about 100 quality specialists from approximately 70 suppliers are invited this year to our 'crossing event'. These are meetings organized by our Supplier Network Management unit, which provide a platform to discuss operational improvements for our products, such as improvements in quality or production volume.

'As-new' program helps cut waste

As part of our commitment to the circular economy, we work together with customers and suppliers to remanufacture used system parts so that they can be reused as if they were new parts. See also Management Board Report - Products and Technology - Product stewardship. Our first pilot scheme under this 'As-new' program, conducted in collaboration with our customers and suppliers, demonstrated the positive environmental impact: total valuable parts returned from upgrades amount to 795,400 kilograms. We discussed the program with more than 20 suppliers and decided to expand it to boost the circular economy model even further.

'Return 4 Reuse' enables circular use

In addition to the 'As-new' program, we are improving the reuse of packing, locking and transport materials, aiming to return 80 percent or more for reuse in the next install or relocation. Starting with the EUV systems, the 'Return 4 Reuse program' is now expanding the concept to the DUV systems. All packing, locking and transport materials are reused at use level (highest level of reuse). The concept is driven by an automated circular process triggering the limited manual interventions to return and reuse the materials by itself. This makes the process sustainable and enables ASML to focus on increasing the number of materials to be reused.

Conflict minerals

As of 2012, Section 1502 of the Dodd-Frank Act in the US requires companies to publicly disclose their use of conflict minerals originating from the Democratic Republic of the Congo or any neighboring countries. These include minerals mined under conditions of armed conflict and human rights abuses. The four main minerals concerned are tin, tantalum, tungsten and gold, also known as 3TG.

We closely monitor use of these materials in our supply chain. We encourage our suppliers and sub-suppliers to have policies and due diligence measures in place that will enable us to investigate if the products and components they supply us with contain any conflict minerals from the Democratic Republic of the Congo or neighboring countries. We have also developed our own due diligence process to identify and manage the sourcing of our components, focusing especially on 3TG. As such, we have been conducting due diligence reviews with relevant suppliers to trace the supply chain back to the smelter and will seek confirmation from the selected suppliers that potential 3TG minerals are responsibly sourced.

We are collaborating with both the Responsible Business Alliance (formerly known as the Electronic Industry Citizenship Coalition) and the Global e-Sustainability Initiative, as well as with other semiconductor and electronics companies, to address conflict-free mineral sourcing on an industry-wide level. The Responsible Business Alliance and Global e-Sustainability Initiative have provided us with the standards and templates we use in reporting and implementing our due diligence. As a member of the Responsible Business Alliance we support initiatives which foster better working conditions in raw material production, as well as the Responsible Business Alliance's efforts to build a trustworthy system that ensures the social and environmental responsibility of mineral sources. We will

continue to work with our suppliers on due diligence in the supply chain, supporting industry initiatives and taking appropriate action to comply with the SEC rules and guidance regarding the Dodd-Frank Act. We hope this concerted effort will dissuade perpetrators of violence and human rights violations and encourage transparent mineral sourcing. Our Conflict Minerals Report is publicly available on our Website.

Partners objectives

Theme	Objective	Target year	How we did
Sustainability	Respond to customer feedback by improving the quality of spare parts upon arrival and addressing cost of ownership issues.	2015 - 2020	We continued initiatives taken at various levels within the organization to increase quality and address cost of ownership issues (e.g. Account teams have received / are receiving training on Cost of Ownership, Voice of the customer sessions, Quality as one of our Corporate Priorities).
	Continue to strengthen executive alignment.	2016-2020	In 2018, regular meetings and numerous face-to-face meetings between our BoM and customer representatives took place to discuss business and general issues.
	Additional emphasis on account teams driving customer quality issues through the organization.	2016-2020	Account teams are supporting the Voice of the Customer sessions to ensure customer feedback is widely shared at ASML.
	Achieve top three ranking among large suppliers of semiconductor equipment.	2016-2020	ASML ranked 3rd on the list of best suppliers.
Sustainability	More extensive review of business critical suppliers.	2016-2018	All business critical suppliers were invited to fill out a business continuity quickscan and RBA self-assessment. Next step is the evaluation of the results by the Supplier Account Teams. In addition, 34 suppliers were invited to an information security self-assessment.
	Introduce revised supplier profiling to separate out performance, capability and risk indicators.	2017-2018	Roll out of the new supplier profile to all 70 key suppliers has been concluded. The focus has shifted to monitor adherence, specifically for the closure of supplier improvement plans and risk mitigation plans.

Partners KPIs

KPI	2016	2017	2018
Supplier Relationship Satisfaction Survey (overall rating score) ¹	77.4 %	77.0 %	79.3 %
Supplier Relationship Satisfaction Survey (overall rating score) Product related suppliers ¹	77.5 %	79.7 %	81.0 %
Supplier Relationship Satisfaction Survey (overall rating score) Non-product related suppliers ¹	77.1 %	74.9 %	77.6 %
Overall Loyalty Score (Customer Loyalty Survey) ²	75.4 %	n/a	73.3 %
VLSI Survey results ³			
Large suppliers of chip-making equipment - score	8.9	9.0	9.1
Suppliers of Fab equipment - score	8.9	9.0	9.1
Technical leadership for lithography equipment - score	9.6	9.4	9.6

1. The overall rating score covers both product-related suppliers and non-product related suppliers. In 2019 we will review and revise the survey to ensure that we continue to identify meaningful improvement areas.
2. The Customer Loyalty Survey is held every two years.
3. Measured on a scale from 0 to 10, with 10 being the top score.

ASML Integrated Report 2018

Operational excellence

We have a long track record of innovation, having introduced several generations of cutting-edge chip-making systems that help our customers produce ever-smaller microchips ('shrink') at affordable prices. ASML has evolved along the axis of technology leadership, always first to market with leading-edge technology and products. We have been successful in this technology journey, to the point where we now have significant market share in lithography systems. As products mature, however, customers increasingly focus on cost of ownership and customer experience. Their expectations are changing.

Our value proposition needs us to balance technology leadership with operational excellence. In certain sectors of the market, operational excellence will become our key differentiator. Our challenge is to maintain both business models. For the higher end of the market such as EUV and High NA, we need to retain our technology leadership edge. While for DUV, there will be more of a drive for operational excellence over technology as our competitors match us in certain areas. This will require different sets of behaviors and changes to our culture. Eventually both EUV / High NA and DUV will need a combination of innovation power and operational excellence.

To meet our customers' expectations, we set up a comprehensive and organized portfolio for structural improvement projects to achieve operational excellence. We aim to deliver products and services with the right quality, on time, at a competitive cost, in a safe work environment and with the optimum use of capital.

Efforts to enhance operational excellence are led by our Operations organization, and more specifically our Department of Operational Strategy and Excellence (OSE). A policy deployment exercise was conducted to make sure strategic goals are being driven at every level. In October 2018, the OSE department held an all-hands meeting at Veldhoven, which served to identify the most pressing challenges and breakthroughs needed and how to achieve them.

Lean principles

As our industry evolves and our company grows, which requires a strong drive for standardizing our processes and ways of working, we need to ensure that our Operations organization and way of working are scalable, agile, effective and efficient. To achieve this, we carry on developing our Centers of Excellence network where we bring together and exchange expert knowledge and experience from across our business to support best-practice decision-making and execution. We are monitoring the maturity level of the competence centers rated on a scale of 0 to 5. Secondly, we work to adjust our basic processes to ensure they meet future needs and support them with state-of-the art IT systems. Thirdly, to achieve the cost, quality and delivery improvements we seek for our customers, we use the Lean principles to build a continuous improvement mindset. This means, among other things, that we seek to eliminate anything that does not add value for our customers. Lean also helps us define a clear end goal, and foster a culture of continuous improvement.

Lean is proving to be an effective tool with quantifiable results. In one example of Lean implementation in the TWINSKAN factory in 2018, 300 employees who were trained and coached daily by Lean experts were shown over the period of a year to have generated nearly 400 new ideas. These were aimed at improving quality, reducing costs and enhancing efficiencies.

In another exercise in 2018, in which we analyzed the different steps in our production processes ('value stream maps'), our end-to-end factory lead time of XT systems was reduced by 70 percent in the period from the third quarter of 2016 up to and including the first quarter of 2018. Production capability increased by 50 percent and employee productivity in 'natural teams' (those working together on a common product or function to improve performance) by 20 percent. One of the ways of gauging progress in achieving operational excellence is measuring the number of employees we have reached with our initiatives to implement Lean principles. Our overall objective is to familiarize over 10,000 operations employees with our Lean way of working. We will do so gradually, targeting a specific number of employees each time. In 2018, we met our target to reach a group of around 3,500 employees by year-end.

Quality

Quality is an integral part of operational excellence. It is the essential ingredient that protects and enhances ASML's reputation as an innovative company that delivers excellence, helps to improve profitability and drives change. Ultimately, quality from a customer perspective is an outcome - that our products and services are delivered as promised to our customers.

The Quality roadmap we launched in 2016 addresses customer needs by implementing a range of products to improve quality. Some of the key parts, such as managing parts quality, reducing issues at install, reduction of software patch hits and improved supplier performance, are included in this roadmap.

These initiatives resulted in improvements in 2018. For example, the mature parts quality framework for DUV has seen the dead-on-arrival rate being reduced to 0.45 percent from 1.5 percent three years ago. The number of issues per install has dropped from 6.5 to 3.7 for DUV, Yieldstar and upgrades. There were also improvements in software quality with the need to install patches being reduced in EUV / DUV from 130 to 90 patches per year.

A mature risk assessment framework including implementation of FMEAs (failure mode & effects analysis) has seen prevention of “extra-long downs” at our customers. Pilots focused on packaging have seen a reduction in packaging-related issues in transfers by 85 percent. Our suppliers met with our renewed quality demands as we saw a reduction in material quality performance (defects) from 0.8 percent at the end of 2015 to 0.25 percent at the end of 2018. In 2018 we reintroduced Statistical Process Control (SPC) in our factories - starting with the Linkou Factory in Taiwan.

Many of these projects have reached a stage of maturity due to increased focus, proactive risk assessment and a consolidated view across our entire value chain. While customers recognize and appreciate our efforts around quality, it will remain an area of focus for the foreseeable future.

The Executive Committee has enforced a culture of quality, committing, for example, to improvements via 'gemba' walks. These entail in-person, on-site observations in an effort to understand workplace challenges. In 2018, the ASML quality principles of first-time right, zero defect and zero repeat were introduced. These form a simple and easy to understand quality model. Quality Training was also launched worldwide as part of the 'creating a culture of quality' change program - created with input from our key customers, senior management, and employee feedback. Nearly 90 percent of the ASML employees have completed the training displaying an appetite for learning and willingness to be part of the Quality drive at ASML. In addition, in 2018, several suppliers signed the Quality First agreement, reinforcing their commitment to accompany us on our journey to excellence.

Environment, health and safety

At ASML, we take responsibility for protecting our people and planet. We aim to invent, develop, manufacture and service our products in a safe and sustainable manner, striving towards zero incidents and zero emissions. Employee health and safety is crucial to creating a trusted working environment, where our employees feel respected and can thrive. Our corporate responsibility strategy is based on the premise that all workplace-related injuries and occupational illnesses are preventable.

We are working to reduce CO₂ emissions by ensuring all of our electricity usage will be ‘green’ by 2020. Other measures include the implementation of safety programs, as well as energy and waste-saving projects.

How we manage environment, health and safety

Our line managers are responsible for day-to-day EHS management, with processes and policies set and overseen by the Corporate EHS Committee, a subcommittee of our Corporate Risk Committee. All employees can access our global online EHS incident reporting tool. It is mandatory to report incidents and unsafe / near-miss situations as this is the first step towards improving our EHS performance. We investigate all incidents and the near-misses that could potentially create a hazardous situation to determine the root causes and take corrective actions to prevent them from recurring or materializing.

Our EHS Competence Center gathers the best-known practices, defines EHS standards for ASML, and helps managers across the business to implement these. Our EHS management system complies with ISO 14001 requirements, and is structured based on the basic idea and purpose of ISO 45001. Since the early 2000s, we have held certificates for ISO 14001. Recertification is scheduled for 2020. As well as helping to improve results on environmental goals, and meet the requirements of involved regulatory bodies, the certificates give ASML and our stakeholders the confidence that we are a learning organization. We provide employees with EHS training to raise their awareness and operational skills, and familiarize them with EHS standards. Based on risk and hazard evaluations, we gain insight into our main risk and hazard areas. We identify and manage our lines of defense and take appropriate action to mitigate risk.

How we did in 2018

Our ‘recordable incident rate’ in 2018 was 0.24, an improvement on our target of 0.31. No work-related fatalities were recorded in 2018, just as in previous years. We register EHS-related incidents in line with the US Occupational Health and Safety Act. Given our ambition to have zero incidents, we will continue to take any necessary action to improve safety and remain focused on preventing incidents.

We organized a global ‘Have a safe day’ campaign to take action on safety topics and raise overall awareness.

Managers used this day to again stress the importance of safety, urging employees to always take action on safety issues and encourage others to do the same. To prevent incidents, we focus on the learning value of near-miss and unsafe situations with a high risk value across the organization. For this, we introduced a standardized incident

investigation method to identify and eliminate common root causes.

We are on track with our aim to achieve 100 percent renewable electricity (scope 2) by 2020. One of the ways we are working to achieve this priority objective is by our contributions to financing renewable projects generating Guarantees of Origin (GO2). These include the 1MW hydropower project initiated in Sandvik, Norway, which was commissioned in March 2018. In addition, we replaced the wind turbine project we had selected in 2017 in Sweden (this was shelved due to a lack of financing) with a 3.5MW hydropower project in Skånevik in Norway. In 2018, we continued to invest in hydropower, ramping up to 6MW.

Enhancing energy efficiency is another priority. Our target for 2020 is to achieve an energy saving of 111 TJ, which equates to a 10 percent reduction of our 2015 energy consumption. The energy savings at year-end 2018 are on track to achieve this target. Some important projects have been initiated for completion in 2020. This action, together with quantification of ongoing energy-saving opportunities, put us on track to achieve 111 TJ in 2020.

We aim to cut the amount of waste we generate by five percent by 2020, compared to the amount of waste generated in 2015. Waste-saving projects in 2018 included, among other efforts, a reduction in organic waste. This resulted in waste reduction of 0.4 percent, due to less kitchen waste, at our headquarters in Veldhoven. We need to develop further initiatives to reach our targets.

Several regulatory inspections were carried out at our locations across the world in 2018, none of which resulted in any significant EHS-related sanctions or fines. ASML was granted all legally required EHS permits required for our operations. In 2018, three environmental incidents were reported to the local authorities. These included one minor oil spill (less than one pint), a small leak, of unknown duration, in the sewage system, and a leak of five gallons of hydrofluoric acid. These took place at our production location in Wilton, Connecticut, in the US. These spills did not cause any significant damage to the environment and were contained according to local regulatory requirements. For further information, see Non-Financial Statements - Non-financial Indicators - Operations.

Environment, health and safety objectives

Theme	Objective	Target year	How we did
Employee safety	Reduce recordable incident rate by 15% compared to average of previous three years (which results in a target for 2018 of 0.31).	2018	Our recordable incident rate of 0.24 is better than our target of 0.31.
Environmental efficiency	100% Renewable electricity.	2020	We are on track. We achieved a 86.3% renewable electricity level in 2018 and have a plan in place to meet our 2020 target.
own operations	10% Energy savings through projects.	2020	We are on track with our energy savings to achieve our target of 111 TJ by the end of 2020.
	5% Waste savings through projects.	2020	We ran some waste-reduction initiatives though more needs to be done since we have only achieved 1.6% (since 2016) of our targeted waste savings (of 5% of our waste generated in 2015).

Environment, health and safety KPIs

KPI	2016	2017	2018
ASML recordable incident rate ¹	0.44	0.26	0.24
Renewable electricity (of total electricity purchased)	71.0 %	70.2 %	86.3 %
Energy savings worldwide through projects (in TJ) ²	35.1	48.8	77.3
Waste savings worldwide through projects ²	1.2 %	1.2 %	1.6 %

¹ The number of work-related injuries and illnesses, per 100 full-time workers. We use OSHA guidelines to determine work-related injuries and illnesses. Minor (first-aid level) injuries are excluded from the calculation of the recordable incident rate.

² In 2016 we started a new master plan period which concludes in 2020. The savings reported are cumulated compared to base year 2015.

ASML operations update on key performance indicators

The following table presents the KPIs used by our BoM and senior management to regularly measure performance.

Year ended December 31 (in millions, unless otherwise indicated)	2017 ¹ EUR	2018 EUR	% ²	% ²
Sales				
Total net sales	8,962.7	10,944.0		
Increase in total net sales (%)	30.4	22.1		
Net system sales	6,424.4	8,259.1		
Net service and field option sales	2,538.3	2,684.9		
Sales of lithography systems (in units) ³	197	224		
Immersion systems recognized (in units)	76	86		
EUV systems recognized (in units)	11	18		
Profitability				
Gross profit	4,020.2	4,950.2	46.0	
Income from operations	2,439.7	2,965.3	27.1	
Net income	2,066.7	2,591.6	23.7	
Liquidity				
Cash and cash equivalents	2,259.0	3,121.1		
Short-term investments	1,029.3	913.3		
Net cash provided by operating activities	1,818.3	3,072.7		
Free cash flow ⁴	1,460.3	2,463.2		

As of January 1, 2018, ASML has adopted the new Revenue Recognition Standard (ASC 606) and Lease Standard 1. (ASC 842). The comparative numbers have been adjusted to reflect these changes in accounting policies, see Note 1 General information / summary of significant accounting policies.

2. As a percentage of total net sales.

3. Lithography systems do not include metrology and inspection systems.

Free cash flow is a non-GAAP measure and is defined as net cash provided by operating activities (2018: EUR 3,072.7 million and 2017: EUR 1,818.3 million) minus purchase of property, plant and equipment (2018: EUR 574.0 million and 2017: EUR 338.9 million) and purchase of intangible assets (2018: EUR 35.5 million and 2017: EUR 19.1 million). We believe that free cash flow is an important liquidity metric, reflecting cash that is available for acquisitions, to repay debt and to return money to our shareholders by means of dividends and share buybacks.

4. Purchase of property, plant and equipment and purchase of intangible assets are deducted from net cash provided by operating activities because these payments are necessary to support the maintenance and investments in our assets to maintain the current asset base. Free cash flow therefore provides an alternative measure (in addition to net cash provided by operating activities) for investors to assess our ability to generate cash from our business. For further details about the purchase of property, plant and equipment and the purchase of intangible assets see Consolidated Financial Statements - Consolidated Statements of Cash Flows.

Operating results

Results of operations 2018 compared to 2017

The following discussion and analysis of our results of operations should be viewed in the context of the risks that may interfere with our business objectives or otherwise affect our results of operations, see Management Board Report - Risk Factors.

Set out below are our Consolidated Statements of Operations data for the years ended December 31, 2017 and 2018:

Year ended December 31 (in millions)	2017 ¹ EUR	2018 EUR
Total net sales	8,962.7	10,944.0

Total cost of sales	(4,942.5)	(5,914.8)
Gross profit	4,020.2	5,029.2
Other income	95.8	—
Research and development costs	(1,259.7)	(1,575.9)
Selling, general and administrative costs	(416.6)	(488.0)
Income from operations	2,439.7	2,965.3
Interest and other, net	(50.3)	(28.3)
Income before income taxes	2,389.4	2,937.0
Provision for income taxes	(306.0)	(351.6)
Income after income taxes	2,083.4	2,585.4
Profit (loss) related to equity method investments	(16.7)	6.2
Net income	2,066.7	2,591.6

As of January 1, 2018, ASML has adopted the new Revenue Recognition Standard (ASC 606) and Lease Standard 1.(ASC 842). The comparative numbers have been adjusted to reflect these changes in accounting policies, see Note 1 General information / summary of significant accounting policies.

Set out below are our Consolidated Statements of Operations data for the years ended December 31, 2017 and 2018 expressed as a percentage of our total net sales:

Year ended December 31	2017 ¹	2018
Total net sales	100.0	100.0
Total cost of sales	(55.1)	(54.0)
Gross profit	44.9	46.0
Other income	1.1	—
Research and development costs	(14.1)	(14.4)
Selling, general and administrative costs	(4.7)	(4.5)
Income from operations	27.2	27.1
Interest and other, net	(0.5)	(0.3)
Income before income taxes	26.7	26.8
Provision for income taxes	(3.4)	(3.2)
Income after income taxes	23.3	23.6
Profit (loss) related to equity method investments	(0.2)	0.1
Net income	23.1	23.7

As of January 1, 2018, ASML has adopted the new Revenue Recognition Standard (ASC 606) and Lease Standard 1.(ASC 842). The comparative numbers have been adjusted to reflect these changes in accounting policies, see Note 1

General information / summary of significant accounting policies.

For further information, see Other Appendices - Appendix - Selected Financial Data and Other Appendices - Appendix - Results of Operations 2017 Compared to 2016.

Total net sales and gross profit

The following table shows a summary of sales data, units sold and gross margin for the years ended December 31, 2017 and 2018:

Year ended December 31	2017 ¹	2018
(in millions, unless otherwise indicated)	EUR	EUR
Total net sales	8,962.7	10,944.0
Net system sales	6,424.4	8,259.1
Net service and field option sales	2,538.3	2,684.9
Sales of lithography systems (in units) ²	197	224
Gross margin	44.9	46.0

As of January 1, 2018, ASML has adopted the new Revenue Recognition Standard (ASC 606) and Lease Standard 1.(ASC 842). The comparative numbers have been adjusted to reflect these changes in accounting policies, see Note 1

General information / summary of significant accounting policies.

2.Lithography systems do not include metrology and inspection systems.

We had another record year in 2018, with contributions from each of our wide range of product offerings in Holistic Lithography solutions.

Total net sales increased by 22.1 percent, driven by an increase in net system sales of 28.6 percent and an increase in net service and field option sales of 5.8 percent in 2018 compared to 2017.

The increase in net system sales is mainly driven by an increase in the number of systems sold in all products as well as the relative increase in system sales towards more high-end systems. The memory sector was the largest end-user growth driver, increasing by over 50%, whereas the logic sector was the largest consumer of our most advanced EUV systems. Shipments of EUV systems in 2018 are intended for high volume manufacturing of advanced logic and DRAM devices in 2019. In addition, China saw the largest geographic regional system sales growth at over 100% in

support of multiple new factories in the region.

The increase in net service and field option sales is mainly driven by an increase in the sales of productivity and focus upgrade packages in combination with a growing installed base.

Gross profit increased by EUR 1,009.0 million due to an increase in sales and profitability. Gross profit as a percentage of net sales increased from 44.9 percent in 2017 to 46.0 percent in 2018 primarily driven by improved margins on our high-end systems. The increase in gross profit as percentage of net sales is negatively impacted by the provision related to the settlement of our legal dispute with Nikon, see Note 20 Legal contingencies.

Other income

In 2017 other income consisted of contributions for R&D programs under the NRE Funding Agreements from certain Participating Customers in the CCIP. In 2018 there is no other income (2017: EUR 95.8 million) due to the NRE funding being completed by the end of 2017.

Research and development costs

R&D costs (net of credits and excluding contributions under the NRE Funding Agreements from Participating Customers in the CCIP) were EUR 1,575.9 million in 2018 as compared to EUR 1,259.7 million in 2017. R&D costs for both 2018 and 2017 were primarily focused on programs supporting our Holistic Lithography solutions in EUV, DUV immersion, and Applications. In 2018, R&D activities mainly related to:

EUV - Further improving availability and productivity focused on the final stages of industrialization related to our NXE:3400B system, as well as introduction of the NXE:3400C. In addition, we are extending our roadmap by including High NA to support our customers with 3 nm logic and beyond.

- DUV immersion - Mainly dedicated to the development of our next generation Immersion system NXT:2000i, of which we shipped our first systems in 2018. In addition we are completing industrialization of new modules and further improving our roadmaps on alignment/overlay and productivity.

Applications - HMI expansion, including multi-beam innovation, and further development of YieldStar and process window control solutions.

Selling, general and administrative costs

SG&A costs increased by 17.1 percent mainly driven by an increase in the number of employees as a result of the growth of our business and an increase in legal fees as a result of litigation.

Interest and other, net

Interest and other, net decreased by EUR 22.0 million in 2018 compared to 2017. This decrease is mainly due to lower hedging costs resulting from the change in functional currency of the US business.

Income taxes

The increase in the provision for income tax in absolute numbers is primarily caused by an increase in the Income before income taxes. The effective tax rate decreased to 12.0 percent of income before income taxes in 2018 compared to 12.8 percent in 2017, mainly resulting from an internal restructuring which resulted in release of deferred tax liabilities on intangible assets that were initially included in the business combination accounting for HMI.

Profit (loss) related to equity method investments

The profit related to equity method investments, which consists of the result of our 24.9 percent equity interest in Carl Zeiss SMT Holding GmbH & Co. KG, was EUR 6.2 million for 2018 (2017: loss of EUR 16.7 million). For more details see Note 10 Equity method investments.

Net income

Net income in 2018 amounted to EUR 2,591.6 million, or 23.7 percent of total net sales, representing EUR 6.10 basic net income per ordinary share, compared with net income in 2017 of EUR 2,066.7 million, or 23.1 percent of total net sales, representing EUR 4.81 basic net income per ordinary share.

Liquidity and capital resources

Our principal sources of liquidity consist of cash and cash equivalents as of December 31, 2018 of EUR 3,121.1 million, short-term investments as of December 31, 2018 of EUR 913.3 million and available credit facilities as of December 31, 2018 of EUR 700.0 million. In addition, we may from time to time raise additional capital in debt and equity markets. Our goal is to remain an investment grade rated company and maintain a capital structure that supports this.

Our cash and cash equivalents increased to EUR 3,121.1 million as of December 31, 2018 from EUR 2,259.0 million as of December 31, 2017 and our short-term investments decreased to EUR 913.3 million as of December 31, 2018 from EUR 1,029.3 million as of December 31, 2017.

We invest our cash and cash equivalents and short-term investments in short-term deposits with financial institutions that have investment grade credit ratings and in money market and other investment funds that invest in high-rated short-term debt securities. Our investments are mainly denominated in euros and to some extent in US dollars and Taiwanese dollars.

Our available credit facilities amount to EUR 700.0 million as of December 31, 2018 and as of December 31, 2017. No amounts were outstanding under these credit facilities at the end of 2018 and 2017. The amounts available at December 31, 2018 and 2017 consisted of EUR 700.0 million committed revolving credit facility with a group of banks, which matures in 2022. Outstanding amounts under this credit facility will bear interest at EURIBOR or

LIBOR plus a margin that depends on our credit rating.

We have the following repayment obligations relating to our Eurobonds:

€500 million in 2022.

€750 million in 2023.

€1,000 million in 2026.

€750 million in 2027.

We seek to ensure that our principal sources of liquidity will be sufficient to satisfy our liquidity requirements throughout every phase of the industry cycle.

Our liquidity needs are affected by many factors, some of which are based on the normal on-going operations of the business, and others that relate to the uncertainties of the global economy and the semiconductor industry. Although our cash requirements fluctuate based on the timing and extent of these factors, we believe that cash generated from operations, together with our other sources of liquidity are sufficient to satisfy our current requirements, including our expected capital expenditures and debt servicing. We intend to return cash to our shareholders on a regular basis in the form of dividend payments and, subject to our actual and anticipated liquidity requirements and other relevant factors, share buybacks or capital repayments.

See Consolidated Financial Statements - Consolidated Statements of Cash Flows and Notes to the Consolidated Financial Statements 4, 5, 16, 17, 28 and 29.

Trend Information

We expect that Moore's Law will continue beyond the next decade including industry fundamentals of a decline in cost per transistor. There is a strong demand for advanced ICs, supported by a value chain with means and incentive to support this. However, cost and process complexity of shrinking with multiple patterning together with new device structures and materials reshapes customer roadmaps, resulting in a continued need to improve DUV lithography performance while exploiting execution of agreed EUV targets for the future and complementing it with a portfolio of product options, enhancements and upgrade packages that support product stewardship and optimize the cost of ownership over the entire lifetime of our systems. It also results in zero tolerance for non-performance, driving improvement of quality and cost efficiency of our products and services.

During the last two years the memory manufacturers have experienced increasing price levels due to shortages in both DRAM and NAND markets. Over the past months, prices declined, albeit still at highly profitable levels. For next year, node migrations in combination with inventory reductions will likely be sufficient to meet the increasing memory demand, therefore memory sales are expected to be lower in 2019. The underlying demand for memory chips remains strong and hence the memory makers will start ramping new factories once the memory prices have normalized.

The past year has been highly profitable for logic manufacturers. High chip demand in automotive and data science applications, have increased factory utilization to record levels. For foundry manufacturers 14 and 16nm has proven to be a strong node; furthermore, an increasing number of fabless chip companies have designs ready for 10 and 7nm. The first high volume manufacturing with EUV is expected in 2019. For the coming year we expect ASML logic sales to increase as the leading foundries are putting capacity in place for nodes with significant EUV adoption, eager to realize the cost benefits of process simplification, cycle time reductions and yield improvement.

We expect continued solid growth in 2019. We plan to ship 30 EUV systems in 2019, however shipment profile will be back-end loaded.

Due to a fire at one of our suppliers of electronics components and modules, work in progress and part of the inventory was lost. Due to the integral cycle time of around one quarter for these modules, we expect ASML's first-quarter sales to be negatively impacted by approximately EUR 300 million, which we expect to largely recover in the second quarter, with the remainder expected to be recovered in the second half of 2019.

Our expectations and guidance for the first quarter of 2019 can be summarized as follows:

• Total net sales of around EUR 2.1 billion.

• Gross margin of around 40 percent.

• R&D costs of around EUR 480 million. The increase in R&D costs reflects continued accelerated investments in our portfolio.

• SG&A costs of around EUR 130 million.

• Effective annualized tax rate of around 14 percent.

For discussion on the main key performance indicators indicated above, see Management Board Report - Financial Performance - Operating results and Liquidity and capital resources.

The trends discussed above are subject to risks and uncertainties. See Special Note Regarding Forward-Looking Statements and Management Board Report - Risk Factors.

Business Risk and Continuity

The Corporate Risk Management function helps us achieve our aims by being systematic in its approach to setting standards and enabling management to make our governance, risk management, internal control and compliance more efficient and effective. It also helps to identify opportunities to achieve our objectives and enable continuous sustainable growth.

The BoM is responsible for ensuring that we comply with applicable legislation and regulations. It is also responsible for managing the internal and external risks related to our business activities.

The BoM has delegated its risk oversight to ASML's Corporate Risk Committee. The Corporate Risk Committee is chaired by the COO and comprises senior management representatives from all sectors within ASML, including the CEO and CFO. The Corporate Risk Committee is a central risk oversight body, which reviews, manages and controls risks in the ASML risk universe. The Corporate Risk Committee approves the risk appetite (i.e. the acceptable level of risk), risk management policies and risk mitigation strategies. Our risk universe is reviewed annually. We take into account a broad range of internal and external information sources such as macroeconomic and industry trends, relevant guidelines and legislation (e.g. the EU Directive on disclosure of non-financial and diversity information and the Dutch Corporate Governance Code), and stakeholders' needs and expectations in all areas, including corporate responsibility. We may have a different risk appetite for different identified risks and our approach is geared towards mitigating the risks to a reasonable level.

Vice President Corporate Risk and Assurance is responsible for leading the development and maintenance of the Enterprise Risk Management (ERM) framework, which oversees the execution of the ERM process. This ensures ERM activities are aligned with our objectives. It is also crucial to enabling the organization to meet our business objectives.

Our ERM process assesses both top-down (company-level) and bottom-up (organization and process-level) risks. It is built on a comprehensive risk universe, consisting of external and internal risk factors that could influence our operational, business continuity, financial and regulatory compliance objectives.

The risk universe allows consolidated and comparative analysis across ASML. The ERM process is also there to make sure that actions to mitigate risk are monitored through a system of multidisciplinary assessments, monitoring, reporting and operational reviews. For example:

• Quarterly senior management meetings are held to assess ASML's corporate initiatives, as well as execution of ASML's strategy.

- Monthly operating review meetings with ASML's senior management and quarterly business review meetings by the CEO, CFO, CTO, and COO with ASML's senior management. These review meetings focus on financial performance, the realization of operating objectives and responses to emerging issues.

• Quarterly review of key operational risk areas by the Corporate Risk Committee.

• ASML's Anti-Fraud Policy. This aims to develop controls, which will aid in prevention, deterrence and detection of fraud against ASML.

• Risk & compliance assessments, performed by Corporate Risk management.

• Internal control assessments, performed by Internal Audit.

• On a semi-annual basis, letters of representation are signed by ASML's key senior management members. They confirm, among others, the following:

• Compliance with the applicable laws and regulations.

• Adequate processes and controls that enable the preparation of financial statements.

• Completeness of transactions and commitments.

• Regular reporting to the Supervisory Board.

Risk management process

In the risk management process, the Supervisory Board (SB) provides independent oversight on management's response to mitigating critical risk areas based on bi-annual risk reviews. The SB's Audit Committee provides independent oversight on the risk management process and timely follow-up on high-priority actions based on quarterly progress updates.

The Disclosure Committee and Internal Control Committee are there to make sure risk management complies with external reporting requirements, and to assess the effectiveness of related internal controls over financial reporting. The Disclosure Committee tracks compliance with requirements arising from US and Dutch law, and applicable stock exchange rules, US GAAP, IFRS-EU and the Sarbanes-Oxley Act. The committee is made up of various members of the senior management team, and reports to the CEO and CFO. The chairman reports to the Audit Committee on the outcome of meetings. The Disclosure Committee gathers all relevant financial and non-financial information and assesses whether public disclosures are accurate and complete. The Disclosure Committee and Internal Control Committee also advise the CEO and CFO on the effectiveness of the disclosure controls and procedures, and the internal control over financial reporting (Sarbanes-Oxley Act).

Our Internal Control Committee, which includes three members of the Disclosure Committee, advises ASML's Disclosure Committee in its assessment of ASML's internal control over financial reporting and disclosures, under section 404 of the Sarbanes-Oxley Act. The chairman of the Internal Control Committee updates the Audit Committee, the CEO and CFO on the progress of this assessment. The chairperson of the Audit Committee includes this item in their report to the full Supervisory Board.

All material risk management activities have been discussed with the Audit Committee and the SB. For a discussion of ASML's risk factors, see Management Board Report - Risk Factors. See also Corporate Governance - Board of Management - ASML Reports.

We do not rank the individual risks identified in our Management Board Report. We believe this defies the purpose of a comprehensive risk assessment. Also, it would be arbitrary since all the risks mentioned have significant relevance for us and our business.

We define strategies to address these risks, which are taken into account when we define the corporate priorities needed to secure risk mitigation in our business processes. For example:

To address the rapid commercial and technological changes in the semiconductor industry, as well as the increasing complexity in executing our product introduction roadmap, we focus on partnerships, collaboration and knowledge-sharing with our customers and suppliers. We work closely to align roadmaps, oversee execution and ensure we maximize customer value. See Management Board Report - Products and Technology and Partners.

To address our dependence on a limited number of suppliers we nurture high-quality and collaborative relationships with our suppliers. We share our expert knowledge, including risks and rewards, so we all work together to achieve cost-effective shrink, boost innovation and enable our industry to grow. See Management Board Report - Partners.

To address risks related to intellectual property rights, we have developed an intellectual property rights management mechanism to protect our intellectual property rights, and to respect the intellectual property of other parties. To protect ourselves from incidents related to cyber security, we have also set up a broad information security program, which looks at measures to prevent, detect and respond to security threats. See Management Board Report - Products and Technology.

To address the scarcity of staff with specific technical expertise, we put effort into educating, training and retaining talent. We also promote initiatives that encourage young people to study science, technology and engineering. See Management Board Report - People.

Risk Factors

In conducting our business, we face many risks that may interfere with our business objectives. It is important to understand the nature of these risks and the impact they may have on our business, financial condition and results of operations. Some of the more relevant risks are described below. These risks are not the only ones that we face. Some risks may not yet be known to us and certain risks that we do not currently believe to be material could become material in the future.

Our business will suffer if we or the industry do not respond rapidly to commercial and technological changes in the semiconductor industry

Our success in developing new technologies, products and in enhancing our existing products depends on a variety of factors, including the successful management of our and our suppliers' R&D programs and the timely and successful completion of product development and design relative to competitors. If the technologies that we pursue to assist our customers in producing smaller and more energy efficient chips are not as effective as those developed by current or new competitors, or if our customers adopt new technological architectures that are less focused on lithography products, this may adversely affect our business, financial condition and results of operations. The success of our EUV technology, which we believe is critical for keeping pace with Moore's Law, which postulates that the number of transistors on a chip doubles approximately every 24 months at equivalent costs, remains dependent on continuing technical advances by us and our suppliers. We invest considerable financial and other resources to develop and introduce new technologies, products and product enhancements, and if we are not successful in developing products that are adopted by customers, we may not recoup the significant investments we have made in such products or enhancements, including in EUV and Applications technology, and our competitive position may suffer. In particular, the multi-beam innovation, which we are developing as part of our Holistic Lithography solutions, and High NA, which is a further extension of our EUV technology, require significant R&D resources for their development. If we are unsuccessful in developing new technology, products and product enhancements such as multi-beam and High NA, or if competitors successfully introduce alternative technologies or processes, this could impact our business and we may be unable to recoup some or all of the investments that we have made, which could have a material adverse effect on our business, financial condition and results of operations.

We may incur increased costs related to inventory obsolescence, as a result of complex technological changes. Such inventory obsolescence costs may be higher as the complexity of technology increases.

Due to increased complexity of our systems or alternative technologies, our customers may purchase existing technology systems rather than new leading-edge systems or may delay their investment in new technology systems to the extent that such investment is not economical or required given their product cycles. Some of our customers have experienced and may continue to experience delays in implementing their product roadmaps, which increases the risk of slowing down the overall transition period (or cadence) for introduction of new systems and lengthening the period for a return on our investments.

We are also dependent on our suppliers to maintain their development roadmaps to enable us to introduce new technologies on a timely basis, and if they are unable to keep pace whether due to technological factors, lack of financial resources or otherwise, this could prevent us from meeting our development roadmaps, which could have a material adverse effect on our business, financial condition and results of operations.

The success of new product introductions is uncertain and depends on our ability to successfully execute our R&D programs

Our lithography systems and applications have become increasingly complex, and accordingly, the costs and time period to develop new products and technologies have increased, and we expect such costs and time period to continue to increase. In particular, developing new technology including a multi-beam innovation and EUV technology (including High NA), as part of our Holistic Lithography solutions, requires significant R&D investments by us and our suppliers in order to meet our and our customers' technology demands. Our suppliers may not have, or may not be willing to invest in, the resources necessary to continue the development of the new technologies to the extent such investments are necessary, which may result in our contributing funds to such R&D programs or limiting the R&D investments that we can undertake. Furthermore, if our R&D programs are not successful in developing the desired new technology, our business, financial condition and results of operations could be materially and adversely

affected.

We may face challenges in managing industrialization of our products and bringing them to high volume production which could impact profitability

Bringing our products to high volume production at a value-based price and in a cost effective manner, depends on our ability to manage the industrialization of our products and our ability to manage costs. Customer acceptance of our products depends on performance of our products in the field. As our products become more complex, the risk that our products may not perform according to specifications or quality standards increases. If quality or performance issues arise, they may result in additional costs and may damage our reputation and reduce demand for our products. In particular, with respect to EUV, there are a number of development milestones that remain to be met, such as the ability of our new systems to consistently perform above certain thresholds. If our products do not perform according to specifications and performance criteria and as a result our customers are not able to meet planned wafer capacity, we may be required to pre-ship additional systems to affected customers leading to additional costs.

Transitioning our products to full-scale production also requires the growth of our infrastructure, including enhancing our manufacturing capabilities, increasing supply of components and training qualified personnel. The transition also requires our suppliers to grow their infrastructure capabilities. If we are unable to meet these growth requirements on a timely basis or at all due to manufacturing constraints, delays in our suppliers' development roadmaps, or insufficiently increasing employee education and training, this could have a material adverse effect on our business, financial condition and results of operations.

The capability, capacity and costs associated with providing the required customer support function to cover the increasing amount of shipments and servicing a growing number of EUV systems that are operational in the field could affect the timing of shipments and the efficient execution of maintenance, servicing and upgrades, which is key to the systems continuing to achieve the required productivity. The build-up of the service organization, its people and the complexity of the technology requirements will take time. It may also mean that we have to extend warranty beyond the agreed standard terms. This may delay the profitability of the service business and could also have a material impact on our reputation and relationships with customers.

We face intense competition

The lithography equipment industry is highly competitive. Our competitiveness depends upon our ability to develop new and enhanced lithography equipment, related applications and services that are competitively priced and introduced on a timely basis, as well as our ability to protect and defend our intellectual property rights. See Management Board Report - Products and Technology - Knowledge management and Protecting our intellectual property, Consolidated Financial Statements - Notes to the Consolidated Financial Statements - Note 20 Legal contingencies, and Other Appendices - Appendix - Government Regulation.

We compete primarily with Canon and Nikon in respect of systems. Both Canon and Nikon have substantial financial resources and broad patent portfolios. Each continues to offer products that compete directly with most of our products, which may impact our sales or cause a loss of market acceptance for our lithography systems. In particular, we have experienced increased competition from Nikon and Canon in existing technologies such as TWINSCAN XT systems, where end-market demand has increased. In addition, adverse market conditions, industry overcapacity or a decrease in the value of the Japanese yen in relation to the euro, could further intensify price-based competition, resulting in lower prices, lower sales, and margins which could have a material adverse effect on our business, financial condition and results of operations.

We also compete with providers of applications that support or enhance complex patterning solutions, e.g Applied Materials Inc. and KLA-Tencor Corporation. These applications effectively compete with our Applications offering, which has become an increasingly significant part of our business. The competition we face in our applications business may be higher than for our systems, as there are more competitors and potential competitors in this market. Our production is highly dependent on the performance of a limited number of critical suppliers of single source key components

We rely on outside vendors for components and subassemblies used in our systems including the design thereof. These components and subassemblies are obtained from a single supplier or a limited number of suppliers. As our business has grown, our dependence on single suppliers or a limited number of suppliers has grown, as the highly specialized nature of many of our components, particularly for EUV systems, means it is not economical to source from more than one supplier. Our reliance on a limited group of suppliers involves several risks, including a potential inability to obtain an adequate supply of required components, in a timely manner or at all, additional costs resulting from switching to alternate suppliers, reduced control over pricing and quality and the risk of untimely delivery of our products as a result of delays in supply of these components and subassemblies. Delays in supply of components and subassembly could occur for a variety of reasons, such as disruptions experienced by our suppliers, including work stoppages, fire, energy shortages, flooding or other natural disasters. For example, one of our suppliers of electronics components experienced a fire in December 2018, and as a result we expect an impact on first quarter 2019 sales. The number of lithography systems we are able to produce may be limited by the production capacity of one of our key suppliers, Carl Zeiss SMT GmbH, which is our sole supplier of lenses, mirrors, illuminators, collectors and other critical optical components (which we refer to as optics). If Carl Zeiss SMT GmbH is unable to maintain and increase production levels or if we are unable to maintain our business relationship with Carl Zeiss SMT GmbH in the future

we could be unable to fulfill orders, which could damage relationships with current and prospective customers and have a material adverse effect on our business, financial condition and results of operations. If Carl Zeiss SMT GmbH were to terminate its supply relationship with us or if Carl Zeiss SMT GmbH is unable to maintain production of optics over a prolonged period, we would effectively cease to be able to conduct our business. See Management Board Report - Partners - Sustainable relationships with suppliers. In addition to Carl Zeiss SMT GmbH's current position as a supplier of optics, a number of other critical components are available from only a limited number of suppliers.

Lead-times in obtaining components have increased as our products have become more complex, and a failure by us to adequately predict demand for our systems or any delays in the shipment of components can result in insufficient supply of components, which can lead to delays in delivery of our systems and can limit our capabilities to react quickly to changing market conditions. Conversely, a failure to predict demand could lead to excess and obsolete inventory. A prolonged inability to obtain adequate deliveries of components or subassemblies, or any other circumstance that requires us to seek alternative sources of supply, could significantly hinder our ability to deliver our products in a timely manner, which could damage relationships with current and prospective customers and have a material adverse effect on our business, financial condition and results of operations.

A high percentage of net sales is derived from a few customers

Historically, we have sold a substantial number of lithography systems to a limited number of customers. Customer concentration can increase because of continuing consolidation in the semiconductor manufacturing industry. In addition, although the applications' part of our Holistic Lithography solutions constitutes an increasing portion of our revenue, a significant portion of those customers are the same customers as those of our systems. Consequently, while the identity of our largest customers may vary from year to year, sales may remain concentrated among relatively few customers in any particular year. In 2018, recognized total net sales to our largest customer accounted for EUR 2,476.8 million, or 22.6 percent of total net sales, compared with EUR 2,454.4 million, or 27.4 percent of total net sales, in 2017 and EUR 1,633.9 million, or 23.8 percent of total net sales in 2016. The loss of any significant customer or any significant reduction or delay in orders by a significant customer may have a material adverse effect on our business, financial condition and results of operations.

Additionally, as a result of our limited number of customers, credit risk on our receivables is concentrated. Our three largest customers (based on total net sales) accounted for EUR 1,491.3 million, or 58.8 percent of accounts receivable and finance receivables on December 31, 2018, compared with EUR 1,356.7 million, or 65.7 percent on December 31, 2017.

As a result of the foregoing risks, business failure or insolvency of one of our main customers may have a material adverse effect on our business, financial condition and results of operations.

The semiconductor industry can be cyclical and we may be adversely affected by any downturn

As a supplier to the global semiconductor industry, we are subject to the industry's business cycles, of which the timing, duration and volatility are difficult to predict. The semiconductor industry has historically been cyclical. New entrants in the industry, including Chinese entrants, could increase the risk of cyclicity in the future. Certain key end market customers - Memory and Logic, exhibit different levels of cyclicity and different business cycles. Sales of our lithography systems, services and other Holistic Lithography products depend in large part upon the level of capital expenditures by semiconductor manufacturers, which in turn are influenced by industry cycles and a range of competitive and market factors, including semiconductor industry conditions and prospects. Large capital expenditures of our customers also impact the available production capacity of the industry to produce chips thereby creating imbalances in the supply and demand of chips. Reductions or delays in capital expenditures by our customers or incorrect assumptions by us about our customers' capital expenditures could have a material adverse effect on our business, financial condition and results of operations.

Our ability to maintain profitability in an industry downturn will depend substantially on whether we are able to lower our costs and break-even level, which is the level of sales that we must reach in a year to have positive net income. If sales decrease significantly as a result of an industry downturn and we are unable to adjust our costs over the same period, our net income may decline significantly or we may suffer losses. Furthermore, we have grown in terms of employees, facilities and inventories in recent years, so it may be even more difficult for us to reduce our costs in order to respond to an industry downturn.

We derive most of our revenues from the sale of a relatively small number of products

We derive most of our revenues from the sale of a relatively small number of lithography systems (224 units in 2018 and 197 units in 2017). As a result, the timing of shipment, including any delays, and recognition of system sales for a particular reporting period from a small number of systems may have a material adverse effect on our business, financial condition and results of operations in that period.

Failure to adequately protect the intellectual property rights upon which we depend could harm our business

We rely on intellectual property rights such as patents, copyrights and trade secrets to protect our proprietary technology and applications. However, we face the risk that such measures could prove to be inadequate and result in circumstances which have a material adverse effect on our business, financial condition and results of operations because:

• Intellectual property laws may not sufficiently support our proprietary rights or may change in the future in a manner adverse to us;

• Patent rights may not be granted or interpreted as we expect;

• Patents will expire which may result in key technology becoming widely available that may harm our competitive position;

• The steps we take to prevent misappropriation or infringement of our proprietary rights may not be successful; and

• Third parties may be able to develop or obtain patents for similar competing technology.

In addition, legal proceedings may be necessary to enforce our intellectual property rights, to determine the validity and scope of the proprietary rights of others, or to defend against claims of infringement. Any such proceedings may result in substantial costs and diversion of management resources, and, if decided unfavorably to us, could have a material adverse effect on our business, financial condition and results of operations.

Defending against intellectual property claims brought by others could harm our business

In the course of our business, we are subject to claims by third parties alleging that our products or processes infringe upon their intellectual property rights. If successful, such claims could limit or prohibit us from developing our technology, manufacturing and selling our products, which could have a material adverse effect on our business, financial condition and results of operations.

In addition, our customers or suppliers may be subject to claims of infringement from third parties, alleging that our products used by such customers in the manufacturing of semiconductor products and / or the processes relating to the use of our products infringe one or more patents issued to such third parties. If such claims are successful, we could be required to indemnify our customers or suppliers for some or all of any losses incurred or damages assessed against them as a result of such infringement, which could have a material adverse effect on our business, financial condition and results of operations.

We also may incur substantial licensing or settlement costs to settle disputes or to potentially strengthen or expand our intellectual property rights or limit our exposure to intellectual property claims of third parties, which could have a material adverse effect on our business, financial condition and results of operations.

Currently, a number of patent infringement suits between Nikon on the one hand and ASML and its supplier Carl Zeiss SMT GmbH are pending in multiple jurisdictions. On January 23, 2019, we entered into a binding MOU with Nikon and Zeiss relating to a comprehensive settlement of all pending disputes between Nikon, ASML and Zeiss. The terms of the MOU include a payment to Nikon by ASML and Zeiss of a total of EUR 150 million, and the cross-license agreement to be executed among the parties as contemplated by the MOU includes royalty payments of 0.8% by ASML to Nikon, and by Nikon to ASML, over the sales of their respective immersion lithography systems for 10 years from date of the definitive agreements giving effect to the MOU. In addition to the payments contemplated by the MOU and related agreements, we incurred significant costs in connection with the litigation with Nikon. See Note 20 Legal contingencies for a disclosure of litigation proceedings with Nikon.

While we have agreed to settle our current litigation with Nikon, we continue to face the risk that we may be subject to claims alleging the infringement of others' patents or intellectual property rights or involved in patent litigation to defend our intellectual property rights.

Patent litigation is complex and may extend for a protracted period of time, giving rise to the potential for both substantial costs and diverting the attention of key management and technical personnel. Potential adverse outcomes from patent litigation may include, without limitation, payment of significant monetary damages, injunctive relief prohibiting our manufacturing, exporting or selling of products, and / or settlement involving significant costs to be paid by us, any of which may have a material adverse effect on our business, financial condition and results of operations.

A disruption in our information technology systems, including incidents related to cyber security, could adversely affect our business operations

We rely on the accuracy, availability and security of our information technology systems. Despite the measures that we have implemented, including those related to cyber security, our systems could be breached or damaged by computer viruses and systems attacks, natural or man-made incidents, disasters or unauthorized physical or electronic access.

From time to time we experience cyber-attacks on our information technology systems as well as the information technology systems of our suppliers, customers and other service providers, whose systems we do not control. These attacks include malicious software (malware), attempts to gain unauthorized access to data, and other electronic security breaches of our information technology systems as well as the information technology systems of our suppliers, customers and other service providers that have led and could lead, for us, our customers, suppliers or other business partners, including R&D partners, to disruptions in critical systems, unauthorized release, misappropriation, corruption or loss of data or confidential information (including confidential information relating to our customers,

employees and suppliers). In addition any system failure, accident or security breach could result in business disruption, theft of our intellectual property, trade secrets (including our proprietary technology), unauthorized access to, or disclosure of, customer, personnel or supplier information, corruption of our data or of our systems, reputational damage or litigation. Furthermore, computer viruses or other malware may harm our systems and software and could be inadvertently transmitted to our customers' systems and operations, which could result in reputational damage, loss of customers or litigation. We may also be required to incur significant costs to protect against or repair the damage caused by these disruptions or security breaches in the future, including, for example, rebuilding internal systems, implementing additional threat protection measures, providing modifications to our products and services, defending against litigation, responding to regulatory inquiries or actions, paying damages, providing customers with incentives to maintain the business relationship, or taking other remedial steps with respect to third parties. These cyber security threats are constantly evolving. We, therefore, remain potentially vulnerable to additional known or yet unknown threats, as in some instances, we, our customers, and our suppliers may be unaware of an incident or its magnitude and effects. We also face the risk that we expose our customers to cybersecurity

attacks through the systems we deliver to our customers, including in the form of malware or other types of attacks as described above, which could harm our customers and therefore our business and reputation.

In addition, from time to time, we implement updates to our information technology systems and software, which can disrupt or shutdown our information technology systems. For example, we are currently implementing a new enterprise-wide management system and infrastructure. We may not be able to successfully integrate and launch these new systems as planned without disruption to our operations. Information technology system disruptions, if not anticipated and appropriately mitigated, could have a material adverse effect on our operations. In addition, we may not be able to effectively integrate and launch these new systems and these new systems may not deliver the intended cost savings and efficiencies and thereby have a material adverse effect on our business, financial condition and results of our operations.

The General Data Protection Regulation (the "GDPR") came into effect in May 2018. The regulation imposes a strict data protection compliance regime and includes new rights. The GDPR applies to the collection, use, retention, security, processing, and transfer of personally identifiable information of residents of EU countries, and created a range of new compliance obligations. Implementation of, and compliance with the GDPR has increased and could continue to increase our cost of doing business. In addition, the GDPR may be interpreted or applied in a manner that is unforeseen by or adverse to us. Violations of the GDPR may result in significant fines (up to four percent of worldwide net sales or EUR 20.0 million, whichever is greater) and reputational harm.

We are subject to risks in our international operations

Our operations are global, see our Consolidated Financial Statements - Notes to the Consolidated Financial Statements - Note 22 Segment disclosure. There are a number of risks inherent in doing business globally, for example:

• Unfavorable political, geopolitical or economic environments;

• Increased exposure to natural hazards;

• Potentially adverse tax consequences;

• Unexpected legal or regulatory changes;

• Global trade issues and changes in and uncertainties with respect to multilateral and bilateral treaties and trade policies, including the ability to obtain required licenses (including licenses for our employees) and approvals and the effects of trade sanctions, export controls, tariffs and similar regulations and international trade disputes, that could impact our ability to produce and deliver our systems and services internationally;

• Failure to comply with regulatory requirements, including anti-corruption, anti-bribery and human rights standards;

• Our inability to attract and retain sufficiently qualified personnel;

• Our inability to protect our intellectual property and information technology systems;

and

• Adverse effects of foreign currency fluctuations.

If we are unable to manage successfully the risks inherent in our international activities, our business, financial condition and results of operations could be materially and adversely affected.

In particular, certain of our manufacturing facilities as well as customers are located in Taiwan. Customers in Taiwan represented 18.2 percent of our 2018 total net sales and 23.4 percent of our 2017 total net sales. Taiwan has a unique international political status. The People's Republic of China asserts sovereignty over Taiwan and does not recognize the legitimacy of the Taiwanese government. Changes in relations between Taiwan and the People's Republic of China, Taiwanese government policies and other factors affecting Taiwan's political, economic or social environment could have a material adverse effect on our business, financial condition and results of operations. The risks we face by doing business in Taiwan increased with our acquisition of HMI. Furthermore, certain of our manufacturing facilities as well as customers are located in South Korea. Customers in South Korea represented, 34.0 percent of our 2018 total net sales and 33.8 percent of our 2017 total net sales were derived from customers in South Korea. There are tensions with the Democratic People's Republic of Korea (North Korea), which have existed since the division of the Korean Peninsula following World War II, which have increased significantly in recent years. The worsening of relations between those countries or the outbreak of war on the Korean Peninsula could have a material adverse effect on our business, financial condition or results of operations.

We have a presence in a number of jurisdictions, including the People's Republic of China and Russia. In particular, our business in People's Republic of China has increased in recent years and is expected to increase further. Such increased presence in new jurisdictions increases the risks we face, including risks relating to compliance with multilateral and bilateral treaties, delays in receipt of appropriate permits, compliance with anti-corruption and anti-bribery laws and regulations, our ability to effectively manage and control our growing business, attracting and retaining sufficiently qualified personnel, and the protection of our intellectual property and information technology systems. For example, we are experiencing delays in processing work permits for foreign nationals, which could potentially delay development and support provided to customers. These risks could have a material adverse effect on our business, financial condition and results of operations.

The administration of U.S. President Trump has enacted trade measures, including import tariffs and other tariffs on People's Republic of China and on other countries and restrictions on conducting business with certain Chinese entities. In response to such measures, the European Union and other countries, including China, have responded with retaliatory tariffs on certain products from the United States. Our business involves the sale of systems and services to customers in a number of countries, including China where our business has grown in recent periods, and includes sensitive technologies that may be the subject of increased export regulations, policies or practices. These and further developments in multilateral and bilateral treaties, national regulation, and trade, national security and investment policies and practices have affected and may further affect our business and the businesses of our suppliers and customers. Any of the foregoing could impact our ability to sell systems and services to our customers and to obtain necessary permits, including permits for use of US technology and for employees producing and developing such technology, which could adversely affect our business, financial condition and results of operations.

We are dependent on the continued operation of a limited number of manufacturing facilities

All of our manufacturing activities, including subassembly, final assembly and system testing, take place in cleanroom facilities in Veldhoven, the Netherlands, in Wilton, Connecticut and in San Diego, California, both in the US, in Pyeongtaek, South-Korea, in Beijing, China, in Linkou and Tainan, Taiwan. These facilities may be subject to disruption for a variety of reasons, including work stoppages, fire, energy shortages, flooding or other natural disasters. We cannot ensure that alternative production capacity would be available if a major disruption were to occur. In addition, some of our key suppliers, including Carl Zeiss SMT GmbH, have a limited number of manufacturing facilities, the disruption of which may significantly and adversely affect our production capacity, which could adversely affect our business, financial condition and results of operations.

Our business and future success depend on our ability to manage the growth of our organization and attract and retain a sufficient number of adequately educated and skilled employees

Our business and future success significantly depends upon our employees, including a large number of highly qualified professionals, as well as our ability to attract and retain employees. Competition for such personnel is intense and has increased in recent years, and we may not be able to continue to attract and retain such personnel. Our R&D programs require a significant number of qualified employees. If we are unable to attract sufficient numbers of qualified employees, this could affect our ability to conduct our R&D on a timely basis, which could adversely affect our business, financial condition and results of operations.

In addition, if we lose key employees or officers to retirement, illness or otherwise, particularly a number of our highly qualified professionals and / or senior management, we may not be able to timely find a suitable replacement. Moreover, as a result of the uniqueness and complexity of our technology, qualified engineers capable of working on our systems are scarce and generally not available (e.g. from other industries or companies). As a result, we must educate and train our employees to work on our systems. Therefore, a loss of a number of key professionals and / or senior management can be disruptive, costly and time consuming. Our R&D activities with respect to new technology systems, such as EUV and High NA, and our service activities have increased our need for qualified personnel. Competition for qualified personnel is particularly significant in the area surrounding our headquarters in Veldhoven, the Netherlands and in the other regions where our facilities are located, where also a number of other high technology companies are located.

Furthermore, the increasing complexity of our products results in a longer learning-curve for new and existing employees and suppliers leading to an inability to decrease cycle times and may result in the occurrence of significant additional costs.

Our suppliers face similar risks in attracting qualified employees, including attracting employees in connection with R&D programs that will support our R&D programs and technology developments. To the extent that our suppliers are unable to attract qualified employees, this could impact our R&D programs or deliveries of components to us, which could adversely affect our business, financial condition and results of operations.

In recent years, our organization has grown significantly. This growth in a short period of time could result in challenges in managing our employees, facilities and other resources. An inability to effectively manage, monitor and control the growth in our employees, facilities and operations could adversely affect our business, financial condition and results of operations. Our personnel also needs to adapt and acquire the appropriate skillset in order to effectively

work in our growing business and an inability to do so could adversely affect our business, financial condition and results of operations.

Fluctuations in foreign exchange rates could harm our results of operations

We are exposed to currency risks. Our Financial Statements are expressed in euros. Accordingly, our results of operations are exposed to fluctuations in exchange rates between the euro and such other currencies, and changes in currency exchange rates can result in losses in our Financial Statements. We are particularly exposed to fluctuations in the exchange rates between the US dollar and the euro, and to a lesser extent to the Japanese yen and the Taiwanese dollar in relation to the euro. We incur costs of sales predominantly in euros with portions also denominated in US and Taiwanese dollars, particularly following our acquisitions of Cymer in 2013 and HMI in 2016. A small portion of our operating results are driven by movements in currencies other than the euro, yen, US dollar or Taiwanese dollar. In general, our customers run their businesses in US dollars and therefore a weakening of the US dollar against the euro might impact the ability or desire of our customers to purchase our products at quoted prices, which could adversely affect our business, financial condition and results of operations.

Changes in taxation could affect our future profitability

We are subject to income taxes in the Netherlands and numerous other jurisdictions. Our effective tax rate has fluctuated in the past and may fluctuate in the future.

Changes in tax legislation in the countries where we operate can affect our effective tax rate. For example, in 2012 the OECD has embarked on a project to propose measures against so called Base Erosion and Profit Shifting or BEPS. Based on the BEPS reports the EU has proposed directives to counter base erosion and profit shifting which in turn will result in legislative proposals in EU member states. Similar legislative initiatives inspired by the BEPS reports have been taken in Asian jurisdictions in which we operate. Anticipating these legislative initiatives, we have implemented and will implement changes in our business flows to align our business flows with these anticipated initiatives.

In addition, in 2018, the newly elected Dutch government issued new proposals for amendments in Dutch tax legislation which, amongst others includes a reduction in the general Dutch corporate income tax rate over a number of years. Furthermore, in December 2017, the U.S. President Trump signed the Tax Cuts and Jobs Act (TCJA) which significantly changed the US income tax code. Regarding TCJA several aspects are currently still waiting for further clarification in the form of to be published Treasury Regulations.

We currently do not expect significant tax effects but we are continuing to assess the impact of those developments. Changes to tax legislation of jurisdictions we operate in, may adversely impact our tax position and consequently our net income. In this respect it should be noted that our worldwide effective tax rate is heavily impacted by R&D incentives included in tax laws and regulations in the countries we operate in. An example is the so-called innovation box tax legislation in the Netherlands. In case these jurisdictions alter their tax policies in this respect this may have an adverse effect on our worldwide effective tax rate. In addition, jurisdictions levy corporate income tax at different rates. The mix of our sales over the various jurisdictions in which we operate may vary from year to year, resulting in a different mix of corporate income tax rates applicable to our profits, which can affect our worldwide effective tax rate and adversely impact our net income.

Hazardous substances are used in the production and operation of our systems and failure to comply with applicable regulations or failure to implement appropriate practices for the environment, health and safety could subject us to significant liabilities

Hazardous substances are used in the production and operation of our products and systems, which subjects us to a variety of governmental regulations relating to environmental protection and employee and product health and safety, including the transport, use, storage, discharge, handling, emission, generation, and disposal of toxic or other hazardous substances. In addition, operating our systems (which use lasers and other potentially hazardous systems) can be dangerous and can result in injury. The failure to comply with current or future regulations could result in substantial fines being imposed on us or other adverse consequences. Additionally, our products have become increasingly complex. The increasing complexity requires us to invest in continued risk assessments and development of appropriate preventative and protective measures for health and safety for both our employees (in connection with the production and installation of our systems and field options and performance of our services) and our customers' employees (in connection with the operation of our systems). Our health and safety practices may not be effective in mitigating all health and safety risks. Failing to comply with applicable regulations or the failure of our implemented practices for customer and employee health and safety could subject us to significant liabilities, which could have a material adverse effect on our business, financial condition and results of operations.

In addition, we face risks related to the global transition to a lower carbon economy and / or climate change. Such risks may result in an increase in our cost of goods, including as a result of the imposition of carbon taxes or increased regulations on technology restrictions, which could have a material adverse effect on our business, financial condition and results of operations.

We may be unable to make desirable acquisitions or to integrate successfully any businesses we acquire. Our future success may depend in part on the acquisition of businesses or technologies intended to complement, enhance or expand our current business or products or that might otherwise offer us growth opportunities. Our acquisitions could fail to achieve our financial or strategic objectives, disrupt our ongoing business and adversely impact our results of operations. Furthermore, our ability to complete such transactions may be hindered by a number

of factors, including potential difficulties in obtaining government approvals.

Any acquisition that we do make could pose risks related to the integration of the new business or technology with our business and organization. We cannot be certain that we will be able to achieve the benefits we expect from a particular acquisition investment. Such transactions may also strain our managerial and operational resources, as the challenge of managing new operations may divert our management from day-to-day operations of our existing business. Furthermore, we may be unable to retain key personnel of acquired businesses or may have difficulty integrating employees, business systems, and technology. The controls, processes and procedures of acquired businesses may also not adequately ensure compliance with laws and regulations and we may fail to identify compliance issues or liabilities. Our business, financial condition and results of operations may be materially and adversely affected if we fail to coordinate our resources effectively to manage both our existing operations and any businesses we acquire.

In addition, in connection with acquisitions, anti-trust regulators have in the past and may in the future impose conditions on us, including requirements to divest assets or other conditions that could make it difficult for us to integrate the businesses that we acquire. Furthermore, as the industry is becoming more consolidated, anti-trust clearances may become harder to obtain, which could inhibit future desired acquisitions.

Moreover, our resources are limited and our decision to pursue a transaction has opportunity costs; accordingly, if we pursue a particular transaction, we may need to forgo the prospect of entering into other transactions that could help us achieve our financial or strategic objectives. Any of these risks could have a material adverse effect on our business, results of operations, financial condition, or cash flows, particularly in the case of a large acquisition or several concurrent acquisitions.

As a result of acquisitions, we have recorded, and may continue to record, a significant amount of goodwill and other intangible assets. Under current accounting guidelines, we must assess, at least annually and potentially more frequently, whether there are indicators that the value of goodwill has been impaired. Furthermore, we have recorded our indirect interest in Carl Zeiss SMT GmbH as an equity method investment and, therefore, we must assess in each reporting period whether there are triggers that cause this investment to be impaired. Any reduction or impairment of the value of our indirect investment in Carl Zeiss SMT GmbH, goodwill or other intangible assets will result in additional charges against earnings, which could materially reduce our reported results of operations in future periods.

We may not declare cash dividends and conduct share buyback programs at all or in any particular amounts in any given year

We aim to pay an annual dividend that is growing over time. Annually, the BoM, upon prior approval from the SB, submits a proposal to the AGM with respect to the amount of dividend to be declared with respect to the prior year. In addition, as part of our plan to return excess cash to shareholders, we conduct share buyback programs from time to time. The dividend proposal and amount of share buyback programs in any given year will be subject to the availability of distributable profits or retained earnings and may be affected by, among other factors, the BoM's views on our potential future liquidity requirements, including for investments in production capacity, the funding of our R&D programs and for acquisition opportunities that may arise from time to time; and by future changes in applicable income tax and corporate laws. We may also suspend buyback programs from time to time which would reduce the amount of cash we are able to return to shareholders. Accordingly, the BoM may decide to propose not to pay a dividend or pay a lower dividend and may adjust the amount of share buyback programs with respect to any particular year in the future, which could have a negative effect on our share price.

We may face share price volatility

Stock markets in general and our share price, in particular, have experienced significant price and volume volatility over recent years. The market price and trading volume of our common stock is subject and may continue to be subject to significant fluctuations due to fluctuations in prices of semi-conductor equipment as a result of economic and geopolitical conditions and due to the variability in the prevailing sentiment regarding our operations or business prospects, as well as, among other things, changing investment priorities of our shareholders. This could have a material adverse effect on our business and results of operations and may frustrate our investors' ability to value their investments in us.

Restrictions on shareholder rights may dilute voting power

Our Articles of Association provide that we are subject to the provisions of Dutch law applicable to large corporations, called "structuurregime". These provisions have the effect of concentrating control over certain corporate decisions and transactions in the hands of our SB. As a result, holders of ordinary shares may have more difficulty in protecting their interests in the face of actions by members of our SB than if we were incorporated in the US or another jurisdiction.

Our authorized share capital also includes a class of cumulative preference shares and we have granted Stichting Preferente Aandelen ASML, a Dutch foundation, an option to acquire, at their nominal value of EUR 0.09 per share, such cumulative preference shares. Exercise of the Preference Share Option would effectively dilute the voting power of our outstanding ordinary shares by one-half, which may discourage or significantly impede a third party from acquiring a majority of our voting shares.

See Corporate Governance - Board of Management and Supervisory Board, and Consolidated Financial Statements - Notes to the Consolidated Financial Statements - Note 28 Shareholders' equity.

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Materiality Assessment

Dialogue and knowledge-sharing are important in an innovation-driven industry. To this end, we continually and openly communicate with our main stakeholder groups through various channels, see Non-Financial Statements - Stakeholder Engagement, and at different levels within our organization. We also analyze global trends, risks and opportunities. Our materiality analysis uses this input to identify the issues that matter most to our stakeholders and to our business. This, in turn, contributes to our vision, mission and strategy.

Our stakeholders are parties affected by our activities or those who have a direct interest in or who can influence our long-term business success. We have identified 5 main stakeholder groups: customers, shareholders, employees, suppliers and society.

We performed a comprehensive new materiality assessment in 2016, considering the GRI principles for defining report content. Through this, we were able to reassess the topics that are most important to our stakeholders and to sustain ASML's long-term business growth. We based our materiality analysis on stakeholder feedback, a review of the industry and relevant global trends, legislation, guidelines and standards (such as the GRI principles and ISO 26000), a sector and media analysis, and analysts' questionnaires (such as the Dow Jones Sustainability Index assessment and the Carbon Disclosure Project). This led to a list of relevant topics. To assess the impact of each of these topics on ASML and our stakeholders, we discussed them with the most relevant internal stakeholders and surveyed representatives from all five stakeholder groups. The assessment results were validated and approved by our Corporate Risk Committee. Our 2018 Integrated Report is based on the aforementioned assessment.

Material themes	Section in this report
Innovation	Products & Technology
Sustainable relationship with customers	Partners
Operational excellence	Operations
Sustainable relationship with our people	People
Talent management	People
Sustainable relationship with suppliers	Partners
Financial performance	Financial Performance & Consolidated Financial Statements
Employee safety	Operations
Knowledge management	Products & Technology
Business risk & continuity	Business Risk & Continuity
Business ethics & compliance	Business Ethics & Compliance

Responsible business behavior themes

Responsible business behavior themes	Section in this report
Product safety & compliance	Products & Technology
Financing & capital return policy	Other Appendices
Product stewardship	Products & Technology
Fair remuneration	People
Tax strategy & transparency	Other Appendices
Human rights	People
Environmental efficiency own operations	Operations
Responsible supply chain	Partners
Community involvement	People
Labor relations	People
Diversity & inclusion	People

We identified 11 material themes that are most relevant to our stakeholders and directly contribute to our potential to innovate and excel. We also identified other issues that could affect our business. These include issues our stakeholders expect us to act on or issues that we have an impact on and therefore, as a company with a strong sense

of corporate social responsibility, feel we need to address. These issues have been categorized under the ‘Responsible business behavior themes’. Each theme is the responsibility of one of our senior managers (referred to as the ‘theme owner’). The theme owner monitors progress for this theme in relation to agreed targets and ensures there are sufficient resources to meet the agreed targets and objectives. Insufficient progress is discussed during operational performance review meetings and escalated to our Corporate Risk Committee or during other relevant committee meetings where necessary.

During 2018 we started our review of our material themes as input, among others, for our new Corporate Responsibility Strategy as of 2019 onwards. See also Management Board Report - Business Strategy - Our strategy. We will finalize and implement the new Corporate Responsibility Strategy in our 2019 Integrated Report.

Sustainable Development Goals

We also support the 2030 ambition defined in the United Nations Sustainable Development Goals adopted by the United Nations in 2015. These goals aim to protect the planet and improve the lives of people everywhere. We have mapped out how our strategy and current efforts actively support these goals and the table below outlines the five most relevant United Nations Sustainable Development Goals to which we contribute.

Relevant United Nations Sustainable Development Goal	ASML Theme	Contribution to the United Nations Sustainable Development Goal	Section in this report
Ensure inclusive and quality education for all and promote lifelong learning	Talent management	•	• People
	Community involvement	• People development & training • Technology promotion program & ASML Foundation • Technical training	• People
	Knowledge management	•	• Products & Technology
Promote inclusive and sustainable economic growth, employment and decent work for all	Sustainable relationship with suppliers	•	• Partners
	Responsible supply chain	• Co-development with business critical suppliers • Responsible Business Alliance (formerly Electronic Industry Citizenship Coalition) membership • Place to Work, Meet, Learn and Share	• Partners • People
	Sustainable relationship with our people	• Employment creation	• Highlights
Build resilient infrastructure, promote sustainable industrialization and foster innovation	Innovation	•	• Products & Technology
	Knowledge management	• ASML's 'open innovation' concept • Knowledge creation and sharing • Strengthening local knowledge infrastructure	• How We Create Value • People
Ensure sustainable consumption and production patterns	Product stewardship	•	• Products & Technology
	Environmental efficiency own operations	• Circular economy approach • Waste savings	• Operations
Take urgent action to combat climate change and its impacts	Product stewardship	• Energy efficiency products	• Products & Technology

- Environmental efficiency own operations
- Renewable electricity
- Operations

We identified our new sustainability priorities for the period 2019-2025. We will further align our strategy with the SDG goals, and select the areas where we believe we can have the most impact. This report focuses on the material themes which we disclose in a comprehensive manner. However, we also want to meet our stakeholders' expectations. For our responsible business behavior themes, we therefore seek to address the elements that especially interest them. This results in themes being addressed in different detail.

Business Ethics and Compliance

It is crucial in an international company like ours to provide clear guidance on ethical behavior. We not only do business in a variety of countries and need to adhere to local laws and regulations, but we also have employees from over 120 countries and a range of cultures. To this end, we have our Code of Conduct, Business Principles and our Ethics Program. We encourage our management to set the right example and create an environment in which our people and business partners feel comfortable to speak up if they experience or suspect a breach of our Code of Conduct and Business Principles. As a member of the Responsible Business Alliance, we adhere to this industry organization's code of conduct and integrate its norms and values into the way we work. We are committed to achieving our strategic goals while conducting business in such a way that is lawful, ethical and sound.

ASML's Ethics Board, chaired by our CEO, oversees and implements our Ethics Program. The corporate Ethics Office, led by our Corporate Ethics Officer, is responsible for implementing and monitoring this Ethics Program. The program consists not only of providing computer-based training on ethics, but also enrolls global classroom trainings throughout the company. In addition, the Ethics Office uses other means of communication to reach out to employees, such as the Yearly Ethics Awareness Week. The Ethics Office also actively promotes our company's Speak Up policy and encourages employees to report any concerns relating to misconduct or suspected misconduct. Our ethics organization includes employees who, in addition to their regular roles at ASML, act as Ethics Liaisons in all the countries we operate in. They are the trusted points of contact for each local office, offering advice and answering questions from colleagues.

Our Business Principles elaborate on our Code of Conduct and give employees greater clarity about the standards we expect them to follow and the behavior they should adopt. We update our code and principles when required to incorporate the latest legal and regulatory requirements or to reflect our internal policies. No changes were made in 2018. Our business principles are: We respect people and planet; We encourage Speak Up; We operate with integrity; We preserve our assets; We manage professionally. Our Code of Conduct and Business Principles can be found in the Governance section of our website.

Our Speak Up policy (whistleblower) and our internal Ethics Investigation Procedure outline the steps employees are encouraged to take if they experience or suspect a breach of our business ethics. These documents also reassure employees that they can report a breach without fear of repercussions. For employees or external stakeholders who feel more comfortable remaining anonymous, we have a Speak Up system available, which is run by an independent external service company. Like our Code of Conduct and Business Principles, our Speak Up policy is available on our Website.

In 2018, we registered 266 Speak Up messages made by employees. The highest number of these Speak Up messages were related to our business principle 'We respect people and planet', more specifically these concerned issues such as bullying, harassment, problems with style and language of communication and HR related topics (appraisal, demotion, compensation and benefits). Other queries related to our business principle 'We operate with integrity', mostly in the form of questions (am I allowed to accept or give away), but we also received Speak Up messages relating to employees (potentially) crossing the line of what is acceptable, as well as potential conflicts of interest. We have looked into and addressed all Speak Up messages.

The increase in Speak Up messages compared to last year is mainly due to the growth of our workforce, an increase in awareness of our policy and a growing familiarity with the procedure for raising issues due to the specific worldwide efforts of the Corporate Ethics Office.

In March, we released our Ethics Program to all HMI employees. This phased implementation entailed the onboarding of HMI managers into ASML's Ethics Program. They received our code of conduct, online as well as face-to-face training, and a dedicated website outlining relevant changes.

Based on the number of questions and Speak Up messages we received via our system, the Ethics Liaisons and internal network decided to choose conflict of interest as the theme of our global Ethics Awareness Week in September 2018. We put specific focus on gifts and entertainment, personal relationships at work, and employees who hold external positions in addition to the work they do at ASML. The aim was to raise general awareness of the topic, and then focus on three specific areas: the need to be transparent, ask questions, and make the right decisions. We provided a guidance framework, outlining what conflict of interest actually means and reiterated what to do if faced with such a situation. As part of this focus, we also released an updated version of our Gifts and Entertainment policy.

In response to employee questions related to fraud, we reviewed our anti-fraud policy and released a revised version. We introduced fraud-prevention training, which is available to all managers and employees. Some of the issues addressed include those related to expense reporting and the use of the clocking system in Veldhoven.

As in previous years, we did not incur any significant fines for breaches of ethical regulations.

Compliance focus

As regulations have expanded worldwide since the financial crisis, we have invested significantly in compliance infrastructure, and are making continued efforts to respond proactively to relevant laws and regulations, for example GDPR, in all the countries we operate in. This is particularly relevant in China, one of our biggest growth markets, which presents unique regulatory challenges with its complex business environment and governmental interests in the semiconductor industry.

We rely on the integrity and accountability of our senior management to comply with relevant laws, and our Chief Compliance Officer supports the business in implementing measures to help managers fulfill their responsibilities. Our Compliance Office, led by our Chief Compliance Officer, oversees and advises management in complying with laws, regulations and corporate policies. While compliance is strongly rooted in a legal framework, there are three distinct compliance pillars spread throughout the organization: the Compliance Office within our legal department that provides an oversight and advisory role across the company; compliance owners, who are responsible for ensuring that adequate measures are in place to be compliant, and the internal control and compliance function, which supports compliance owners with the design and implementation of adequate internal controls to become, and remain, compliant. Our Corporate Legal department owns certain key corporate-wide compliance programs, including anti-bribery and corruption, anti-trust, and insider trading. We are in the process of entrenching this compliance structure throughout the organization, and this was a key focus area in 2018.

We had two broad, company-wide compliance focus areas in 2018:

• Working to take a pre-emptive approach to compliance, as opposed to responding in a reactive manner.

• Strengthening the local capability and responsiveness in the countries we operate in. We are in the process of decentralizing certain responsibilities in compliance and creating capabilities in the regions themselves. This improves traction and allows for training and awareness and compliance enhancements to be more tailored and relevant.

Supervisory Board

Gerard J. Kleisterlee (1946, Dutch)

Member of the SB since 2015; first term expires in 2019

Chairman of the SB, Chairman of the Selection and Nomination Committee and member of the Technology Committee

1 Mr. Kleisterlee was the President and CEO of the Board of Management of Royal Philips N.V. from 2001 until 2011, after having worked at Philips from 1974 onwards.

1 Currently, Mr. Kleisterlee is the Chairman of the Board of Vodafone Group Plc. and the Senior Independent Director of Royal Dutch Shell Plc.

Antoinette (Annet) P. Aris (1958, Dutch)

Member of the SB since 2015; first term expires in 2019

Member of Technology Committee and Selection and Nomination Committee

1 Ms. Aris is Senior Affiliate of Strategy at INSEAD, France, a position she has held since 2003.

1 From 1994 to 2003 Ms. Aris was a partner at McKinsey & Company in Germany.

1 Currently, Ms. Aris is a Non-Executive Director of Thomas Cook Plc. and a member of the supervisory boards of Jungheinrich AG, ASR Nederland N.V., Randstad Holding N.V. and Coöperatieve Rabobank U.A.

Clara (Carla) M.S. Smits-Nusteling (1966, Dutch)

Member of the SB since 2013; second term expires in 2021

Chairperson of the Audit Committee

1 Ms. Smits-Nusteling was CFO and a member of the Board of Management of Royal KPN N.V. from 2009 until 2012.

1 Prior to that, Ms. Smits-Nusteling held several finance and business related positions at Royal KPN N.V. and PostNL.

1 Currently, Ms. Smits-Nusteling is a Non-Executive Director of the Board of Tele2 AB, a member of the Management Board of the Foundation Unilever N.V. Trust Office, Non-Executive Director of the Board of Directors of Nokia Corporation and lay judge of the Enterprise Court of the Amsterdam Court of Appeal.

Douglas A. Grose (1950, American)

Member of the SB since 2013, second term expires 2021

Vice Chairman of the SB, Chairman of the Technology Committee and member of the Selection and Nomination Committee

1 Mr. Grose was CEO of GlobalFoundries from 2009 until 2011.

1 Prior to that, Mr. Grose served as senior vice president of technology development, manufacturing and supply chain for Advanced Micro Devices, Inc. Mr. Grose also spent 25 years at IBM as General Manager of technology development and manufacturing for the systems and technology group.

1 Currently, Mr. Grose is a member of the Board of Directors of SBA Materials, Inc., President of Fuller Road Management Corporation and Fort Schuyler Management Corporation.

Johannes (Hans) M.C. Stork (1954, American)
Member of the SB since 2014; second term expires in 2022

Member of the Technology Committee and the Remuneration Committee

Mr. Stork is Senior Vice President and CTO of ON Semiconductor Corporation, a position he has held since 2011. Prior to that, Mr. Stork held various management positions at IBM Corporation, Hewlett Packard Company, Texas Instruments, Inc. and Applied Materials, Inc., including Senior Vice President and CTO of Texas Instruments, Inc. and Group Vice President and CTO of Applied Materials, Inc. Further, Mr. Stork was a member of the Board of Sematech.

Currently, Mr. Stork is a member of the Scientific Advisory Board of imec.

Terri L. Kelly (1961, American)
Member of the SB since 2018; first term expires in 2022

Member of the Remuneration Committee

Ms. Kelly was the President and Chief Executive Officer at W.L. Gore & Associates Inc. from 2005 until April 1, 2018, after having worked at Gore since 1983 in various (management) roles. Ms. Kelly served on the board of directors of Gore through July 2018.

Currently, Ms. Kelly serves as Trustee of The Nemours Foundation, Vice-Chair of the University of Delaware and Trustee of the Unidel Foundation. Furthermore, Ms. Kelly is a member of the Board of Directors of United Rentals, Inc.

Rolf-Dieter Schwalb (1952, German)
Member of the SB since 2015; first term expires in 2019

Chairman of the Remuneration Committee and member of the Audit Committee

Mr. Schwalb was CFO and member of the Board of Management of Royal DSM N.V. from 2006 to 2014.

Prior to that, Mr. Schwalb was CFO and member of the Executive Board of Beiersdorf AG and he held a variety of management positions in Finance, IT and Internal Audit at Beiersdorf AG and Procter & Gamble Co.

Wolfgang H. Ziebart (1950, German)
Member of the SB since 2009; third term expires in 2019

Member of the Technology Committee and the Audit Committee

Mr. Ziebart was President and CEO of Infineon Technologies A.G. from 2004 until 2008.

Prior to that, Mr. Ziebart was on the Boards of Management of car components manufacturer Continental A.G. and automobile producer BMW A.G.

Currently, Mr. Ziebart is the Chairman of the supervisory board of Nordex SE and a member of the Board of Veoneer, Inc.

Company Secretary : Mr. Robert F. Roelofs
Appointed : 2002
Deputy Company Secretary : Ms. Angela J.F.M. van de Kerkhof
Appointed : 2017

Introduction

As ASML's SB we focus on long-term and sustainable value creation. Our goal is to ensure the company pursues a strategy that secures its leading position as a supplier of holistic lithography solutions to the semiconductor industry. There is a strong alignment between the SB and the BoM on all key elements of the company strategy. Having the right people and policies in place is crucial to the successful implementation of the agreed strategy and is therefore another focus area for the SB. We uphold an appropriate system of checks and balances, provide oversight, evaluate performance and give advice where required or requested. Through good governance, we help to ensure that ASML always acts in the best interests of the company and its stakeholders. ASML is fully compliant with the Dutch Corporate Governance Code. In this Supervisory Board Report, we report on our activities in 2018.

In line with expectations, ASML had another very good year. We made progress in EUV industrialization and profitability and continued to show the strength of our DUV and Applications business. Shrink remains a key industry driver supporting innovation and providing long-term industry growth. To support this industry driver and further enable the continuation of Moore's Law well into the next decade, ASML continues to develop the next generation EUV systems, EUV High NA. This year ASML managed to sign agreements with 3 major customers, committing to 4 orders for High NA R&D systems targeting initial shipment in 2021, and 8 options for early volume systems with shipments planned from 2024. We also made further strides in the integration of HMI. All of this puts us well on track towards achieving our ambitions for 2025 as announced during the Investor Day in November of this year, subject to market conditions.

The success of ASML goes hand in hand with strong growth in people. It is a challenge to not only bring the right people into the company, but also enable them to work efficiently and make a contribution as quickly as possible. In addition to that there is also a strong focus on retention of employees to maintain a strong workforce. While ASML has many technological and organizational challenges ahead, we are confident the company is very well positioned for the future.

Activities in 2018

In 2018, ASML's SB discussed in depth the company's corporate strategy, including its implementation and translation thereof into Corporate and Business Priorities during a two-day off-site meeting in September. More specifically, ASML's strategies for EUV, DUV and Applications were extensively reviewed and also discussed throughout the year. With respect to EUV, the SB supported the BoM with advice relating to the further development and industrialization of this technology as well as the further development of its High NA program. In DUV, the SB supported the BoM in its activities to further improve competitiveness and operational excellence. With respect to Applications, the growing pattern fidelity control business as well as the continuing efforts with respect to the integration of HMI, were attention points for the SB.

This year, a specific focus area for the SB was the rapid growth of the business in size, complexity and international reach. This rapid growth comes with challenges both on an operational level, as well as on an organizational and employment level. Therefore, in 2018 special attention was paid to the way this growth and increasing complexity is managed, to the risks involved and the mitigation measures taken. The SB also extensively discussed with the BoM the organizational structure of the company, which remains an important element in supporting the further growth of the company. The same goes for development of ASML employees, leadership development and talent attraction and retention and recruitment, which was also a topic discussed regularly in the SB meetings. The SB considers it of vital importance that the company is able to employ the right people and that new employees are onboarded as quickly and effectively as possible, during which time the employees are not only made aware of internal processes and procedures, but also ASML's core values as described in its Code of Conduct. Special attention was paid to talent management and people development in general, as well as to succession planning for the Board of Management and senior management in particular.

In November, the SB paid a three day visit to China and Taiwan. As China is becoming an increasingly important market for ASML, the SB wanted to be informed firsthand about market developments, customers, risks and opportunities for the company in the short and long term. In Taiwan the SB was provided with an update on the business in general and in particular on HMI and the status of the integration.

A recurring item on the SB's agenda is a review of developments in the semiconductor market and the customer domain, financial performance and the development of ASML's share price and analyst perceptions. Other topics addressed by the SB were the annual budget and the quarterly results and accompanying press releases, as well as the outcomes of the year-end US GAAP and IFRS-EU audits. The SB reviewed the financing of ASML, including the long-term financial plan and ASML's capital return policy, and approved the BoM's dividend proposals for the financial years 2017 and 2018. The SB provided advice to the BoM in relation to the share buyback program, which was announced on January 17, 2018. The SB also reviewed ASML's annual and interim financial statements, including non-financial information, prior to publication thereof.

A considerable amount of attention was paid to a review of ASML's risk landscape as well as the measures required to mitigate such risks. Part of a significant review of our risk-management approach were the assessment and mitigation of risks resulting from the aforementioned rapid growth of ASML and related operational and organizational challenges, as well as of risks related to ASML's supply chain, as part of which the SB reviewed ASML's supplier risk-management process. In December 2018, ASML was confronted with a risk in its supply chain when a major fire destroyed a large part of the production facility of Prodrive Technologies, an important supplier of ASML. As a result of having the right processes in place, the company was able to react quickly and could start working immediately with Prodrive to mitigate the impact of the fire. Nonetheless, the risks in the supply chain will remain an important point of attention for the SB. The SB also closely followed developments in the legal proceedings between ASML and Nikon and also paid attention to the potential impact on ASML of increasing international trade tensions. Furthermore, the SB reviewed and discussed ASML's IP strategy and its operational strategy, including global footprint. Corporate responsibility strategy was another topic discussed by the SB and its Remuneration Committee, as this is a long-term qualitative target for the BoM. The SB monitored compliance with rules and regulations including the Dutch Corporate Governance Code.

The SB also extensively discussed its own composition and profile, the composition of its Committees and the composition of the BoM, as well as the remuneration of the BoM and the SB. Reference is made to the Reports of the Selection and Nomination Committee and the Remuneration Committee as included in this Supervisory Board Report.

A SB delegation held two formal meetings with the Works Council in 2018. This year the SB and the Works Council exchanged views on the rapid growth of the Company and the effects thereof on the Company as a whole and in particular on the company culture and its core values. In addition, the onboarding processes and the effectiveness thereof were discussed and evaluated. Furthermore, the meetings generally focused on the strategy and overall performance of ASML, particularly in EUV, the composition of the SB and the BoM, the Remuneration Policy for the BoM, the alignment of remuneration policies for senior management and the job grades below that level, long-term value creation, and our strategy and business-development process. Finally, the SB and the Works Council reflected on their perspectives on their future cooperation, as a new Works Council was installed on November 14, 2017. An SB delegation and the Works Council also discussed the nomination for appointment to the SB of Ms. Kelly, who was appointed per the 2018 AGM and for whose position the Works Council had an enhanced right of recommendation.

Meetings and Attendance

In 2018, the SB held eight meetings. Of these meetings, three were held at the company's headquarters in Veldhoven, one was at an off-site where the primary focus was on strategy, one was at an off-site meeting in China and Taiwan focused on the Chinese market and three were held via telephone conference. In addition to these meetings, there were several informal meetings and telephone calls among SB and/or BoM members.

The SB meetings and the SB committee meetings are held over several days, ensuring there is time for review and discussion. At each meeting, the SB members discuss among themselves the goals and outcome of the meeting, as well as topics such as the functioning and composition of the SB and the BoM. Also discussed during each meeting are the reports from the Committees of the Supervisory Board.

The SB meetings and the meetings of the four SB committees were well attended. See table below for a full overview of SB members' meeting attendance.

Most BoM members were present for the SB meetings. Besides the formal meetings, SB members were in regular contact with the BoM and its individual members.

Supervisory Board members' meeting attendance

SB member	SB Audit Committee	Remuneration Committee	Selection and Nomination Committee	Technology Committee
Annet Aris ¹	8/8 n/a	1/1	2/2	5/5
Douglas Grose	8/8 n/a	n/a	3/3	5/5
Gerard Kleisterlee ²	8/8 8/9	n/a	3/3	5/5
Pauline van der Meer Mohr ³	2/3 3/4	n/a	0/1	n/a
Hans Stork	8/8 n/a	5/5	n/a	5/5
Rolf-Dieter Schwalb	8/8 9/9	5/5	n/a	n/a
Carla Smits-Nusteling	8/8 9/9	n/a	n/a	n/a
Wolfgang Ziebart ⁴	8/8 5/5	1/1	n/a	5/5
Terri Kelly ⁵	5/5 n/a	4/4	n/a	n/a

1. As per 25 April 2018 Ms. Aris retired from the Remuneration Committee and joined the Selection and Nomination Committee.

2. Mr. Kleisterlee is not a member of the Audit Committee, but attends the Audit Committee meetings whenever possible.

3. Ms. Van der Meer Mohr retired by rotation at the 2018 AGM.

4. As per 25 April 2018 Mr. Ziebart retired from the Remuneration Committee and joined the Audit Committee.

5. Ms. Kelly was appointed at the 2018 AGM.

For further details on the structure, organization and responsibilities of the SB, see Corporate Governance - Supervisory Board.

Composition, Diversity and Independence

To ensure an appropriate and balanced composition, the SB spends considerable time discussing its (future) composition as well as its rotation schedule on an ongoing basis. The SB attaches great importance to its composition, independence and diversity in the broadest possible sense and strives to meet all the associated guidelines and requirements. In order to properly perform its tasks the SB considers it to be very important that its members are able to act critically and independently of one another, the BoM and other stakeholders. All current members of the SB are fully independent as defined by the Code, and such independence is annually assessed by the members of the SB by means of a statement addressing the relevant requirements for independence. The current composition of ASML's SB is diverse in terms of gender, nationality, knowledge, experience and background. It also meets the Dutch statutory requirements aimed at ensuring a balanced representation of men and women. The SB has formulated a diversity policy, which is included in the Profile of the Supervisory Board as published on the Website.

Per the 2018 AGM, Mr. Stork's and Ms. Van der Meer Mohr's term of appointment expired. The SB nominated Mr. Stork for reappointment because of his contribution to the SB, especially given his background and experience in various industries, including the semiconductor industry, and in various roles. At the 2018 AGM, Mr. Stork was reappointed for a second term of four years. Ms. Van der Meer Mohr had already indicated at the 2017 AGM that she would not be available for reappointment.

The SB decided to nominate Ms. T.L. (Terri) Kelly for appointment per the 2018 AGM. The decision to nominate Ms. Kelly was due to her background and experience as the CEO of an innovative, multinational business with a long-term orientation, as well as her experience in the area of organizational and leadership development. ASML's Works Council used its enhanced recommendation right for the nomination of Ms. Kelly. At the 2018 AGM, Ms. Kelly was appointed for a first term of four years.

Per the 2019 AGM, the appointment terms of Ms. Aris and Messrs. Kleisterlee, Schwalb and Ziebart will expire. All have informed the SB that they are available for reappointment. Taking into consideration their valuable contribution to the company and the Supervisory Board in particular, the SB intends to propose to the General Meeting of Shareholders to reappoint Ms. Aris and Messrs. Kleisterlee, Schwalb and Ziebart. For the intended nomination of Ms. Aris the Works Council has an enhanced recommendation right. As regards Mr. Ziebart, given that he has been a

member of the SB since 2009, the SB considers it desirable to reappoint Mr. Ziebart in particular because of his background and experience in various industries, including the semiconductor industry, and in various roles. Mr. Ziebart has proved himself to be a valuable contributor to the SB, which has benefited from his knowledge, experience and leadership capabilities.

For further information and background on the members of the SB, including details on nationality, gender and age, please see the SB members' information in Supervisory Board Report - Supervisory Board.

Evaluation

The SB greatly values the structural and ongoing evaluation process as a means of ensuring continuous improvement in our way of working. Each year, the SB, assisted by the Selection and Nomination Committee, evaluates the composition, competence and functioning of the SB and its committees, the relationship between the SB and the BoM, its committees, its individual members, the chairpersons of both the SB and the committees, as well as the composition and functioning of the BoM and its individual members, and the education and training needs for the SB and BoM members. The SB and its Committees conducted its annual self-assessment at the end of 2018. The self-evaluation was carried out in cooperation with an external party and using a web-based survey. Also, one-on-one meetings were held between the SB Chairman and the individual members. The results of the self-evaluation were discussed at the start of 2019 by the full SB as well as in the committees. This led to the conclusion that the SB and its committees continue to function well. Several suggestions were made to further improve the functioning of the SB, including recommendations to optimize the balance between the discussion of recurring items and deep dives into certain topics by the SB.

The BoM also conducted a self-evaluation in 2018, focusing on the functioning of the BoM collectively as well as on the functioning of the individual BoM members. This self-evaluation was performed with the assistance of an external adviser, who conducted interviews with each of the BoM members. Furthermore, the BoM discussed its functioning in a meeting especially set up for this purpose. The conclusion of the self-evaluation was that ASML has a well-functioning BoM; some suggestions were made in relation to strengthening the individual feedback loops. These recommendations will be implemented in 2019.

Supervisory Board Committees

For information on the roles and responsibilities of the SB committees, see Corporate Governance - Supervisory Board - Composition and role of the four committees of the Supervisory Board.

Audit Committee

The current members of the Audit Committee are Ms. Smits-Nusteling (Chairperson), Messrs. Schwalb and Ziebart. Mr. Kleisterlee attends the Audit Committee meetings whenever possible. The members of the Audit Committee are all independent members of the SB. The SB has determined that both Ms. Smits-Nusteling and Mr. Schwalb qualify as an Audit Committee financial expert pursuant to Section 407 of the Sarbanes-Oxley Act and the rules promulgated thereunder as well as pursuant to Dutch statutory rules, taking into consideration their extensive financial backgrounds and experience.

The Audit Committee held nine meetings in 2018.

The Audit Committee's focus in 2018 was, among other things, overseeing the integrity and quality of our financial reporting and the effectiveness of the internal risk management and internal control systems. The Audit Committee reviewed the Company's annual and interim financial statements, including non-financial information, the quarterly results and the accompanying press releases as well as the outcomes of the year-end US GAAP and IFRS-EU audits. The operational short and long-term performance was also discussed extensively, with a focus on various performance scenarios and their impact on ASML's results, cash generation, and financing and capital return policies. The Audit Committee also performed accounting deep dives focused on revenue recognition disclosures and balance sheet treatment, a deep dive on the internal controls framework and a review of the balance sheet.

The Audit Committee extensively discussed the effectiveness of the internal control framework in accordance with the US Sarbanes-Oxley Act. This included monitoring the scoping, framework updates, control execution and control assessments. The Audit Committee discussed management's assessment of the results from the test of design and test of effectiveness of internal controls over financial reporting.

Furthermore, the Audit Committee reviewed and approved the audit plans of the internal and external auditors, including scoping, materiality levels and the fees of the external auditor. The Audit Committee monitored the progress of the internal and external audit activities including review of observations identified as a result of the internal audit activities over the quarter, quarterly procedures performed by the external auditor, and the audit performed at year-end by the external auditor. The Audit Committee oversaw the follow-up by the BoM on the recommendations made in the internal and external management letters. The Audit Committee also evaluated the performance of the external auditor at the end of 2018, including a review of their independence.

The Audit Committee closely monitored risk management and the risk-management process, including the timely follow-up of high-priority actions based on quarterly progress updates. The Audit Committee also discussed compliance, for instance in relation to the implementation of GDPR, as well as the compliance function at ASML. The Audit Committee reviewed and provided the SB with advice regarding the financing of ASML, including the long-term financial plan and ASML's capital return policy, the dividend proposal in respect of the 2018 financial year and the implementation of the 2018-2019 share buyback program. The Audit Committee (and the SB) fully supports ASML's principles regarding its current and future financing and capital return policies, which helps ASML to respond to the cyclical nature of the semiconductor equipment industry.

Other recurring agenda items in 2018 related to ASML's tax policy and planning and ASML's management of the IT landscape and the containment of any risks identified in that respect, as well as the IT security risks, roadmap and related activities. Also, the

Audit Committee regularly discussed the so-called Future Mode of Operations project aimed at re-engineering ASML's business processes given the increased size and complexity of ASML.

After each in-person meeting, the Audit Committee held one-to-one meetings with the CFO, and with the external and internal auditors. The external auditor and the internal auditor attended all Audit Committee meetings.

With respect to the external auditor's communication over the 2018 financial year, the Audit Committee confirms that the communication contained no significant items that need to be mentioned in this report.

Remuneration Committee

The current members of the Remuneration Committee are Mr. Schwalb (Chairman), Ms. Kelly and Mr. Stork, each of whom is an independent, non-executive member of our SB in accordance with the NASDAQ Listing Rules. Mr. Schwalb is neither a former member of our BoM, nor a member of the management board of another company. Currently, no member of the Remuneration Committee is a member of the management board of another Dutch listed company.

In 2018, the Remuneration Committee held five meetings.

In 2018 the Remuneration Committee reviewed the group of companies used for reference for BoM remuneration and used this information to set a benchmark and perform scenario analyses. Where applicable, this was debated and used to make recommendations to the SB concerning the total remuneration package of the BoM and the variable remuneration consisting of an STI in cash and an LTI in shares as well as the assessment of the shareholding positions of the BoM based upon the share ownership guideline of the Remuneration Policy. Furthermore, the Remuneration Committee recommended to the SB to update the Remuneration Policy for the BoM; the SB intends to submit a proposal for an updated Remuneration Policy for adoption by the General Meeting of Shareholders during the 2019 AGM. The Remuneration Committee also reviewed the Remuneration Report as part of the SB Report and Other Appendices - Appendix - Board of Management and Supervisory Board Remuneration, which details the remuneration of members of the SB and the BoM.

Working with the Audit Committee and the Technology Committee, the Remuneration Committee reviewed the STI and LTI targets for the BoM and proposed 2018 targets to the SB. It also provided recommendations to the SB regarding the achievement of the 2017 targets and related compensation levels for the BoM members in 2018.

The Remuneration Committee also performed a reference group review and benchmark for the SB remuneration together with an external adviser. This review and benchmark resulted in a recommendation by the Remuneration Committee to the SB to adjust the remuneration of the SB. The SB intends to submit this proposed adjustment to the General Meeting of Shareholders at the 2019 AGM.

The external auditor performs certain agreed-upon procedures with respect to the execution of the Remuneration Policy.

For further details, see Supervisory Board Report - Remuneration Report.

Selection and Nomination Committee

The current members of the Selection and Nomination Committee are Mr. Kleisterlee (Chairman), Mr. Grose and Ms. Aris, each of whom is an independent, non-executive member of our SB in accordance with the NASDAQ Listing Rules.

The Selection and Nomination Committee held four meetings in 2018.

In 2018 there were several changes in composition of the BoM, the SB and the SB Committees, which were discussed at length by the Selection and Nomination Committee as well as by the full SB. At the 2018 AGM Mr. Dassen and Mr. Fouquet were appointed as members of the BoM. Mr. Dassen succeeded Mr. Nickl as Executive Vice President and CFO of the company and Mr. Fouquet was added to the BoM, as a result of which the BoM expanded from five to six members. In addition, certain changes were made to the division of tasks within the BoM, with Mr. Fouquet becoming responsible for ASML's EUV business and Mr. Van Hout assuming the role of Chief Strategy Officer and head of Strategic Supplier Relations. In addition, Messrs Wennink, Van den Brink and Schneider-Maunoury were reappointed effective as of the 2018 AGM. The SB acknowledges that the BoM is not considered to be balanced within the meaning of Dutch law, as it does not consist of at least 30% women. The SB recognizes the importance of diversity and the benefits it brings to the company. When searching for suitable candidates for the BoM, candidates are considered on merit against objective criteria and the specific profile for the job, while having due regard for the relevant aspects of diversity, in particular gender diversity. In the search for a new CFO, which took place in 2017 and 2018, diversity aspects, especially gender, were included in the profile for this position. As a result, several female candidates were included on both the long list and the short list. After following due process to determine which candidate would be the best fit for ASML, the SB unanimously selected Mr. Dassen. The company does have the ambition to meet the requirements of balanced gender representation as applicable for Dutch companies. The company has a specific program to improve gender diversity, getting women more interested in science, engineering and technology and to grow them into (senior) management positions. With respect to the SB, Ms. Kelly was appointed as a member based on the enhanced recommendation right of the Works Council, and Mr. Stork was reappointed for a second term. The Selection and Nomination Committee also discussed the intended nomination for reappointment of Messrs. Kleisterlee, Schwalb, Ziebart and Ms. Aris, whose terms will expire per the 2019 AGM. Furthermore, the Selection and Nomination Committee also discussed the composition of the BoM and the SB in the longer term. As part of that discussion, the Selection and Nomination Committee paid special attention to the current and desired profile of the SB, the competences represented in the SB as well as the rotation schedule to prevent too many simultaneous rotations of SB members. Other topics of discussion in 2018 were the functioning of the individual members of the SB and the BoM, the outcome of the SB's self-evaluation in 2017 and the 2018 self-evaluation process. For further details on the self-evaluation, see Supervisory Board Report - Evaluation. The Selection and Nomination Committee also spent ample time discussing management development and succession planning of the BoM and senior management.

As part of its responsibility to monitor corporate governance developments, the Selection and Nomination Committee paid attention to, among other things, the status of the implementation by the Dutch legislator of the revised EU Shareholder Rights Directive, which implementation is scheduled to take place in the course of 2019.

Technology Committee

The current members of the Technology Committee are Mr. Grose (Chairman), Ms. Aris, Mr. Kleisterlee, Mr. Stork, and Mr. Ziebart.

The Technology Committee held five scheduled meetings in 2018.

In 2018 the Technology Committee focused on the execution and implementation of technology programs in EUV (including High NA), DUV and Applications. The Technology Committee also discussed the technology targets and the achievements related thereto, and provided the Remuneration Committee and the SB with advice in this area. With respect to EUV, special attention was paid to further improving the operational performance of the EUV systems. In DUV, the Technology Committee focused on cost reduction and maintaining our competitive market position. For Applications, the integration of HMI was the primary point of attention.

To further increase its knowledge and understanding of technological developments relevant to ASML, the Technology Committee invited external speakers on specific technological areas relevant for ASML.

Remuneration of the Supervisory Board

For information on the remuneration of the SB, please see Corporate Governance - Supervisory Board - Remuneration of the Supervisory Board.

A Word of Thanks to ASML Employees

The Supervisory Board would like to extend a word of gratitude to all ASML employees, either working on a fixed or temporary basis. In a dynamic and demanding environment, the success of ASML depends on being able to deliver

our cutting-edge technology to the customer. With your hard work and constant focus, you've contributed greatly to another successful year for ASML.

The Supervisory Board,
Gerard Kleisterlee, Chairman
Douglas Grose, Vice Chairman
Annet Aris
Terri Kelly
Carla Smits-Nusteling
Rolf-Dieter Schwalb
Hans Stork
Wolfgang Ziebart
Veldhoven, February 5, 2019

Remuneration Report

The SB, on recommendation of the Remuneration Committee, determines the remuneration of the members of the BoM. The Remuneration Policy was adopted by the AGM on April 26, 2017 and applies as from January 1, 2017 onwards.

In this Remuneration Report, an overview is provided of the Remuneration Policy for the BoM and the application thereof in 2018. For details regarding the remuneration of the BoM in 2018, see Other Appendices - Appendix - Board of Management and Supervisory Board Remuneration.

Remuneration policy

The Remuneration Policy supports the long-term development of the company in a highly dynamic environment, while aiming to fulfill all stakeholders' requirements and keeping an acceptable risk profile. More than ever, the challenge for us is to drive technology, to serve our customers and to satisfy our stakeholders. These drivers are the backbone of the Remuneration Policy. The SB ensures that the policy and its implementation are linked to the company's objectives.

The objective of the Remuneration Policy is to enable ASML to attract, motivate and retain qualified industry professionals for the BoM in order to define and achieve our strategic goals. The policy acknowledges the internal and external context as well as our business needs and long-term strategy. The policy is designed to encourage behavior that is focused on long-term value creation, while adopting the highest standards of good corporate governance. The policy is aimed at motivating for outstanding achievements, using a combination of non-financial and financial performance measures. Technology leadership and customer value creation are the key drivers of sustainable returns to our shareholders.

The policy is built on the following principles:

- Transparent - The policy and its execution are clear and practical;
- Aligned - The Remuneration Policy is aligned with the policy for ASML senior management and other ASML employees;
- Long-term oriented - The incentives focus on long-term value creation;
- Compliant - ASML adopts the highest standards of good corporate governance; and
- Simple - The policy and its execution are as simple as possible and easily understandable to all stakeholders.

Reference group and market positioning

We offer a remuneration package that is competitive as compared to a relevant labor market. To define this market, a reference group is created, consisting of companies that are comparable to us in terms of size and complexity, data transparency and geographical area. For as long as ASML is positioned around the median of the group of companies with respect to size (measured by enterprise value, revenue and number of employees), the median market level may serve as a reference in determining the level of pay for the BoM.

The reference group consists of the following companies:

Reference group composition

AkzoNobel	Leonardo-Finmeccanica
Alstom	Linde
Continental	Nokia
Covestro	Philips
DSM	Schindler
Essilor	Shire
Evonik	Smith & Nephew
Gemalto	Solvay
Givaudan	UCB
Infineon Technologies	Yara International
Legrand	

In principle, a benchmark assessment is conducted every 2 years. In the year without a market assessment, the SB considers the appropriateness of any change of base salary on the market environment as well as the salary

adjustments for other ASML employees. To ensure an appropriate composition of the relevant labor market, the SB reviews the composition of the reference group in conjunction with the frequency of the benchmark. Substantial changes applied to the composition of the reference group will be proposed to the shareholders.

Total direct compensation

The remuneration levels are determined using the total direct compensation. Total direct compensation consists of base salary, an STI and an LTI. Each component and corresponding performance measures are described in this section.

Other remuneration elements are pension and expense reimbursements. The latter may include company car costs, travel expenses, representation allowances, housing costs (gross amount before taxes), social-security costs, and health and disability insurance costs.

The financial measures are chosen from the below list. The SB may still deviate from this list when necessary, given any specific challenges in a given year, but will as much as possible choose measures from the pre-defined list. The actual financial performance criteria selected for the financial years 2018 and 2019 are set out in Other Appendices - Appendix - Board of Management and Supervisory Board Remuneration.

Measure	Description
Sales	Total net sales as included in the US GAAP Consolidated Financial Statements
Gross Margin	Gross Profit as a percentage of total net sales
R&D opex	R&D costs as included in the US GAAP Consolidated Financial Statements
SG&A opex	SG&A costs as included in the US GAAP Consolidated Financial Statements
EBITDA Margin %	Income from operations (plus depreciation and amortization) as percentage of total net sales
EBIT Margin %	Income from operations as percentage of total net sales
Net Margin %	Net income as a percentage of total net sales
Free Cash Flow	Cash flow from operations minus purchases of property, plant and equipment and intangible fixed assets
Cash Conversion Cycle ¹	Days Inventory Outstanding + Days Sales Outstanding -/- Days Payable Outstanding
Capital Expenditures	Investment in property, plant and equipment

The SB could also decide to focus on certain elements of Cash Conversion Cycle in any year, i.e. Days Inventory Outstanding, Days Sales Outstanding and / or Days Payable Outstanding, instead of Cash Conversion Cycle only. Days Inventory Outstanding = Average (last 4 quarters) annual inventory divided by last 4 quarters cost of sales. Days Sales Outstanding = Average (last 4 quarters) accounts receivable divided by last 4 quarters total net sales. Days Payable Outstanding = Average (last 4 quarters) accounts payable divided by last 4 quarters cost of sales. The performance measures form a balanced mix of financial (60 percent) and other business measures (40 percent). For each of the performance criteria the SB sets challenging, but realistic target levels. The target-setting and performance review occur on an annual basis, except for circumstances where the SB considers semi-annual target-setting more appropriate. All performance measures are set in advance and will not change during the performance period.

The pay-out levels are prorated upon the level of achievement of the aforementioned performance criteria. Below threshold performance, there is no pay-out. Meeting threshold performance will result in a pay-out of 50 percent of target pay-out. In case of excellent performance, the maximum pay-out is capped at 150 percent of the target pay-out. The STI is paid on an annual basis.

Long-term incentive

The LTI refers to the share-based incentive. All members of the BoM are eligible to receive performance-related shares. The target level of the LTI is set at 100 percent of base salary for the Presidents and 85 percent for the other members of the BoM. In case of excellent performance the maximum opportunity amounts to 200 percent of target. The performance shares are conditionally granted on an annual basis to the members of the BoM. The shares will become unconditional depending on the achievement of predetermined performance targets during a three-year period. Each performance cycle starts on the first day of the year of grant. The number of performance shares to be conditionally awarded is calculated at the beginning of this period using the volume-weighted average share price during the last quarter of the year preceding the conditional award.

Performance measures

Three types of performance measures relate to the LTI:

- ASML's total shareholder return compared to a reference index.

- ASML's ROAIC compared to a pre-defined target to be set by the SB prior to the performance period.

- Long-term strategic qualitative targets to ensure ASML's ability to keep performing at high standards. Depending on the strategic requirements the definition and relative weight may change upon the discretion of the SB:

- Technology Leadership Index

- Sustainability

The definition of the total shareholder return target and calculation is as follows:

ASML's relative change in share price, plus dividends paid over the relevant performance period. The total shareholder return is calculated as the difference between (i) the average (closing) share price during the last quarter of the performance period and (ii) the average (closing) share price during the quarter preceding the performance period; in the calculation, dividends are reinvested at the ex-dividend date. The total shareholder return of ASML (calculated with the ASML New York share) is compared to the PHLX Semiconductor Sector Index. This NASDAQ index is designed to track the performance of a set of companies engaged in the design, distribution, manufacture, and sale of semiconductors. There are two versions of this index, a price return index and a total return index, the latter of which is chosen (NASDAQ: X.SOX), since this index reinvests cash dividends, equivalent to the total shareholder return definition described above).

The definition of the ROAIC target and calculation is as follows:

ASML's rate of return on capital it has put to work, regardless of the capital structure of the company. It is used as a fundamental metric to measure value creation of the company. The ROAIC is calculated by dividing the Net Operating Profit After Tax by the Average Invested Capital.

The aforementioned performance measures receive the following weights:

LTI performance measures	Weight
ROAIC	40%
Total shareholder return	30%
Technology Leadership Index	20%
Sustainability	10%
Total	100%

Performance incentive zone

The vesting of performance shares depends on the relative total shareholder return as compared to the aforementioned index, the ROAIC performance as compared to the pre-defined target and the evaluation of the qualitative targets by the SB. The vesting will be calculated at the end of the three-year performance period for all performance measures, based on a predefined pay-out matrix.

Performance ASML vs PHLX Index

(total shareholder return ASML -/- total shareholder return X.SOX)

Pay-out as a % of target

≥ 20%	200%
Between 0% and 20%	Linear between 100% and 200%
Between -20% and 0%	Linear between 50% and 100%
< -20%	0%

For ROAIC, the Technology Leadership Index and Sustainability targets, the same principle of threshold, target and maximum levels applies as for the STI, with the maximum pay-out equal to 200 percent of target. The SB, in cooperation with the relevant subcommittees (Technology Committee, Audit Committee and Remuneration Committee) will assess the performance achieved against ROAIC and the qualitative targets. Both the STI and LTI make use of the Technology Leadership Index as a qualitative performance measure. The objective is equal, but the applicable measures, targets and performance periods are different and aligned with specific short- and long-term strategic priorities.

Grant date

Performance shares will be granted two days after the publication of ASML's annual results in January of the year in which the three-year performance period starts.

Holding period

The minimum holding period is two years after the vesting date. Upon termination of the employment contracts / management services contracts the transfer restrictions will remain in place during the holding period except in case of decease.

In case a tax payment is due by the members of the BoM over the retrieved variable income, performance shares may be partially sold at vesting ('sell to cover') in accordance with the law and internal regulations.

Share ownership guidelines

Members of the BoM are required to hold at least the value of two times base salary in the form of shares; for the two Presidents this is three times base salary. This ensures an alignment of the interests of members of the BoM with long-term value creation throughout their employment with / services for the Company. The Remuneration Committee of the SB will (i) after each financial year, determine the value of ASML shares then held by the individual members of the BoM, based on the shareholding data of the members of the BoM (to be) published in the Integrated Report over that year, (ii) include vested ASML shares that are still in the holding period when determining the value of the ASML shares held by the individual members of the BoM, (iii) not define penalties upfront should the value of ASML

shares held by a member of the BoM be lower than agreed, but determine potential penalties by using its discretionary judgment, thereby taking into consideration all relevant circumstances, and (iv) allow new members of the BoM time to meet the share ownership requirements (three years, depending on the actual situation).

Other remuneration

Benefits

The pension arrangement for the BoM is based on the 'excedent' (supplementary) arrangement for our employees in the Netherlands. The plan is a defined contribution opportunity as defined in Dutch fiscal regulations. The total defined contribution is a percentage of the pensionable salary and depends on the participants' age at the beginning of the year. The total net contribution is according to the maximum level as allowed by Dutch fiscal legislation, of which the participant contributes 3.9 percent of his pension base.

Dependents pension and disability pension are insured on a risk basis, the premium of which is paid by ASML. As a guiding principle, the value of the pension arrangement is set at the median of executive pensions in the Netherlands using a general industry sample of companies.

Severance payment

All employment agreements, respectively management services agreements, with members of the BoM contain specific provisions regarding benefits upon termination of those agreements. If the Company gives notice of termination of the agreement for reasons which are not exclusively or mainly found in acts or omissions on the side of the BoM member, a severance amount equal to one year base salary will be made available upon the effective date of termination.

This severance payment will also be made available in case of a termination of the agreement of a BoM member with mutual consent between such BoM member and the Company.

Change of control over the company

BoM members are also entitled to the aforementioned severance payment in the event ASML or its legal successor gives notice of termination due to a change of control or if the BoM gives notice of termination, which is directly related to such change of control and such notice is given within twelve months from the date on which the change of control occurs. For further information, see Corporate Governance - Other Information on Governance - Severance payments under agreements with members of Board of Management

The change of control provision includes a mitigation of the pay-out under the LTI. This entails that the share price will be fixed on the average of i) the average closing share price over a period of 15 trading days prior to the first public announcement of change in control negotiations and ii) the average share price over a period of 30 trading days prior to the closing of the transaction.

Loans

ASML does not grant any loans or guarantees to any of the members of the BoM.

Other information

Additional information on BoM remuneration in 2018 is included in Other Appendices - Appendix - Board of Management and Supervisory Board Remuneration.

General

ASML Holding N.V. is a public limited liability company operating under Dutch law and has a two-tier board structure with a board of management responsible for managing the company under supervision of an independent supervisory board. ASML's shares are listed on Euronext Amsterdam and NASDAQ. The address of our registered office is De Run 6501, 5504 DR Veldhoven, the Netherlands (Tel.: +31 40 268 3000).

We endorse the importance of good corporate governance, of which independence, accountability and transparency are the most significant elements. These are also the elements on which a relationship of trust between us and all our stakeholders (employees, customers, suppliers, shareholders and the public) can be built.

We continuously monitor and assess applicable Dutch, US and other relevant corporate governance codes, rules, and regulations. ASML is subject to the Dutch Corporate Governance Code, and because we are listed on NASDAQ, we are also required to comply with the Sarbanes-Oxley Act, as well as NASDAQ Listing Rules, and the rules and regulations promulgated by the SEC.

Our SB and BoM will continue their efforts to ensure that our practices and procedures comply with the applicable rules and regulations, including the Code. This section of the report addresses our corporate governance structure, part of which refers to the principles and best practices set forth in the Code, as well as applicable laws on corporate governance. Our SB and BoM are of the opinion that we comply with all recommendations in the Code.

Board of Management

Role and procedure

ASML's BoM is responsible for managing ASML, under the chairmanship of the President and CEO, and the vice chairmanship of the President and CTO, which together constitutes a dual leadership. The current BoM comprises 6 members.

Although the various management tasks are divided among the members of the BoM, the BoM remains collectively responsible for the management of ASML, establishing a position on the relevance of long-term value creation for ASML and its business, the deployment of ASML's strategy, ASML's risk profile and policies, the achievement of ASML's objectives, ASML's results and the corporate social responsibility aspects relevant to ASML.

In fulfilling its management tasks and responsibilities, the BoM considers the interests of ASML and the business connected with it, as well as the interests of ASML's stakeholders. The BoM is accountable to the SB and the General Meeting of Shareholders for the performance of its management tasks.

The SB supervises and advises the BoM in the execution of its tasks and responsibilities, while the BoM provides the SB with all the information, in writing or otherwise, necessary for the SB to fulfill its duties. Besides the information provided in the regular meetings, the BoM provides the SB with regular updates on developments relating to our business, financials, operations, and industry developments in general.

Important decisions of the BoM that require the approval of the SB are, among others:

- ASML's operational and financial objectives.
- The strategy designed to achieve the objectives.
- The parameters to be applied in relation to the strategy designed to achieve the objectives.
- Corporate responsibility issues that are relevant to ASML.

The main elements of the operational and financial objectives, the strategy to achieve the objectives, and the parameters to be applied are included in the Management Board Report. The Management Board Report - Risk Factors included in this 2018 Integrated Report outlines the sensitivity of the results to both external and internal factors and variables.

The BoM's rules of procedure include such matters as the general responsibilities of the BoM, the relationship with the SB and various stakeholders, the decision-making process within the BoM, and the logistics surrounding the meetings. The BoM's rules of procedure are published in the Governance section on our Website.

Appointment, other functions

Members of the BoM are appointed by the SB upon recommendation by the Selection and Nomination Committee and upon notification to the General Meeting of Shareholders. Members of the BoM are appointed for a period of four years, after which reappointment is possible.

The SB may suspend and dismiss members of the BoM, but this can only be done after consulting the General Meeting of Shareholders.

Pursuant to Dutch legislation a member of the BoM may not be a supervisory board member in more than two other large companies (within the meaning of Dutch Corporate Law). A member of the BoM may never be the chairman of a supervisory board of a large company. BoM members may only accept a supervisory board membership of another large company after having obtained prior approval from the SB. Members of the BoM are also required to notify the SB of other important functions held or to be held by them. Currently, no members of our BoM hold more than two supervisory board seats in other large companies and no member of the BoM is a chairman of a supervisory board of a large company.

Dutch legislation provides for statutory provisions to ensure a balanced representation of men and women on the management boards and supervisory boards of companies governed by this legislation. Balanced representation of men and women is deemed to exist if at least 30 percent of the seats are filled by men and at least 30 percent are filled by women. Within the meaning of this legislation, our SB currently qualifies as balanced, but no seats are taken by women on the BoM. As such the BoM would not qualify as balanced. We have the ambition to meet the statutory requirements for ensuring a balanced gender representation. In a technology environment such as the environment ASML operates in this has proven to be challenging. For that reason and in order to increase gender diversity in the BoM, we have a specific program in place to improve gender diversity, aimed at getting women more interested in science, engineering and technology. In this way, we try to increase the number of women throughout ASML and by doing so increase our future talent pool so that more women will be available in the future for technical positions and (senior) management positions. Given the specific nature of our industry, this is a long-term process. Female participation in our total workforce has improved. Our percentage of female employees increased from 11 percent in 2010 to 16 percent in 2018. For more information on our diversity and inclusion initiatives and performance data, see Management Board Report - People - Promoting diversity and inclusion and Non-Financial Statements - Non-financial Indicators - People.

ASML Reports

ASML publishes, among others, the following annual reports regarding the financial year 2018: the Integrated Report comprising the Management Board Report and the Financial Statements in accordance with Part 9 of Book 2 of the Dutch Civil Code and IFRS-EU, as well as the SB Report in accordance with the Code; and the Integrated Report on Form 20-F in conformity with US GAAP. Both reports have the same qualitative base and describe the same risk factors that are specific to the semiconductor industry, ASML and ASML's shares. We also provide sensitivity analyses by providing:

- A narrative explanation of ASML's financial statements.
- The context within which financial information should be analyzed.
- Information about the quality, and variability, of our earnings and cash flow.

With respect to the process of creating the Integrated Report, we have extensive guidelines for the lay-out and the content of our report. These guidelines are primarily based on applicable laws and regulations. For Dutch statutory purposes, we follow the requirements of Dutch law and regulations, including those on the preparation of the consolidated financial statements in accordance with IFRS-EU. For the Integrated Report on Form 20-F, we apply the requirements of the Exchange Act, and prepare the financial statements included therein in accordance with US GAAP. With respect to the preparation process of these and the other financial reports, we apply internal procedures to safeguard the completeness and accuracy of such information as part of its disclosure controls and procedures. See also Management Board Report - Business Risk and Continuity where ASML's internal risk management and control systems are discussed.

Code of Conduct

Our Code of Conduct describes what ASML stands for and believes in:

- We respect people and planet.
- We operate with integrity.
 - We preserve our assets.
- We manage professionally.
 - We encourage Speak Up.

The Code of Conduct and Business Principles can be found on the Governance section of our Website.

Remuneration of the Board of Management

For detailed information see Supervisory Board Report - Remuneration Report and Other Appendices - Appendix - Board of Management and Supervisory Board Remuneration.

Indemnification

Our Articles of Association provide for the indemnification of the members of the BoM against claims that are a direct result of their tasks as members of the BoM, provided that such claim is not attributable to willful misconduct or intentional recklessness of such member of the BoM. The SB has further implemented the indemnification of the BoM members by means of separate indemnification agreements for each BoM member.

Conflicts of interest

Conflicts of interest procedures are incorporated in the BoM's rules of procedure, and reflect Dutch law and the principles and best practice provisions of the Code with respect to conflicts of interest.

There have been no transactions in 2018, nor are there currently any transactions, between ASML or any of ASML's subsidiaries, or any significant shareholder and any member of the BoM or officer or any relative or spouse thereof, other than ordinary course compensation arrangements.

Supervisory Board

Role and procedure

As mentioned before, our SB supervises the BoM and the general course of affairs of ASML and its subsidiaries. The SB also supports the BoM with its advice. As we have and intend to keep a two-tier structure, the SB is a separate and independent body from the BoM and from ASML.

In fulfilling its role and responsibilities, the SB takes into consideration the interests of ASML and its subsidiaries, as well as the relevant interests of its stakeholders. The SB supervises how the BoM determines its position on the long-term value creation strategy and how the BoM implements that strategy. The SB supervises and advises the BoM in performing its tasks, with a particular focus on:

- The achievement of ASML's objectives.
- ASML's corporate strategy and the management of risks inherent to ASML's business activities.
- The structure and operation of internal risk management and control systems.
- The financial reporting process.
- ASML's culture and the activities of the BoM in that regard.
- Compliance with applicable legislation and regulations.
- The relationship with shareholders and other stakeholders.
- The corporate social responsibility issues important for ASML.

Major management decisions, such as ASML's strategy, major investments and budget, require the SB's approval. The SB selects and appoints new BoM members, prepares the Remuneration Policy for the BoM, and decides on the remuneration for the individual members of the BoM. Also, the SB is the body that nominates new SB candidates for appointment and submits remuneration proposals for the SB members to the General Meeting of Shareholders.

The SB, through its Selection and Nomination Committee, closely follows the developments in the area of corporate governance and the applicability of the relevant corporate governance rules for ASML. For a more detailed description on the SB's activities in the area of corporate governance, see Supervisory Board Report.

Meetings and activities of the Supervisory Board

For detailed information on the meetings and activities of the SB in 2018, see Supervisory Board Report - Meetings and Attendance.

The rules of procedure

The SB's rules of procedure include requirements based on the Code, the Sarbanes-Oxley Act and on any other applicable laws, as well as corporate governance practices developed by the SB over the years. Given the continuous developments in corporate governance, these rules of procedure are subject to regular review. Items covered in these rules include the responsibilities of the SB and its committees, the composition of the SB and its committees, logistics surrounding the meetings, the meeting attendance of members of the SB, and the rotation schedule for these members.

The SB's rules of procedure also include the charters of the four committees. The SB has assigned some of its tasks and responsibilities to the four committees. That said, the plenary SB remains responsible for the fulfillment of these tasks and responsibilities. The SB and its committees may obtain information from officers and external advisers, if necessary for the execution of its tasks. The committees in particular occasionally call upon external advisers, who assist the committees with preparing the recommendations to be decided upon by the full SB.

The SB's rules of procedure, as well as the charters of the four committees, are regularly reviewed and, if needed, amended. Changes to the SB's rules of procedure need to be approved by the full SB. Changes to the charters of the committees are approved by the committee concerned. The Audit Committee charter is reviewed annually to check whether the charter still complies with the applicable rules and regulations, especially those relating to the Sarbanes-Oxley Act. The SB's rules of procedure, and those of the four committees, were revised in 2017 pursuant to the amended Code and to ensure that our practices and procedures comply with Dutch corporate governance requirements.

Expertise, composition, appointment

The SB currently consists of eight members, the minimum being three members. The SB determines the number of SB members required to perform its functions.

The members of the SB show a diverse mix with respect to background, nationality, age, gender and expertise, in line with the diversity policy as included in the current profile drawn up by the SB. The aim of this profile is to ensure that the SB has an international and fitting composition that reflects our global business activities and has a suitable level of experience in the financial, economic, technological, social, and legal aspects of international business. In the case of (re)appointments, the Selection and Nomination Committee checks whether the candidates fit the SB's profile. See also Supervisory Board Report - Composition, Diversity and Independence.

We are subject to the law applicable to large corporations ('structuurregime'). As such, members of the SB are appointed by the General Meeting of Shareholders based on binding nominations proposed by the SB. The SB informs the General Meeting of Shareholders and the Works Council about upcoming retirements by rotation at the AGM in the year preceding the actual retirement(s) by rotation. This ensures they have sufficient opportunity to recommend candidates for the upcoming vacancies. The SB has the right to reject the proposed recommendations. Furthermore, the Works Council has an enhanced right to make recommendations for one-third of the members of the SB. This enhanced recommendation right implies that the SB may only reject the Works Council's recommendations in limited circumstances: (i) if the relevant person is unsuitable or (ii) if the SB would not be duly composed if the recommended person were appointed as SB member.

The General Meeting of Shareholders may reject binding nominations of the SB by way of a resolution adopted with an absolute majority of the votes cast, representing at least one-third of ASML's outstanding share capital. If the votes cast in favor of such a resolution do not represent at least one-third of the total outstanding capital, a new shareholders' meeting can be convened, at which the nomination can be overruled by an absolute majority.

Ms. Aris and Ms. Kelly were (re)appointed as per the Works Council's enhanced recommendation right.

For newly appointed SB members, an introduction program is prepared, which is aimed at effectively familiarizing new members with all aspects of ASML. SB members are regularly given the opportunity to follow technical tutorials to maintain and increase their knowledge of our ever progressing technology. In addition, specific training is also provided for new committee members based on individual needs. Every year, the SB and / or committees members determine their need for further training on specific topics.

Members of the SB serve for a maximum term of four years from the date of their appointment or a shorter period as per the SB's rotation schedule. Members can be reappointed, provided that their entire term of office does not exceed 12 years. A member of the SB may be reappointed once for another four-year period. After that, the member may subsequently be reappointed again for a period of two years; this appointment may be extended for a final term of no more than two years. The rotation schedule is available in the Corporate Governance section on our Website.

The General Meeting of Shareholders may, by an absolute majority of the votes representing at least one-third of the total outstanding capital, withdraw its confidence in the SB. This resolution shall result in the immediate dismissal of the entire SB. In such case, the Enterprise Chamber of the Amsterdam Court of Appeal shall appoint one or more members to the SB at the request of the BoM.

Legal restrictions apply to the overall number of executive board positions (including a one-tier board) and supervisory board positions that a member of the supervisory board (or a non-executive director in the case of a one-tier board) of a large company, may hold. None of the members of the SB is in violation of these rules.

For detailed information on the members of our SB, see Supervisory Board Report - Supervisory Board.

Role of the Chairman of the Supervisory Board and the Company Secretary

Mr. Kleisterlee is the Chairman of the SB and Mr. Grose is the Vice Chairman. The role and responsibilities of the Chairman of the SB are described in its rules of procedure. The Chairman sets the agenda of the SB meetings, acts as the main point of contact between the SB and the BoM and ensures orderly and efficient proceedings at General Meetings of Shareholders. The Chairman will, among other responsibilities, also ensure that:

- ☑ The members of the SB follow an introduction and training program;
- ☑ The SB elects a vice chairman;
- ☑ The members of the SB receive all information necessary for the proper performance of their duties on a timely basis;
- ☑ There is enough time for consultation and decision-making by the SB;
- ☑ The committees function properly;
- ☑ The BoM performs activities in respect of culture;
- ☑ The communication with our shareholders is effective;

¶The performance of the members of the BoM and the SB members is assessed at least once a year; and

¶The SB has proper contact with the BoM and the Works Council.

The Company Secretary assists the SB in the performance of its duties, ensures that the correct procedures are followed, and that the SB acts in accordance with its legal and statutory obligations. The Company Secretary assists the Chairman of the SB in the organization of the affairs of the SB and its committees. The Company Secretary is appointed by and may also be dismissed by the BoM after prior approval from the SB. The Company Secretary is assisted by a Deputy Company Secretary.

Composition and role of the four committees of the Supervisory Board

In the plenary SB meetings, the chairpersons of the four committees report on the issues and items discussed in the committee meetings. In addition, the minutes of the committee meetings are made available to all SB members, enabling the full SB to make the appropriate decisions.

For detailed information on the composition, meetings and activities of the committees of the SB, see Supervisory Board Report - Supervisory Board Committees.

Audit Committee

In general, the Audit Committee meets at least four times a year and always before the publication of the quarterly, half-year and annual financial results.

The Audit Committee assists the SB in overseeing the integrity and quality of our financial reporting and the effectiveness of the internal risk management and internal control systems. Frequently discussed topics are the annual results, the audits and the internal and external audit plans and their execution, our internal control systems, including testing of internal controls over financial reporting in light of Section 404, 302 and 906 of the Sarbanes-Oxley Act, our risk management systems, and our financial- and cash position, our long-term financial plan and the supervision of the enforcement of the relevant legislation and regulations.

We provide the Audit Committee with all relevant information to be able to adequately and efficiently supervise the preparation and disclosure of financial information. This includes information on the status and development of the (semiconductor) market to be able to judge the outlook and budget for the next 6-12 months, the application of IFRS-EU and US GAAP, the choice of accounting policies and the work of internal and external auditors. Each year, the Audit Committee discusses and reviews such matters as our financing policy and strategy, tax planning policy, investor relations activities and strategy, fraud policy, and information and communication technology policy.

With regard to internal audit, the Audit Committee reviews the internal audit charter, the internal audit plan and the interaction with the external auditor. As a general rule, the internal auditor attends the Audit Committee meetings and then meets with the Audit Committee after the meeting without management present.

The Audit Committee reviews and approves the external audit plan, including the scope of the audit, the materiality level and the fees of the external auditor, as well as the external auditor's independence and performance regarding audit and permitted non-audit services. The Audit Committee is the first point of contact for the external auditor if the external auditor discovers irregularities in the content of the financial reports. As a general rule, the external auditor attends the Audit Committee meetings and then meets with the Audit Committee after the meeting without management present to discuss the relationship between the Audit Committee and the external auditor, the relationship between the BoM and the external auditor, and any other matters deemed necessary to be discussed.

In addition to the internal auditor and the external auditor, the Audit Committee generally invites the CEO, CFO, Corporate Controller, Corporate Chief Accountant and Vice-President Corporate Risk and Assurance to its meetings. In general, after each Audit Committee meeting, the Audit Committee also meets with the CFO alone. From time to time, other ASML employees are invited to Audit Committee meetings to address subjects that are of importance to the Audit Committee such as the return policy (including the share buyback program), tax and IT.

Remuneration Committee

In general, the Remuneration Committee meets at least two times a year and more frequently when deemed necessary.

The Remuneration Committee oversees the development and implementation of the Remuneration Policy. In cooperation with the Audit Committee and the Technology Committee, the Remuneration Committee reviews and proposes to the SB corporate goals and objectives relevant to the variable part of the BoM's remuneration. Before proposing these corporate goals and objectives to the SB for approval, the Remuneration Committee carries out scenario analyses of the possible financial outcomes on the variable remuneration of meeting these goals, as well as exceeding these goals. Also in cooperation with the Audit Committee and the Technology Committee, the Remuneration Committee evaluates the performance of the members of the BoM in view of those goals and objectives, and - based on this evaluation - recommends to the SB appropriate compensation levels for the members of the BoM. In doing so, the Remuneration Committee takes note of the views of the individual members of the BoM with regard to the amount and structure of their own remuneration.

Selection and Nomination Committee

In general, the Selection and Nomination Committee meets at least two times a year and more frequently when deemed necessary.

The Selection and Nomination Committee assists the SB with:

- Preparing the selection criteria and appointment procedures for members of the SB and BoM.
- Periodically evaluating the scope and composition of the BoM and the SB, and proposing the profile of the SB in relation thereto.
- Periodically evaluating the functioning of the BoM and the SB and the individual members of those boards and reporting the results thereof to the SB.
- Proposing (re)appointments of members of the BoM and the SB, and supervising the policy of the BoM in relation to the selection and appointment criteria for senior management.

The Selection and Nomination Committee also discusses developments in corporate governance, for example those based on legislative proposals or revisions of the Code, but also the outcome of the Report of the Monitoring Committee with respect to compliance with the Code.

Technology Committee

The Technology Committee meets at least two times a year and more frequently when deemed necessary.

The Technology Committee provides advice to the SB with respect to our technology plans required to execute our business strategy, including but not limited to, technology trends, the study of potential alternative strategies, the technology strategy, product roadmaps, required technical resources and operational performance in R&D. The Technology Committee makes recommendations to the SB on technology related projects with respect to ASML's competitive position. In addition, the Technology Committee discusses the technology targets set to measure short- and long-term performance as well as the achievements related thereto, and advises the Remuneration Committee on this topic.

External experts as well as experts from within ASML may act as advisers to the Technology Committee with respect to the subjects reviewed and discussed by this committee. The advisers do not have voting rights, but regularly attend committee meetings (except for those meetings or calls specifically designated to set and / or evaluate technology targets). External experts may include representatives of customers, suppliers and partners to increase the committee's understanding of the technology and research required to develop our leading-edge systems.

The Technology Committee's in-depth technology discussions and the subsequent reporting on the main points of these discussions in the full SB increases the SB's understanding of our technology requirements and enables the SB to adequately supervise the strategic choices we face, including our investment in R&D.

Conflict of interest

Conflict of interest procedures are incorporated in the SB's rules of procedure, and address Dutch law and the principles and best-practice provisions of the Code with respect to conflicts of interest.

There have been no transactions during 2018, nor are there currently any transactions, between ASML or any of its subsidiaries, and any other significant shareholder, and any SB member or any relative or spouse thereof other than ordinary course compensation arrangements.

Remuneration of the Supervisory Board

The General Meeting of Shareholders determines the remuneration of the SB members; this remuneration is not dependent on our (financial) results. The SB's remuneration was last revised in 2017. In addition to their fee as members of the SB, the members are also paid a fee for each committee membership, as well as a net cost allowance. Detailed information on the SB's remuneration can be found in Other Appendices - Appendix - Board of Management and Supervisory Board Remuneration.

No member of the SB personally maintains a business relationship with ASML, other than as a member of the SB. The members of the SB do not receive ASML shares, or rights to acquire ASML shares, as part of their remuneration. Members who acquire or have acquired ASML shares or rights to acquire ASML shares must intend to keep these for long-term investment only. No member of the SB currently has any ASML shares or rights to acquire ASML shares. In concluding transactions in ASML shares, members of the SB must comply with our Insider Trading Rules. We have not granted any personal loans, guarantees, or the like to members of the SB. Our Articles of Association provide for the indemnification of the members of the SB against claims that are a direct result of their tasks as

members of the SB, provided that such claims are not attributable to willful misconduct or intentional recklessness of the member of the SB. We have also implemented the indemnification of the members of the SB by means of separate indemnification agreements for each member.

Shareholders and General Meeting of Shareholders

Powers

A General Meeting of Shareholders is held at least once a year and generally takes place in Veldhoven, the Netherlands. During this meeting, at least the following items are discussed and / or approved:

• The written report of the BoM containing the course of affairs at ASML and the conduct of the management over the past financial year.

• The adoption of the financial statements for the past financial year, as prepared in accordance with applicable laws and regulations.

• The discharge of the members of the BoM in respect of their management during the previous financial year.

• The discharge of the members of the SB in respect of their supervision during the previous financial year.

• Our reserves and dividend policy and justification thereof by the BoM.

Each material change in our corporate governance structure. The material changes in our corporate governance structure and ASML's compliance with the amended Code will be discussed at the AGM of 2019 as a separate agenda item.

• Any other item the BoM or the SB decide to put on the agenda.

The General Meeting of Shareholders also has (with due observance of the statutory provisions) the power:

• To resolve to amend the articles of association.

• To resolve to dissolve ASML.

• To resolve to issue shares if and insofar as the BoM has not been designated by the General Meeting of Shareholders for this purpose.

• To resolve to reduce the issued share capital.

• To appoint members of the SB.

• To withdraw its confidence in the SB (resulting in a dismissal of the SB in its entirety).

• To adopt the Remuneration Policy for members of the BoM.

• To determine the remuneration of the members of the SB.

• To approve resolutions regarding a significant change in the identity or character of ASML or its business, as referred to in article 2:107 of the Dutch Civil Code.

Proposals placed on the agenda by the SB, the BoM, or by shareholders, provided that they have submitted the proposals in accordance with the applicable legal provisions, are discussed and resolved. Shareholders representing at least 1.0 percent of ASML's outstanding share capital or representing a share value of at least EUR 50.0 million are entitled to place agenda items on the agenda of a General Meeting of Shareholders at the latest 60 days before the date of said meeting.

A recurring agenda item is the limited authorization for the BoM to issue (rights to) shares in ASML's capital, and to exclude preemptive rights for such issuances. This agenda item typically includes two elements: i) the authorization to the BoM to issue 5.0 percent (rights to) shares of ASML's issued share capital as of the date of authorization, plus an additional 5.0 percent of ASML's issued share capital as of the date of authorization that may be issued in connection with mergers, acquisitions and / or (strategic) alliances, and ii) the authorization to exclude preemptive rights in relation to the above share issue, with a maximum of 10.0 percent of ASML's issued share capital as of the date of authorization.

A simple majority is required for the authorization to issue shares. For the authorization to exclude the preemptive rights, a simple majority is required provided at least 50 percent of ASML's issued share capital is present or represented at the AGM. Otherwise a majority of two thirds of the votes cast is required. The BoM must obtain the approval of the SB for the issuance of ASML shares as well as for excluding the preemptive rights.

It is important for us to be able to issue (rights to) shares and to exclude the preemptive shareholders' rights in situations where it is imperative to be able to act quickly, for example when financial opportunities arise. This authorization has been used in the past, especially to optimize our financial position. Given the dynamics of the global capital markets, such financing transactions generally need to be executed within a short window of opportunity. The opportunity to issue shares or rights to shares, such as convertible bonds, would be limited if we needed a resolution of the General Meeting of Shareholders to issue shares and / or to exclude the shareholders' preemptive rights and may therefore interfere with the financial flexibility of ASML.

As communicated in our press release of January 23, 2019, a proposal will be submitted to the 2019 Annual General Meeting of Shareholders to declare a dividend in respect of 2018 of EUR 2.10 per ordinary share (for a total amount of approximately EUR 0.9 billion), compared with a dividend of EUR 1.40 per ordinary share paid in respect of 2017. In addition to dividend payments, we intend to return cash to our shareholders on a regular basis through share buybacks or capital repayment, subject to our actual and anticipated level of liquidity requirements and other relevant factors.

On January 17, 2018, we announced a new share buyback program, to be executed within the 2018-2019 time frame. As part of this program, we intend to repurchase approximately EUR 2.5 billion of our own shares. We intend to cancel these shares after repurchase, with the exception of up to EUR 2.4 million shares, which will be used to cover employee share plans. Through December 31, 2018, we acquired 7 million shares under this program for a total consideration of EUR 1.1 billion. In January 2019, a number of 5,806,366 ordinary shares were canceled. The share buyback program may be suspended, modified or discontinued at any time.

Voting Rights

We are subject to the relevant provisions of Dutch law applicable to large corporations (the 'structuurregime'). These provisions have the effect of concentrating control over certain corporate decisions and transactions in the hands of the SB. Members of the BoM are appointed by the SB. The SB shall notify the General Meeting of Shareholders of intended appointments to the BoM. General Meetings of Shareholders will be held at least once a year. We do not solicit from or nominate proxies for our shareholders. However, shareholders and other persons entitled to attend General Meetings of Shareholders may be represented by proxies.

EGMs may be held as often as deemed necessary by the SB or BoM and must be held if one or more ordinary or cumulative preference shareholders jointly representing at least 10 percent of the issued share capital make a written request to that effect to the SB and the BoM specifying in detail the business to be dealt with.

Resolutions are adopted at General Meetings of Shareholders by an absolute majority of the votes cast (except where a different proportion of votes are required by the Articles of Association or Dutch law), and there are generally no quorum requirements applicable to such meetings. In the General Meeting of Shareholders each share confers the right to cast one vote.

Logistics of the General Meeting of Shareholders

The convocation date for the AGM is legally set at 42 days, and the record date at the 28th day prior to the day of the AGM. Those who are registered as shareholders on the record date are entitled to attend the meeting and to exercise other shareholder rights.

The BoM and SB shall provide the shareholders with the facts and circumstances relevant to the proposed resolutions, by way of an explanation to the agenda and other documents necessary and / or helpful for this purpose. All documents relevant to the General Meeting of Shareholders, including the agenda with explanations, shall be posted in the Investors and Governance sections on our Website. The agenda indicates which agenda items are voting items, and which items are for discussion only.

ASML shareholders may appoint a proxy who can vote on their behalf at the AGM. We also use an Internet proxy voting system, thus facilitating shareholder participation without having to attend in person. Shareholders who voted using their Internet proxy voting are required, however, to appoint a proxy to officially represent them at the AGM in person. We also provide the option for shareholders to issue voting proxies or voting instructions to an independent third party (civil law notary) prior to the AGM.

Voting results from the AGM will be made available on our Website within 15 days of the meeting.

The draft minutes of the AGM are available on our Website, and also upon request by letter or e-mail, no later than 3 months after the meeting. Shareholders are given the opportunity to provide their comments in the subsequent 3 months, after which the minutes are adopted by the Chairman and the Secretary of the meeting. The adopted minutes are also available on our Website and on request by letter or e-mail.

Information to the shareholders

To ensure fair disclosure, we distribute company information that may influence the share price to shareholders and other parties in the financial markets simultaneously and through means that are public to all interested parties. In case of bilateral contact with shareholders, we follow the procedure related thereto as published on our Website.

When our annual and quarterly results are published by means of a press release, interested parties, including shareholders, can participate through conference calls, listen to a web cast and view the presentation of the results on our Website. The schedule for communicating the annual financial results is posted on our Website. In addition, we provide information to our shareholders at our AGM. We also publish an Integrated Report on our Website every year, reporting on financial and non-financial performance, as well as a Statutory Interim Report.

It is our policy to post the presentations given to analysts and investors at investor conferences on our Website.

Information regarding presentations to investors and analysts and conference calls are announced in advance on our

Website (for details see our financial calendar as published in the Investor Relations section on our Website). Meetings and discussions with investors and analysts will, in principle, not be held shortly before the publication of regular financial information. We do not assess, comment on, or correct analysts' reports and valuations in advance, other than to comment on factual errors. We do not pay any fees to parties carrying out research for analysts' reports, or for the production or publication of analysts' reports, and take no responsibility for the content of such reports. At the AGM, the BoM and the SB provide shareholders with all requested information, unless this is contrary to an overriding interest of ASML. If this is the case, the BoM and SB will provide their reasons for not providing the requested information.

The Corporate Governance section on our Website also provides links to websites that contain information about ASML published or filed by ASML in accordance with applicable rules and regulations.

Our sole anti-takeover device is the possibility of issuing cumulative preference shares in its share capital to the Foundation under an option agreement between ASML and the Foundation.

Relationship with institutional investors

It is important to us that our institutional investors participate in our General Meetings of Shareholders. To increase the participation rate, several measures have been taken, including providing Internet proxy voting. In addition, we actively approach our institutional investors to discuss their participation at the AGM.

The Audit of Financial Reporting and the Position of the Internal and External Auditor Function

Financial reporting

We have comprehensive internal procedures in place for the preparation and publication of our Integrated Report, quarterly figures, and all other financial information. These internal procedures are frequently discussed by the Audit Committee and the SB. The Disclosure Committee assists the BoM in overseeing ASML's disclosure activities and ensures compliance with applicable disclosure requirements arising under Dutch and US law, and other regulatory requirements.

The Audit Committee reviews and approves the external auditor's audit plan for the audits planned during the financial year. The audit plan also includes, among others, the activities of the external auditor with respect to their limited procedures on the quarterly results other than the annual accounts. The external auditor regularly updates the Audit Committee on the progress of the audits and other activities.

The SB has reviewed and approved, and all SB members signed, ASML's 2018 financial statements as prepared by the BoM. KPMG has duly examined our financial statements, and the Auditor's Report is included in the Consolidated Financial Statements.

Appointment, role, assessment of the functioning of the external auditor, and the auditor's fee

In accordance with Dutch law, our external auditor is appointed by the General Meeting of Shareholders and is nominated for appointment by the SB upon advice from the Audit Committee and the BoM. ASML's current external auditor, KPMG, was appointed by the General Meetings of Shareholders in 2017 for the reporting year 2018.

Every year, the BoM and the Audit Committee provide the SB with a report on the relationship with the external auditor.

The external auditor is present at our AGM to respond to questions, if any, from the shareholders about the auditor's report on the Consolidated Financial Statements.

The Audit Committee approves the remuneration of the external auditor on behalf of the SB after consultation with the BoM. It has been agreed among the members of the SB and the BoM that the Audit Committee has the most relevant insight and experience to be able to approve this item. The SB has therefore delegated these responsibilities to the Audit Committee.

The Audit Committee monitors compliance with Dutch and US rules on non-audit services provided by the external auditor, which outlines strict separation of audit and advisory services for Dutch public-interest entities.

In principle, the external auditor attends all the Audit Committee meetings, unless the Audit Committee deems this unnecessary. The external auditor's findings are discussed at these meetings. Furthermore, the external auditor also attends the SB meetings in which the quarterly financial results are discussed.

The Audit Committee reports to the SB on all issues discussed with the external auditor, including the external auditor's reports with regard to the audit of the annual reports as well as the content of the annual reports. The independent auditor's report refers to materiality, scope of the group audit, the responsibilities of management, the SB and the external auditor for the financial statements, and reports on other legal and regulatory requirements.

For more information on principal accountant fees and services see Other Appendices - Appendix - Principal Accountant Fees and Services.

Internal Audit function

The Internal Audit function assesses our systems of internal controls by performing independent procedures such as risk-based operational audits, IT audits and compliance audits. The Internal Audit department reports directly to the Audit Committee and the BoM. The department's annual Internal Audit plan is discussed with and approved by the Audit Committee, the BoM and the SB. The follow-up on the Internal Audit findings and progress being made

compared to the Internal Audit plan are discussed on a quarterly basis with the Audit Committee. The external auditor and Internal Audit department have meetings on a regular basis.

Other Information on Governance

General

ASML Holding N.V. is a holding company that operates through its subsidiaries. We have operating subsidiaries in the Netherlands, the United States, Italy, France, Germany, the United Kingdom, Ireland, Belgium, Korea, Taiwan, Singapore, China, Hong Kong, Japan, Malaysia and Israel. Our major operating subsidiaries, each of which is ultimately wholly owned by ASML Holding N.V., are ASML Netherlands B.V., ASML Hong Kong Ltd. and ASML US LLC. See Exhibit Index - Exhibit 8.1 - List of main subsidiaries.

The EU Takeover Directive requires that listed companies publish additional information providing insight into the defensive structures and mechanisms they use. The relevant provision has been implemented into Dutch law by means of a decree made on April 5, 2006. The information required to be disclosed in accordance with this decree is listed below.

Our BoM has the power to issue ordinary shares and cumulative preference shares insofar as the BoM has been authorized to do so by the General Meeting of Shareholders. The BoM requires approval of the SB for such an issue. The authorization by the General Meeting of Shareholders can only be granted for a certain period not exceeding 5 years and may be extended for no longer than 5 years on each occasion. If the General Meeting of Shareholders has not authorized the BoM to issue shares, the General Meeting of Shareholders will be authorized to issue shares on the BoM's proposal, provided that the SB has approved such proposal.

Share capital

ASML's authorized share capital amounts to EUR 126.0 million and is divided into:

700,000,000 Cumulative Preference Shares with a nominal value of EUR 0.09 each.

699,999,000 Ordinary Shares with a nominal value of EUR 0.09 each.

9,000 Ordinary Shares B with a nominal value of EUR 0.01 each.

As of December 31, 2018, 431,465,767 ordinary shares with a nominal value of EUR 0.09 each were issued and fully paid up; this includes 10,368,038 treasury shares. No ordinary shares B and no cumulative preference shares have been issued.

A total of 96,566,077 depository receipts for ordinary shares were issued at the launch of the CCIP. This number has since decreased with the sell-down by the relevant customers following expiry of the lock-up. For further information see Reporting obligations under the Act on the supervision of financial markets ('Wet op het financieel toezicht', the FMSA) and under US securities laws below.

Ordinary shares

An ordinary share entitles the holder thereof to cast nine votes at the General Meeting of Shareholders. Each ordinary share consists of 900 fractional shares. Fractional shares entitle the holder thereof to a fractional dividend, but do not entitle the holder thereof to voting rights. Only those persons who hold shares directly in the share register in the Netherlands, held by us at our address at 5504 DR Veldhoven, de Run 6501, the Netherlands, or in the New York share register, held by JP Morgan Chase Bank, N.A., P.O. Box 64506, St. Paul, MN 55164-0506, United States, can hold fractional shares. Those who hold ordinary shares through the deposit system under the Dutch Securities Bank Giro Transactions Act ('Wet giraal effectenverkeer'; the Giro Act) maintained by the Dutch central securities depository Euroclear Nederland or through the Depository Trust Company cannot hold fractional shares. At our 2018 AGM, the BoM was authorized from April 25, 2018 through October 25, 2019, subject to the approval of the SB, to issue shares and / or rights thereto representing up to a maximum of 5.0 percent of our issued share capital at April 25, 2018, plus an additional 5.0 percent of our issued share capital at April 25, 2018 that may be issued in connection with mergers, acquisitions and / or (strategic) alliances.

Holders of ASML's ordinary shares have a preemptive right, in proportion to the aggregate nominal amount of the ordinary shares held by them. This preemptive right may be restricted or excluded. Holders of ordinary shares do not have preemptive right with respect to any ordinary shares issued for consideration other than cash or ordinary shares issued to employees. If authorized for this purpose by the General Meeting of Shareholders, the BoM has the power, subject to approval of the SB, to restrict or exclude the preemptive rights of holders of ordinary shares. At our 2018 AGM, our shareholders authorized the BoM through October 25, 2019, subject to approval of the SB, to restrict or exclude preemptive rights of holders of ordinary shares up to a maximum of 10 percent of our issued share capital.

We may repurchase our issued ordinary shares at any time, subject to compliance with the requirements of Dutch law and our Articles of Association. Any such repurchases are and remain subject to the approval of the SB and the authorization by the General Meeting of Shareholders, which authorization may not be for more than 18 months. At the 2018 AGM, the BoM has been authorized, subject to SB approval, to repurchase through October 25, 2019, up to a maximum of two times 10.0 percent of our issued share capital at April 25, 2018, at a price between the nominal value of the ordinary shares purchased and 110.0 percent of the market price of these securities on Euronext Amsterdam or NASDAQ.

For details on our share buyback program, see Consolidated Financial Statements - Notes to the Consolidated Financial Statements - Note 29 Purchases of equity securities by the issuer and affiliated purchasers.

Ordinary shares B

Our Articles of Association provide for 9,000 ordinary shares B with a nominal value of EUR 0.01. Each ordinary share B entitles the holder thereof to cast one vote at the General Meeting of Shareholders. Holders of fractional shares had the opportunity, until July 31, 2013, to convert fractional shares into ordinary shares B to obtain voting rights with respect to those fractional shares. No ordinary shares B have been issued.

Special voting rights on the issued shares

There are no special voting rights on the issued shares in our share capital.

Limitation voting rights on ordinary shares indirectly held by the Participating Customers

Pursuant to the agreements entered into with them, the Participating Customers (and their respective foundations) will not be entitled to vote with the ordinary shares that were acquired by (the foundations of) the Participating Customers as part of the CCIP or any other ordinary shares otherwise transferred to the foundations (under the circumstances described under 'Standstill; Additional Purchases', prior to a Shareholder Agreement Termination Event except when a Suspension Event occurs and is continuing or where the following matters are proposed at any General Meeting of Shareholders (the 'Voting Restrictions'): (i) an issuance of ASML shares or grant of rights to subscribe for ASML shares representing 25 percent or more of the issued and outstanding share capital of ASML or the restriction or exclusion of preemption rights relating thereto (in each case, on an aggregate basis during the preceding 12 months) or the designation of the BoM as the authorized body to resolve on these matters; (ii) an authorization to repurchase 25 percent or more of ASML's issued and outstanding share capital on an aggregate basis during the preceding 12 months; (iii) the approval of a significant change in the identity or nature of ASML or its business, including a transfer of all or substantially all business or assets of ASML and its subsidiaries to a third party, the establishment or cancellation of a long-lasting cooperation of essential importance with a third party and an acquisition or disposition of an interest in the capital or assets of a person with a value of at least one third of the assets of ASML (on a consolidated basis); (iv) an amendment to ASML's Articles of Association that would materially affect the specific voting rights of the Participating Customers, would materially affect the identity or nature of ASML or its business, or would disproportionately (or uniquely) and adversely affect the rights or benefits attached to or derived from the ordinary shares held by the Participating Customers through the foundations as compared to the shareholders; (v) the dissolution of ASML; and (vi) any merger or demerger which would result in a material change in the identity or nature of ASML or its business.

Cumulative preference shares

In 1998, we granted the Preference Share Option to the Foundation. This option was amended and extended in 2003 and 2007. A third amendment to the option agreement between the Foundation and ASML became effective on January 1, 2009, to clarify the procedure for the repurchase and cancellation of the preference shares when issued.

The nominal value of the cumulative preference shares amounts to EUR 0.09 and the number of cumulative preference shares included in the authorized share capital is 700,000,000. A cumulative preference share entitles the holder thereof to cast 9 votes in the General Meeting of Shareholders.

The Foundation may exercise the Preference Share Option in situations where, in the opinion of the Foundation's Board of Directors, ASML's interests, ASML's business or the interests of ASML's stakeholders are at stake. This may be the case if a public bid for ASML's shares is announced or made, or there is a justified expectation that such a bid will be made without any agreement having been reached in relation to such a bid with ASML. The same may apply if one shareholder, or more shareholders acting in concert, hold a substantial percentage of ASML's issued ordinary shares without making an offer or if, in the opinion of the Foundation's Board of Directors, the (attempted) exercise of the voting rights by one shareholder or more shareholders, acting in concert, is materially in conflict with ASML's interests, ASML's business or ASML's stakeholders.

The Foundation's objectives are to look after the interests of ASML and of the enterprises maintained by ASML and of the companies which are affiliated in a group with ASML, in such a way that the interests of ASML, of those enterprises and of all parties concerned are safeguarded in the best possible way, and influences in conflict with these interests which might affect the independence or the identity of ASML and those companies are deterred to the best of the Foundation's ability, and everything related to the above or possibly conducive thereto. The Foundation seeks to realize its objects by the acquiring and holding of cumulative preference shares in the capital of ASML and by exercising the rights attached to these shares, particularly the voting rights attached to these shares.

The Preference Share Option gives the Foundation the right to acquire a number of cumulative preference shares as the Foundation will require, provided that the aggregate nominal value of such number of cumulative preference shares shall not exceed the aggregate nominal value of the ordinary shares that have been issued at the time of exercise of the Preference Share Option for a subscription price equal to their nominal value. Only one-fourth of the subscription price would be payable at the time of initial issuance of the cumulative preference shares, with the other three-fourths of the nominal value only being payable when we call up this amount. Exercise of the preference share option could effectively dilute the voting power of the outstanding ordinary shares by one-half.

Cancellation and repayment of the issued cumulative preference shares by ASML requires the authorization by the General Meeting of Shareholders of a proposal to do so by the BoM approved by the SB. If the Preference Share Option is exercised and as a result cumulative preference shares are issued, ASML, at the request of the Foundation, will initiate the repurchase or cancellation of all cumulative preference shares held by the Foundation. In that case ASML is obliged to effect the repurchase and cancellation respectively as soon as possible. A cancellation will result in a repayment of the amount paid and exemption from the obligation to pay up on the cumulative preference shares. A repurchase of the cumulative preference shares can only take place when such shares are fully paid up.

If the Foundation does not request ASML to repurchase or cancel all cumulative preference shares held by the Foundation within 20 months of issuance of these shares, we will be obliged to convene a General Meeting of Shareholders in order to decide on a repurchase or cancellation of these shares.

The Foundation is independent of ASML. The Board of Directors of the Foundation comprises four independent members from the Netherlands' business and academic communities. The current members of the Foundation's Board of Directors are: Mr. A.P.M. van der Poel, Mr. S. Perrick, Mr. J.M. de Jong and Mr. A.H. Lundqvist.

Limitations to transfers of shares in the share capital of ASML

There are currently no limitations, either under Dutch law or in ASML's Articles of Association, on the transfer of ordinary shares in the share capital of ASML. Pursuant to ASML's Articles of Association, the SB's approval shall be required for every transfer of cumulative preference shares.

Reporting obligations under the Act on the supervision of financial markets ('Wet op het financieel toezicht', the FMSA) and under US securities laws

The following table sets forth the total number of ordinary shares owned by each shareholder that reported to the AFM or SEC a beneficial ownership of ordinary shares that is at least 3.0 percent (5.0 percent, in the case of the SEC) of our ordinary shares issued and outstanding as well as the ordinary shares (including shares underlying options) owned by our members of the BoM (which includes those persons specified in Management Board Report - Board of Management), as a group, as of December 31, 2018. The information set out below with respect to shareholders is based on public filings with the SEC and AFM as of January 31, 2019.

Identity of Person or Group	Shares Owned	Percent of Class ⁵	
Capital Group International, Inc ¹	64,679,514	15.36	%
BlackRock Inc. ²	27,139,122	6.44	%
Members of ASML's Board of Management (6 persons) ^{3,4}	84,933	0.02	%

As reported to the AFM on November 20, 2018, Capital Group International, Inc. and Capital Research & Management Company, which we believe to be an affiliate of Capital Group International, Inc., indirectly have 582,115,626 voting rights corresponding to 64,679,514 shares (based on 9 votes per share) of our ordinary shares but do not have ownership rights related to those shares. Capital World Investors reported on a Schedule 13-G/A 1. filed with the SEC on February 14, 2018, that it is the beneficial owner of 51,761,833 shares of our ordinary shares as a result of its affiliation with Capital Research & Management Company. In addition, the Growth Fund of America reported to the AFM on May 15, 2014 that it owns 3.08 percent of our outstanding shares. We believe that some or all of these shares are included within the shares reported to be owned by Capital Group International, Inc., as set forth above.

Based solely on the Schedule 13-G/A filed by BlackRock Inc. with the SEC on January 30, 2018; BlackRock 2. reports voting power with respect to 24,678,344 of these shares. A public filing with the AFM on August 1, 2018 shows aggregate holdings of various BlackRock funds of 4.92 percent, based on total number of issued shares at the time, and 6.21 percent in voting rights.

Does not include unvested shares granted to members of the BoM. For further information see Supervisory Board 3. Report - Remuneration Report and Other Appendices - Appendix - Board of Management and Supervisory Board Remuneration.

4. No shares are owned by members of the SB.

5.

As a percentage of the total number of ordinary shares issued and outstanding (421,097,729) as of December 31, 2018, which excludes 10,368,038 ordinary shares which have been issued but are held in treasury by ASML. Please note that share ownership percentages reported to the AFM are expressed as a percentage of the total number of ordinary shares issued (including treasury stock) and that accordingly, percentages reflected in this table may differ from percentages reported to the AFM.

As of December 31, 2018, 71,710,774 ordinary shares were held by 325 registered holders with a registered address in the US. Since certain of our ordinary shares were held by brokers and nominees, the number of record holders in the US may not be representative of the number of beneficial holders or of where the beneficial holders are resident.

Appointment of Board of Management and Supervisory Board

Board of Management

The rules governing the appointment and dismissal of members of the BoM are described in Corporate Governance - Board of Management.

Supervisory Board

The rules governing the appointment and dismissal of members of the SB are described in Corporate Governance - Supervisory Board.

Articles of Association

The General Meeting of Shareholders can resolve to amend our Articles of Association. The (proposed) amendment requires the approval of the SB.

A resolution to amend the Articles of Association is adopted at a General Meeting of Shareholders, at which more than one half of the issued share capital is represented and with at least three-fourths of the votes cast. If the required share capital is not represented at a meeting convened for that purpose, a subsequent meeting shall be convened, to be held within four weeks of the first meeting, at which, irrespective of the share capital represented, the resolution can be adopted with at least three-fourths of the votes cast. If a resolution to amend the Articles of Association is proposed by the BoM, the resolution will be adopted with an absolute majority of votes cast irrespective of the represented share capital at the General Meeting of Shareholders.

A summary of our Articles of Association is included as Exhibit 99.1 to our form 6-K filed furnished with the SEC on February 8, 2013 (the 'Articles of Association').

Severance payments under agreements with members of Board of Management

Employment agreements, respectively management services agreements, for members of the BoM contain specific provisions regarding severance payments. If ASML gives notice of termination of the employment agreement respectively management services agreements for reasons which are not exclusively or mainly found in acts or omissions of the member of the BoM concerned, a severance payment not exceeding one year's base salary will be paid upon the effective date of termination.

As of July 1, 2013, the relationship between a member of the BoM and a listed company can no longer be treated as an employment contract. All members of the BoM that were appointed and reappointed at the 2018 AGM have entered into a management services agreement.

Current contracts contain a provision that a member of the BoM, on their own initiative (when giving notice of termination pursuant to a change of control), will be entitled to a severance amount. Given that such a resignation is specifically linked to a change of control, ASML does not consider this provision a deviation from the Code.

NASDAQ Corporate Governance Standards

NASDAQ rules provide that foreign private issuers may follow home country practice in lieu of the NASDAQ corporate governance standards subject to certain exceptions and except to the extent that such exemptions would be contrary to US federal securities laws. The practices followed by ASML in lieu of NASDAQ rules are described below:

ASML does not follow NASDAQ's quorum requirements applicable to meetings of ordinary shareholders. In accordance with Dutch law and generally accepted Dutch business practice, ASML's Articles of Association provide that there are no quorum requirements generally applicable to General Meetings of Shareholders.

ASML does not follow NASDAQ's requirements regarding the solicitation of proxies and the provision of proxy statements for General Meetings of Shareholders. ASML does furnish proxy statements and solicit proxies for the General Meeting of Shareholders. Dutch corporate law sets a mandatory (participation and voting) record date for Dutch listed companies at the 28th day prior to the date of the General Meeting of Shareholders. Shareholders registered at such record date are entitled to attend and exercise their rights as shareholders at the General Meeting of Shareholders, regardless of sale of shares after the record date.

ASML does not follow NASDAQ's requirement regarding distribution to shareholders of copies of an annual report containing audited Financial Statements prior to our AGM. The distribution of our Integrated Reports to shareholders is not required under Dutch corporate law or Dutch securities laws, or by Euronext Amsterdam. Furthermore, it is generally accepted business practice for Dutch companies not to distribute annual reports. In part, this is because the Dutch system of bearer shares has made it impractical to keep a current list of holders of the bearer shares in order to distribute the annual reports. Instead, we make our Integrated Report available at our corporate head office in the Netherlands (and at the offices of our Dutch listing agent as stated in the convening notice for the meeting) no later than 42 days prior to convocation of the AGM. In addition, we post a copy of our Integrated Reports on our Website prior to the AGM.

ASML does not follow NASDAQ's requirement to obtain shareholder approval of stock option or purchase plans or other equity compensation arrangements available to officers, directors or employees. It is not required under Dutch law or generally accepted practice for Dutch companies to obtain shareholder approval of equity compensation

arrangements available to officers, directors or employees. The AGM adopts the Remuneration Policy for the BoM, approves equity compensation arrangements for the BoM and approves the remuneration for the SB. The Remuneration Committee evaluates the achievements of individual members of the BoM with respect to the short and long-term quantitative performance, the full SB evaluates the quantitative performance criteria. Equity compensation arrangements for employees are adopted by the BoM within limits approved by the AGM.

Compliance with the Corporate Governance Code

ASML fully complies with the Code.

The Board of Management and the Supervisory Board,

Veldhoven, February 5, 2019

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Consolidated Statements of Operations

Year ended December 31	2016 ¹	2017 ¹	2018
Notes (in millions, except per share data)	EUR	EUR	EUR
Net system sales ²	4,718.9	6,424.4	8,259.1
Net service and field option sales ²	2,156.2	2,538.3	2,684.9
22, 23 Total net sales	6,875.1	8,962.7	10,944.0
Cost of system sales ²	(2,423.9)	(3,439.9)	(4,141.2)
Cost of service and field option sales ²	(1,305.9)	(1,502.6)	(1,773.6)
24 Total cost of sales	(3,729.8)	(4,942.5)	(5,914.8)
Gross profit	3,145.3	4,020.2	5,029.2
30 Other income	93.8	95.8	—
24, 25 Research and development costs	(1,105.8)	(1,259.7)	(1,575.9)
24 Selling, general and administrative costs	(374.8)	(416.6)	(488.0)
Income from operations	1,758.5	2,439.7	2,965.3
26 Interest and other, net	33.7	(50.3)	(28.3)
Income before income taxes	1,792.2	2,389.4	2,937.0
21 Provision for income taxes	(234.4)	(306.0)	(351.6)
Income after income taxes	1,557.8	2,083.4	2,585.4
10 Profit (loss) related to equity method investments	—	(16.7)	)6.2
Net income	1,557.8	2,066.7	2,591.6
1 Basic net income per ordinary share	3.66	4.81	6.10
1 Diluted net income per ordinary share ³	3.64	4.79	6.08
Number of ordinary shares used in computing per share amounts			
1 Basic	425.6	429.8	424.9
1 Diluted ³	427.7	431.6	426.4

As of January 1, 2018, ASML has adopted the new Revenue Recognition Standard (ASC 606) and Lease Standard 1.(ASC 842). The comparative numbers have been adjusted to reflect these changes in accounting policies, see Note 1 General information / summary of significant accounting policies.

As of January 1, 2017, ASML presents net sales with respect to metrology and inspection systems as part of net 2.system sales instead of net service and field option sales. The 2016 numbers have been adjusted to reflect this change in accounting policy.

The calculation of diluted net income per ordinary share assumes the exercise of options issued under our stock 3.option plans and the issuance of shares under our share plans for periods in which exercises or issuances would have a dilutive effect. The calculation of diluted net income per ordinary share does not assume exercise of options when exercise would be anti-dilutive.

Consolidated Statements of Comprehensive Income

Year ended December 31 Notes (in millions)	2016 ¹ EUR	2017 ¹ EUR	2018 EUR
Net income	1,557.8	2,066.7	2,591.6
Other comprehensive income:			
Proportionate share of other comprehensive income from equity method investments	—	(1.0)	(4.8)
Foreign currency translation, net of taxes:			
Gain (loss) on foreign currency translation and effective portion of hedges on net investments	120.4	(329.0)	18.2
Financial instruments, net of taxes:			
4 Gain (loss) on derivative financial instruments	6.0	(16.6)	8.3
4 Transfers to net income	2.4	(3.1)	11.8
Other comprehensive income, net of taxes	128.8	(349.7)	33.5
Total comprehensive income, net of taxes	1,686.6	1,717.0	2,625.1
Attributable to equity holders	1,686.6	1,717.0	2,625.1

As of January 1, 2018, ASML has adopted the new Revenue Recognition Standard (ASC 606) and Lease Standard 1 (ASC 842). The comparative numbers have been adjusted to reflect these changes in accounting policies, see Note 1 General information / summary of significant accounting policies.

Consolidated Balance Sheets

	As of December 31	2017 ¹	2018
Notes	(in millions, except share and per share data)	EUR	EUR
Assets			
5	Cash and cash equivalents	2,259.0	3,121.1
5	Short-term investments	1,029.3	913.3
6	Accounts receivable, net	1,740.3	1,498.2
7	Finance receivables, net	59.1	611.1
21	Current tax assets	61.6	79.7
23	Contract assets	270.4	95.9
8	Inventories, net	2,955.6	3,439.5
9	Other assets	510.5	772.6 ²
	Total current assets	8,885.8	10,531.4
7	Finance receivables, net	159.4	275.1
21	Deferred tax assets	31.7	236.3 ²
9	Other assets	708.2	806.1
10	Equity method investments	982.2	915.8
11	Goodwill	4,541.1	4,541.1
12	Other intangible assets, net	1,166.0	1,104.0
13, 22	Property, plant and equipment, net	1,600.8	1,589.5
14	Right-of-use assets	113.7	137.6
	Total non-current assets	9,303.1	9,605.5
	Total assets	18,188.9	20,136.9
Liabilities and shareholders' equity			
	Accounts payable	837.3	964.0
15	Accrued and other liabilities	625.5	911.4
21	Current tax liabilities	152.0	187.9
16	Current portion of long-term debt	25.2	—
23	Contract liabilities	1,530.0	1,728.6
	Total current liabilities	3,170.0	3,791.9
16	Long-term debt	3,000.1	3,026.5
21	Deferred and other tax liabilities	341.1	251.2
23	Contract liabilities	622.0	1,224.6
15	Accrued and other liabilities	279.3	201.7
	Total non-current liabilities	4,242.5	4,704.0
	Total liabilities	7,412.5	8,495.9

Ordinary shares; EUR 0.09 nominal value;
699,999,000 shares authorized at December 31, 2018;
421,097,729 issued and outstanding at December 31, 2018;
699,999,000 shares authorized at December 31, 2017;
427,393,592 issued and outstanding at December 31, 2017;

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	Issued and outstanding shares	38.8	38.6
	Share premium	3,732.5	3,741.3
	Treasury shares at cost	(557.9)	(1,621.8)
	Retained earnings	7,311.5	9,197.9 ²
	Accumulated other comprehensive income	251.5	285.0
28	Total shareholders' equity	10,776.4	11,641.0
	Total liabilities and shareholders' equity	18,188.9	20,136.9

As of January 1, 2018, ASML has adopted the new Revenue Recognition Standard (ASC 606) and Lease Standard 1. (ASC 842). The comparative numbers have been adjusted to reflect these changes in accounting policies, see Note 1 General information / summary of significant accounting policies.

As per January 1, 2018, ASML has adopted ASU No. 2016-16 Income Taxes (ASC 740) 'Intra-Entity Transfers of 2. Assets Other Than Inventory', adjusted to retained earnings as of January 1, 2018. See Note 1 General information / summary of significant accounting policies.

Consolidated Statements of Shareholders' Equity

Notes (in millions)	Issued and Outstanding Shares	Amount	Share Premium	Treasury Shares at Cost	Retained Earnings ³	Accumulated OCI ²	Total
	Number ¹						
		EUR	EUR	EUR	EUR	EUR	EUR
Balance at January 1, 2016	428.0	38.8	3,070.2	(476.9	)5,350.4	472.4	8,454.9
Components of comprehensive income:							
Net income ³	—	—	—	—	1,557.8	—	1,557.8
Foreign currency translation and effective portion of hedges on net investments	—	—	—	—	—	120.4	120.4
4 Gain on financial instruments, net of taxes	—	—	—	—	—	8.4	8.4
Total comprehensive income	—	—	—	—	1,557.8	128.8	1,686.6
CCIP:							
30 Fair value differences ⁴	—	—	27.9	—	—	—	27.9
29 Purchase of treasury shares	(4.8	)—	—	(400.0	)—	—	(400.0)
29 Cancellation of treasury shares	—	—	—	—	—	—	—
19, 24 Share-based payments ⁵	—	—	49.2	—	—	—	49.2
Issuance of shares ⁶	6.7	0.6	545.3	80.7	(27.8	)—	598.8
28 Dividend paid	—	—	—	—	(445.9	)—	(445.9)
19, 21 Tax benefit from share-based payments	—	—	0.9	—	—	—	0.9
Balance at December 31, 2016	429.9	39.4	3,693.5	(796.2	)6,434.5	601.2	9,972.4
Components of comprehensive income:							
Net income ³	—	—	—	—	2,066.7	—	2,066.7
Proportionate share of other comprehensive income from equity method investments	—	—	—	—	—	(1.0	)(1.0)
Foreign currency translation and effective portion of hedges on net investments	—	—	—	—	—	(329.0	)(329.0)
4 Loss on financial instruments, net of taxes	—	—	—	—	—	(19.7)(19.7)
Total comprehensive income	—	—	—	—	2,066.7	(349.7)(1,717.0

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CCIP:								
30	Fair value differences ⁴	—	—	28.6	—	—	—	28.6
29	Purchase of treasury shares	(3.5)—	—	(500.0)—	—	(500.0)
29	Cancellation of treasury shares	—	(0.7	)—	650.0	(649.3)—	—
19, 24	Share-based payments	—	—	53.1	—	—	—	53.1
	Issuance of shares	1.0	0.1	(42.7	)88.3	(23.7	)—	22.0
28	Dividend paid	—	—	—	—	(516.7	)—	(516.7)
	Balance at December 31, 2017	427.4	38.8	3,732.5	(557.9	)7,311.5	251.5	10,776.4
	Opening balance adjustment ⁷	—	—	—	—	(85.3	)—	(85.3)
	Opening balance January 1, 2018	427.4	38.8	3,732.5	(557.9	)7,226.2	251.5	10,691.1
Components of comprehensive income:								
	Net income	—	—	—	—	2,591.6	—	2,591.6
	Proportionate share of other comprehensive income from equity method investments	—	—	—	—	—	(4.8	)(4.8)
	Foreign currency translation and effective portion of hedges on net investments	—	—	—	—	—	18.2	18.2
4	Gain on financial instruments, net of taxes	—	—	—	—	—	20.1	20.1
	Total comprehensive income	—	—	—	—	2,591.6	33.5	2,625.1
29	Purchase of treasury shares	(7.0	)(0.3	)—	(1,145.9	)—	—	(1,146.2)
29	Cancellation of treasury shares	—	—	—	—	—	—	—
19, 24	Share-based payments	—	—	46.3	—	—	—	46.3
	Issuance of shares	0.7	0.1	(37.5	)82.0	(22.8	)—	21.8
28	Dividend paid	—	—	—	—	(597.1	)—	(597.1)
	Balance at December 31, 2018	421.1	38.6	3,741.3	(1,621.8	)9,197.9	285.0	11,641.0

As of December 31, 2018, the number of issued shares was 431,465,767. This includes the number of issued and outstanding shares of 421,097,729 and the number of treasury shares of 10,368,038. As of December 31, 2017, the number of issued shares was 431,464,705. This includes the number of issued and outstanding shares of 427,393,592 and the number of treasury shares of 4,071,113. As of December 31, 2016, the number of issued shares was 439,199,514. This includes the number of issued and outstanding shares of 429,941,232 and the number of treasury shares of 9,258,282.

As of December 31, 2018, accumulated OCI, net of taxes, consists of EUR 5.8 million loss relating to our proportionate share of other comprehensive income from equity method investments (2017: EUR 1.0 million loss; 2016: no amount), EUR 282.3 million relating to foreign currency translation gain (2017: EUR 264.1 million gain; 2016: EUR 593.1 million gain) and EUR 8.5 million relating to unrealized gains on financial instruments (2017: EUR 11.6 million losses; 2016: EUR 8.1 million gain).

As of January 1, 2018, ASML has adopted the new Revenue Recognition Standard (ASC 606) and Lease Standard (ASC 842). The comparative numbers have been adjusted to reflect these changes in accounting policies, see Note 1 General information / summary of significant accounting policies. The Retained Earnings balance at January 1, 2016 has been increased by EUR 66.1 million to reflect the changes in the new Revenue Recognition Standard.

In 2017 (EUR 28.6 million) and 2016 (EUR 27.9 million) is recognized to increase equity to the fair value of the shares issued to the Participating Customers in the CCIP. The portion of the NRE funding allocable to the shares was recognized over the NRE Funding Agreements period (2013-2017).

Share-based payments include an amount of EUR 1.5 million in relation to the fair value compensation of unvested equity awards exchanged as part of the acquisition of HMI.

Issuance of shares includes 5,866,001 ordinary shares issued in relation to the acquisition of HMI for a total fair value of EUR 580.6 million.

As per January 1, 2018, ASML has adopted ASU No. 2016-16 Income Taxes (ASC 740) 'Intra-Entity Transfers of Assets Other Than Inventory', adjusted to retained earnings as of January 1, 2018. See Note 1 General information / summary of significant accounting policies.

Consolidated Statements of Cash Flows

Notes	Year ended December 31 (in millions)	2016 ¹ EUR	2017 ¹ EUR	2018 EUR
	Cash Flows from Operating Activities			
	Net income	1,557.8	2,066.7	2,591.6
	Adjustments to reconcile net income to net cash flows from operating activities:			
9, 12, 13, 16	Depreciation and amortization ²	356.9	417.5	422.7
11, 12, 13	Impairment	3.5	9.0	15.4
13	Loss on disposal of property, plant and equipment ³	5.2	2.8	3.6
19, 24	Share-based payments	47.7	53.1	46.3
6	Allowance for doubtful receivables	3.2	7.8	11.2
8	Allowance for obsolete inventory	73.0	120.1	218.2
21	Deferred income taxes	13.4	(8.4)	(238.5)
10	Equity method investments ⁴	—	36.4	61.6
	Changes in assets and liabilities:			
6	Accounts receivable	213.4	(1,136.4)	201.2
7	Finance receivables	(62.9)	237.0	(664.9)
8	Inventories ^{3,5}	5.4	(284.1)	(515.7)
9	Other assets	(122.1)	(169.4)	(404.0)
15	Accrued and other liabilities	(27.0)	90.9	237.7
	Accounts payable	50.9	266.6	97.9
21	Current tax assets and liabilities	93.4	(151.8)	13.1
23	Contract assets and liabilities	(546.0)	260.5	975.3
	Net cash provided by operating activities	1,665.9	1,818.3	3,072.7
	Cash Flows from Investing Activities			
13	Purchase of property, plant and equipment ⁵	(316.3)	(338.9) ⁶	(574.0) ^{6,7}
12	Purchase of intangible assets	(8.4)	(19.1)	(35.5)
5	Purchase of short-term investments	(2,520.0)	(1,129.3)	(918.1)
5	Maturity of short-term investments	2,320.0	1,250.0	1,034.1
	Cash from (used for) derivative financial instruments	(15.0)	27.0	(2.4)
	Loans issued and other investments	—	(0.6)	(1.0)
13	Repayment on loans	(7.4)	1.6	5.4
10	Acquisition of equity method investments	—	(1,019.7)	—
2	Acquisition of subsidiaries (net of cash acquired)	(2,641.3)	—	—
	Net cash used in investing activities	(3,188.4)	(1,229.0)	(491.5)
	Cash Flows from Financing Activities			
28	Dividend paid	(445.9)	(516.7)	(597.1)
28, 29	Purchase of treasury shares	(400.0)	(500.0)	(1,146.2)
2	Net proceeds from issuance of shares	582.7	⁸ 50.6	21.8
16	Net proceeds from issuance of notes	2,230.6	⁹ —	—
16	Repayment of debt	(4.7)	(243.0)	(2.8) ⁷
19, 21	Tax benefit (deficit) from share-based payments	0.9	—	—
	Net cash from (used in) financing activities	1,963.6	(1,209.1)	(1,724.3)
	Net cash flows	441.1	(619.8)	856.9

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	Effect of changes in exchange rates on cash	7.1	(28.1)	5.2
	Net increase (decrease) in cash and cash equivalents	448.2	(647.9)	862.1
5	Cash and cash equivalents at beginning of the year	2,458.7	2,906.9	2,259.0
5	Cash and cash equivalents at end of the year	2,906.9	2,259.0	3,121.1
	Supplemental Disclosures of Cash Flow Information:			
	Interest paid	(55.7)	(91.4)	(61.0)
	Income taxes paid	(115.9)	(475.0)	(554.4)

As of January 1, 2018, ASML has adopted the new Revenue Recognition Standard (ASC 606) and Lease Standard (ASC 842). The comparative numbers have been adjusted to reflect these changes in accounting policies, see Note 1 General information / summary of significant accounting policies.

In 2018, depreciation and amortization includes EUR 315.4 million of depreciation of property, plant and equipment (2017: EUR 308.2 million, 2016: EUR 290.8 million), EUR 103.7 million of amortization of intangible assets (2017: EUR 105.5 million, 2016: EUR 63.5 million) and EUR 3.6 million of amortization of underwriting commissions and discount related to the bonds and credit facility (2017: EUR 3.8 million, 2016: EUR 2.6 million).

In 2018, an amount of EUR 70.8 million (2017: EUR 45.8 million, 2016: EUR 22.8 million) of the disposal of property, plant and equipment relates to non-cash transfers to inventory. Since the transfers between inventory and property, plant and equipment are non-cash events, these are not reflected in these Consolidated Statements of Cash Flows. Additionally, in 2018, an amount of EUR 54.7 million of land and buildings was reclassified to other assets. See Note 13 Property, plant and equipment.

Equity method investments includes the profit (loss) related to equity method investments, dividends received from equity method investments and capitalization of R&D and supply chain support funding.

In 2018, an amount of EUR 59.8 million (2017: EUR 13.4 million, 2016: EUR 21.6 million) of the additions in property, plant and equipment relates to non-cash transfers from inventory. Since the transfers between inventory and property, plant and equipment are non-cash events, these are not reflected in these Consolidated Statements of Cash Flows. See Note 13 Property, plant and equipment.

In 2018, an amount of EUR 191.6 million (2017: EUR 36.5 million) of the purchase of property, plant and equipment relates to funding provided for tooling to our equity method investment. This funding is not reflected as addition in our movement schedule of property, plant and equipment, see Note 13 Property, plant and equipment, but is presented as part of the other assets. For further details regarding our equity method investments see Note 10 Equity method investments.

In 2018, an amount of EUR 24.5 million of the purchase of property, plant and equipment relates to exercising the purchase option of our headquarters in Veldhoven in June 2018. This cash outflow is not reflected as addition in our movement schedule of property, plant and equipment as it was previously recognized as property, plant and equipment as Koppelenweg I B.V. was a VIE. See Note 13 Property, plant and equipment.

In 2016, net proceeds from issuance of shares include an amount of EUR 536.6 million which is included in the consideration transferred for the acquisition of HMI. See Note 2 Business combinations.

In 2016, net proceeds from issuance of notes relate to the total cash proceeds of EUR 2,230.6 million (net of incurred transaction costs) from the issuance of our EUR 500 million 0.625 percent senior notes due 2022, our EUR 1,000 million 1.375 percent senior notes due 2026 and our EUR 750 million 1.625 percent senior notes due 2026.

Notes to the Consolidated Financial Statements

1. General information / summary of significant accounting policies

ASML, with its corporate headquarters in Veldhoven, the Netherlands, is engaged in the development, production, marketing, selling and servicing of advanced semiconductor equipment. ASML's principal operations are in the Netherlands, the US and Asia.

Our shares are listed for trading in the form of registered shares on Euronext Amsterdam and on NASDAQ. The principal trading market of our ordinary shares is Euronext Amsterdam.

Basis of preparation

The accompanying Consolidated Financial Statements are stated in millions of euros unless indicated otherwise. The accompanying Consolidated Financial Statements have been prepared in conformity with US GAAP. We have reclassified certain prior period amounts to align with the current period presentation.

Use of estimates

The preparation of our Consolidated Financial Statements in conformity with US GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities on the balance sheet dates, and the reported amounts of net sales and costs during the reported periods. Actual results could differ from those estimates. We evaluate our estimates continuously and we base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances. Actual results may differ from these estimates if the assumptions prove incorrect. To the extent there are material differences between actual results and these estimates, our future results could be materially and adversely affected. We believe that the accounting policies described below require us to make significant judgments and estimates in the preparation of our Consolidated Financial Statements. Our most critical accounting estimates include:

Revenue recognition

Business combinations

Inventories

Income taxes

Contingencies and litigation

Lease accounting

Evaluation of long-lived assets for impairment

Principles of consolidation

The Consolidated Financial Statements include the Financial Statements of ASML Holding N.V. and all of its subsidiaries and the variable interest entity of which ASML was the primary beneficiary until June 29, 2018. All intercompany profits, balances and transactions have been eliminated in the consolidation.

Subsidiaries

Subsidiaries are all entities over which ASML has the control to govern financial and operating policies generally accompanying a shareholding of more than 50 percent of the outstanding voting rights. As from the date that these criteria are met, the financial data of the relevant subsidiaries are included in the consolidation.

Business combinations

Acquisitions of subsidiaries are included on the basis of the acquisition method. The cost of acquisition is measured based on the consideration transferred at fair value, the fair value of identifiable assets distributed and the fair value of liabilities incurred or assumed at the acquisition date (i.e., the date which we obtain control). The excess of the costs of an acquired subsidiary over the net of the amounts assigned to identifiable assets acquired and liabilities incurred or assumed, is capitalized as goodwill. Acquisition-related costs are expensed when incurred in the period they arise or the service is received.

Variable interest entities

We assess whether we have a controlling financial interest in any variable interest entity. We consolidate a variable interest entity when we have a variable interest that provides us with a controlling financial interest. We are deemed to have a controlling financial interest in a variable interest entity if both of the following characteristics are met: a) the power to direct the activities of a variable interest entity that most significantly impact the variable interest entity's

economic performance and b) the obligation to absorb losses of the variable interest entity that could potentially be significant to the variable interest entity or the right to receive benefits from the variable interest entity that could potentially be significant to the variable interest entity.

Foreign currency translation

The financial information for subsidiaries outside the euro-zone is measured using a mix of local currencies or the euro as the functional currency. The Financial Statements of those foreign subsidiaries are translated into euros in the preparation of ASML's Consolidated Financial Statements. Assets and liabilities are translated into euros at the exchange rate on the respective balance sheet dates. Income and costs are translated into euros based on the average exchange rate for the corresponding period. The resulting translation adjustments are recorded directly in shareholders' equity.

Derivative financial instruments

We use derivative financial instruments for the management of foreign currency risks and interest rate risks. We measure all derivative financial instruments based on fair values derived from market prices of the instruments. We adopt hedge accounting for hedges that are highly effective in offsetting the identified hedged risks taking into account required effectiveness criteria.

Derivatives are initially recognized at fair value on the date a derivative contract is entered into and subsequently remeasured. The method of recognizing the resulting gain or loss depends on whether the derivative is designated as a hedging instrument, and if so, the nature of the item being hedged. We designate derivatives as one of the following:

• A hedge of an exposure relating to changes in the fair value of a recognized asset or liability, that is attributable to a particular risk (fair value hedge).

• A hedge of an exposure relating to the variability in the cash flows of a recognized asset or liability, or of a forecasted transaction, that is attributable to a particular risk (cash flow hedge).

• A hedge of the foreign currency exposure relating to a net investment in a foreign operation (net investment hedge).

We document at the inception of the transaction the relationship between hedging instruments and hedged items, as well as our risk management objectives and strategy for undertaking various hedging transactions. We also document, both at hedge inception and on an ongoing basis, whether derivatives that are used in hedging transactions are highly effective in offsetting changes in fair values or cash flows of hedged items. The cash flows resulting from the derivative financial instruments are classified in the Consolidated Statements of Cash Flows according to the nature of the hedged item.

Fair value hedge

Changes in the fair value of a derivative financial instrument, that is designated and qualified as a fair value hedge, along with the gain or loss on the hedged asset or liability that is attributable to the hedged risk, are recorded in the Consolidated Statements of Operations.

Hedge accounting is discontinued when we revoke the hedging relationship, the hedging instrument expires or is sold, terminated or exercised, or no longer qualifies for hedge accounting. The adjustment to the carrying amount of the hedged item arising from the hedged risk is amortized to the Consolidated Statements of Operations from that date. Interest rate swaps that are being used to hedge the fair value of fixed loan coupons payable are designated as fair value hedges. The change in fair value is intended to offset the change in the fair value of the underlying fixed loan coupons, which is recorded accordingly. The gain or loss relating to the ineffective portion of interest rate swaps hedging fixed loan coupons payable is recognized in the Consolidated Statements of Operations as interest and other, net.

Cash flow hedge

Changes in the fair value of a derivative that is designated and qualified as a cash flow hedge are recorded in OCI, net of taxes, until the underlying hedged transaction is recognized in the Consolidated Statements of Operations. In the event that the underlying hedge transaction will not occur within the specified time period, the gain or loss on the related cash flow hedge is released from OCI and included in the Consolidated Statements of Operations, unless extenuating circumstances exist that are related to the nature of the forecasted transaction and are outside our control or influence and which cause the forecasted transaction to be probable of occurring on a date that is beyond the specified time period.

Foreign currency hedging instruments that are being used to hedge cash flows related to forecasted sales or purchase transactions in non-functional currencies are designated as cash flow hedges. The gain or loss relating to the ineffective portion of the foreign currency hedging instruments is recognized in the Consolidated Statements of

Operations in net sales or cost of sales.

Interest rate swaps that are being used to hedge changes in the variability of future interest cash flows to certain of our operating lease obligations are designated as cash flow hedges. The changes in fair value of the derivatives are intended to offset changes in future interest cash flows of such operating lease obligations. The gain or loss relating to the ineffective portion of interest rate swaps hedging the variability of future interest cash flows is recognized in the Consolidated Statements of Operations as interest and other, net.

Net investment hedge

Foreign currency hedging instruments that are being used to hedge changes in the value of a net investment are designated as net investment hedges. Changes in the fair value of a derivative that is designated and qualifies as a net investment hedge are recorded in other comprehensive income. The gain or loss relating to the ineffective portion is recognized in the Consolidated Statements of Operations as interest and other, net. Gains and losses accumulated in OCI are recognized in the Consolidated Statements of Operations when the foreign operation is (partially) disposed or sold.

Cash and cash equivalents

Cash and cash equivalents consist primarily of highly liquid investments, such as bank deposits, money market funds and interest-bearing bank accounts with insignificant interest rate risk and remaining maturities of 3 months or less at the date of acquisition.

Short-term investments

Investments with remaining maturities longer than 3 months and less than 1 year at the date of acquisition are presented as short-term investments. Gains and losses other than impairments, interest income and foreign exchange results, are recognized in OCI until the short-term investments are derecognized. Upon derecognition, the cumulative gain or loss recognized in OCI, is recognized in the Consolidated Statements of Operations.

Accounts receivable

Accounts receivable are measured at fair value and are subsequently measured at amortized cost using the effective interest rate method, less allowance for doubtful debts.

Finance receivable

Finance receivables consist of receivables in relation to sales-type leases. We perform ongoing credit evaluations on our customers' financial condition. We periodically review whether an allowance for credit losses is needed by considering factors such as historical payment experience, credit quality, the aging of the finance receivables balances, and current economic conditions that may affect a customer's ability to pay.

Inventories

Inventories are stated at the lower of cost (applying the first-in, first-out method) or net realizable value. Cost includes net prices paid for materials purchased, charges for freight and customs duties, production labor cost and factory overhead. Allowances are made for defect, obsolete or excess inventory.

Allowances for inventory are determined based on the expected demand which is derived from sales forecasts, technical obsolescence as well as the expected net realizable value of the inventory.

Equity method investments

Equity investments, through which we are able to exercise significant influence but do not control, are accounted for using the equity method and presented on our Consolidated Balance Sheets within equity method investments. The difference between the cost of our investment and our proportionate share of the carrying value of the equity method investments' underlying net assets as of the acquisition date is the basis difference. The basis difference is allocated to the identifiable assets and liabilities based on their fair value as of the acquisition date (i.e., the date which we obtain significant influence), with the excess costs of the investment over our proportional fair value of the identifiable assets and liabilities being equity method goodwill.

Under the equity method, after initial recognition at cost, our equity method investments are adjusted for our proportionate share of the profit or loss and other comprehensive income of the equity method investments, recognized on a one-quarter time lag and presented within profit (loss) related to equity method investments. Our proportionate share of the profit or loss of the equity method investments is adjusted for any differences in accounting principles and policies, basis difference adjustments and intra-entity profits. Receipt of dividends reduces the equity method investments, which is presented as an operating cash flow based on the nature of the distributions.

Goodwill

Goodwill represents the excess of the costs of an acquisition over the fair value of the amounts assigned to assets acquired and liabilities incurred or assumed of the acquired subsidiary at the date of acquisition. Goodwill on acquisition of subsidiaries is allocated to reporting units for the purpose of impairment testing. The allocation is made to those reporting units that are expected to benefit from the business combination in which the goodwill arose.

Goodwill is stated at cost less accumulated impairment losses.

Other intangible assets

Other intangible assets include brands, intellectual property, developed technology, customer relationships, and other.

Other intangible assets are stated at cost, less accumulated amortization and accumulated impairment losses.

Amortization is calculated using the straight-line method based on the estimated useful lives of the assets. The following table presents the estimated useful lives of our finite-lived other intangible assets:

Category	Estimated useful life
Brands	20 years
Intellectual property	3 - 10 years
Developed technology	6 - 15 years
Customer relationships	8 - 18 years
Other	2 - 6 years

Property, plant and equipment

Property, plant and equipment are stated at cost, less accumulated depreciation and accumulated impairment losses. Costs of assets manufactured by ASML include direct manufacturing costs, production overhead and interest costs incurred for qualifying assets during the construction period. Depreciation is calculated using the straight-line method based on the estimated useful lives of the related assets. In the case of leasehold improvements, the estimated useful lives of the related assets do not exceed the remaining term of the corresponding leases.

The following table presents the estimated useful lives of our property, plant and equipment:

Category	Estimated useful life
Buildings and constructions	5 - 45 years
Machinery and equipment	1 - 5 years
Leasehold improvements	1 - 10 years
Furniture, fixtures and other equipment	3 - 5 years

Land is not depreciated.

Evaluation of long-lived assets for impairment

Long-lived assets include equity method investments, goodwill, other intangible assets and property, plant and equipment.

Our equity method investments are tested for impairment whenever events or changes in circumstances indicate that the carrying amount of the equity method investments may not be recoverable. We remeasure our equity method investments at fair value when they are deemed to be other-than-temporarily impaired.

Goodwill is tested for impairment annually or whenever events or changes in circumstances indicate that the carrying amount of the goodwill may not be recoverable. These events or circumstances could include a significant change in the business climate, legal factors, operating performance indicators, competition, or sale or disposition of a significant portion of a reporting unit. To determine whether it is necessary to perform the quantitative goodwill impairment test, we first assess qualitative factors. If we determine that it is more likely than not (a likelihood of more than 50 percent) that the fair value of a reporting unit is less than its carrying amount (including goodwill), the quantitative goodwill impairment test is performed. The recoverability of goodwill is tested by comparing the carrying amount of the reporting unit including goodwill with the fair value of the reporting unit. If the carrying amount of the reporting unit is higher than the fair value of the reporting unit, an impairment loss shall be recognized in an amount equal to that excess, limited to the total amount of goodwill allocated to that reporting unit.

Finite-lived other intangible assets and property, plant and equipment are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of those assets may not be recoverable. An impairment loss is recognized only if the carrying amount of finite-lived other intangible assets or property, plant and equipment is not recoverable and exceeds its fair value. The carrying amount is not recoverable if it exceeds the sum of the (un)discounted forecasted cash flows resulting from the use and eventual disposition of such asset. An impairment loss is measured as the amount by which the carrying amount exceeds its fair value.

In determining the fair value of long-lived assets, we make estimates about future cash flows. These estimates are based on our strategic plan updated with the latest available projections of the semiconductor industry and our income and cost expectations, which are consistent with the plans and estimates that we use to manage our business. We also make estimates and assumptions concerning our WACC. It is possible that actual results may differ from our plans, estimates and assumptions. Future adverse changes in market conditions may also require impairment of certain long-lived assets, which could have a material adverse effect on our financial condition and results of operations.

High NA agreement with Carl Zeiss SMT GmbH

On November 3, 2016 we agreed with Carl Zeiss SMT GmbH to support their R&D costs, capital expenditures and other supply chain investments, in respect of High NA, beginning in 2016.

R&D and supply chain support costs are capitalized for 24.9 percent of this funding because it directly benefits us through our investment in Carl Zeiss SMT Holding GmbH & Co. KG. The amount capitalized is presented within

equity method investments. The remainder of this support relating to supply chain support costs is charged to the cost of sales as incurred, the part related to R&D costs is charged to the operating expenses as incurred. The support provided related to capital expenditures consists of tooling and facilities. Funding provided for facilities is accounted for in property, plant & equipment as we are considered the accounting owner during the construction period. The support provided for tooling is determined to be a capital lease. Support provided for tooling prior to the asset being put into use is recorded in other assets and transferred into property, plant & equipment when put into use.

Revenue From Contracts With Customers

We measure revenue based on the consideration specified in the contracts with our customers, adjusted for any significant financing components, and excluding any tax amounts collected on behalf of third parties. We recognize revenue when we satisfy a performance obligation by transferring control over a good or service to our customer. Taxes assessed by a governmental authority that are imposed on a specific revenue-producing transaction, that are collected by us from our customers, are excluded from revenue.

We bill our customers for, and recognize as net sales, any charges for shipping and handling costs. The related costs are recognized as cost of sales. For certain contracts and constructive obligations resulting from these arrangements, for which a loss is evident, we recognize the anticipated loss to the extent the costs of completing these contracts and constructive obligations exceed the amount of the contract price. When we satisfy these obligations, we utilize the related liability.

We generate revenue from the sale of integrated patterning solutions for the semiconductor industry, which mainly consist of systems, system related options and upgrades, other holistic lithography solutions and customer services. The main portion of our net sales is derived from contractual arrangements with our customers that have multiple deliverables (performance obligations), which mainly include the sale of our systems, system related options, installation, training and extended and enhanced (optic) warranty.

The main portion of our system sales results from volume purchase agreements, in which we offer customers discounts in the normal course of sales negotiations. As part of these volume purchases agreements, we may also offer free goods or services and credits that can be used towards future purchases. Occasionally, systems, with the related extended and enhanced (optic) warranties, installation and training services, are ordered individually. Our system sales agreements do not include a general right of return.

For bundled packages, we account for individual goods and services, including the free or discounted goods or services, separately if they are distinct - i.e. if a product or service is separately identifiable from other items in the bundled package and if a customer can benefit from it on its own or with other resources that are readily available to the customer. The consideration paid for our performance obligations is typically fixed, unless specifically noted in the nature of the performance obligations. At times the total consideration of the contract can be dependent on the final volume of systems ordered by the customer. Payment is typically due 15-45 days after shipment or completion of the service unless described otherwise. The total consideration of the contract is allocated between all distinct performance obligations in the contract based on their stand-alone selling prices. The stand-alone selling prices are determined based on other stand-alone sales that are directly observable, when possible. However, for the majority of our performance obligations these are not available. If no directly observable evidence is available, the stand-alone selling price is estimated using the adjusted market assessment approach. These estimates are considered significant judgments.

Variable consideration is estimated at contract inception for each performance obligation, and subsequently updated each quarter, using either the expected value method or most likely amount method, whichever is determined to best predict the consideration to be collected from the customer. Variable consideration is only included in the transaction price if it is considered probable that a significant revenue reversal will not occur.

In certain scenarios when entering into a volume purchase agreement, free goods or services are provided directly or through a voucher that can be used on future contracts. Consideration from the contract will be allocated to these performance obligations and revenue recognized when control transfers based on the nature of the goods or service provided.

Options to buy goods or services in addition to the purchase commitment are assessed to determine if they provide a material right to the customer that they would not have received if they had not entered into this contract. Each option to buy additional goods or services provided at a discount from the stand-alone selling price is considered a material right. The discount offered from the stand-alone selling price will be allocated from the consideration of the other goods and services in the contract if it is determined the customer will exercise the option to buy, adjusted for the likelihood. Revenue will be recognized in line with the nature of the related goods or services. If it is subsequently determined the customer will not exercise the option to buy, or the option expires, revenue will be recognized.

Occasionally we may enter into a bill-and-hold transaction where we invoice a customer for a system that is ready for delivery but not shipped to the customer until a later date, based on customer's request. Transfer of control is determined to have occurred only when there is a substantive reason for the arrangement, the system is separately identified as belonging to the customer, the good has been accepted by the customer and is ready for delivery, and we do not have the ability to direct the use of the system.

Goods or services Nature, timing of satisfying the performance obligations, and significant payment terms

New systems (established technologies)	<p>New systems sales include i-line, KrF, ArF, ArFi and EUV related systems, along with the related factory options ordered with the base system, as well as metrology and inspection systems. Prior to shipment, the majority of our systems undergo a Factory Acceptance Test (FAT) in our cleanroom facilities, effectively replicating the operating conditions that will be present on the customer's site, in order to verify whether the system meets its standard specifications and any additional technical and performance criteria agreed with the customer. A system is shipped only after all contractual specifications are met or discrepancies from agreed upon specifications are waived and customer sign-off is received for delivery. Each system's performance is re-tested through a Site Acceptance Test (SAT) after installation at the customer site. We have never failed to successfully complete installation of a system at a customer's premises; therefore, acceptance at FAT is considered to be proven for established technologies with a history of successful customer acceptances at SAT (equal or better than FAT).</p> <p>Transfer of control of a system undergoing FAT, and recognition of revenue related to this system, will occur upon delivery of the system, depending on the Incoterms.</p> <p>Transfer of control of a system not undergoing a FAT, and recognition of revenue related to this system, will occur upon customer acceptance of the system at SAT.</p>
Used systems	<p>We have no significant repurchase commitments in our general sales terms and conditions, however from time to time we repurchase systems that we have manufactured and sold and, following refurbishment, will resell to other customers. This repurchase decision is mainly driven by market demand expressed by other customers and less frequently by explicit or implicit contractual arrangements relating to the initial sale. We consider reasonable offers from any vendor, including customers, to repurchase used systems that we can refurbish, resell, and install as part of our normal business operations.</p> <p>Transfer of control of the systems, and related revenue recognition, will occur either upon delivery of the system to the carrier or upon arrival of the system to the customer's loading dock, depending on the Incoterms and if a FAT was performed prior to shipment. If no FAT was performed, then transfer of control will be upon customer acceptance at SAT. If a FAT was performed, then transfer of control will be upon customer acceptance at FAT, refer to "New systems (established technologies)".</p>
Field upgrades and options (system enhancements)	<p>Field upgrades and options mainly relate to goods and services that are delivered for systems already installed in the customer factories. Certain upgrades require significant installation efforts, enhancing an asset the customer controls, therefore resulting in transfer of control over the period of installation, measured using the cost incurred method which is estimated using labor hours, as this best depicts the satisfaction of our obligation in transferring control. The options and other upgrades that do not require significant installation effort transfer control upon delivery, depending on the Incoterms.</p> <p>As long as we are not able to make a reliable estimate of the total efforts needed to complete the upgrade, we only recognize revenue to cover costs incurred. Margin will be realized at the earlier of us being able to make a reliable estimate or completion of the upgrade.</p>
New product introduction	<p>New product introductions are typically newly developed options to be used within our systems. Transfer of control and revenue recognition for new product introductions occurs upon customer acceptance (generally at SAT). Once there is an established history of successful installation and customer acceptance, revenue will be recognized consistent with other systems and goods after</p>

transfer of control.

Installation

Installation is provided within the selling price of a system. Installation is considered to be distinct as it does not significantly modify the system being purchased and the customer or a third party could be capable of performing the installation themselves if desired. Transfer of control takes place over the period of installation from delivery through SAT, measured on a straight-line basis, as our performance is satisfied evenly over this period of time.

As long as we are not able to make a reliable estimate of the total efforts needed to complete the installation, we only recognize revenue to cover costs incurred. Margin will be realized at the earlier of us being able to make a reliable estimate or installation completion.

Warranties

We provide standard warranty coverage on our systems for 12 months, providing labor and non-consumable parts necessary to repair our systems during these warranty periods. These standard warranties cannot be purchased and do not provide a service in addition to the general assurance the system will perform as promised. As a result, no revenue is allocated to these standard warranties.

Both the extended and enhanced (optic) warranties on our systems are accounted for as a separate performance obligation, with transfer of control taking place over the warranty period, measured on a straight-line basis, as this is a stand-ready obligation.

Time-based licenses and related service

Time-based licenses relate to software licenses and the related service which are sold for a period of time. The licenses and the related service are not considered to be individually distinct and the transfer of control takes place over the license term, measured on a straight-line basis, as our performance is satisfied evenly over this period of time. Payments are made in installments throughout the license term.

Goods or services	<p>Nature, timing of satisfying the performance obligations, and significant payment terms</p> <p>Application projects are node transition and consulting projects which at times may be provided as free service within a volume purchase agreement. Measuring satisfaction of this performance obligation is performed through an input method based on the labor hours expended relative to the estimated total labor hours as this best depicts the transfer of control of these kind of services.</p>
Application projects	<p>As long as we are not able to make a reliable estimate of the total efforts needed to complete these kind of projects, we only recognize revenue to cover costs incurred. Margin will be realized at the earlier of us being able to make a reliable estimate or project completion.</p>
Service contracts	<p>Service contracts are entered into with our customers to support our systems used in their ongoing operations during the systems lifecycle, typically in the form of full-service agreements, limited manpower agreements, other labor agreements, parts availability or parts usage agreements. These services are typically for a specified period of time. Control transfers over this period of time, measured on a straight-line basis, as these are stand-ready obligations, with an exception for the labor hour pool service contracts for which we recognize revenue in line with invoicing, using the practical expedient in ASC 606-10-55-18. Invoicing is typically performed monthly or quarterly throughout the service period, typically payable within 15-45 days.</p>
Billable parts and labor	<p>Billable labor represents maintenance services to our systems installed in the customer's factories while in operation, through purchase orders from our customer. Control over these services is transferred to the customer upon receipt of customer sign-off.</p> <p>Billable parts represent spare parts including optical components relating to our systems installed in the customer's factories while in operation, through purchase orders from our customer.</p> <p>Billable parts can be:</p> <ul style="list-style-type: none"> • Sold as direct spare parts, for which control transfers upon the relevant Incoterms; or • Sold as part of maintenance services, for which control transfers upon receipt of customer sign-off.
Field projects (relocations)	<p>Field projects represent mainly relocation services. Measuring satisfaction of this performance obligation is performed through an input method based on the labor hours expended relative to the estimated total labor hours as this best depicts the transfer of control of our service.</p>
OnPulse Maintenance	<p>OnPulse maintenance services are provided over a specified period of time on our light source systems. Payment is determined by the amount of pulses counted from each light source system, which is variable. Invoicing is monthly based on the pulses counted. Revenue is recognized in line with invoicing using the practical expedient in ASC 606-10-55-18.</p>
Cost of sales	<p>Cost of system and field option sales comprise direct product costs such as materials, labor, cost of warranty, depreciation, amortization, shipping and handling costs and related overhead costs.</p> <p>Costs of service sales comprise direct service costs such as materials, labor, depreciation and overhead costs.</p>
Lease arrangements - Lessee	<p>We determine if an arrangement is a lease at inception. Determining whether a contract contains a lease requires judgment. In general, arrangements are considered to be a lease when all of the following apply:</p> <ul style="list-style-type: none"> ¶ It conveys the right to control the use of an identified asset for a period of time in exchange for consideration; ¶ We have substantially all economic benefits from the use of the asset; and

¶We can direct the use of the identified asset.

Each lease arrangement we enter into is classified as either a finance lease or an operating lease, which is determined at lease commencement or at the modification of the lease arrangement and based upon the terms of each lease.

Lease assets and lease liabilities are recognized based on the present value of the future minimum lease payments over the lease term at commencement date. As our leases do not provide an implicit rate, we use our incremental borrowing rate based on the information available at commencement date in determining the present value of future payments.

The right-of-use asset includes all lease payments made and initial direct costs incurred. Our lease terms may include options to extend or terminate the lease when it is reasonably certain that we will exercise that option.

For operating leases the lease expense for minimum lease payments is recognized on a straight-line basis over the lease term. For finance leases each lease payment is allocated between the liability and finance cost. The finance cost is charged to the Consolidated Statements of Operations over the lease period so as to produce a constant periodic rate of interest on the remaining balance of the liability for each period. The finance lease asset is depreciated over the shorter of the asset's useful life and the lease term on a straight-line basis.

We have lease agreements with lease and non-lease components, which are generally accounted for as a single lease component. For certain equipment and for leased warehouses we account for the lease and non-lease components separately. For warehouse leases the allocation of the consideration between lease and non-lease components is based on the relative stand-alone prices of lease components included in the lease contracts. Additionally, for car leases, we apply a portfolio approach to effectively account for the operating lease right-of-use assets and liabilities.

Operating leases are included in right-of-use assets and in accrued and other liabilities. Finance leases are included in property, plant and equipment and long-term debt.

Lease Arrangements - Lessor

We classify a lease as a sales-type when the lease meets any of the following criteria at lease commencement:

- The lease transfers ownership of the underlying asset to the lessee by the end of the lease term;
- The lease grants the lessee an option to purchase the underlying asset that the lessee is reasonably certain to exercise;
- The lease term is for the major part of the remaining economic life of the underlying asset. However, if the commencement date falls at or near the end of the economic life of the underlying asset, this criterion shall not be used for purposes of classifying the lease;
- The present value of the sum of the lease payments and any residual value guaranteed by the lessee that is not already reflected in the lease payments equals or exceeds substantially all of the fair value of the underlying asset; or
- The underlying asset is of such a specialized nature that it is expected to have no alternative use to the lessor at the end of the lease term.

Revenue is recognized at commencement of the lease term of a sales-type lease. The present value of the lease payments is recognized as a finance receivable. The difference between the gross receivable and the present value of the receivable is unearned interest, which is recognized over time in the Consolidated Statements of Operations.

A lease is classified as an operating lease if the lease classification criteria (as described above) are not met. If we have offered our customers an operating lease arrangement, the contract consideration is recognized in the Consolidated Statements of Operations on a straight-line basis over the period of the lease.

Sales-type leases

Leases where substantially all the risks and rewards incidental to ownership of an asset are transferred to the lessee are classified as sales-type lease arrangements. If we have offered the customer a sales-type lease arrangement, revenue is recognized at commencement of the lease term. The difference between the gross finance receivable and the present value of the minimum lease payments is initially recognized as unearned interest and presented as a deduction to the gross finance receivable. Interest income is recognized in the Consolidated Statement of Operations over the term of the lease contract using the effective interest method.

Operating leases

Leases whereby all the risks and rewards incidental to ownership are not transferred to the lessee are classified as operating lease arrangements. If we have offered the customer an operating lease arrangement, the system is included in property, plant and equipment upon commencement of the lease. Revenue from operating lease arrangements is recognized in the Consolidated Statement of Operations on a straight-line basis over the term of the lease contract.

Warranty

We provide standard warranty coverage on our systems for 12 months and on certain optic parts for 60 months, providing labor and parts necessary to repair systems during the warranty period. The estimated warranty costs are accounted for by accruing these costs for each system upon recognition of the system sale. The estimated warranty costs are based on historical product performance and service records. We calculate the charge of average service hours and parts per system to determine the estimated warranty costs. On an annual basis, we assess, and update if necessary, our accounting estimates used to calculate the costs of the standard warranty coverage.

Customer Co-Investment Program

In connection with the CCIP, we entered into investment agreements, shareholders agreements, NRE Funding Agreements and a commercial agreement with Participating Customers.

The investment agreements, shareholder agreements, NRE Funding Agreements and commercial agreement are accounted for as a multiple-element arrangement with each of the Participating Customers. The following two separate elements are identified: (1) the share issuance (governed by the investment agreements and the shareholder

agreements) and (2) the NRE funding and commercial discounts and credits (governed by the NRE Funding Agreements and the commercial agreement with Intel).

The shares issued to the Participating Customers were recorded at fair value based on quoted share prices (EUR 3,977.4 million) with the remaining aggregate arrangement consideration allocated to the NRE funding and commercial discounts and credits. The difference between the fair value of the shares at the time of issuance and the subscription price of the shares (EUR 39.91) was recorded as a deduction from shareholders' equity upon issuance of the shares (EUR 123.4 million). Shareholders' equity is increased to the fair value of the shares as the portion of the NRE funding allocable to the shares is received over the NRE funding period (2013-2017).

A significant related party relationship existed between ASML and Intel as a result of the equity investment made by Intel as part of the CCIP. Based on the commercial discounts and credits (governed by the commercial agreement with Intel) and the significant related party relationship that existed up to July 2, 2017, all NRE funding from Intel was deferred and recognized in the Consolidated Statements of Operations only when the commercial discounts and credits are earned.

Other income

The portion of the NRE funding from TSMC and Samsung not allocable to the shares issued to those Participating Customers under the CCIP was recognized in other income when the R&D costs relating to lithography projects were recognized over the NRE funding period (2013-2017).

Research and development costs and credits

Costs relating to R&D are charged to operating expenses as incurred. ASML receives subsidies and other grants from several Dutch and international (inter-)governmental institutes ('government grants'). These government grants that cover R&D costs relating to approved projects are recorded as R&D credits in the R&D costs in the Consolidated Statements of Operations.

Government grants are not recognized until there is reasonable assurance that ASML will comply with the conditions and that the grants will be received.

Government grants that are received as compensation for expenses or losses already incurred, or for the purpose of giving immediate financial support to ASML with no future related costs, are recognized in the Consolidated Statements of Operations in the period in which they become receivable.

Share-based payments

Compensation expenses in relation to share-based payments are recognized based upon the grant-date fair value of stock options and shares. The grant-date fair value of stock options is estimated using a Black-Scholes option valuation model. This Black-Scholes model requires the use of assumptions, including expected share price volatility, the estimated life of each award and the estimated dividend yield. The risk-free interest rate used in the model is determined, based on an index populated with euro-denominated European government agency bond with high credit ratings and with a life equal to the expected life of the equity-settled share-based payments. The grant-date fair value of shares is determined based on the closing price of our shares listed at Euronext Amsterdam on the grant-date. The grant-date fair value of the equity-settled share-based payments is, based on the terms and conditions, expensed over the vesting period, based on our estimate of equity instruments that will eventually vest. At each balance sheet date, we revise our estimate of the number of equity instruments expected to vest. The impact of the revision of the original estimates, if any, is recognized in the Consolidated Statements of Operations in the period in which the revision is determined, with a corresponding adjustment to shareholders' equity.

Income taxes

The asset and liability method is used in accounting for income taxes. Under this method, deferred tax assets and liabilities are recognized for the tax effect of incurred net operating losses and for tax consequences attributable to differences between the balance sheet carrying amounts of existing assets and liabilities and their respective tax bases. If it is more likely than not that the carrying amounts of deferred tax assets will not be realized, a valuation allowance is recorded for the differences. Tax expense includes current taxes on profit as well as actual or potential withholding taxes on current and expected income from group companies.

Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in the Consolidated Statements of Operations in the period that includes the enactment date.

We recognize liabilities for uncertain tax positions based on a two-step process. The first step is to evaluate the tax position for recognition by determining if the weight of available evidence indicates that it is more likely than not that the position will be sustained on audit, including resolution of related appeals or litigation processes, if any. The second step is to measure the tax benefit as the largest amount that is more than 50 percent likely of being realized upon settlement. While we believe we have appropriate support for the positions taken on our tax returns, we regularly assess the potential outcomes of examinations by tax authorities in determining the adequacy of our provision for

income taxes, and adjust the income tax provision, income taxes payable and deferred taxes in the period in which the facts that give rise to a revision become known.

Contingencies and litigation

In connection with proceedings and claims, our management evaluates, based on the relevant facts and legal principles, the likelihood of an unfavorable outcome and whether the amount of the loss can be reasonably estimated. In most cases, management determined that either a loss was not probable or was not reasonably estimable. Significant subjective judgments were required in these evaluations, including judgments regarding the validity of asserted claims and the likely outcome of legal and administrative proceedings. The outcome of these proceedings, however, is subject to a number of factors beyond our control, most notably the uncertainty associated with predicting decisions by courts and administrative agencies. In addition, estimates of the potential costs associated with legal and administrative proceedings frequently cannot be subjected to any sensitivity analysis, as damage estimates or settlement offers by claimants may bear little or no relation to the eventual outcome. Finally, in any particular proceeding, we may agree to settle or to terminate a claim or proceeding in which we believe that it would ultimately prevail where we believe that doing so, when taken together with other relevant commercial considerations, is more effective than engaging in an expensive and protracted litigation, the outcome of which is uncertain. We accrue for legal costs related to litigation in our Consolidated Statements of Operations at the time when the related legal services are actually provided to us.

Net income per ordinary share

Basic net income per ordinary share is calculated by dividing net income by the weighted average number of ordinary shares outstanding for that period. The dilutive effect is calculated using the treasury stock method. Excluded from the diluted weighted average number of shares outstanding calculation are cumulative preference shares contingently issuable to the preference share foundation, since they represent a different class of stock than the ordinary shares. The basic and diluted net income per ordinary share has been calculated as follows:

Year ended December 31 (in millions, except per share data)	2016 ¹ EUR	2017 ¹ EUR	2018 EUR
Net income	1,557.8	2,066.7	2,591.6
Weighted average number of shares outstanding	425.6	429.8	424.9
Basic net income per ordinary share	3.66	4.81	6.10
Weighted average number of shares outstanding	425.6	429.8	424.9
Plus shares applicable to Options and conditional shares	2.1	1.8	1.5
Dilutive potential ordinary shares	2.1	1.8	1.5
Diluted weighted average number of shares	427.7	431.6	426.4
Diluted net income per ordinary share ²	3.64	4.79	6.08

As of January 1, 2018, ASML has adopted the new Revenue Recognition Standard (ASC 606) and Lease Standard 1.(ASC 842). The comparative numbers have been adjusted to reflect these changes in accounting policies, see Note 1 General information / summary of significant accounting policies.

The calculation of diluted net income per ordinary share assumes the exercise of options issued under our stock option plans and the issuance of shares under our share plans for periods in which exercises or issuances would have a dilutive effect. The calculation of diluted net income per ordinary share does not assume exercise of options when exercise would be anti-dilutive.

Comprehensive income

Comprehensive income consists of net income and OCI, including unrealized gains and losses on financial instruments, derivative financial instruments designated for cash flow hedge accounting, net of taxes, and unrealized gains and losses on foreign currency translation and effective portion of hedges on net investments, net of taxes. OCI also contains gains and losses that are not included in net income (loss) related to the proportionate share of other comprehensive income from equity method investments.

New US GAAP accounting pronouncements adopted

During 2018, ASML has adopted the following accounting pronouncements:

Adoption of ASC 606 "Revenue from Contracts with Customers"

In March 2014, the FASB issued ASU No. 2014-9 "Revenue From Contracts With Customers". The standard is a joint project of the FASB and the IASB, to clarify the principles for recognizing revenue and to develop a common revenue standard for US GAAP and IFRS that would:

Remove inconsistencies and weaknesses in previous revenue requirements

Provide a more robust framework for addressing revenue issues

Improve comparability of revenue recognition practices across entities, industries, jurisdictions and capital markets

Provide more useful information to users of financial statements through improved disclosure requirements and

Simplify the preparation of financial statements by reducing the number of requirements to which an entity must refer.

We have closely assessed the impact of adopting ASC 606 on our Consolidated Financial Statements by assessing all contracts that have an impact on net system sales and net service and field option sales over 2017 and 2016. We have finalized our assessment of all contracts based on which we have adopted ASC 606 "Revenue from Contracts with Customers" with a date of the initial application of January 1, 2018. We have selected full retrospective adoption and therefore have restated all years presented in our Consolidated Financial Statements upon adoption. As a result, we have changed our accounting policy for revenue recognition as detailed below.

We applied ASC 606 for the years ended December 31, 2016 and 2017 retrospectively using the practical expedients in paragraph ASC 606-10-65-1(f), under which we:

Do not restate contracts that begin and are completed in the same annual or semi-annual reporting period;

Used the transaction price at the date the contract was completed rather than estimating variable consideration amounts in the comparative reporting periods;

Do not disclose the amount of consideration allocated to the remaining performance obligations or an explanation of when we expect to recognize that amount as revenue for all reporting periods presented before the date of the initial application - i.e. January 1, 2018; and

Reflect the aggregate effect of all modifications that occurred before January 1, 2016 when identifying the performance obligations, determining the transaction price and allocating the transaction price to the satisfied and unsatisfied performance obligations.

Applying these practical expedients does not have a significant impact on our adjusted annual financial results as the impact is limited to certain shifts of revenue recognition between periods due to not using the hindsight allowed by these practical expedients.

The details of the significant changes and quantitative impact of the changes are disclosed below:

A. Allocation of consideration based on stand-alone selling price

We changed from allocating the consideration of a contract to the elements of the contract using the relative selling price determined through VSOE or BESP in accordance with ASC 605 to allocating the consideration of a contract based on stand-alone selling prices determined using the adjusted market assessment approach in accordance with ASC 606. As a result, we consider customer discounts and credits, within volume purchase agreements, a reduction of the transaction price. Consequently, we allocate these customer discounts and credits ratably to the performance obligations based on the stand-alone selling prices.

As we have very limited sales on a stand-alone basis we have to make estimates to determine our stand-alone selling prices. For this we selected the adjusted market assessment approach. This estimate requires our judgment as we mainly enter into bundled arrangements and we sell specialized goods and services. Furthermore, we have no insight into the stand-alone selling prices of our competitors for comparable products and services. Therefore, we considered our pricing policies and practices, which are based on the value we provide to our customers. Our internal pricing policies result in a list price, which is for the majority of products only determined and set when the products or services are introduced. We conclude that these list prices generally do not reflect the stand-alone selling prices over the lifetime of the related product or services.

To determine the stand-alone selling prices for our products and services we used data of bundled arrangements over the last one to three years and derived the price for which each system model would be sold, on a stand-alone basis, from this data. We used the same relative step-down from the list price for options and services that are sold together with the system. For other services we used list prices, as these contracts typically have duration of one year and prices are updated periodically. For options that are not sold as part of a system for systems already installed at the customer, we used the contract data over the last three years and derived the price for which these options would be sold, on a stand-alone basis, from this data.

B. Field upgrades

Transfer of control of field upgrades and options, that require significant installation efforts, was previously upon customer acceptance of the upgraded system. The new over-time revenue recognition requirement, in ASC 606-10-25-27 regarding performance that enhances an asset the customer controls, results in revenue for these field upgrades and options to be recognized over time during the period of installation.

C. Installation

Installation revenue was previously recognized upon completion and customer acceptance. It has been determined, in accordance with ASC 606-10-25-27, that the customer simultaneously consumes and receives the benefits provided by the performance of the installation. As a result, transfer of control takes place over the period of installation from delivery through customer acceptance, measured on a straight-line basis, as our performance is satisfied evenly over this period of time.

D. Applications projects and Field projects (relocations)

Applications and Field project revenue was previously recognized upon completion and customer acceptance. It has been determined, in accordance with ASC 606-10-25-27, that the customer simultaneously consumes and receives the benefits provided by the performance of our services. As a result, the transfer of control occurs throughout the service period.

E. Bill-and-hold transactions

Previously, in order to recognize revenue for a bill-and-hold transaction, we required a fixed schedule of delivery, as well as the buyer must have had a substantial business purpose for requesting the bill-and-hold transaction, in combination with the other requirements of SAB Topic 13. In accordance with ASC 606-10-55-83, we no longer require a fixed scheduled delivery and a customer's explicit request.

F. Options to buy as a material right

Options to buy goods or services, in addition to the purchase commitment, were previously not assessed as a separate element. These options are now assessed in order to determine if they provide a material right to the customer they would not have received if they had not entered into the contract. Each option to buy additional goods or services provided at a discount from the stand-alone selling price is considered a material right and will be recognized as revenues in accordance with ASC 606-10-55-42.

G. Contract assets and liabilities

The contract assets primarily relate to our rights to a consideration for goods or services delivered but not invoiced at the reporting date. The contract assets are transferred to receivables when invoiced and the rights become unconditional. The contract liabilities primarily relate to down payments, received on systems to be delivered, as well as deferred revenue from system shipments, based on the allocation of the consideration to the related performance obligations in the contract. This balance mainly consists of extended warranties, installation and other free goods or services provided as part of a volume purchase agreement.

The majority of our customer contracts contain both asset and liability positions. At the end of each reporting period, these positions are netted on a contract basis and presented as either an asset or a liability in the financial statements. Consequently, a contract balance can change between periods from a net contract asset balance to a net contract liability balance on the balance sheet.

The following tables summarize the impacts of the adoption of ASC 606 on our Consolidated Statements of Operations and Comprehensive Income for the year ended December 31, 2017:

Consolidated Statements of Operations

Year ended December 31, 2017 (in millions, except per share data)	As previously reported EUR	Adoption of ASC 606 EUR	As adjusted EUR
Net system sales	6,373.7	50.7	6,424.4
Net service and field option sales	2,679.1	(140.8)	)2,538.3
Total net sales	9,052.8	(90.1)	)8,962.7
Cost of system sales	(3,459.0)	)19.1	(3,439.9)
Cost of service and field option sales	(1,517.1)	)14.5	(1,502.6)
Total cost of sales	(4,976.1)	)33.6	(4,942.5)
Gross profit	4,076.7	(56.5)	)4,020.2
Other income	95.8	—	95.8
Research and development costs	(1,259.7)	)—	(1,259.7)
Selling, general and administrative costs	(416.6)	)—	(416.6)
Income from operations	2,496.2	(56.5)	)2,439.7
Interest and other, net	(50.3)	)—	(50.3)
Income before income taxes	2,445.9	(56.5)	)2,389.4
Provision for income taxes	(310.7)	)4.7	(306.0)
Income after income taxes	2,135.2	(51.8)	)2,083.4
Profit (loss) related to equity method investments	(16.7)	)—	(16.7)
Net income	2,118.5	(51.8)	)2,066.7
Basic net income per ordinary share	4.93		4.81
Diluted net income per ordinary share	4.91		4.79
Number of ordinary shares used in computing per share amounts			
Basic	429.8		429.8
Diluted	431.6		431.6

Consolidated Statements of Comprehensive Income

Year ended December 31, 2017 (in millions)	As previously reported EUR	Adoption of ASC 606 EUR	As adjusted EUR
Net income	2,118.5	(51.8))2,066.7

Other comprehensive income:

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Proportionate share of other comprehensive income from equity method investments	(1.0))—	(1.0)
Foreign currency translation, net of taxes:			
Gain (loss) on foreign currency translation and effective portion of hedges on net investments	(329.0)	)—	(329.0)
Financial instruments, net of taxes:			
Gain (loss) on derivative financial instruments	(16.6)	)—	(16.6)
Transfers to net income	(3.1)	)—	(3.1)
Other comprehensive income, net of taxes	(349.7)	)—	(349.7)
Total comprehensive income, net of taxes	1,768.8	(51.8	)1,717.0
Attributable to equity holders	1,768.8	(51.8	)1,717.0

The following table summarizes the impacts of the adoption of ASC 606 on our Consolidated Balance Sheets as of December 31, 2017:

Consolidated Balance Sheets As of December 31, 2017 (in millions, except share and per share data)	As previously reported EUR	Adoption of ASC 606 EUR	As adjusted EUR
Assets			
Cash and cash equivalents	2,259.0	—	2,259.0
Short-term investments	1,029.3	—	1,029.3
Accounts receivable, net	1,772.3	(32.0)	)1,740.3
Finance receivables, net	59.1	—	59.1
Current tax assets	61.6	—	61.6
Contract assets	—	270.4	270.4
Inventories, net	2,958.4	(2.8)	)2,955.6
Other assets	867.3	(356.8)	)510.5
Total current assets	9,007.0	(121.2)	)8,885.8
Finance receivables, net	264.9	—	264.9
Deferred tax assets	31.7	—	31.7
Other assets	602.7	—	602.7
Equity method investments	982.2	—	982.2
Goodwill	4,541.1	—	4,541.1
Other intangible assets, net	1,166.0	—	1,166.0
Property, plant and equipment, net	1,600.8	—	1,600.8
Right-of-use assets	—	—	—
Total non-current assets	9,189.4	—	9,189.4
Total assets	18,196.4	(121.2)	)18,075.2
Liabilities and shareholders' equity			
Accounts payable	837.3	—	837.3
Accrued and other liabilities	2,327.4	(1,734.6)	)592.8
Current tax liabilities	152.0	—	152.0
Current portion of long-term debt	25.2	—	25.2
Contract liabilities	—	1,530.0	1,530.0
Total current liabilities	3,341.9	(204.6)	)3,137.3
Long-term debt	3,000.1	—	3,000.1
Deferred and other tax liabilities	327.9	13.2	341.1
Contract liabilities	—	622.0	622.0
Accrued and other liabilities	850.3	(652.0)	)198.3
Total non-current liabilities	4,178.3	(16.8)	)4,161.5
Total liabilities	7,520.2	(221.4)	)7,298.8
Issued and outstanding shares	38.8	—	38.8
Share premium	3,732.5	—	3,732.5
Treasury shares at cost	(557.9))—	(557.9)

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Retained earnings	5,092.8	152.0	5,244.8
Earnings current year	2,118.5	(51.8)2,066.7
Accumulated other comprehensive income	251.5	—	251.5
Total shareholders' equity	10,676.2	100.2	10,776.4
Total liabilities and shareholders' equity	18,196.4	(121.2	)18,075.2

The following tables summarize the impacts of the adoption of ASC 606 on our Consolidated Statements of Cash Flows for the for the year ended December 31, 2017:

Consolidated Statements of Cash Flows

Year ended December 31, 2017 (in millions)	As previously reported EUR	Adoption of ASC 606 EUR	As adjusted EUR
Cash Flows from Operating Activities			
Net income	2,118.5	(51.8	)2,066.7
Adjustments to reconcile net income to net cash flows from operating activities:			
Depreciation and amortization	417.5	—	417.5
Impairment	9.0	—	9.0
Loss on disposal of property, plant and equipment	2.8	—	2.8
Share-based payments	53.1	—	53.1
Allowance for doubtful receivables	7.8	—	7.8
Allowance for obsolete inventory	120.1	—	120.1
Deferred income taxes	(7.6	)(0.8	)(8.4)
Equity method investments, net of income taxes	16.7	—	16.7
Changes in assets and liabilities:			
Accounts receivable	(1,142.4	)(6.0	(1,136.4)
Finance receivables	224.8	(61.3	)163.5
Inventories	(237.8	)(46.3	)(284.1)
Other assets	(389.8	)(294.0	(95.8)
Accrued and other liabilities	491.2	(400.3	)90.9
Accounts payable	266.5	—	266.5
Current tax assets and liabilities	(151.8	)—	(151.8)
Contract assets and liabilities	—	260.5	260.5
Net cash provided by operating activities	1,798.6	—	1,798.6
Cash Flows from Investing Activities			
Purchase of property, plant and equipment	(338.9	)—	(338.9)
Purchase of intangible assets	(19.1	)—	(19.1)
Purchase of short-term investments	(1,129.3	)—	(1,129.3)
Maturity of short-term investments	1,250.0	—	1,250.0
Cash from (used for) derivative financial instruments	27.0	—	27.0
Loans issued and other investments	(0.6	)—	(0.6)
Repayment on loans	1.6	—	1.6
Acquisition of equity method investments	(1,019.7	)—	(1,019.7)
Dividend income from equity method investments	19.7	—	19.7
Acquisition of subsidiaries (net of cash acquired)	—	—	—
Net cash used in investing activities	(1,209.3	)—	(1,209.3)
Cash Flows from Financing Activities			
Dividend paid	(516.7	)—	(516.7)
Purchase of treasury shares	(500.0	)—	(500.0)
Net proceeds from issuance of shares	50.6	—	50.6
Net proceeds from issuance of notes	—	—	—
Repayment of debt	(243.0)—	(243.0)
Tax benefit (deficit) from share-based payments	—	—	—

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Net cash used in financing activities	(1,209.1)—	(1,209.1)
Net cash flows	(619.8)—	(619.8)
Effect of changes in exchange rates on cash	(28.1	)—	(28.1)
Net increase (decrease) in cash and cash equivalents	(647.9	)—	(647.9)
Cash and cash equivalents at beginning of the year	2,906.9	—	2,906.9
Cash and cash equivalents at end of the year	2,259.0	—	2,259.0

The following tables summarize the impacts of the adoption of ASC 606 on our Consolidated Statements of Operations and Comprehensive Income for the year ended December 31, 2016:

Consolidated Statements of Operations

Year ended December 31, 2016 (in millions, except per share data)	As previously reported EUR	Adoption of ASC 606 EUR	As adjusted EUR
Net system sales	4,672.0	46.9	4,718.9
Net service and field option sales	2,122.8	33.4	2,156.2
Total net sales	6,794.8	80.3	6,875.1
Cost of system sales	(2,468.2	)44.3	(2,423.9)
Cost of service and field option sales	(1,282.1	)(23.8	)(1,305.9)
Total cost of sales	(3,750.3	)20.5	(3,729.8)
Gross profit	3,044.5	100.8	3,145.3
Other income	93.8	—	93.8
Research and development costs	(1,105.8	)—	(1,105.8)
Selling, general and administrative costs	(374.8	)—	(374.8)
Income from operations	1,657.7	100.8	1,758.5
Interest and other, net	33.7	—	33.7
Income before income taxes	1,691.4	100.8	1,792.2
Provision for income taxes	(219.5	)(14.9	)(234.4)
Income after income taxes	1,471.9	85.9	1,557.8
Profit (loss) related to equity method investments	—	—	—
Net income	1,471.9	85.9	1,557.8
Basic net income per ordinary share	3.46		3.66
Diluted net income per ordinary share	3.44		3.64
Number of ordinary shares used in computing per share amounts			
Basic	425.6		425.6
Diluted	427.7		427.7

Consolidated Statements of Comprehensive Income

Year ended December 31, 2016 (in millions)	As previously reported EUR	Adoption of ASC 606 EUR	As adjusted EUR
Net income	1,471.9	85.9	1,557.8

Other comprehensive income:

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Proportionate share of other comprehensive income from equity method investments	—	—	—
Foreign currency translation, net of taxes:			
Gain (loss) on foreign currency translation and effective portion of hedges on net investments	120.4	—	120.4
Financial instruments, net of taxes:			
Gain (loss) on derivative financial instruments	6.0	—	6.0
Transfers to net income	2.4	—	2.4
Other comprehensive income, net of taxes	128.8	—	128.8
Total comprehensive income, net of taxes	1,600.7	85.9	1,686.6
Attributable to equity holders	1,600.7	85.9	1,686.6

The following table summarizes the impacts of the adoption of ASC 606 on our Consolidated Balance Sheets as of December 31, 2016:

Consolidated Balance Sheets As of December 31, 2016 (in millions, except share and per share data)	As previously reported EUR	Adoption of ASC 606 EUR	As adjusted EUR
Assets			
Cash and cash equivalents	2,906.9	—	2,906.9
Short-term investments	1,150.0	—	1,150.0
Accounts receivable, net	700.2	(26.0)	)674.2
Finance receivables, net	447.4	—	447.4
Current tax assets	11.6	—	11.6
Contract assets	—	91.6	91.6
Inventories, net	2,780.9	(49.1)	)2,731.8
Deferred tax assets	—	—	—
Other assets	560.4	(62.8)	)497.6
Total current assets	8,557.4	(46.3)	)8,511.1
Finance receivables, net	117.2	(61.3)	)55.9
Deferred tax assets	34.9	—	34.9
Contract assets	—	56.7	56.7
Other assets	612.3	—	612.3
Equity method investments	—	—	—
Goodwill	4,873.9	—	4,873.9
Other intangible assets, net	1,323.0	—	1,323.0
Property, plant and equipment, net	1,687.2	—	1,687.2
Right-of-use assets	—	—	—
Total non-current assets	8,648.5	(4.6)	)8,643.9
Total assets	17,205.9	(50.9)	)17,155.0
Liabilities and shareholders' equity			
Accounts payable	593.2	—	593.2
Accrued and other liabilities	2,237.8	(1,590.8)	)647.0
Current tax liabilities	201.9	—	201.9
Current portion of long-term debt	247.7	—	247.7
Contract liabilities	—	1,386.4	1,386.4
Total current liabilities	3,280.6	(204.4)	)3,076.2
Long-term debt	3,071.8	—	3,071.8
Deferred and other tax liabilities	396.9	14.0	410.9
Provisions	20.5	—	20.5
Contract liabilities	—	447.4	447.4
Accrued and other liabilities	615.7	(459.9)	)155.8
Total non-current liabilities	4,104.9	1.5	4,106.4
Total liabilities	7,385.5	(202.9))7,182.6

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Issued and outstanding shares	39.4	—	39.4
Share premium	3,693.5	—	3,693.5
Treasury shares at cost	(796.2)—	(796.2)
Retained earnings	4,810.6	66.1	4,876.7
Earnings current year	1,471.9	85.9	1,557.8
Accumulated other comprehensive income	601.2	—	601.2
Total shareholders' equity	9,820.4	152.0	9,972.4
Total liabilities and shareholders' equity	17,205.9	(50.9	)17,155.0

The following tables summarize the impacts of the adoption of ASC 606 on our Consolidated Statements of Cash Flows for the year ended December 31, 2016:

Consolidated Statements of Cash Flows

Year ended December 31, 2016 (in millions)	As previously reported EUR	Adoption of ASC 606 EUR	As adjusted EUR
Cash Flows from Operating Activities			
Net income	1,471.9	85.9	1,557.8
Adjustments to reconcile net income to net cash flows from operating activities:			
Depreciation and amortization	356.9	—	356.9
Impairment	3.5	—	3.5
Loss on disposal of property, plant and equipment	5.2	—	5.2
Share-based payments	47.7	—	47.7
Allowance for doubtful receivables	3.2	—	3.2
Allowance for obsolete inventory	73.0	—	73.0
Deferred income taxes	(0.6)	)14.0	13.4
Equity method investments, net of income taxes	—	—	—
Changes in assets and liabilities:			
Accounts receivable	187.4	26.0	213.4
Finance receivables	(156.1)	)61.3	(94.8)
Inventories	(43.7)	)49.1	5.4
Other assets	(152.9)	)62.8	(90.1)
Accrued and other liabilities	(273.9)	)246.9	(27.0)
Accounts payable	50.9	—	50.9
Current tax assets and liabilities	93.4	—	93.4
Contract assets and liabilities	—	(546.0)	)(546.0)
Net cash provided by operating activities	1,665.9	—	1,665.9
Cash Flows from Investing Activities			
Purchase of property, plant and equipment	(316.3)	)—	(316.3)
Purchase of intangible assets	(8.4)	)—	(8.4)
Purchase of short-term investments	(2,520.0)	)—	(2,520.0)
Maturity of short-term investments	2,320.0	—	2,320.0
Cash from (used for) derivative financial instruments	(15.0)	)—	(15.0)
Loans issued and other investments	—	—	—
Repayment on loans	(7.4)	)—	(7.4)
Acquisition of equity method investments	—	—	—
Dividend income from equity method investments	—	—	—
Acquisition of subsidiaries (net of cash acquired)	(2,641.3)	)—	(2,641.3)
Net cash used in investing activities	(3,188.4)	)—	(3,188.4)
Cash Flows from Financing Activities			
Dividend paid	(445.9)	)—	(445.9)
Purchase of treasury shares	(400.0)	)—	(400.0)
Net proceeds from issuance of shares	582.7	—	582.7
Net proceeds from issuance of notes	2,230.6	—	2,230.6
Repayment of debt	(4.7))—	(4.7)
Tax benefit (deficit) from share-based payments	0.9	—	0.9

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Net cash used in financing activities	1,963.6	—	1,963.6
Net cash flows	441.1	—	441.1
Effect of changes in exchange rates on cash	7.1	—	7.1
Net increase (decrease) in cash and cash equivalents	448.2	—	448.2
Cash and cash equivalents at beginning of the year	2,458.7	—	2,458.7
Cash and cash equivalents at end of the year	2,906.9	—	2,906.9

Adoption of ASC 842 "Leases"

As of January 1, 2018, ASML has early adopted ASC 842 "Leases". We applied a modified retrospective adoption and therefore restated 2016 and 2017. The most significant changes in our accounting policy (compared to ASC 840 "Leases") are the recognition of right-of-use assets and lease liabilities for operating leases and the classification of leases from a lessor perspective.

As of December 31, 2016 and 2017, our impact resulting from operating leases is as follows:

• We have recognized right-of-use assets and lease liabilities of EUR 131 million and EUR 114 million, respectively.

• The short term portion of the lease liabilities of EUR 28 million and EUR 33 million, respectively, has been classified as accrued and other liabilities - current.

• The long term portion of the lease liabilities of EUR 103 million and EUR 81 million, respectively, has been included in the accrued and other liabilities - non-current.

As of December 31, 2016 and 2017, we reclassified our non-current accounts receivable of EUR 32 million and EUR 106 million, respectively, from finance receivables to other assets - non-current in order to present our sales-type leases separate on our balance sheet within finance receivables.

We elected the following practical expedients as a package and applied these consistently to all of our leases (including those for which we are a lessee or a lessor):

• We did not reassess whether any expired or existing contracts are or contain leases.

• We did not reassess the lease classification for any expired or existing leases (that is, all existing leases that were classified as operating leases in accordance with ASC 840 have been classified as operating leases, and all existing leases that were classified as capital leases in accordance with ASC 840 have been classified as finance leases).

• We excluded initial direct costs for any existing leases.

Adoption of ASU 2016-16 Income Taxes: "Intra-Entity Transfers of Assets Other Than Inventory"

As of January 1, 2018, ASML adopted ASU 2016-16 Income taxes: "Intra-entity transfers of assets other than inventory". We applied a modified retrospective adoption with a cumulative effect adjustment to Retained earnings as of January 1, 2018. The most significant change in our accounting policy is that prepaid taxes as calculated using the purchaser's rather than the seller's tax jurisdiction (except for prepaid taxes arising from intra-entity transfers of inventory).

As of January 1, 2018, retained earnings decreased with EUR 85 million and other assets decreased with EUR 157 million whereas Deferred tax assets increased with EUR 72 million. This impact mainly relates to a so-called bi-lateral advanced pricing agreement between the US and the Dutch tax authorities on a inter group transfer of intellectual property rights.

Adoption of ASU 2017-04 "Simplifying the Test for Goodwill Impairment"

As of January 1, 2018, ASML adopted ASU 2017-04 "Simplifying the Test for Goodwill Impairment". This accounting standard update removes Step 2 of the goodwill impairment test, which requires a hypothetical purchase price allocation. The guidance provides that a goodwill impairment is the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. All other goodwill impairment guidance remains largely unchanged.

Adoption of ASU 2016-15 "Classification of Certain Cash Receipts and Cash Payments"

As of January 1, 2018, ASML adopted ASU 2016-15 "Classification of Certain Cash Receipts and Cash Payments". This accounting standard update provides guidance over certain cash flow issues. The guidance provided over distributions received from equity method investments allows for companies to make an accounting policy election to classify distributions received from equity method investees using the cumulative earnings approach or the nature of the distributions approach. ASML has elected to use the nature of distributions approach which results in our distributions received from Carl Zeiss SMT Holding GmbH & Co. KG to be classified as operating cash flows. This accounting policy election was applied retrospectively.

New US GAAP accounting pronouncements issued but not adopted

For the below mentioned ASUs issued up to the date of this report but not yet adopted by us, the impact on our Financial Statements needs to be assessed:

ASU No. 2016-13 "Financial Instruments - Credit Losses (Topic 326)" was issued by the FASB in June 2016 and will provide financial statement users with more information about the expected credit losses on financial instruments and other commitments to extend credit held by an entity at each reporting date. The Update is effective for fiscal years beginning after December 15, 2020, including interim periods within those fiscal years. Early adoption is permitted for periods beginning after December 15, 2018. The Standard will be applied using a modified retrospective approach, which requires a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the Standard is effective. We will therefore not restate prior years presented in our Consolidated Financial Statements upon adoption. We are currently in the process of determining the impact of implementing this Standard on our Consolidated Financial Statements.

We believe that the impact of all other recently issued ASUs, either adopted or not yet adopted by us, do not have or are not expected to have a material impact on our Consolidated Financial Statements.

2. Business combinations

On November 22, 2016, we concluded the acquisition of HMI and obtained control through acquiring 100 percent of the issued share capital of HMI, for a total consideration of EUR 3.0 billion. There were no contingent consideration arrangements. The total consideration was allocated to other intangible assets of EUR 606.7 million, other net assets of EUR 259.2 million and goodwill of EUR 2,115.0 million.

The majority of the goodwill arising on the acquisition of HMI is attributable to buyer specific synergies, net sales and profits assigned to future multi-beam technology, net sales and profits assigned to next generation single-beam technology and HMI workforce. Synergies relate to the unique combination of HMI's inspection tools and our defect prediction/pattern fidelity control software.

3. Fair value measurements

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value measurement hierarchy prioritizes the inputs to valuation techniques used to measure fair value as follows:

Level 1: Valuations based on inputs such as quoted prices for identical assets or liabilities in active markets that the entity has the ability to access.

Level 2: Valuations based on inputs other than level 1 inputs such as quoted prices for similar assets or liabilities, quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable data for substantially the full term of the assets or liabilities.

Level 3: Valuations based on inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

The fair value hierarchy gives the highest priority to quoted prices (unadjusted) in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). A financial instrument's fair value classification is based on the lowest level of any input that is significant in the fair value measurement hierarchy.

Financial assets and financial liabilities measured at fair value on a recurring basis

Investments in money market funds (as part of our cash and cash equivalents) have fair value measurements which are all based on quoted prices for identical assets or liabilities.

Our short-term investments consist of deposits with a remaining maturity beyond three months at the date of acquisition with financial institutions that have investment grade credit ratings. The fair value of the deposits is determined with reference to quoted market prices in an active market for similar assets or discounted cash flow analysis.

The principal market in which we execute our derivative contracts is the institutional market in an over-the-counter environment with a high level of price transparency. The market participants usually are large commercial banks. The valuation inputs for our derivative contracts are based on quoted prices and quoting pricing intervals from public data sources; they do not involve management judgment.

The valuation technique used to determine the fair value of forward foreign exchange contracts (used for hedging purposes) approximates the net present value technique which is the estimated amount that a bank would receive or pay to terminate the forward foreign exchange contracts at the reporting date, taking into account current interest rates and current exchange rates.

The valuation technique used to determine the fair value of interest rate swaps (used for hedging purposes) is the net present value technique, which is the estimated amount that a bank would receive or pay to terminate the swap agreements at the reporting date, taking into account current interest rates.

Our Eurobonds serve as hedged items in fair value hedge relationships in which we hedge the variability of changes in the fair value of our Eurobonds due to changes in market interest rates with interest rate swaps. The fair value changes of these interest rate swaps are recorded on the Consolidated Balance Sheets under derivative financial instruments (within other current and non-current assets and other current and non-current liabilities) and the carrying amounts of the Eurobonds are adjusted for the effective portion of these fair value changes only. For the actual aggregate carrying amount and the fair value of our Eurobonds, see Note 16 Long-term debt.

The following tables present our financial assets and financial liabilities that are measured at fair value on a recurring basis:

As of December 31, 2018 (in millions)	Level 1 EUR	Level 2 EUR	Level 3 EUR	Total EUR
Assets measured at fair value				
Derivative financial instruments ¹	—	101.9	—	101.9
Money market funds ²	2,342.6	—	—	2,342.6
Short-term investments ³	—	913.3	—	913.3
Total	2,342.6	1,015.2	—	3,357.8
Liabilities measured at fair value				
Derivative financial instruments ¹	—	47.4	—	47.4
Assets and Liabilities for which fair values are disclosed				
Long-term debt ⁴	3,119.4	—	—	3,119.4

¹ Derivative financial instruments consist of forward foreign exchange contracts and interest rate swaps. See Note 4 Financial risk management.

² Money market funds are part of our cash and cash equivalents. See Note 5 Cash and cash equivalents and short-term investments.

³ Short-term investments consist of deposits with a remaining maturity longer than three months, but less than one year at the date of acquisition. See Note 5 Cash and cash equivalents and short-term investments.

⁴ Long-term debt relates to Eurobonds. See Note 16 Long-term debt.

As of December 31, 2017 (in millions)	Level 1 EUR	Level 2 EUR	Level 3 EUR	Total EUR
Assets measured at fair value				
Derivative financial instruments ¹	—	115.7	—	115.7
Money market funds ²	1,329.4	—	—	1,329.4
Short-term investments ³	—	1,029.3	—	1,029.3
Total	1,329.4	1,145.0	—	2,474.4
Liabilities measured at fair value				
Derivative financial instruments ¹	—	67.3	—	67.3
Assets and Liabilities for which fair values are disclosed				
Long-term debt ⁴	3,193.2	—	—	3,193.2

¹ Derivative financial instruments consist of forward foreign exchange contracts and interest rate swaps. See Note 4 Financial risk management.

² Money market funds are part of our cash and cash equivalents. See Note 5 Cash and cash equivalents and short-term investments.

³ Short-term investments consist of deposits with a remaining maturity longer than three months, but less than one year at the date of acquisition. See Note 5 Cash and cash equivalents and short-term investments.

4. Long-term debt relates to Eurobonds. See Note 16 Long-term debt.

There were no transfers between levels during the years ended December 31, 2018 and December 31, 2017.

Financial assets and financial liabilities that are not measured at fair value

The carrying amount of cash and cash equivalents, accounts payable, and other current financial assets and liabilities approximate their fair value because of the short-term nature of these instruments. Accounts receivable and finance receivables also approximate their fair value because of the fact that any recoverability loss is reflected in an impairment loss.

Assets and liabilities measured at fair value on a non-recurring basis

In 2017 and 2018, we had no significant fair value measurements on a non-recurring basis. We did not recognize any impairment charges for goodwill and other intangible assets during 2017 and 2018. See Note 11 Goodwill and Note 12 Other intangible assets for more information.

4. Financial risk management

We are exposed to certain financial risks such as market risk (including foreign currency risk and interest rate risk), credit risk, liquidity risk and capital risk. Our overall risk management program focuses on the unpredictability of financial markets and seeks to minimize potentially adverse effects on our financial performance. We use derivative financial instruments to hedge certain risk exposures. None of our transactions are entered into for trading or speculative purposes. We believe that market information is the most reliable and transparent measure for our derivative financial instruments that are measured at fair value. To mitigate the risk that any of our counterparties in hedging transactions are unable to meet their obligations, we only enter into transactions with a limited number of major financial institutions that have investment grade credit ratings. Also, we closely monitor the creditworthiness of our counterparties. Concentration risk is mitigated by limiting the exposure to each of the individual counterparties. Our risk management program focuses appropriately on the current environment of uncertainty in the financial markets.

Foreign currency risk management

We are exposed to currency risks. Our Financial Statements are expressed in euros. Accordingly, our results of operations are exposed to fluctuations in exchange rates between the euro and such other currencies, and changes in currency exchange rates can result in losses in our Financial Statements. We are particularly exposed to fluctuations in the exchange rates between the US dollar and the euro, and to a lesser extent to the Japanese yen and the Taiwanese dollar in relation to the euro. We incur costs of sales predominantly in euros with portions also denominated in US and Taiwanese dollars, particularly following our acquisitions of Cymer in 2013 and HMI in 2016. A small portion of our operating results are driven by movements in currencies other than the euro, yen, US dollar or Taiwanese dollar. It is our policy to hedge material transaction exposures, such as forecasted sales and purchase transactions, and material net remeasurement exposures, such as accounts receivable and payable. We hedge these exposures through the use of foreign exchange contracts.

As of December 31, 2018, accumulated OCI includes EUR 10.9 million representing the total anticipated gain to be released to cost of sales (2017: loss EUR 12.5 million and 2016: gain EUR 10.4 million) (net of taxes: 2018: gain EUR 9.7 million; 2017: loss EUR 11.2 million; 2016: gain EUR 9.3 million), which will offset the euro equivalent of foreign currency denominated forecasted purchase transactions. All amounts are expected to be released over the next 12 months. As of December 31, 2018, accumulated OCI includes EUR (1.4) million (2017: no amount; 2016: EUR 0.2 million), representing the total anticipated gain to be released to sales. The effectiveness of all contracts for which we apply hedge accounting is monitored on a quarterly basis throughout the life of the hedges. During 2018, 2017 and 2016, no ineffective hedge relationships were recognized.

As of December 31, 2018, EUR 11.9 million loss (2017: EUR 13.9 million gain) representing the effective portion of hedges on net investments was recognized in accumulated OCI.

Interest rate risk management

We have interest-bearing assets and liabilities that expose us to fluctuations in market interest rates. We use interest rate swaps to align the interest-typical terms of interest-bearing liabilities with the interest-typical terms of interest-bearing assets. There may be residual interest rate risk to the extent the asset and liability positions do not fully offset.

As part of our hedging policy, we use interest rate swaps to hedge changes in fair value of our Eurobonds due to changes in market interest rates, thereby offsetting the variability of future interest receipts on part of our cash and cash equivalents. During 2018, these hedges were highly effective in hedging the fair value exposure to interest rate movements. The changes in fair value of the Eurobonds were included in the Consolidated Statements of Operations in the same period as the changes in the fair value of the interest rate swaps.

Furthermore, as part of our hedging policy, we use interest rate swaps to hedge the variability of future interest cash flows relating to certain of our operating lease obligations. In June 2018, these interest rate swaps matured together with the related operating lease obligation. Over the lifetime of the hedge relationship the hedge was highly effective in hedging the cash flow exposure to interest rate movements.

Financial instruments

We use foreign exchange contracts to manage our foreign currency risk and interest rate swaps to manage our interest rate risk. The following table summarizes the notional amounts and estimated fair values of our derivative financial instruments:

As of December 31 (in millions)	2017		2018	
	Notional amount EUR	Fair Value EUR	Notional amount EUR	Fair Value EUR
Forward foreign exchange contracts	1,146.2	18.1	134.1	(2.0)
Interest rate swaps	3,024.9	30.3	3,000.0	56.5

The following table summarizes our derivative financial instruments per category:

As of December 31 (in millions)	2017		2018	
	Assets	Liabilities	Assets	Liabilities
	EUR	EUR	EUR	EUR
Interest rate swaps — cash flow hedges	—	0.6	—	—
Interest rate swaps — fair value hedges	93.6	62.7	88.5	32.0
Forward foreign exchange contracts — cash flow hedges	0.7	2.6	6.5	0.9
Forward foreign exchange contracts — net investment hedged	1.2	1.2	—	2.6
Forward foreign exchange contracts — no hedge accounting	20.2	0.2	6.9	11.9
Total	115.7	67.3	101.9	47.4
Less non-current portion:				
Interest rate swaps — fair value hedges	65.2	62.7	59.7	32.0
Total non-current portion	65.2	62.7	59.7	32.0
Total current portion	50.5	4.6	42.2	15.4

The fair value part of a hedging derivative financial instrument that has a remaining term of 12 months or less after balance sheet date is classified as current asset or liability. When the fair value part of a hedging derivative has a term of more than 12 months after balance sheet date, it is classified as non-current asset or liability. The current portion of derivative financial instruments is included in other current assets and current accrued and other liabilities in the Consolidated Balance Sheets. The non-current portion of derivative financial instruments is included in other non-current assets and non-current accrued and other liabilities in the Consolidated Balance Sheets.

For further information regarding our derivative financial instruments, see Note 3 Fair value measurement.

Foreign exchange contracts

The notional principal amounts of the outstanding forward foreign exchange contracts in the main currencies US dollar, Japanese yen and Taiwanese dollar at December 31, 2018 are USD 348.6 million, JPY 6.0 billion and TWD 8.8 billion (2017: USD 796.3 million, JPY 7.4 billion and TWD 16.6 billion).

The hedged highly probable forecasted transactions denominated in foreign currency are expected to occur at various dates during the coming 12 months. Gains and losses recognized in OCI on forward foreign exchange contracts included in a hedge relationship will be recognized in the Consolidated Statements of Operations in the period during which the hedged forecasted transactions affect the Consolidated Statements of Operations.

In 2018, we recognized a net amount of EUR 11.8 million loss (2017: EUR 3.1 million gain; 2016: EUR 2.4 million loss) in the Consolidated Statements of Operations resulting from effective cash flow hedges for forecasted sales and purchase transactions that occurred in the year. Furthermore, we recognized a net amount of EUR 24.2 million gain in the Consolidated Statements of Operations resulting from derivative financial instruments measured at fair value through profit or loss (2017: EUR 126.4 million gain; 2016: EUR 81.2 million loss), which is almost fully offset by the revaluation of the hedged monetary items.

Interest rate swaps

The notional principal amount of the outstanding interest rate swap contracts as of December 31, 2018 was EUR 3.0 billion (2017: EUR 3.0 billion).

Sensitivity analysis financial instruments

Foreign currency sensitivity

We are mainly exposed to fluctuations in exchange rates between the euro and the US dollar, the euro and Taiwanese dollar and the euro and the Japanese yen. The following table details our sensitivity to a 10.0 percent strengthening of foreign currencies against the euro. The sensitivity analysis includes foreign currency denominated monetary items outstanding and adjusts their translation at the period end for a 10.0 percent strengthening in foreign currency rates. A positive amount indicates an increase in net income or equity, as shown.

(in millions)	2017		2018	
	Impact on net income EUR	Impact on equity EUR	Impact on net income EUR	Impact on equity EUR
US dollar	(6.5	) 15.6	(8.7	) 28.2
Japanese yen	(1.8	) 0.9	(1.7	) (4.0
Taiwanese dollar	(5.3	) (22.3	) (6.5	) (12.7
Other currencies	(3.4	) —	(5.9) —
Total	(17.0	) (5.8	) (22.8	) 11.5

It is our policy to limit the effects of currency exchange rate fluctuations on our Consolidated Statements of Operations. The decreased effect on net income in 2018 compared with 2017 reflects our lower net exposure to currencies other than the euro at year-end 2018. The negative effect on net income as presented in the table above for 2018 is mainly attributable to timing differences between the arising and hedging of exposures.

The effects of the fair value movements of cash flow hedges, entered into for US dollar and Japanese yen transactions are recognized in equity. The US dollar and Japanese yen effect on equity in 2018 compared with 2017 is the result of an increase in outstanding purchase hedges and decrease in outstanding sales hedges.

The effects of the fair value movements of net investment hedges, entered into for Taiwanese dollar transactions are recognized in equity. This effect is offset by the translation adjustment on the net investment also recorded in equity. This offset is not included in the table above.

For a 10.0 percent weakening of the foreign currencies against the euro, there would be approximately an equal but opposite effect on net income and equity.

Interest rate sensitivity

The sensitivity analysis below has been determined based on the exposure to interest rates for both derivative financial and non-derivative financial instruments at the balance sheet date with the stipulated change taking place at the beginning of the financial year and held constant throughout the reporting period. The table below shows the effect of a 1.0 percentage point increase in interest rates on our net income and equity. A positive amount indicates an increase in net income and equity.

(in millions)	2017		2018	
	Impact on net income EUR	Impact on equity EUR	Impact on net income EUR	Impact on equity EUR
Effect of a 1.0 percent point increase in interest rates	2.6	0.1	10.3	—

The positive effect on net income mainly relates to our cash and cash equivalents and short-term investments. The positive effect on equity, is mainly attributable to the fair value movements of the interest rate swaps designated as cash flow hedges.

For a 1.0 percentage point decrease in interest rates there would be approximately an equal but opposite effect on net income and equity.

Credit risk management

Financial instruments that potentially subject us to significant concentration of credit risk consist principally of cash and cash equivalents, short-term investments, derivative financial instruments used for hedging activities, accounts receivable and finance receivables.

Cash and cash equivalents, short-term investments and derivative financial instruments contain an element of risk of the counterparties being unable to meet their obligations. Our risk management program focuses appropriately on the current environment of uncertainty in the financial markets. We invest our cash and cash equivalents and short-term investments in short-term deposits with financial institutions that have investment grade credit ratings and in money market and other investment funds that invest in high-rated short-term debt securities. To mitigate the risk that our counterparties in hedging transactions are unable to meet their obligations, we enter into transactions with a limited number of major financial institutions that have investment grade credit ratings and closely monitor their creditworthiness. Concentration risk is mitigated by limiting the exposure to each of the individual counterparties. Our customers consist of IC manufacturers located throughout the world. We perform ongoing credit evaluations of our customers' financial condition. We mitigate credit risk through additional measures, including the use of down payments, letters of credit, and contractual ownership retention provisions. Retention of ownership enables us to recover the systems in the event a customer defaults on payment.

Capital risk management

We manage our capital availability risk by maintaining a conservative financial policy that focuses on liquidity and financial stability throughout industry cycles. This is pursued by maintaining a capital structure that supports a solid investment grade credit rating.

5. Cash and cash equivalents and short-term investments

Cash and cash equivalents at December 31, 2018 include deposits with financial institutions that have investment grade credit ratings of EUR 188.2 million (2017: EUR 42.1 million), investments in money market and other investment funds that invest in high-rated short-term debt securities of EUR 2,342.6 million (2017: EUR 1,329.4 million) and interest-bearing bank accounts of EUR 590.3 million (2017: EUR 887.5 million). Our cash and cash equivalents are predominantly denominated in euros and partly in US dollars and Taiwanese dollars.

Cash and cash equivalents have insignificant interest rate risk and remaining maturities of three months or less at the date of acquisition. At December 31, 2018 no restrictions on usage of cash and cash equivalents exist (2017: no restrictions). The carrying amount of these assets approximates their fair value.

Short-term investments have insignificant interest rate risk and remaining maturities longer than three months but less than one year at the date of acquisition. The carrying amount of these assets approximates their fair value. No unrealized gains or losses have been recorded.

6. Accounts receivable

Accounts receivable consist of the following:

As of December 31 (in millions)	2017 ¹ EUR	2018 EUR
Accounts receivable, gross	1,744.9	1,504.9
Allowance for doubtful receivables	(4.6)	(6.7)
Accounts receivable, net	1,740.3	1,498.2

As of January 1, 2018, ASML has adopted the new Revenue Recognition Standard (ASC 606) and Lease Standard 1.(ASC 842). The comparative numbers have been adjusted to reflect these changes in accounting policies, see Note 1 General information / summary of significant accounting policies.

The non-current portion of accounts receivable is included in the non-current other assets, see Note 9 Other assets. The decrease in accounts receivable as of December 31, 2018 compared to December 31, 2017 is due to timing of payments from customers.

The carrying amount of the accounts receivable approximates the fair value. We perform ongoing credit evaluations on our customers' financial condition. We periodically review whether an allowance for credit losses is needed by considering factors such as historical payment experience, credit quality, aging of the accounts receivable balances, and current economic conditions that may affect a customer's ability to pay.

7. Finance receivables

Finance receivables consist of receivables in relation to sales-type leases. The following table lists the components of the finance receivables as of December 31, 2018 and 2017:

As of December 31 (in millions)	2017 ¹	2018
	EUR	EUR
Finance receivables, gross	225.1	893.7
Unearned interest	(6.6)	(7.5)
Finance receivables, net	218.5	886.2
Current portion of finance receivables, gross	62.1	613.3
Current portion of unearned interest	(3.0)	(2.2)
Non-current portion of finance receivables, net	159.4	275.1

As of January 1, 2018, ASML has adopted the new Revenue Recognition Standard (ASC 606) and Lease Standard 1.(ASC 842). The comparative numbers have been adjusted to reflect these changes in accounting policies, see Note 1

General information / summary of significant accounting policies.

The increase in finance receivables as of December 31, 2018 compared to December 31, 2017 was mainly caused by an increase in the number of sales-type leases, as well as a change in the mix towards more high-end systems.

At December 31, 2018, finance receivables, gross due for payment in each of the next 5 years and thereafter are as follows:

(in millions)	EUR
2019	613.3
2020	250.6
2021	7.2
2022	22.6
2023	—
Thereafter	—
Finance receivables, gross	893.7

Gross profit recognized at the commencement date of the lease for our sales-type leases amounts to EUR 446.5 million during 2018 (2017: EUR 247.4 million; 2016: EUR 390.1 million). Interest income for our sales-type leases in 2018 amounts to EUR 4.9 million (2017: EUR 4.0 million; 2016: EUR 6.3 million).

We perform ongoing credit evaluations on our customers' financial condition. We periodically review whether an allowance for credit losses is needed by considering factors such as historical payment experience, credit quality, the aging of the finance receivables balances, and current economic conditions that may affect a customer's ability to pay. In 2018, 2017 and 2016 we did not record any expected credit losses from finance receivables. As of December 31, 2018, the finance receivables were neither past due nor impaired.

8. Inventories

Inventories consist of the following:

As of December 31 (in millions)	2017 ¹	2018
	EUR	EUR
Raw materials	826.8	1,238.3
Work-in-process	1,430.7	1,537.5
Finished products	1,048.0	1,105.0

Inventories, gross	3,305.5	3,880.8
Provision to net realizable value	(349.9)	(441.3)
Inventories, net	2,955.6	3,439.5

As of January 1, 2018, ASML has adopted the new Revenue Recognition Standard (ASC 606) and Lease Standard 1.(ASC 842). The comparative numbers have been adjusted to reflect these changes in accounting policies, see Note 1

General information / summary of significant accounting policies.

The increase in inventory in 2018 compared to 2017 is in line with the growing business.

A summary of activity in the provision to net realizable value is as follows:

Year ended December 31 (in millions)	2017 EUR	2018 EUR
Balance at beginning of year	(382.7)	(349.9)
Addition for the year	(120.1)	(218.2)
Effect of changes in exchange rates	7.9	4.2
Utilization of the provision	145.0	122.6
Balance at end of year	(349.9)	(441.3)

In 2018, the addition for the year is recorded between cost of sales EUR 207.9 million and R&D costs EUR 10.3 million (2017: cost of sales EUR 101.3 million and R&D costs EUR 18.8 million, 2016: cost of sales EUR 69.2 million and R&D costs EUR 3.8 million). In 2018, the addition for the year mainly relates to inventory items which became obsolete due to technological developments and design changes.

9. Other assets

Other current assets consist of the following:

As of December 31 (in millions)	2017 ¹ EUR	2018 EUR
Advance payments to Carl Zeiss SMT GmbH	111.3	231.1
Prepaid expenses	198.4	299.6
Derivative financial instruments	50.5	42.2
VAT	67.3	116.0
Subordinated loan granted to lessor in respect of Veldhoven headquarters ²	5.4	—
Other assets	77.6	83.7
Other current assets	510.5	772.6

As of January 1, 2018, ASML has adopted the new Revenue Recognition Standard (ASC 606) and Lease Standard 1.(ASC 842). The comparative numbers have been adjusted to reflect these changes in accounting policies, see Note 1 General information / summary of significant accounting policies.

² For further details on the loan granted to the lessor in respect of the Veldhoven headquarters see Note 13 Property, plant and equipment.

ASML owns an indirect interest of 24.9 percent in Carl Zeiss SMT GmbH, who is our single supplier of optical columns and, from time to time, ASML makes non-interest bearing advance payments to Carl Zeiss SMT GmbH supporting their work-in-process, thereby securing lens and optical column deliveries to us. Amounts included in these advance payments are settled through future lens or optical column deliveries.

Prepaid expenses mainly include prepaid income taxes on intercompany profit not realized by the ASML group of EUR 100.9 million (2017: EUR 99.7 million) and the contract balance related to the joint development program with imec of EUR 107.5 million as of December 31, 2018 (2017: EUR 15.6 million). At the end of 2018 we started the new joint development program under which we deliver a system and services upfront and receive R&D services throughout the contract period up until 2024.

Derivative financial instruments consist of the current part of the aggregate fair value of interest rate swaps and forward foreign exchange contracts, see Note 4 Financial risk management.

Other non-current assets consist of the following:

As of December 31 (in millions)	2017 ¹ EUR	2018 EUR
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Advance payments to Carl Zeiss SMT GmbH	331.5	533.4
Derivative financial instruments	65.2	59.7
Compensation plan assets ²	41.2	43.1
Prepaid expenses	140.4	4.6
Non-current accounts receivable	105.5	150.7
Other assets	24.4	14.6
Other non-current assets	708.2	806.1

As of January 1, 2018, ASML has adopted the new Revenue Recognition Standard (ASC 606) and Lease Standard 1. (ASC 842). The comparative numbers have been adjusted to reflect these changes in accounting policies, see Note 1 General information / summary of significant accounting policies.

2. For further details on compensation plan assets see Note 19 Employee benefits.

The non-current advance payments to Carl Zeiss SMT GmbH include the non-current part of the advance payments as described above, plus support for tooling (as part of the High NA agreement signed November 3, 2016) for Carl Zeiss SMT GmbH of EUR 176.7 million as of December 31, 2018 (2017: EUR 39.1 million).

Derivative financial instruments consist of the non-current part of the fair value of interest rate swaps, which decreased in value as a result of an increase in market interest rates, see Note 4 Financial risk management.

Prepaid expenses mainly included prepaid income taxes on intercompany profit (other than inventory) not realized by the ASML group. As of December 31, 2017 the balance of prepaid income taxes on intercompany profit not realized by the ASML group amounts to EUR 133.9 million compared to EUR 0.0 million as of December 31, 2018. This change is due to the adoption of ASU 2016-16 as of January 1, 2018. See Note 1 General information / summary of significant accounting policies.

Non-current accounts receivable increased as we sold more systems for which we granted our customers extended payment terms.

10. Equity method investments

We include investments which are accounted for using the equity method, under equity method investments in our Consolidated Balance Sheets. As of December 31, 2018, these include a 24.9 percent equity interest in Carl Zeiss SMT Holding GmbH & Co. KG, a limited partnership that owns Carl Zeiss SMT GmbH, our single supplier of optical columns. We have determined that Carl Zeiss SMT Holding GmbH & Co. KG is a variable interest entity because the entity was established without substantive voting rights since there is disparity between our voting rights and our economics, as well as substantially all of Carl Zeiss SMT Holding GmbH & Co. KG's activities involve or are conducted on our behalf. However, we are not the primary beneficiary of the variable interest entity because we lack the power, through voting rights or similar rights, to direct the activities that most significantly impact Carl Zeiss SMT Holding GmbH & Co. KG's economic performance. We account for our equity investment using the equity method of accounting because we do not control this partnership, however we can exert significant influence over its operating and financial policies.

On June 29, 2017, we completed the acquisition of the 24.9 percent interest in Carl Zeiss SMT Holding GmbH & Co. KG for EUR 1 billion in cash plus EUR 2.6 million transaction costs. Our investment in Carl Zeiss SMT Holding GmbH & Co. KG was EUR 979.3 million more than our 24.9 percent share of the carrying value of their underlying net assets as of the acquisition date. In order to determine the basis differences, we were required to determine the fair value of Carl Zeiss SMT Holding GmbH & Co. KG's identifiable assets and liabilities at acquisition date in the same manner as if it would be a business combination. The excess costs of the investment over our proportional fair value of the identifiable assets and liabilities was identified as equity method goodwill.

The basis differences as of the acquisition date were allocated as follows:

(in millions)	EUR
Equity method goodwill	362.7
Other intangible assets	560.7
In-process research and development	50.7
Inventories	73.7
Pensions	19.9
Deferred tax liabilities	(88.4)
Basis differences	979.3

We amortize the basis difference related to the other intangible assets over the estimated remaining useful lives of these assets that gave rise to this difference. The weighted-average life of the finite-lived intangible assets acquired is 19.4 years and will be amortized using a straight-line method. In-process R&D is initially capitalized at fair value as an intangible asset with an indefinite life. When the R&D project is complete, it is reclassified as an amortizable

purchased intangible asset and is amortized over its estimated useful life. If the project is abandoned, we will record the full basis difference charge for the value of the related intangible asset in our Consolidated Statements of Operations in the period of abandonment. Equity method goodwill is not amortized or tested for impairment; instead the investment in Carl Zeiss SMT Holding GmbH & Co. KG is tested for impairment whenever events or changes in circumstances indicate that the carrying value of the investment may not be recoverable. The basis difference related to inventories will be recorded as part of profit (loss) related to equity method investments.

For the year ended December 31, 2018, we recorded a profit from equity method investments of EUR 6.2 million in our Consolidated Statements of Operations. This profit includes the following components:

Profit of EUR 80.9 million related to our share of Carl Zeiss SMT Holding GmbH & Co. KG's net income after accounting policy alignment.

Cost of EUR 37.3 million related to inventory step-up release.

Cost of EUR 26.7 million basis difference amortization related to intangible assets.

Cost due to intercompany profit elimination of EUR 10.7 million.

We record the results using a one-quarter time lag as these results are not available in time to record them in our concurrent period. The profit was reflected as an increase of the carrying amount of our equity method investments in our Consolidated Balance Sheets as of December 31, 2018.

During 2018, we received dividends amounting to EUR 89.2 million from Carl Zeiss SMT Holding GmbH & Co. KG (2017: EUR 19.7 million).

Carl Zeiss SMT Holding GmbH & Co. KG is a privately held company; therefore, quoted market prices for their stock are not available.

The following summarizes the total assets and liabilities related to our variable interest in Carl Zeiss SMT Holding GmbH & Co. KG

as reflected in our Consolidated Balance Sheets, as well as our maximum exposure to losses as of December 31, 2018.

Our maximum exposure to loss is limited to our equity method investment in Carl Zeiss SMT Holding GmbH & Co.

KG and prepayments provided to the equity method investment.

As of December 31 (in millions)	2018 Assets	2018 Liabilities	Maximum exposure to loss
EUV Agreements ¹	393.7	—	393.7
DUV Agreements ¹	31.5	—	31.5
High NA Agreement ¹	342.9	—	342.9
Investment agreement for 24.9 percent equity	915.8	—	915.8

¹ Amounts are included in advanced payments to Carl Zeiss SMT GmbH within other current assets and other non-current assets. See Note 9 Other assets.

EUV and DUV Agreements

Carl Zeiss SMT GmbH is our single supplier of optical columns and, from time to time, receives non-interest bearing advance payments from us that support their work in-process, thereby securing lens and optical module deliveries to us. Amounts owed under these advance payments are settled through future lens, DUV or EUV optical component deliveries. Our maximum exposure related to this agreement is limited to the assets not settled as of the balance sheet date. See also Note 9 Other assets.

High NA Agreement

On November 3, 2016 we agreed with Carl Zeiss SMT GmbH to support their R&D costs, capital expenditures and other supply chain investments, in respect of High NA, for an amount of EUR 760.0 million over 6 years, beginning in 2016. During 2018, we agreed to fund an additional EUR 144.9 million, which when combined with the agreed additional funding in 2017 of EUR 325.0 million, brings the current estimate of the total funding under this agreement to EUR 1,229.9 million. In 2018 we paid an amount of EUR 275.1 million, of which EUR 74.8 million related to R&D costs and EUR 8.5 million related to supply chain support costs (2017: EUR 147.5 million, of which EUR 55.8 million related to R&D costs and EUR 2.6 million related to supply chain support costs). As of December 31, 2018 our estimated remaining commitment to Carl Zeiss SMT GmbH amounts to EUR 795.3 million (2017: EUR 925.5 million). Our maximum exposure related to this agreement is limited to the amount reimbursable from Carl Zeiss SMT GmbH as of the balance sheet date.

11. Goodwill

Changes in goodwill are summarized as follows:

Year ended December 31	2017	2018
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(in millions)	EUR	EUR
Cost		
Balance at beginning of year	4,873.9	4,541.1
Effect of changes in exchange rates	(332.8)	—
Balance at end of year	4,541.1	4,541.1

For more information with respect to business combinations, see Note 2 Business combinations.

Goodwill mainly results from the acquisitions of Cymer and HMI. Within ASML we have identified two reporting units, which are Reporting Unit ASML and Reporting Unit Cymer Light Sources.

As of December 31, 2018 the goodwill allocated to Reporting Unit ASML amounts to EUR 4,078.8 million (2017: EUR 4,078.8 million) and for Reporting Unit Cymer Light Sources this amounts to EUR 462.3 million (2017: EUR 462.3 million).

Based on our assessment during the annual goodwill impairment test, we believe it is more likely than not that the fair values of the reporting units exceed their carrying amounts, and therefore goodwill was not impaired as of December 31, 2018.

12. Other intangible assets

As of December 31, 2018 other intangible assets consist of finite-lived other intangible assets. Brands, intellectual property, developed technology, customer relationships and other were mainly obtained from the acquisitions of HMI (2016) and Cymer (2013).

Finite-lived other intangible assets consist of the following:

(in millions)	Brands EUR	Intellectual property EUR	Developed technology EUR	Customer relationships EUR	Other EUR	Total EUR
Cost						
Balance at January 1, 2017	40.2	61.4	1,264.7	253.2	17.4	1,636.9
Additions	—	0.5	—	—	14.9	15.4
Effect of changes in exchange rates	(2.0)	)—	(64.8)	)(24.6	)(0.1	)(91.5)
Balance at December 31, 2017	38.2	61.9	1,199.9	228.6	32.2	1,560.8
Additions	—	5.0	—	—	37.0	42.0
Disposals	—	—	—	—	—	—
Effect of changes in exchange rates	1.0	2.0	—	—	(3.0))—
Balance at December 31, 2018	39.2	68.9	1,199.9	228.6	66.2	1,602.8
Accumulated amortization						
Balance at January 1, 2017	3.2	57.9	199.1	50.0	3.7	313.9
Amortization	2.0	2.1	84.1	13.4	3.9	105.5
Impairment charges	—	—	—	—	0.1	0.1
Effect of changes in exchange rates	(0.4)	)—	(19.0)	)(5.6	)(0.3	(24.7)
Balance at December 31, 2017	4.8	60.0	264.2	57.8	8.0	394.8
Amortization	1.9	1.2	82.1	12.7	5.8	103.7
Disposals	—	—	—	—	—	—
Effect of changes in exchange rates	0.7	1.6	0.2	—	(2.2)	)0.3
Balance at December 31, 2018	7.4	62.8	346.5	70.5	11.6	498.8
Carrying amount						
December 31, 2017	33.4	1.9	935.7	170.8	24.2	1,166.0
December 31, 2018	31.8	6.1	853.4	158.1	54.6	1,104.0

During 2018, we recorded amortization charges of EUR 103.7 million (2017: EUR 105.5 million; 2016: EUR 63.5 million) which were recorded in cost of sales for EUR 97.2 million (2017: EUR 99.7 million; 2016: EUR 59.5 million), in R&D costs for EUR 1.3 million (2017: EUR 2.1 million and 2016: EUR 2.5 million) and in SG&A costs for EUR 5.2 million (2017: EUR 3.7 million and 2016: EUR 1.5 million).

As of December 31, 2018, the other intangible assets not yet available for use amount to EUR 37.0 million (2017: EUR 6.0 million) and are allocated to Reporting Unit ASML.

During 2018 we recorded no impairment charges (2017: EUR 0.1 million; 2016: EUR 0.0 million).

As of December 31, 2018, the estimated amortization expenses for other intangible assets, for the next 5 years and thereafter, are as follows:

(in millions)	EUR
2019	105.1
2020	104.5
2021	103.7
2022	100.7
2023	93.5
Thereafter	596.5
Amortization expenses	1,104.0

13. Property, plant and equipment

Property, plant and equipment consist of the following:

(in millions)	Land and buildings EUR	Machinery and equipment EUR	Leasehold improvements EUR	Furniture, fixtures and other equipment EUR	Total EUR
Cost					
Balance at January 1, 2017	1,556.6	1,133.1	254.2	359.0	3,302.9
Additions	115.2	173.3	6.9	24.9	320.3
Disposals	(0.4)	(105.3)	(0.1)	(3.5)	(109.3)
Effect of changes in exchange rates	(29.6)	(41.2)	(4.4)	(4.8)	(80.0)
Balance at December 31, 2017	1,641.8	1,159.9	256.6	375.6	3,433.9
Acquisitions through business combinations	—	—	—		