Annual Report 2019
SMA Solar Technology AG

Integrated. Connected.

Sustainably shaping the energy supply of the future.

SMA SOLAR TECHNOLOGY AG AT A GLANCE

SMA Group		2019	2018	2017	2016	2015
Sales	€ million	915.1	760.9	891.0	946.7	981.8
Export ratio	%	76.1	80.6	81.8	87.9	87.5
Inverter output sold	MW	11,409	8,449	8,538	8,231	7,260
Capital expenditure	€ million	27.6	40.3	33.2	29.0	48.3
Depreciation	€ million	46.0	82.6	53.2	76.7	77.8
EBITDA	€ million	34.2	–69.1	97.3	141.5	121.1
EBITDA margin	%	3.7	–9.1	10.9	14.9	12.3
Net income	€ million	–8.6	–175.5	30.1	29.6	14.3
Earnings per share [1]	€	–0.25	–5.06	0.87	0.85	0.41
Employees [2]		3,124	3,353	3,213	3,345	3,330
in Germany		2,186	2,212	2,077	2,093	2,081
abroad		938	1,141	1,136	1,252	1,249

SMA Group		2019/12/31	2018/12/31	2017/12/31	2016/12/31	2015/12/31
Total assets	€ million	1,107.3	989.3	1,216.2	1,210.8	1,160.5
Equity	€ million	416.9	424.5	611.5	585.1	570.2
Equity ratio	%	37.6	42.9	50.3	48.3	49.1
Net working capital [3]	€ million	159.5	177.4	167.9	225.4	223.0
Net working capital ratio [4]	%	17.4	23.3	18.8	23.8	22.3
Net cash [5]	€ million	303.0	305.5	449.7	362.0	285.6

1 Converted to 34,700,000 shares
2 Reporting date; without temporary employees
3 Inventories and trade receivables minus trade payables and liabilities from advanced payments received for orders
4 Relating to the last twelve months (LTM)
5 Total cash minus interest-bearing financial liabilities to banks

Energy that changes

As a leading global specialist for photovoltaic system technology, SMA is setting the standards today for the decentralized and renewable energy supply of tomorrow.

More than 3,000 SMA employees in 18 countries have devoted themselves to this task.

Our innovative solutions for all photovoltaic applications and our unsurpassed service offer our customers worldwide greater independence in meeting their energy needs.

In collaboration with our partners and customers, we are helping people around the world transition to a self-sufficient, decentralized and renewable energy supply.

SMA

Dear Shareholders,

2019 was a crucial year for SMA. After a particularly modest business performance and high losses in the 2018 fiscal year, it was important to lead the Company back to growth and sustainable profitability. For this reason, the Managing Board implemented measures at an early stage to reduce fixed costs and increase sales. Some initial success is already reflected in the key financial figures for the past fiscal year. Our inverter output sold exceeded 10 gigawatts for the first time in 2019. With a total of 11.4 gigawatts of output sold, our sales volume was up 35% on the previous year's level. Owing to high price pressure and changes in the product mix, SMA's sales did not increase at the same rate. However, we exceeded our guidance with sales of €915.1 million. All segments posted growth, especially Home Solutions and Large Scale & Project Solutions. Earnings also improved significantly. Although we recorded another loss of –€11.8 million at the level of EBIT, our EBITDA was positive again at €34.2 million.

By means of targeted measures, we reduced our costs as planned in 2019 while also achieving major milestones in terms of sales. In May, a U.S. project developer placed the largest order in our Company's history with us. The delivery of almost 600 medium-voltage solutions for PV power plants started in September. In addition, we signed contracts for the delivery of battery inverters with a total capacity of more than one gigawatt in 2019 – three times as much as in the previous year – and thus expanded our leading position in the important future field of storage technology. There was also a big step forward in the business field of operation and maintenance services in the past fiscal year, with the total capacity of the photovoltaic power plants for which we provide this service increasing by around 30% to 4.5 gigawatts.

FOCUS ON CUSTOMERS AND CONTINUED DEVELOPMENT INTO A SYSTEMS AND SOLUTIONS PROVIDER

This success is the result of a strong customer focus and increased sales activities. In this way, we have gained additional market share in our core business and strengthened our positioning – in established photovoltaic markets such as Germany and the U.S. as well as in new markets that are just at the beginning of their development. Further measures were aimed at SMA's strategic development into a systems and solutions provider and at opening up new business fields. These included introducing system packages with optimally coordinated hardware, software and services for private and commercial applications in key target markets, as well as pooling our sales activities for large-scale storage systems, repowering and other services in a single unit. We used our digital expertise to help our subsidiary coneva expand its range of digital energy services and to establish the joint venture elexon with two partners. This new company develops and produces solutions in the field of charging infrastructure for electric vehicle fleets and has set itself the goal of accelerating the expansion of electric vehicle charging infrastructure throughout Europe.

The basis for our success both in our core business and in the new business fields is our extensive experience and, above all, our unique understanding of the overall system. With pioneering innovations and dedicated committee work, SMA has played a key role in advancing the development of photovoltaics as a cost-effective energy source suitable for mass use over the past about 40 years. We always kept the overall system in mind in the interests of sustainable development. In view of the increasing decentralization and digitalization of the energy supply, this holistic approach is now becoming increasingly important and represents a key competitive advantage. After all, only those who understand the entire energy supply system and not just individual parts of it can intelligently integrate and connect the players and sectors involved. This ability is crucial to a reliable, sustainable and cost-effective energy supply in a decentralized system that is becoming increasingly complex as the number of participants grows.

DR.-ING. JÜRGEN REINERT
Chief Executive Officer SMA Solar Technology AG

SMA HELPS SUSTAINABLY SHAPE THE ENERGY SUPPLY OF THE FUTURE

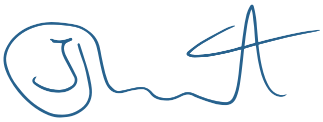
The transition to this future energy supply system is increasingly gaining momentum. Driven in part by the "Fridays for Future" movement, the urgency of the fight against climate change and thus also awareness of sustainable living and sustainable business came to the fore last year among large sections of the public and in business and politics. The use of renewable energy and the electrification of important sectors, such as mobility and heating, are prerequisites for a carbon-neutral economic system, making them the key element in the fight against climate change. In this context, we use our knowledge, experience, and passion to play a vital role in designing the energy supply system of the future. We do this in a sustainable way in every respect, as in contrast to many other companies that are now jumping on board with the current sustainability trend, sustainability is not a short-lived trend or an image factor for us, but rather has been deeply rooted in our corporate DNA ever since SMA was founded.

Our goal has always been to combine long-term economic success with environmental protection and social responsibility. Of course, we remain true to this principle today and will do so in the future. Only if we are economically successful we can support our customers with their big and small projects as a solid and reliable partner. For this reason, we are continuing on the path to more sales with lower costs that we successfully embarked upon in 2019 by implementing further measures now, and will also further develop the SMA strategy over the next few months. We are optimally aligning SMA to take advantage of the opportunities that arise in new and established business fields and to deepen and broaden our long-term customer relationships.

MANAGING BOARD EXPECTS SALES AND EARNINGS GROWTH IN 2020

SMA is well positioned to benefit from the anticipated market growth in Europe and the Americas, as well as in storage technology. On this basis, the Managing Board expects sales to increase to between €1.0 billion and €1.1 billion in 2020. Further cost reduction measures, lower production costs, and the leveraging of economies of scale accompanied by a leveling off of price declines, will bolster the Company's profitability. The Managing Board therefore also anticipates a significant improvement in EBITDA to between €50 million and €80 million and a return to positive EBIT.

As a highly innovative and thoroughly sustainable company, SMA plays a key role in shaping the global transition to a reliable, environmentally friendly and cost-effective decentralized energy supply on the basis of renewable energy. In doing so, we use our strengths to advance the integration and connection of different players and sectors. Our employees are deeply committed to this mission. On behalf of the Managing Board, I would like to thank them for all their work for the Company and their great dedication.



Dr.-Ing. Jürgen Reinert
Chief Executive Officer
SMA Solar Technology AG

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THE MANAGING BOARD TEAM

ULRICH HADDING
Board Member for Finance, Human Resources and Legal

Ulrich Hadding (b. 1968) held different positions at the SCHOTT Group in Germany and abroad for ten years, most recently as Head of Legal & Compliance for SCHOTT Solar AG. He moved to SMA in 2009, initially establishing an internationally oriented Legal department and then the Compliance function. He played a major role in nearly all of SMA's recent M&A activities and successively took on further management functions, e. g., for Tax, Insurance, Controlling and Financial Project Management. Since the end of 2015, he has been Head of Finance and Legal and member of SMA's Executive Management Committee. Since January 1, 2017, Ulrich Hadding has been a member of the Managing Board with responsibility for Finance, Human Resources and Legal. He also serves as labor director of SMA and is responsible for capital market communication.

DR.-ING. JÜRGEN REINERT
Chief Executive Officer

After he studied electrical engineering in South Africa, Dr.-Ing. Jürgen Reinert (b. 1968) received his doctorate at the Institute for Power Electronics and Electrical Drives (ISEA) at RWTH Aachen, Germany, and began his career as senior engineer there. From 1999 to 2011, he worked for Emotron AB in Sweden, where in his last position, as General Manager, he was responsible for Technology and Operations. From 2011 to 2014, as Executive Vice President, Technology, he was responsible for the division Power Plant Solutions at SMA. Under his leadership, SMA was successful in expanding its worldwide project business and developing turnkey system solutions for large-scale PV power plants. Since April 2014, Dr. Reinert has been a member of the Managing Board. He was appointed Chief Executive Officer in October 2018. Dr. Reinert is responsible for Strategy, Sales and Service, Operations and Technology. He is a member of the Supervisory Board at Danfoss A/S.

SUPERVISORY BOARD REPORT

Dear Shareholders,

After sustaining losses last year, SMA succeeded in almost breaking even in 2019. This is all the more pleasing as the difficulties in the Company's environment, such as still long delivery times, remained unchanged and the necessary cost reductions with a simultaneous increase in sales demanded a very high level of commitment from management and staff.

Especially in these challenging times, collaboration on the Supervisory Board and between the Supervisory Board and the Managing Board was characterized by trust, openness, intensive and constructive dialogue. The Supervisory Board assisted the Managing Board in an advisory capacity and continuously monitored the Managing Board with regard to the management of the Company in accordance with the law, Articles of Incorporation and Rules of Procedure. For its part, the Managing Board involved the Supervisory Board and its committees early on in all decisions of fundamental importance to SMA, keeping them regularly, promptly and comprehensively informed by means of written and oral reports. The subject matter of these reports included all strategy issues relevant to the Company, the market and competitive situation, and business developments. The Managing Board also reported to the Supervisory Board on the Company's and the Group's position, sales and results of operations. Furthermore, the Managing Board presented detailed information on proposed business policies and other important questions concerning corporate planning, in particular financial, investment, production and personnel planning, as well as significant business transactions. Deviations in how events actually transpired in comparison to previously reported objectives were provided, including reasons for the variances. In addition, the Supervisory Board was informed about the Company's and the Group's profitability, above all the return on equity, risk and opportunity management, risk status and compliance.

The Supervisory Board closely scrutinized and discussed business transactions requiring the approval of the Supervisory Board as well as instances where business performance deviated from corporate planning. Even beyond the regular Supervisory Board meetings, the Chairman of the Supervisory Board and his deputy were in frequent contact with the Managing Board and discussed subjects concerning strategy, planning, business development, position of risk, risk management and compliance, as well as significant business transactions and upcoming decisions. The Supervisory Board members took general and specialized training necessary for their tasks on their own accord, and in doing so, they received appropriate support from the Company. No Supervisory Board or Managing Board members reported any conflicts of interest to the Supervisory Board.

Focus of Supervisory Board Consultations

The Supervisory Board examined all material events and discussed them with the Managing Board at six regular meetings and adopted necessary resolutions in accordance with the law, Articles of Incorporation and Rules of Procedure. The Supervisory Board attended the very vast majority of meetings in full.

In preparation for the meetings, the Supervisory Board received written reports from the Managing Board on a regular basis and on time. At each regular meeting, the subject matter of the deliberations were current business developments, the evolution of markets of particular importance to the SMA Group and corporate planning. Members of the Managing Board participated in all regular Supervisory Board and Audit Committee meetings, but were not present for discussions of agenda items relating to the Managing Board itself.

At its meeting on February 7, 2019, the Supervisory Board dealt with the Corporate Governance Report included in the 2018 Annual Report, and the Supervisory Board Report for 2018. The Supervisory Board also discussed the content of the Non-Financial Statement presented by the Managing Board. The meeting and resolutions also dealt with the evaluation of target achievements and the determination of the variable remunerations of the Managing Board.

At its meeting convened to adopt the accounts on March 20, 2019, the Supervisory Board acknowledged the 2018 Annual Financial Statements, approved the 2018 Consolidated Financial Statements after in-depth consultation and also passed the proposal to the Annual General Meeting on profit appropriation for 2018. In addition, it reviewed the proposal for selection of the Financial Statements and the Consolidated Financial Statements auditor for 2019. The Supervisory Board also focused intensively on the extent to which the measures designed to restructure the Company had been fulfilled.

At its meeting on May 27, 2019, the Supervisory Board focused on current issues affecting the product quality of SMA and its competitors. The discussions and resolutions also covered the Company's personnel-related plans, strategies and efforts to reduce its environmental impact, as well as the reappointment of a Managing Board member.

At the meeting on May 28, 2019, the Supervisory Board issued the audit assignment to the auditors for 2019.

Focus of the Supervisory Board meeting on September 19, 2019, was the medium-term strategy and possible strategic partnerships for the Company. In addition, the Supervisory Board familiarized itself with the Company's product innovations and product roadmap and discussed the results achieved in the partnership with Danfoss A/S. Furthermore, the Supervisory Board again discussed the progress of the restructuring measures.

At its meeting on December 5, 2019, the Supervisory Board dealt in depth with the budget for the 2020 fiscal year submitted by the Managing Board. Furthermore, it discussed the Managing Board's report on the orientation of SMA's sales and service. The Managing Board and the Supervisory Board also adopted a new Declaration of Conformity pursuant to Section 161 (1) sentence 1 of the German Stock Corporation Act (AktG) to comply with the recommendations of the German Corporate Governance Code.

Focus of Committee Meetings

To improve the efficiency of the work carried out by the Supervisory Board, the Supervisory Board maintains four permanent committees: the Presidial Committee, Audit Committee, Nomination Committee and Mediation Committee. You will find the names of the persons appointed to these committees on our website at www.SMA.de/en/investor-relations as well as in the Corporate Governance Report 2019.

The committees prepare the topics and resolutions to be reviewed by the entire Supervisory Board, and, within the framework of the competencies assigned to them, they resolve those matters they have been assigned instead of the Supervisory Board. The content of the committee meetings is reported on by the committee chairman at the subsequent plenary session of the Supervisory Board. All members of the Supervisory Board receive the content and resolutions of the committees in writing.

The **Presidial Committee** met three times in 2019. The committee's work focused in particular on dealing with matters relating to the Managing Board and preparing Supervisory Board resolutions on Managing Board composition, allocation of responsibilities, and Managing Board remuneration.

The **Audit Committee** convened seven times in 2019, three times via telephone conferences. The meetings focused on discussing the Company's business performance and cost efficiency, the quarterly statements and half-yearly report. In addition, the committee familiarized itself with the main points and overall findings of the auditor for the 2018 Annual Financial Statements and upon review confirmed the auditor's independence. The Audit Committee also dealt with tax issues. Another key area of the committee's work was reviewing the internal risk management systems (Internal Control System, Internal Audit and Compliance), with the committee members gathering comprehensive information about these systems' methods and effectiveness. Furthermore, the committee handled the half-yearly report prepared by the Internal Audit department and the Compliance Report, neither of which showed any significant irregularities in SMA business processes. Other topics of the committee meetings were the contents of the Non-Financial Statement of the Company pursuant to Section 289c of the German Commercial Code (HGB) and the extended Auditors' Report. The Audit Committee also reviewed the recommendation made for the entire board to consider regarding profit appropriation, selecting the auditor for 2019 and granting the audit mandate.

The **Nomination Committee** held one meeting in 2019. The topic of discussion was a replacement on the Supervisory Board, which had become necessary due to the resignation of Reiner Wettlaufer.

The **Mediation Committee** did not convene in 2019.

Corporate Governance

In 2019, the Supervisory Board also dealt with German Corporate Governance Code content. For the year under review, the Supervisory Board and the Managing Board issued a Declaration of Compliance pursuant to Section 161 of the German Stock Corporation Act (AktG) in compliance with the recommendations of the German Corporate Governance Code and declared two deviations for 2019. The joint report issued by the Supervisory Board and the Managing Board on compliance with the rules of the German Corporate Governance Code pursuant to clause 3.10 of the German Corporate Governance Code (Corporate Governance Report) has been made permanently available on our website at www.SMA.de/en/investor-relations and is also mentioned on pages 16 et seq. of the Annual Report. This is also where you will find statements on conflicts of interest and how they are handled.

Annual Financial Statements and Consolidated Financial Statements

The Annual Financial Statements prepared by the Managing Board as of December 31, 2019, the Combined Management Report for the 2019 fiscal year of SMA AG, the Consolidated Financial Statements as of December 31, 2019, and the Combined Management Report for the 2019 fiscal year of the SMA Group were audited by the accounting firm Deloitte GmbH, Hanover, Germany. The Supervisory Board granted the audit assignment in accordance with the resolution adopted by the General Meeting on May 28, 2019. Prior to submitting the corresponding proposal to the General Meeting regarding appointment of the auditors, the Supervisory Board had obtained the auditor's certificate of independence pursuant to clause 7.2.1 of the German Corporate Governance Code. The Supervisory Board also monitored the independence of the auditor.

The Consolidated Financial Statements of the Company were prepared in line with Section 315a of the German Commercial Code (HGB) on the basis of the International Financial Reporting Standards (IFRS) as applicable in the EU. The auditor granted an unqualified audit opinion for the Annual Financial Statements and the Combined Management Report of SMA AG as well as for the Consolidated Financial Statements and the Combined Management Report of the SMA Group.

The reporting documents, including the Non-Financial Statement of the Company, and the Managing Board's proposal on the appropriation of profits, as well as the audit reports were made available to the Supervisory Board in good time. These were first discussed by the Audit Committee at its meetings on February 5, 2020, and March 23, 2020, with the auditors and then by the Supervisory Board at its meeting on March 24, 2020, in the presence of the auditor's representatives. The auditor's representatives reported on the audit findings and provided detailed explanations of the net assets, financial position and results of operations of the Company and the Group. The questions posed by the Supervisory Board were answered and the reporting documents were reviewed in detail with the auditor's representatives and discussed and examined by the Supervisory Board. The Supervisory Board raised no objections after concluding its examination. Thereafter, the findings of the audit were approved. Accordingly, the Supervisory Board approved the Financial Statements prepared by the Managing Board and the related Combined Management Report for the 2019 fiscal year at its meeting convened to adopt the accounts on March 24, 2020. Hence, the Company's Annual Financial Statements have been approved as set out in Section 172 of the German Stock Corporation Act (AktG).

Finally, at its meeting held on March 24, 2020, the Supervisory Board approved the Managing Board's proposal on the appropriation of the balance sheet profit. In this respect, the Supervisory Board discussed the Company's liquidity position, the financing of planned investments and estimated business development. In doing so, the Supervisory Board came to the conclusion that the proposal was in the interests of the Company and the shareholders.

Changes to the Managing Board and Supervisory Board

As of June 30, 2019, the co-founder of SMA, Reiner Wettlaufer, resigned from the Supervisory Board for personal reasons. In his more than 30 years of service, Reiner Wettlaufer has played a decisive role in shaping the culture of the Company and thus its character as a future-oriented company that is also committed to its employees. His vision has given SMA important impetus in both good and bad years. The Supervisory Board would like to thank Reiner Wettlaufer for his dedication for the good of the Company.

Ilonka Nußbaumer was judicially appointed to fill the vacant seat on the Supervisory Board until the 2020 Annual General Meeting.

In 2019, SMA succeeded in taking visible steps toward profitability and also developed further in terms of digitalization and the use of artificial intelligence. We must now continue to sustainably follow this path to participate in the promising future of renewable energies.

The Supervisory Board would like to thank the Managing Board and all employees for their dedicated work and their strong commitment to lead SMA to a successful future.

Niestetal, March 24, 2020

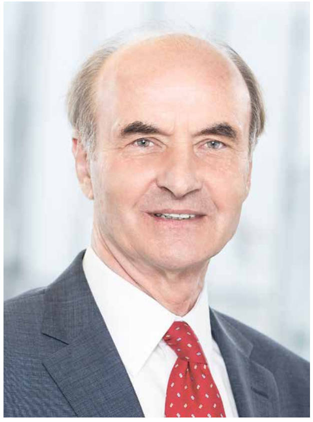
The Supervisory Board

Dr. Erik Ehrentraut
Chairman

Roland Bent
Shareholder Representative

Oliver Dietzel
Employee Representative

Peter Drews
Shareholder Representative



Dr. Erik Ehrentraut
Shareholder Representative
(Chairman)

Kim Fausing
Shareholder Representative
(Deputy Chairman)

Johannes Häde
Employee Representative

Heike Haigis
Employee Representative

Alexa Hergenröther
Shareholder Representative

Ilonka Nußbaumer
Shareholder Representative

Yvonne Siebert
Employee Representative

Dr. Matthias Victor
Employee Representative

Hans-Dieter Werner
Employee Representative

CORPORATE GOVERNANCE

CORPORATE GOVERNANCE REPORT

In this declaration, SMA Solar Technology AG reports on its corporate governance principles in accordance with Section 289f (1), (2) and 315d of the German Commercial Code (HGB) and on corporate governance in the Company in accordance with Section 161 of the German Stock Corporation Act (AktG) and clause 3.10 of the German Corporate Governance Code (DCGK). The declaration includes the Declaration of Compliance, information on corporate governance practices, which comprises information on where they can be accessed by the public, as well as information on the composition and description of the function of the Managing Board, Supervisory Board and respective committees and material corporate governance structures.

Complying with the principles of good corporate governance is extremely important to SMA. SMA is guided by the recommendations and suggestions in the German Corporate Governance Code (DCGK). The Managing Board and Supervisory Board dealt with meeting these requirements, especially with the amendments to the DCGK in the version dated February 7, 2017. The Company declared emergent deviations from the German Corporate Governance Code in the Declaration of Compliance of December 5, 2019. This declaration is reproduced below and published on our website at www.SMA.de/en/investor-relations.

Declaration of Compliance With German Corporate Governance Code

In accordance with Section 161 of the German Stock Corporation Act, the Managing Board and Supervisory Board of SMA Solar Technology AG declare:

Since the last Declaration of Compliance dated December 6, 2018, SMA Solar Technology AG has complied with the recommendations of the Government Commission German Corporate Governance Code in the version dated February 7, 2017, published in the Federal Gazette (Bundesanzeiger) on April 24, 2017, with the exceptions mentioned below in numbers (1) and (2) and will continue to comply with them with the exceptions mentioned:

(1) Notwithstanding Article 5.4.1 (2) sentence 2 clause 4 of the German Corporate Governance Code in conjunction with the targets adopted by the Supervisory Board for its composition, the Supervisory Board includes with Dr. Erik Ehrentraut one member who will have reached the age of 75 by the end of the election period.

The Supervisory Board believes it is vital that Dr. Ehrentraut's many years of experience in managing an internationally active company and in supporting the Company remains available to the Supervisory Board.

(2) Notwithstanding Article 5.4.1 (2) sentence 2 clause 5 of the German Corporate Governance Code, the Supervisory Board has decided not to define any maximum limits for terms of office on the Supervisory Board. The Supervisory Board believes that a limit on the term of office does not account for the specific work of the Supervisory Board members and their profound knowledge of the Company and the market environment.

Niestetal, December 5, 2019

The Managing Board The Supervisory Board

Corporate Governance Practices

The SMA Strategy 2020 comprises a forward-looking vision and mission, the values that all SMA employees align themselves with and clear strategic targets for the years to come. It was presented to all SMA employees worldwide and will provide the strategic framework for our activities, through which the management and employees will ensure the long-term success of SMA, even under changing market conditions. Further details can be found on page 30.

Since 2009, SMA has recognized the code of conduct of the German Association for Supply Chain Management, Procurement and Logistics (BME e. V.) and used this as the basis for its own guidelines for suppliers (SMA Supplier Code). These guidelines commit SMA to fair dealings with suppliers. The guidelines are based on, among other things, the UN Global Compact, the conventions of the International Labour Organization (ILO) and the United Nations' Universal Declaration of Human Rights. SMA's objective is to enshrine general principles with regard to fairness, integrity and corporate responsibility in business relationships. For SMA, these behavioral guidelines also complement its mission statement and corporate culture, in which fairness, integrity and corporate responsibility are deeply rooted. Alongside these guidelines, the SMA Supplier Code prescribes standards for sustainable activity and gives expression to what SMA expects of suppliers and business partners with regard to social, ecological and ethical issues. The key points of the guidelines are a ban on child labor, forced labor, abuse and discrimination of employees, fighting against corruption, fair working conditions, occupational health and safety, environmental protection, and quality and product safety. The BME's code of conduct is accessible on its website at www.bme.de/en. The latest version of the SMA Supplier Code is reproduced on the SMA website www.SMA.de/en.

In addition, in 2011, SMA had already made a declaration to the General Secretary of the United Nations to adopt the ten principles of the UN Global Compact as compulsory guidelines for its corporate governance. The principles of the UN Global Compact define standards for upholding human rights, the protection of workers' rights, environmental protection and avoidance of corruption. They can be viewed on the website at www.unglobalcompact.org.

In January 2012, the Managing Board also enacted the SMA business principles. The SMA business principles form the heart of the compliance management system and shape SMA's values into clear behavioral standards. They were drafted in a workgroup project led by Group Compliance. The SMA business principles are obligatory for all SMA employees worldwide.

In compliance with the provisions of Section 76 (4) sentence 2 AktG, in 2017, the Managing Board resolved to set a target of 8% for the proportion of female employees in the first management level below the Managing Board and 14.6% for the second level by June 30, 2022. The targets correspond to the current ratio of genders at both management levels as of the date of the resolution. In the reporting period, the quota achieved for the first management level corresponded to the target figure set. At 11.1%, the quota for the second management level was below the target figure. This is mainly due to the growth in this management level, which could not be covered by female staff to the desired extent despite the Company's intensive efforts to increase its target group-specific attractiveness.

Transparency

Transparency is a key element of good corporate governance. Our aim is to provide all shareholders, financial analysts, media and interested members of the public at large with timely information about our business situation and significant corporate changes. All important information is also made available on our website at www.SMA.de/en. Reporting on the business situation and the operating results takes place in the Annual Report, in the annual press conference on financial statements and in the Quarterly Statements and Half-Yearly Financial Reports. Furthermore, the public is informed through press releases, via social networks and, if stipulated by law, by means of ad hoc statements. In addition, once a year SMA invites investors, analysts and the press to its Capital Markets Day to inform them about the market and competition, SMA's strategic direction, unique selling propositions and financial developments.

Transparency is particularly important whenever deliberations and Company decisions might lead to conflicts of interest for members of the Supervisory Board or Managing Board. Any conflicts of interest that may have arisen are therefore disclosed by those members of the corporate bodies affected when discussion of the subject commences. The member concerned does not participate in the adoption of any necessary resolutions by the Managing Board or the Supervisory Board.

According to a disclosure made by the members of the Managing Board and the Supervisory Board, they held, either directly or indirectly, 4.91% (2018: 9.65%) of all shares issued as of the end of the fiscal year. The Managing Board members held a total stake of 0.03% (2018: 0.01%) in the share capital and the Supervisory Board members held a stake of 4.88% (2018: 9.64%) in the share capital. The cdw foundation, in which the Supervisory Board member Peter Drews acts as a Managing Board member, holds an additional 8.65% (2018: 8.65%). In addition, Danfoss A/S, in which Supervisory Board member Kim Fausing acts as chief executive officer and Supervisory Board member Ilonka Nußbaumer acts as Senior Vice President, Head of Group HR, holds 20.00% (2018: 20.00%) of the share capital.

Remuneration Report

The Remuneration Report is a constituent of the audited Combined Management Report and is shown on pages 21 et seq. of the Annual Report.

The Company's Corporate Bodies and Their Functions

SMA Solar Technology AG is a stock corporation governed by German law. Accordingly, it possesses a dualistic management structure in which one corporate body is devoted to managing the Company (the Managing Board) and is supervised by another corporate body (the Supervisory Board). Both bodies are endowed with different powers and work closely with one another in an atmosphere of trust when managing and supervising the Company. At the Annual General Meeting, electing the auditor and the shareholder representatives to the Supervisory Board takes place as does determining the appropriation of profits, along with making decisions that impact member rights of shareholders.

Managing Board

The Managing Board is responsible for independently and jointly managing the Company. It is obliged to sustainably ensure and increase the Company value and is responsible for managing the business. In agreement with the Supervisory Board, it decides on fundamental issues of business policy and corporate strategy as well as on short- and medium-term financial planning. The Managing Board is in charge of preparing the Quarterly Statements, Half-Yearly Financial Reports and Annual Financial Statements for SMA Solar Technology AG and the SMA Group, as well as for adherence to all legal and official provisions and internal policies. In compliance with the provisions in Section 111 (5) AktG, the Supervisory Board set a target of 25% for the proportion of women on the Managing Board in the period by June 30, 2022. The Supervisory Board strives to achieve this target by selecting suitable candidates when appointing new members to the Managing Board.

As a collective body, the Managing Board, in principle, strives to adopt resolutions jointly. However, the Rules of Procedure for the Managing Board, adopted by the Supervisory Board, stipulate that individual members of the Managing Board are in charge of specific areas of responsibility. The Managing Board, with the consent of the Supervisory Board, lays out how responsibilities are assigned. The members of the Managing Board notify each other on an ongoing basis about all material events in their area of responsibility and about any matters covering multiple areas of responsibility. Under legal provisions or the Rules of Procedure, in certain transactions, a unanimous resolution of the Managing Board is mandatory. For a predetermined number of transactions, the Supervisory Board has a reservation of consent. The Managing Board has not instituted any committees.

The Company's diversity concept for the Managing Board to be described in accordance with Section 289f HGB comprises, in part, consideration of the various personal and professional competencies required to fulfill the respective tasks on the Managing Board. Other elements include decisions on the proportion of women on the Managing Board and the age limit for the Managing Board described in Section 1 (4b) of the Supervisory Board's Rules of Procedure. The aim of the concept is to best meet the requirements for the work carried out by a Managing Board through a broad and varied range of knowledge and experience. The current makeup of the Managing Board upholds the prescribed age limit and reflects different professions and professional backgrounds as well as personal and professional competencies. Detailed information about the individual Managing Board members is provided on page 8 et seq.

On the Managing Board, Dr.-Ing. Jürgen Reinert is the appointed Chief Executive Officer of SMA Solar Technology AG and is responsible for Strategy, Sales and Service in addition to Operations and Technology. Ulrich Hadding is in charge of Finance, Human Resources and Legal, as well as Investor Relations and Internal Auditing.

Supervisory Board

The Supervisory Board advises the Managing Board in all matters and supervises its activity. The Managing Board involves and consults with the Supervisory Board on all matters of fundamental significance and whenever particularly important business decisions need to be made. Under the Rules of Procedure applicable to the Managing Board, which were adopted by the Supervisory Board, the Managing Board must obtain prior approval from the Supervisory Board for certain decisions. Such decisions include approval of the annual budget, comprising the investment plan, incorporation, acquisition or sale of companies and acquisition or sale of real estate, whenever stipulated threshold values are exceeded. The Supervisory Board must also consent to the allocations of responsibility on the Managing Board.

The Supervisory Board is made up of 12 members and its composition complies with the provisions of the German Stock Corporation Act and the Codetermination Act. Under these provisions, the employees of German Group companies and their shareholders (Annual General Meeting) each elect six representatives to the Supervisory Board. The current members of the Supervisory Board are: Oliver Dietzel, Johannes Häde, Heike Haigis, Yvonne Siebert, Dr. Matthias Victor and Hans-Dieter Werner as employee representatives, and Roland Bent, Peter Drews, Dr. Erik Ehrentraut (Chairman), Kim Fausing (Deputy Chairman), Alexa Hergenröther and Ilonka Nußbaumer as shareholder representatives. Reiner Wettlaufer resigned from his position as a member of the Supervisory Board on June 30, 2019. Ilonka Nußbaumer was judicially appointed as his successor until the 2020 Annual General Meeting.

Dr. Erik Ehrentraut and Alexa Hergenröther, as independent members of the Supervisory Board, possess the necessary expertise in the fields of accounting or auditing as stipulated under Section 100 (5) of the AktG.

The Committees of the Supervisory Board are made up as follows:

Presidial Committee	Dr. Erik Ehrentraut (Chairman), Yvonne Siebert (Deputy Chairwoman), Kim Fausing, Dr. Matthias Victor
Audit Committee	Alexa Hergenröther (Chairwoman), Dr. Erik Ehrentraut (Deputy Chairman), Oliver Dietzel, Johannes Häde
Nomination Committee	Peter Drews (Chairman), Dr. Erik Ehrentraut, Kim Fausing
Mediation Committee	Heike Haigis (Chairwoman), Kim Fausing (Deputy Chairman), Dr. Erik Ehrentraut, Hans-Dieter Werner

The committees prepare topics and resolutions for review by the Supervisory Board at its plenary session. They regularly meet with stakeholders such as the Managing Board, the auditor or the heads of Internal Audit or Compliance for this purpose. The committee chairperson reports on the content of the committee meetings at the next plenary session of the Supervisory Board. Any member of the Supervisory Board may attend committee meetings, provided the relevant committee chairperson does not decide otherwise. The meeting minutes and resolutions adopted by committees are made available to all the members of the Supervisory Board.

The Supervisory Board reports annually on the focus of its activities and deliberations in the Supervisory Board Report. You may refer to the Supervisory Board Rules of Procedure on our website at www.SMA.de/en/investor-relations. The Supervisory Board members take general and specialized training necessary for their tasks of their own accord, and in doing so, they receive appropriate support from the Company.

In the past, the Supervisory Board already has regularly considered the personal and professional requirements of its members and, with regard to the provisions of clause 5.4.1 of the German Corporate Governance Code, has decided on appropriate objectives for its composition and established a competence profile. The competence profile addresses the requirements for members of the Supervisory Board, which are provided in particular by law, the German Corporate Governance Code and the objectives of the Supervisory Board for its composition.

These requirements and the competence profile continue to form the diversity concept of the Supervisory Board within the meaning of Section 289f (6) of the HGB, the objective of which is to ensure that the Supervisory Board has the broadest possible range and variation of knowledge and experience. The Supervisory Board considers that increasing the diversity of the Supervisory Board is already an objective of various provisions of the law and of the German Corporate Governance Code. It incorporated this objective when selecting new members and took it into consideration when creating its competence profile and the objectives for its composition, and will continue to do so in the future while implementing the diversity concept.

The objectives of the Supervisory Board for its composition are as follows:

1. The minimum proportion of women on the Supervisory Board is determined by legal provisions.
2. Maintain the composition of the Supervisory Board members with a background of international experience at least in the previous scope
3. Special consideration given to candidates with knowledge and experience in the application of financial reporting standards and internal control processes as well as in the field of auditing
4. Special consideration given to candidates with technical expertise, particularly in the field of renewable energies, preferably in the field of photovoltaics
5. Special consideration given to candidates with knowledge in the field of digitalization and about the internal structures and functions of the Company
6. At least half of the shareholder representatives are to be independent. At the same time, at least one member is to possess expertise in the field of accounting or auditing.
7. Consideration of the age limit of 75 years at the end of the term of office when selecting new members

These objectives have been implemented as follows:

As regards 1: The Supervisory Board now has four female members, Heike Haigis, Alexa Hergenröther, Ilonka Nußbaumer and Yvonne Siebert.

As regards 2 to 5: In the opinion of the Supervisory Board, these objectives have also been achieved.

As regards 6: The Company currently considers at least three shareholder representatives independent: Roland Bent, Dr. Erik Ehrentraut and Alexa Hergenröther. Two of these independent members have expertise in the fields of accounting and financial audits: Dr. Erik Ehrentraut and Alexa Hergenröther.

As regards 7: To date, one member of the Supervisory Board will exceed the age limit of 75 years at the end of his term of office.

From the perspective of the Supervisory Board, the requirements arising from the competence profile and the diversity concept have now been fulfilled, also with regard to the minimum proportion of women on the Supervisory Board. The only deviation from the set targets is with regard to the age limit.

Cooperation Between the Managing Board and the Supervisory Board

The Managing Board and the Supervisory Board work closely with one another in an atmosphere of trust for the good of the Company, thus meeting both the requirements of effective enterprise control and the need to be able to make decisions quickly. Their common goal is to secure the continued existence of the Company and steadily increase its value. To this end, the Managing Board keeps the Supervisory Board promptly and comprehensively informed, both in writing and verbally, and during regular meetings about the Company's position, current business developments and all relevant questions pertaining to strategic planning, risk management, risk status and important compliance matters. The Quarterly Financial Statements and the Half-Yearly Financial Report are discussed with the Managing Board on a regular basis during Audit Committee meetings prior to their publication.

Outside meetings, the Chairman of the Supervisory Board and his deputy are also in contact with the Managing Board to discuss significant business transactions and upcoming decisions and are immediately informed about key developments.

Shareholders and Annual General Meeting

SMA Solar Technology AG shareholders discuss their co-determination and control rights at the Annual General Meeting, which takes place at least once a year. The Annual General Meeting adopts resolutions with binding effect, and each share grants one vote. Every shareholder who registers on time is entitled to participate in the Annual General Meeting. In addition, shareholders may have their voting rights exercised by a credit institution, a shareholder association, the proxies deployed by SMA Solar Technology AG and bound by the shareholder's instructions or by another authorized representative. The invitation to the Annual General Meeting and all reports and information necessary for adopting resolutions, including the Annual Report, are published in accordance with the provisions of the Stock Corporation Act and are available in the run-up to the Annual General Meeting on our website at www.SMA.de/en/investor-relations.

INFORMATION CONCERNING TAKEOVERS REQUIRED BY HGB SECTIONS 289A AND 315A

Number 1: The share capital of SMA Solar Technology AG amounts to €34.7 million. The capital is divided up into 34,700,000 no-par value bearer shares. The rights and obligations associated with the shareholdings fall under the regulations in the German Stock Corporation Act.

Number 2: Each share has the right to one vote. On October 1, 2010, the four founders and main shareholders of SMA Solar Technology AG, Dr.-Ing. h. c. Günther Cramer, Peter Drews, Prof. (em.) Dr.-Ing. Werner Kleinkauf and Reiner Wettlaufer, transferred equity stakes to the next generation within their families by way of a gift. The acquiring shareholders concluded a pooling agreement for a period of seven years, which would have been terminable for the first time in 2017. During the term of this agreement, the voting rights emanating from the shares transferred may only be exercised as a block vote. In addition, the shares may only be sold to third parties with the consent of the other members of the pool or if narrowly defined prerequisites are satisfied. At the end of the fiscal year, the shareholders who coordinate their voting rights in "Poolvertrag SMA Solar Technology AG" (pooling agreement) held a total of 8,744,470 shares or 25.20% of the Company's voting rights. Beyond this, the Managing Board is not aware of any restrictions affecting voting rights or the transferability of shares. The members of the pool have informed the Company that the pooling agreement will end effective January 30, 2020.

Number 3: Danfoss A/S, Denmark, holds 20.00% of the Company's share capital.

Shareholders who coordinate their voting rights in "Poolvertrag SMA Solar Technology AG" (see Number 2) hold 25.20% of the Company's share capital. Lars Cramer as individual shareholder of the "Poolvertrag SMA Solar Technology AG" holds 11.05% of the Company's share capital.

Numbers 4 and 5: The shareholders do not have any special rights conferring them any particular powers of control.

Number 6: Appointment and dismissal of the Managing Board takes place pursuant to Sections 84 and 85 of the German Stock Corporation Act (AktG) together with Section 31 of the Codetermination Act (MitBestG). Under Article 5 of the Articles of Incorporation, the Managing Board consists of at least two members and the exact number is laid down by the Supervisory Board. Under Section 179 of the AktG, the Articles of Incorporation may be amended by a resolution adopted by the Annual General Meeting with a majority of three-quarters of the share capital represented at the vote.

Number 7: The Articles of Incorporation include the provisions on the powers of the Managing Board regarding Authorized Capital II. The Managing Board, after obtaining the consent of the Supervisory Board, is entitled to increase the share capital on one or several occasions by up to a total of €3.4 million by issuing new bearer shares in return for cash contributions and/or contributions in kind in the period ending May 23, 2023. The Managing Board, with the consent of the Supervisory Board, is entitled to cancel the statutory subscription rights of shareholders: (a) in the case of capital increases in return for contributions in kind for the acquisition of or investment in companies, parts of companies or investments in companies, (b) for the purpose of issuing shares to employees of the Company and companies affiliated with the Company, (c) to exclude fractions and (d) in the case of capital increases in return for cash contributions if the issue amount of the new shares does not fall significantly below the stock exchange price of shares of the same class and terms that are already listed at the time the Managing Board sets the final issue amount, and the total pro rata amount of the issued capital attributable to the new shares in respect of which the subscription right is excluded may not exceed 10% of the issued capital available at the time the new shares are issued.

Furthermore, following a resolution adopted by the Annual General Meeting on May 31, 2016, the Managing Board, in the period up to May 30, 2021, is entitled, on behalf of the Company, to acquire its own shares up to a value of 10% of the existing capital stock at the time the resolution was adopted by the Annual General Meeting, and to dispose of shares acquired in this way with the consent of the Supervisory Board by means other than through the stock exchange, or an offer made to all the shareholders, provided the shares are sold in return for cash at a price that does not fall significantly below the stock exchange price of shares in the Company issued under the same terms or the shares are sold in return for in-kind contributions, or they are offered in return for shares held by persons that either had or have an employment relationship with the Company, or with one of its affiliated companies, or members of bodies in companies that depend on the Company. Additionally, if the Managing Board sells the Company's own shares by offering them to all the shareholders with the consent of the Supervisory Board, the Managing Board is entitled to exclude the shareholders' right of subscription for fractions. In addition, the Managing Board is entitled to cancel any own shares acquired after obtaining the consent of the Supervisory Board.

Number 8: Credit lines agreed with banks with a volume of €100 million contain a change of control clause that includes the special termination right of the relevant bank.

Number 9: If the employment contract with a member of the Managing Board ends after being terminated by the member of the Managing Board within a period of six months after a change of control, this member is entitled to severance pay amounting to his/her remuneration rights for the remaining term of the employment contract, however, no longer than a period of two years.

REMUNERATION REPORT

The Remuneration Report summarizes the principles that are decisive when it comes to determining remuneration for the Supervisory Board and the Managing Board and also explains the remuneration structure and the emoluments payable.

Managing Board Remuneration and Emoluments

The remuneration system for the Managing Board (including the most important contractual elements) is decided at a Supervisory Board plenary session. The Supervisory Board regularly examines the remuneration system for the Managing Board and defines targets for the variable components of the emoluments. The criteria for determining remuneration include evaluating the tasks of the individual Managing Board members, their personal performance, the overall financial situation and Company success, using compensation peer benchmarking and the Company's usual remuneration structure. In its assessment, the Supervisory Board also included Managing Board remuneration in relation to remuneration of the top-level executives and the workforce as a whole, taking into account changes over time, and thus, laid out comparable peer groups from top-level executives and the workforce. The remuneration is assessed in a way that ensures it is competitive with the market for highly qualified managerial staff. The remuneration system complies with statutory requirements, with the stipulations of the German Corporate Governance Code and with case law and was approved by the Annual General Meeting on May 23, 2017. The remuneration of the Managing Board consists of the components described below in which the fixed component of the emoluments amounts to 60% and the variable component and long-term bonus in the case of good business performance to 40% of the total remuneration before additional benefits. 60% of the variable component of the emoluments must correspond to the long-term bonus. The percentages provided are approximate values. A deviation of up to five percentage points is permitted.

NON-PERFORMANCE-BASED FIXED REMUNERATION

The annual fixed emoluments are divided into 12 monthly salaries.

PERFORMANCE-BASED VARIABLE REMUNERATION

Managing Board members also receive a performance-based variable salary, which depends on sales and earnings before income tax (EBT) as recorded in the Consolidated Financial Statements for a fiscal year audited by the financial auditor as well as on achieving personal goals. The performance-based variable salary consists of three components: “profit,” “sales” and “personal performance.” “Profit” counts for 40% and “sales” and “personal performance” count for 30% each of the performance-based variable salary. The “profit” and “sales” components can also be fulfilled up to 150%. If the defined lower limits of the respective components are not met, they are graded with a “0.” Values in-between are determined on a linear basis. If the sum of the percentages of the components reaches 100% or more, this entitles payment of the full agreed remuneration. If the agreed targets are exceeded, this does not entitle to payment of an overall higher variable remuneration (cap).

The target values (EBT, sales) and personal objectives are redefined by the Supervisory Board every year and the corresponding remuneration based on the objectives achieved after the Consolidated Financial Statements have been approved is generally paid in March of the following year. If the Managing Board members’ duties do not extend beyond one full fiscal year, then they receive one-twelfth of the performance-based variable remuneration determined for the entire fiscal year for each month of the fiscal year, in which they carry out their duties.

LONG-TERM BONUS

Managing Board members also receive a long-term bonus, which depends on the mean EBT margin as recorded in the Consolidated Financial Statements audited by the auditors over a period of three fiscal years. The upper and lower limits of the target value (EBT margin) are determined annually by the Supervisory Board for the following three fiscal years. If the upper limit of the target value is achieved, then the full agreed long-term bonus may be claimed, whereas if the lower limit of the target value is not met, no bonus is payable. Values in-between are determined on a linear basis. If the target value is exceeded, this does not entitle to payment of a higher long-term bonus (cap). The bonus is payable, at the very earliest, upon expiration of the three-year period. Payment takes place after the third Consolidated Financial Statements have been approved, usually at the end of March, even if the employment contract ends before the end of the performance period. If the employment contract still has a term of at least two years to run when payment becomes due, then the Managing Board members are expected to invest the net amount payable, in part, in shares in SMA Solar Technology AG and to hold these shares until their Managing Board duties with the Company have ended.

ADDITIONAL BENEFITS

All Managing Board members are entitled to:

→ A company car

→ Reimbursement of travel costs and any expenses incurred on company business

→ Continued payment of remuneration for up to nine months in the event of temporary sick leave

→ Employer’s contribution up to the contribution assessment ceiling of statutory social insurance (pension, health, long-term care), even in the case of voluntary insurance and without furnishing any proof as well as appropriate directors and officers liability insurance.

Any taxes due must be borne by the Managing Board member.

OTHER CONTRACTUAL BENEFITS

In the event of death or long-term sick leave, remuneration will continue to be paid for six months.

In the event of early termination of Managing Board duties without good cause, the compensation payable is limited to the total remuneration for the remaining term of the contract and up to a maximum of two years' emoluments (severance pay cap). If an employment contract with a member of the Managing Board ends after being terminated by the member within a period of six months from a change of control [1], this member is also entitled to severance pay amounting to his/her remuneration rights for the remaining term of the employment contract, however, no longer than a period of two years.

The members of the Managing Board are subject to a post-termination non-compete clause valid for a period of two years, which provides an appropriate compensation payment amounting to 50% of the services contractually agreed by the Managing Board. The Managing Board member must set off any remuneration earned while he/she is otherwise employed during the non-compete period, insofar as the remuneration exceeds the amount of the last contractually agreed services performed when the other earnings are added.

The maximum cash value of the compensation sums payable in a non-compete clause after conclusion of Managing Board duties amounts to €0.603 million for Ulrich Hadding (2018: €0.616 million) and €0.795 million (2018: €0.829 million) for Dr. Jürgen Reinert.

In the 2019 fiscal year, the total emoluments payable to all members of the Managing Board in office in the fiscal year amounted to €1.458 million (2018: €2.837 million). This included variable emoluments of €0.007 million paid to the Managing Board in 2019 (2018: €0.155 million). The Managing Board members receive no separate remuneration for carrying out tasks at subsidiaries.

The table below provides information on the remuneration of the Managing Board in accordance with the rules of the German Corporate Governance Code dated February 7, 2017. The values in the "Inflow" table relate to the emoluments of individual Managing Board members for the 2019 fiscal year. The "Grants" table also shows the minimum and maximum remuneration achievable with regard to the variable remuneration components for the fiscal year.

No credits were granted nor were any advances paid to Managing Board members during the fiscal year. There are no pension commitments.

Inflow

	Ulrich Hadding Board Member for Finance, HR and Legal Joined 2017/01/01		**Dr.-Ing. Jürgen Reinert Chief Executive Officer, Board Member for Strategy, Sales and Service, Operations and Technology Joined 2014/04/01**	
in €'000	**2018**	**2019**	**2018**	**2019**
Fixed remuneration	600	600	800	800
Additional benefits/Others	28	29	23	22
Total	628	629	823	822
One-year variable remuneration	22	7	36	0
Multi-year variable remuneration				
Long-term variable remuneration 2016 – 2018	0		0	
Long-term variable remuneration 2017 – 2019		0		0
Total	22	7	36	0
Pension contribution	0	0	0	0
Total	**650**	**636**	**859**	**822**

1 Contrary to the provision introduced in the 2017 Annual General Meeting.

Grants

in €'000	Ulrich Hadding Board Member for Finance, HR and Legal Joined 2017/01/01				Dr.-Ing. Jürgen Reinert Chief Executive Officer, Board Member for Strategy, Sales and Service, Operations and Technology Joined 2014/04/01			
	2018	2019	2019 (Min)	2019 (Max)	2018	2019	2019 (Min)	2019 (Max)
Fixed remuneration	600	600	600	600	800	800	800	800
Additional benefits/Others	28	29	29	29	23	22	22	22
Total	628	629	629	629	823	822	822	822
One-year variable remuneration [1]	160	160	0	160	220	220	0	220
Long-term variable remuneration 2018 – 2020	240				330			
Long-term variable remuneration 2019 – 2021		240	0	240		330	0	330
Total	400	400	0	400	550	550	0	550
Pension contribution	0	0	0	0	0	0	0	0
Total	**1,028**	**1,029**	**629**	**1,029**	**1,373**	**1,372**	**822**	**1,372**

[1] For the 2019 fiscal year, Ulrich Hadding waived €100,000 and Jürgen Reinert waived €135,000 of the short-term variable remuneration (10% of the total target remuneration). The amounts shown here are the unabridged target figures.

Supervisory Board Remuneration and Emoluments

In accordance with the regulations on Supervisory Board remuneration in effect since the 2013 fiscal year, Supervisory Board members receive fixed remuneration of €25,000 a year. The remuneration payable to the Chairman amounts to twice the amount mentioned above and the remuneration payable to the Chairman's deputy amounts to one and a half times the aforementioned amount.

Members of the Supervisory Board Audit Committee receive an annual remuneration of an additional €7,500. For members of the Supervisory Board Presidial Committee, the total annual remuneration is an additional €5,000. The chairpersons of these committees receive twice the aforementioned amounts. Members of other committees do not receive any special remuneration for their committee duties.

Supervisory Board members receive an additional €750 per meeting day for their meeting participation. If they take part in several meetings in one day, they receive a maximum payment of twice the aforementioned amount. The remuneration is payable at the end of the fiscal year. Supervisory Board members who have only sat on the Supervisory Board or a committee for part of the fiscal year receive remuneration pro rata temporis.

No other remuneration or benefits for personally rendered services, in particular consulting and mediation services, were granted to Supervisory Board members. Similarly, in the year under review, the Supervisory Board members were granted no credits or advances.

As of December 31, 2019, five of the members of the Supervisory Board held SMA shares.

The emoluments payable to the members of the Supervisory Board amounted to a total of €0.419 million in the reporting year (previous year: €0.445 million).

Beyond the remuneration of the Supervisory Board, the employee representatives that are employees of the Company receive fee payments unrelated to their Supervisory Board duties.

Other

The Company has taken out professional indemnity insurance (D&O insurance) for the members of the corporate bodies of all SMA Group companies. It is effected or extended every year. The insurance covers the personal liability risk of the members resulting from a breach of duty when exercising their duties in the event that any claims for economic losses are asserted against them. The deductible in the policy for the 2019 fiscal year was 10% of the damage, however, no higher than one and a half times the fixed annual emoluments of the member of the corporate body.

Remuneration of the Supervisory Board

in €'000	Remuneration for supervisory duties 2018	Remuneration for supervisory duties 2019	Remuneration for committee duties 2018	Remuneration for committee duties 2019	Total 2018	Total 2019
Roland Bent	29.5	28.0	0.0	0.0	29.5	28.0
Oliver Dietzel [2]	31.0	29.5	12.0	12.8	43.0	42.3
Peter Drews	30.3	29.5	0.0	0.0	30.3	29.5
Dr. Erik Ehrentraut (Chairman)	55.3	54.5	24.3	25.0	79.6	79.5
Kim Fausing [1] (Deputy Chairman)	0.0	0.0	0.0	0.0	0.0	0.0
Johannes Häde	31.0	29.5	12.8	12.8	43.8	42.3
Heike Haigis [2]	31.0	29.5	0.0	0.0	31.0	29.5
Alexa Hergenröther	31.0	28.8	20.3	20.3	51.3	49.1
Ilonka Nußbaumer [1, 3]	0.0	0.0	0.0	0.0	0.0	0.0
Yvonne Siebert	30.3	29.5	6.5	7.3	36.8	36.8
Dr. Matthias Victor	31.0	29.5	7.3	7.3	38.3	36.8
Hans-Dieter Werner	31.0	29.5	0.0	0.0	31.0	29.5
Reiner Wettlaufer [4]	30.3	15.5	0.0	0.0	30.3	15.5
Total	**361.7**	**333.3**	**83.2**	**85.5**	**444.9**	**418.8**

1 Kim Fausing and Ilonka Nußbaumer waived their entitlements from the Company.
2 The union members on the Supervisory Board pay their remuneration to the union.
3 Ilonka Nußbaumer was appointed to the SMA Supervisory Board on August 13, 2019.
4 On June 30, 2019, Reiner Wettlaufer resigned his seat on the Supervisory Board for personal reasons.

COMBINED MANAGEMENT REPORT [1]

[1] The present Combined Management Report has been drawn up for both the SMA Group and SMA AG. It was prepared in accordance with Sections 289, 289a, 315 and 315a of the German Commercial Code (HGB) and German Accounting Standards (GAS) numbers 17 and 20. The Combined Management Report also includes the Remuneration Report and the Corporate Governance Statement.

BASIC INFORMATION ABOUT THE GROUP

BUSINESS ACTIVITY AND ORGANIZATION

SMA Solar Technology AG (SMA AG) and its subsidiaries (SMA Group) develop, produce and sell solar and battery inverters, monitoring systems for PV systems, medium-voltage technology, transformers and chokes. In addition, the Company offers intelligent energy management solutions and services, including operation and maintenance services for photovoltaic power plants (O&M business). Another business segment is digital services for the future energy supply.

Organizational Structure

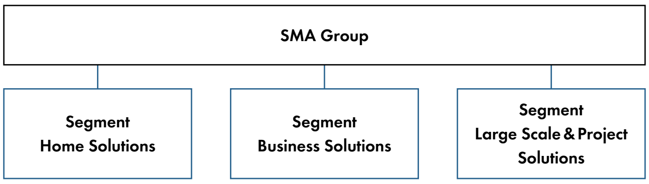
LEGAL STRUCTURE OF THE GROUP

As the parent company of the SMA Group, SMA AG, headquartered in Niestetal near Kassel, Germany, provides all of the functions required for its operative business. The parent company holds, either directly or indirectly, 100% of the shares of all the operating companies that belong to the SMA Group. The Annual Report includes information regarding the parent company and all 29 Group companies (2018: 34), including eight domestic companies and 21 companies based abroad. In addition, SMA Solar Technology AG has a 28.27% stake in Tigo Energy, Inc. Tigo Energy, Inc. is recognized as an associate in the Consolidated Financial Statements according to the equity method. elexon GmbH is also designated as an associate. The company was established in the reporting year. It is a joint venture in the field of charging infrastructure devices, in which the Group has a 33.34% stake.

ORGANIZATIONAL AND REPORTING STRUCTURE

The SMA Group operates under a functional organization. In this organization, the business units Home & Business Solutions (formerly Residential & Commercial business unit) and Large Scale & Project Solutions (formerly Utility business unit) take on overall responsibility and manage development, operational service and sales, as well as production and procurement/logistics. The Home Solutions and Business Solutions segments are presented separately in the reporting structure. The Off-Grid & Storage business unit, SMA Sunbelt Energy GmbH, coneva GmbH and emerce GmbH were integrated into Home & Business Solutions and Large Scale & Project Solutions, resulting in there no longer being any separate reporting for the Storage and Digital Energy segments from 2019 onward.

REPORTING STRUCTURE



MANAGEMENT AND CONTROL

In accordance with the German Stock Corporation Act, the executive bodies consist of the Annual General Meeting, the Managing Board and the Supervisory Board. The Managing Board manages the Company. The Supervisory Board appoints, supervises and advises the Managing Board. The Annual General Meeting elects shareholder representatives to the Supervisory Board and grants or refuses discharge to the Managing Board and the Supervisory Board.

COMPOSITION OF THE MANAGING BOARD

On the SMA Solar Technology AG Managing Board, Chief Executive Officer Dr.-Ing. Jürgen Reinert is responsible for Strategy, Sales and Service, Operations and Technology. Ulrich Hadding is in charge of Finance, Human Resources and Legal.

COMPOSITION OF THE SUPERVISORY BOARD

The SMA Supervisory Board, which represents shareholders and employees in equal measure, consists of Roland Bent, Peter Drews, Dr. Erik Ehrentraut (Chairman), Kim Fausing (Deputy Chairman), Alexa Hergenröther and Ilonka Nußbaumer (since August 13, 2019) as shareholder representatives. The employees are represented on the Supervisory Board by Oliver Dietzel, Johannes Häde, Heike Haigis, Yvonne Siebert, Dr. Matthias Victor and Hans-Dieter Werner.

PRODUCTS AND SERVICES

As a specialist in system technology, SMA develops and sells PV inverters and storage solutions, hardware and software, as well as services that allow energy to be managed intelligently and used efficiently. SMA's portfolio contains a wide range of efficient PV inverters, holistic system solutions for PV systems of all power classes, battery-storage solutions and intelligent energy management systems, and complete solutions for PV diesel hybrid applications. In addition, SMA offers extensive services up to and including operation and maintenance services for photovoltaic power plants (O&M business) and develops digital energy services for private and business customers. SMA inverters already come integrated with all the functions required to generate a maximum yield, without any additional cost to the customer. These functions include effective shade management with SMA ShadeFix and inverter monitoring with SMA Smart Connected.

In the **Home Solutions segment**, SMA caters to global markets for small PV systems with and without connection to a smart home solution. Our SMA Energy System Home provides an end-to-end, single-source system package featuring all the hardware, software and service components required for an independent and cost-effective household electricity supply. SMA's portfolio in the Home Solutions segment comprises single- and three-phase string inverters in the lower output range of up to 12 kW, integrated services, energy management solutions, storage systems, communication products and accessories, alongside services such as extended warranties, spare parts and modernization of PV systems (Repowering) to enhance performance as well as digital energy services. With this portfolio of products and services, SMA provides solutions for private PV systems in all major photovoltaic markets worldwide.

In the **Business Solutions segment**, the focus is on global markets for medium-sized PV systems with and without an energy management solution. SMA Energy System Business, featuring perfectly matched hardware, software, tools and services, gives commercial enterprises the option of producing, storing and selling solar power themselves and organizing their companies' energy flows in a transparent and cost-efficient way. The product portfolio in this segment comprises the three-phase inverters of the product families Sunny Tripower with outputs of more than 12 kW and Sunny Highpower. Storage solutions, holistic energy management solutions for medium-sized PV systems based on the ennexOS platform, medium-voltage technology and other accessories complement the range of products. In addition, SMA offers services up to and including system modernization and operational management of commercial PV systems (O&M business) as well as digital services.

The **Large Scale & Project Solutions segment** focuses on international PV power plant markets with its powerful string inverters in the Sunny Highpower product family and the central inverters in the Sunny Central product family. The outputs of inverters in this segment range from 150 kW to the megawatts. In addition, the SMA portfolio includes complete solutions comprising central inverters with their grid service and monitoring functions, as well as all medium- and high-voltage technology and accessories. Another focus is on storage solutions for large-scale PV and storage power plants. The portfolio is supplemented by services, such as for the modernization and functional enhancement of PV power plants (Repowering), and operation and maintenance services (O&M business). This segment also includes the PV diesel hybrid projects that SMA undertakes in sunbelt areas around the world and large-scale storage projects in select markets.

IMPORTANT SALES MARKETS AND COMPETITIVE SITUATION

SMA estimates that 108 GW of new PV power was installed worldwide in 2019. This is significantly above last year's level (2018: 101 GW; figures exclude inverter retrofitting and battery inverter technology). While new installations in China declined by roughly 31% to 30 GW in the reporting year (2018: 44 GW), the global market, not including China, posted good growth of 37% to 78 GW. SMA estimates that persistently high price pressure caused global PV inverter technology sales (including inverter retrofitting and battery inverter technology) to rise by around 6% to €5.2 billion in the reporting period (2018: €4.9 billion). This includes around €640 million in the battery inverter growth segment (2018: approx. €580 million).

According to SMA estimates, the share of the photovoltaic markets in Europe, the Middle East and Africa (EMEA) in global sales increased to approximately 29% in 2019 (2018: 25%). American photovoltaic markets amounted to a share of 20% (2018: 19%). Due to low prices and strong decline in gigawatts, the Chinese market accounted for only around 16% of global sales in 2019 (2018: 24%). As in the previous year, the Asia-Pacific photovoltaic markets (excluding China) accounted for 32% of sales.

SMA IS WELL POSITIONED INTERNATIONALLY AND HAS A WIDE RANGE OF PRODUCTS

With its companies and experienced photovoltaics specialists in 18 countries, and a portfolio of products and solutions for all segments, the SMA Group is in a good position to benefit from the growth of global photovoltaic markets.

The SMA production sites in Niestetal and Kassel (Germany) have an overall annual capacity of 15 GW. The competence center for coils (electromagnetic components) is based in Zabierzów near Krakow (Poland). With its international positioning and product and service portfolio for all types of applications and different regional requirements, SMA can react quickly to shifts in demand.

In 2019, SMA sold inverters with an accumulated output of 11,409 MW (2018: 8,449 MW) and generated €915.1 million in sales (2018: €760.9 million).

MEASURES TO REDUCE COSTS AND INCREASE SALES IMPLEMENTED ACCORDING TO PLAN

In the reporting period, SMA implemented the measures resolved at the end of 2018 to reduce costs and increase sales as planned. In March 2019, it concluded the sale of the Chinese subsidiaries to the local management there and withdrew from the Chinese market. The unfortunate but unavoidable layoff of around 100 full-time positions at the headquarters in Germany was executed in a socially responsible manner by way of a voluntary severance program. This, combined with additional measures aimed at optimizing and consolidating operations, resulted in savings of over €23 million, as planned, in the reporting period.

At the same time, improved customer focus and increased sales activities allowed SMA to regain market shares in the core business. In addition, we further advanced SMA's strategic positioning in major future fields and consequently its continued development into a provider of systems and solutions in the reporting period. The measures we carried out included introducing complete system packages for private and commercial applications into key target markets; establishing the elexon joint venture for electric vehicle fleet charging infrastructure; pooling the sales activities for storage systems, repowering and other services within an in-house sales unit; and refining the digital energy service offering through the subsidiary coneva.

VISION AND MISSION [1]

Energy supply structures are undergoing fundamental change all over the world. After the pioneering phase of renewable energy sources comes the digitalization of the energy industry. In the foreseeable future, the energy supply will be decentralized, highly renewable, fully digital and interconnected. Photovoltaics will play an essential part as the most cost-effective and decentralized source of energy. With a wide portfolio of products and solutions, extensive PV system expertise, and a global presence, SMA is in an excellent position to utilize the opportunities offered. The SMA Strategy 2020 will provide the strategic framework for this. It comprises a forward-looking vision and mission, as well as clear strategic targets.

Our vision is to make people completely independent in their energy supply using decentralized renewable energy in a connected world. SMA will make a substantial contribution to the fast and full implementation of this vision. Our mission is to integrate and network photovoltaics, storage systems and mobility with intelligent energy management. With our superior solutions, we will shape the energy supply of the future.

CORPORATE GOALS

SMA's corporate goals are enshrined in the Strategy 2020. They were presented to all SMA employees around the world and should form the basis for the Company's sustainable success.

GLOBAL MARKET LEADER IN ALL SEGMENTS

SMA's goal is to make consistent use of growth opportunities in all market sectors and regions and to be the global market leader in sales in every one of our market segments – Home Solutions, Business Solutions and Large Scale & Project Solutions.

PROVIDER OF SYSTEMS AND SOLUTIONS

The ability to offer not only individual components but also entire systems and solutions, including innovative services, is becoming an important distinguishing feature in the photovoltaic industry. SMA has therefore set itself the target of increasing the proportion of sales it generates outside inverters to over 40% by 2020.

[1] The following section is not a mandatory component of the management report as defined in Section 315 HGB in conjunction with GAS 20, and therefore not a subject of the financial audit.

SUSTAINABLE PROFITABILITY AND LIMITED CAPITAL TIE-UP

To counter the high price pressure that is still expected, SMA is striving for continual process improvements and increases in efficiency. Profitability will be ensured through reductions in structural costs if necessary.

DEVELOPMENT OF SMA BY MEANS OF DISRUPTIVE APPROACHES

The digitalization of the energy supply is giving rise to business opportunities that demand novel approaches. In order to make use of the resulting opportunities, SMA focuses on disruptive technological approaches, data-based business models and end-to-end sales models in new, legally independent business units.

SMA IS AN ATTRACTIVE COMPANY [1]

Motivated employees with an international, entrepreneurial mindset and approach, sustainability across the entire value chain and high credibility among all stakeholders are important factors for SMA's success in a dynamic market environment. We therefore practice our values and allow SMA employees the freedom for responsible, entrepreneurial action. We stand out, both internally and externally, due to fairness, internationality and sustainability. Additional information is available in the Non-Financial Statement starting page 35.

FOCUS ON CONTINUED DEVELOPMENT INTO A SYSTEMS AND SOLUTIONS PROVIDER AND COST REDUCTION

In the reporting year, SMA implemented additional key measures to achieve the objectives of Strategy 2020. In addition to launching our system packages for private and commercial applications (SMA Energy System Home and SMA Energy System Business), they also entailed further developing the digital service and data service offerings, and implementing the cost-cutting measures to secure SMA's long-term profitability without negatively impacting investments in the major fields of the future.

SMA also began the process of updating its strategy in the reporting period. In response to the rapidly advancing pace of digitalization, the aim is to adapt, refine and consolidate the existing strategy accounting for future requirements.

[1] The following paragraph is not a mandatory component of the management report as defined in Section 315 HGB in conjunction with GAS 20, and therefore not a subject of the financial audit.

ENTERPRISE MANAGEMENT

Leading Indicators

To be able to react to market changes in a timely manner, it is exceedingly important for SMA to recognize opportunities and risks early on. To achieve this, we will have ongoing discussions about what are commonly referred to as operative leading indicators at both the Managing Board and business unit level with the business unit heads, vice presidents and the general managers of SMA subsidiaries. Indicators relevant to SMA include changes in PV system incentive programs and their effect on regional market potential, growth and competitiveness of SMA in regional markets, customer acceptance of new products, as well as market-related information stemming from discussions with customers, suppliers and associations. The myriad of influencing factors and the complex way they interact make it difficult to produce a detailed forecast that holds up long term.

As part of annual and medium-term planning, the Managing Board specifically discusses opportunities and risks with regard to markets and sales volumes with the sales and business unit heads and records the final assumptions for planning. In the reporting period, the Managing Board and business unit management were informed on a monthly basis about the financial development of the entire SMA Group and the individual business units. They were continuously compared with planning assumptions. In the event of deviations or unforeseen events, short-term countermeasures could therefore be taken on the basis of intra-year forecasts.

Financial Management Parameters

In 2019, SMA used the following key financial management parameters for its operative business as explained below. Compared with the previous year, there were no changes in the calculation of key figures or in the management system.

SALES

Sales include all of the sales generated over the reporting period. Because the market for inverters was shaped partly by plummeting prices, we also measure, in addition to sales, inverter output sold. We calculate sales at both the Group and business unit level.

OPERATING PROFIT (EBIT)/OPERATIVE EARNINGS MARGIN

In addition to sales and the cost of sales, the operating profit includes functional costs and other operating expenses and income. SMA uses this key figure to measure the profitability of the individual business units and the Group. To determine the operative earnings margin, we calculate operating profit in relation to total sales. We measure the operating profit and operative earnings margin at both the Group and business unit level.

EARNINGS BEFORE DEPRECIATION AND AMORTIZATION (EBITDA)

SMA calculates operating earnings before interest, taxes, depreciation and amortization (EBITDA) based on operating earnings (EBIT) plus depreciation and amortization of fixed and intangible assets. SMA uses this key figure to measure profitability at the Group level, excluding imputed depreciation of investments made.

NET WORKING CAPITAL/NET WORKING CAPITAL RATIO

In addition to inventories, net working capital comprises trade receivables, trade payables, prepayments received from customers and prepayments made to suppliers. We measure our customers' and suppliers' accounts receivables as well as product manufacturing inventories regularly in relation to sales over the last 12 months. We measure and manage net working capital at the corporate Group level.

CAPITAL EXPENDITURE

Capital expenditure is another key driver of liquidity planning. To manage capital expenditure, we formulate budgets as part of our annual planning, which the Managing Board approves over the course of the fiscal year. This applies particularly to large-scale capital expenditure projects, which are additionally evaluated with a profitability calculation. We manage capital expenditure at the corporate Group level.

NET CASH

With net cash, we review our own financing possibilities for the ongoing business like net working capital and capital expenditure. It includes liquid funds and securities contained within working capital and cash on hand pledged as collatoral less interest-bearing financial liabilities. We manage net cash at the corporate Group level.

Intragroup Reporting and Management

INTRAGROUP REPORTING

The monthly reporting includes, among other information, detailed status reports on orders placed and order volumes, the amount of inverter output sold, sales figures, results of operation, cash flow statements, research and development activities, investments and net working capital. The aim is to compare changes in decisive items on the income statement and balance sheet both with the budget and figures of the previous month and to take any corrective measures necessary. An electronic management information system (SAP Business Warehouse) serves as the "home" for the information used for reporting.

INTRAGROUP MANAGEMENT SYSTEM

In the reporting period, the basic elements of the intragroup management system were the regular Managing Board meeting and monthly discussions on results with the business unit managers. Strategy implementation was also discussed during quarterly business reviews with the business units as was an assessment on the progress of objectives. In addition, the SMA intragroup management system encompasses the regular Risks and Opportunities Report and the report prepared by the Internal Audit department.

RESEARCH AND DEVELOPMENT

SMA uses its high systems expertise to develop holistic solutions for different photovoltaic applications and for comprehensive energy management across all segments and sectors (power generators, household appliances, storage systems, heating, ventilation and air-conditioning, e-mobility). To offer our customers technically mature and economic system solutions in all market segments and regions, we selectively collaborate with strong partners. With our continuous research and our market- and customer-focused development, we can further reduce the consumer cost of PV electricity and decrease the complexity in the new, decentralized and digital energy world, thus making a significant contribution to a successful global energy transition.

Forward-Looking Development Approach

Thorough understanding of different market requirements and close proximity to our customers enable us to anticipate future system technology demands. Customers used to be concerned primarily with energy yield, service life and design flexibility. Now, however, consumer costs of PV electricity, system integration and connectivity are the key factors in making a purchasing decision. With the increasing integration of PV systems into comprehensive systems, cyber security is also playing an ever more important role. In this context, the PV inverter is classified as a system-critical component, so customers place higher demands on the transparency of companies. [1]

In product development, we are pursuing a platform strategy aimed at systematically reducing product costs and being able to quickly react to market changes. By standardizing the core inverter, we are capable of increasing the proportion of identical components across the entire portfolio. Customization in line with different markets and customer needs is implemented through the connection area and software.

Since January 1, 2019, the business units' costs have been shown under selling expenses, as they are increasingly focused on customers and markets. In previous years, they were included in research and development expenses. The previous year's figures were adjusted accordingly. In the reporting year, R&D expenses decreased by 7.0% year on year to € 63.1 million (including capitalized development projects). SMA was granted 1,491 patents and utility models worldwide by the end of the reporting period. In addition, more than 500 other patent applications were still pending as of December 31, 2019. Furthermore, SMA holds the rights to 1,167 registered trademarks.

Research and Development Expenses of the SMA Group

in € million	2019	2018	2017	2016	2015
Research and development expenses	63.1	67.8	83.0	78.3	96.0
of which capitalized development projects	10.9	18.8	18.4	12.5	29.5
Depreciation on capitalized development projects (scheduled)	9.0	21.4	18.2	19.8	13.6
Research and development ratio in % in relation to sales	6.9	8.9	9.3	8.3	9.8

Complete Solutions to Lower Energy Costs [2]

PRIVATE SYSTEMS: MORE SELF-CONSUMPTION AND COMPLETE SYSTEM PACKAGES

In the reporting period, SMA expanded its solution portfolio for reducing household energy costs and increasing the appeal of photovoltaics in the Home Solutions segment. The focus here was on solutions with equally high benefits for installers and for PV system operators.

With intelligent solar technology and the SMA Smart Connected service function integrated directly into the inverter, SMA facilitates maximum energy yields and the greatest possible convenience for PV system operators and installers. Customers can choose between different inverters of the Sunny Boy and Sunny Tripower product families depending on the size and individual requirements of their residential PV systems. In addition to the proven inverter models, SMA has been offering the new Sunny Boy 2.0 for smaller private PV systems since the first quarter of 2019. In the first half of 2019, SMA launched the new, particularly powerful Sunny Tripower 8.0–10.0 for larger private applications and small commercial applications. Both devices meet the new European connection conditions. Thanks to their low weight and compact design, their installation is particularly simple and space requirements are low. They can quickly and easily be put into operation using a smartphone or tablet via the integrated web interface.

In November, SMA and battery manufacturer LG Chem launched a new home storage system. The combination of the Sunny Boy Storage 3.7 battery inverter from SMA and the new RESU 10M high-voltage battery from LG Chem is particularly easy to transport and can be installed by one person. Being uncomplicated and flexible, the system allows end customers to significantly increase self-consumption of cost-effective solar power.

In the reporting period, SMA presented its first complete system package for an independent and cost-effective household electricity supply in the form of SMA Energy System Home. In addition to PV and battery inverters, SMA Energy System Home includes battery storage, energy management and design software, as well as customized service components. Quickly, easily and at any time, the system can be expanded with additional functions and gives installers the opportunity for additional business in the areas of storage, energy management and e-mobility.

[1] This paragraph is not a mandatory component of the management report as defined in Section 315 HGB in conjunction with GAS 20, and therefore not a subject of the financial audit.

[2] The following section is not a mandatory component of the management report as defined in Section 315 HGB in conjunction with GAS 20, and therefore not a subject of the financial audit.

In order to make the generation and use of solar power even more attractive, SMA has also developed a solution for easy integration of PV systems into the SolarCoin ecosystem. Since the start of February 2019, operators of PV systems registered on the world's largest solar monitoring platform, Sunny Portal, have had access in just a few clicks to the cryptocurrency issued by the SolarCoin Foundation to reward the generation of solar power.

COMMERCIAL APPLICATIONS: COMPREHENSIVE ENERGY MANAGEMENT AND CONVENIENT DIRECT SELLING

In the Business Solutions segment, in the reporting period, SMA further developed the ennexOS IoT platform for energy management that was launched at the start of 2018. ennexOS allows to effectively reduce energy costs across all sectors (power generators, electrical appliances, storage systems, heating, ventilation and air-conditioning, e-mobility). The modular functionality of the platform can be adjusted to the user's individual requirements at any time. This ranges from monitoring energy flows and automatically optimizing total energy costs to involving households and companies in the energy market of the future. As a central interface, the SMA Data Manager M provides for perfect communication and monitoring and can also be used to manage all future energy flows. The extension of functions in the reporting period means that, in addition to PV systems, combined heat and power plants and diesel generators, hydroelectric power plants can now be incorporated into energy monitoring with ennexOS. Moreover, enhancements to the interface of the Data Manager M enable the integration of additional devices, including inverters from other manufacturers. Furthermore, cyber security was increased even further by the introduction of special security protocols in data transmission.

ennexOS is a key component of SMA Energy System Business, the new, flexible SMA system solution for commercial applications. In addition to PV and battery inverters, a battery-storage system developed in-house by SMA and the SMA Data Manager M, the system includes all the tools and services that commercial enterprises can use to generate and sell solar power themselves and to organize energy flows at the company in a transparent and cost-efficient way. As a result, SMA as a system provider is for the first time supplying customers with a complete system solution consisting of hardware, software and corresponding services from a single source.

In the reporting period, SMA also pressed ahead with efforts to position itself in the field of e-mobility, setting up joint venture elexon together with AixControl GmbH and aixACCT charging solutions GmbH. With this, the partners are pooling their expertise in the key areas of charging infrastructure, energy management and renewable energies. elexon offers turnkey solutions for the planning, installation and maintenance of efficient charging parks for electric vehicles from a single source. Based on the manufacturing capacities and, above all, experience of the joint venture partners, the focus is also on industrial solutions for charging parks and large fleets.

PV POWER PLANTS: HIGH-PERFORMANCE AND COST-EFFECTIVE SOLUTIONS FOR CENTRAL AND DECENTRALIZED ARCHITECTURES

In the Large Scale & Project Solutions segment, development in the reporting period focused on further increasing power density to reduce PV power plant costs with central and decentralized designs, and on secure system integration. In addition, SMA enhanced its service offer, especially with regard to the modernization of large PV systems (repowering).

The new Sunny Highpower PEAK3 is the first SMA string inverter for 1,500-volt DC voltage. The inverter with an output of 150 kW allows for flexible planning, rapid project implementation and easy service in PV power plants with a decentralized architecture and provides maximum power even under extreme conditions. Delivery started in the first quarter of 2019.

With the Sunny Central UP, SMA has once again successfully increased the output of its largest central inverter by more than 50%. Its output of up to 4.6 MW enables a considerable reduction in the number of inverters in large 1,500-volt PV power plants and thus significantly lowers operating costs. Delivery started in the third quarter of 2019. The inverter is also available as a fully integrated turnkey container solution in combination with perfectly matched medium-voltage technology. In the reporting period, SMA signed a contract for the delivery of 595 of the medium-voltage solutions to one of the big utility companies in the U.S.

In addition, all SMA central inverters now have a fully integrated hardware and software solution for simple connection of DC-coupled battery-storage systems. This inverter option has been delivered since the end of the first quarter of 2019.

In the large-scale storage system segment, SMA sold systems with a total capacity of around 1 GW for the first time in 2019 – more than three times as much as in the previous year. This included a 10 MW storage system using SMA technology that went into operation in northern Germany in May 2019. The system solution that SMA supplied for the project with Sunny Central Storage battery inverters and an SMA Hybrid Controller enables an off-grid power supply with the new stand-alone mode, black start and utility grid resynchronization capabilities. This function was successfully demonstrated in November 2019 in a test that is, to date, the only one of its kind anywhere in Germany. The municipality of Bordesholm, Germany, was disconnected from the utility grid without any interruption in the supply and was supplied using renewable energies independently of the grid for one hour, before the connection to the utility grid was restored – once again without any interruption in the supply.

In November, SMA signed an innovative framework agreement on operation and maintenance (O&M) services with U.S. PV system operator TerraForm Power. Over the next ten years, SMA will provide O&M services, including the exchange of outdated inverters for TerraForm Power's North American solar portfolio with a total power of around 1 GW.

NON-FINANCIAL STATEMENT [1]

[GRI 102–14] Since SMA was founded, sustainability has been an essential part of its corporate mission statement. We understand sustainability as combining long-term economic success with protection of the environment and social responsibility. Our sense of identity includes satisfied employees thanks to an attractive corporate culture, a fair and honest business policy, social commitment, exemplary handling of environmental issues and resources through sustainable production, and the use of renewable energy sources at all levels of the value chain. With our products and services, we are driving the transition to a globally sustainable, renewable energy supply and are helping curb global climate change.

The SMA Managing Board is committed to the ten principles of the UN Global Compact, which SMA signed back in 2011. Based on these principles and the 17 UN Sustainable Development Goals (SDGs), we continuously develop our commitment to sustainability. In this way, we want to help meet the challenges associated with the global climate change, a steadily growing population and increasingly scarce resources. An overview of the Sustainable Development Goals that SMA has already achieved can be found at the end of the Annual Report on page 128. Our work focuses particularly on Goal 7: "Affordable and clean energy," Goal 11: "Sustainable cities and communities," Goal 12: "Responsible consumption and production" and Goal 13: "Climate action."

[GRI 102–11, 12, 14, 18, 48–52, 54] On the following pages, we report on the developments and progress we made in terms of sustainability in the 2019 fiscal year. Significant risks from the Company's business activities and from its products and services that could have negative effects on the aspects covered in the Non-Financial Statement are described in the Risks and Opportunities Report starting on page 59. An overview of sustainability key figures can be found at the end of the Annual Report on page 128 et seq. In addition, we publish information about sustainability at SMA on our website at www.SMA.de/en.

The report uses the Core option of the Global Reporting Initiative (GRI) standards. The disclosures also fulfill the criteria of the UN Global Compact annual progress report. In the future, we will also report on how the Company's activities measure up against each of the 17 UN Sustainable Development Goals. The precautionary principle, as outlined in the Rio Declaration on Environment and Development, is also an integral part and driving force of our sustainability commitment.

Sustainability – An Important Element of the SMA Strategy

[GRI 102–14, 22, 23, 34] SMA knows that a comprehensive, credible commitment to sustainability is possible only when it is an established part of the corporate strategy. That is why sustainability is an essential element of the SMA Strategy 2020. The sustainability mission statement already developed in 2012 was adapted to the Strategy 2020. Sustainability will also have a central role to play as SMA continues to develop its strategy.

On this basis, we have defined four areas of action for sustainability that comprise the following topics:

PRODUCTS AND PROCESSES	ENVIRONMENT AND ENERGY	EMPLOYEES	SOCIAL RESPONSIBILITY
Quality and safety	Resource efficiency	Culture of feedback	Responsibility in the supply chain
Customer satisfaction	Preventive environmental protection	Advanced training	Stakeholder dialogue/ transparency
Circular economy	Holistic energy management	Diversity	International principles and values
Sustainable profitability	Sustainable mobility	Occupational safety and health management	Social commitment

[1] The content of the "Non-Financial Statement" section, which contains the disclosures pursuant to Sections 289b – e and Sections 315b – c of the German Commercial Code (HGB), is not subject to auditing in accordance with Section 317 (2) Sentence 4 HGB. It is relevant only to verify that the non-financial statement, separate non-financial report, non-financial group statement or separate non-financial group report has been submitted.

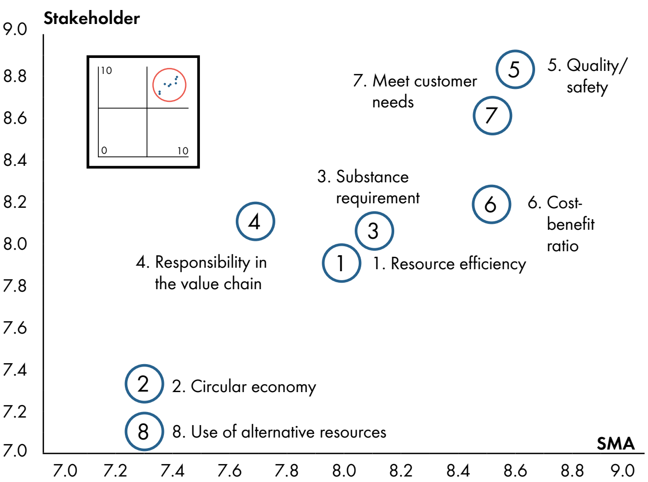
The four areas of action “Products and Processes,” “Employees,” “Environment and Energy,” and “Social Responsibility” are the focal points for our commitment to sustainability. In terms of content, they relate to factors both at the Company and product level.

For all Company activities, the Global Quality unit coordinates implementation of the sustainability commitment. Decisions are made by the Global Management Committee, which consists of the Managing Board and top-level managers.

KEY FACTORS DETERMINED USING STAKEHOLDER ANALYSIS

[GRI 102–40, 42–44, 46, 47, 103–1] Ongoing dialogue with various interest groups and the general public is important to us. In 2017, we carried out a stakeholder analysis to identify key areas of action for a sustainable Company strategy. Our survey gave internal and external interest groups (customers, suppliers, employees, NGOs) the chance to directly influence the development of SMA’s sustainability commitment. The survey included three sections: sustainable Company, sustainable product design and sustainable value chain. The results of the stakeholder analysis serve as the basis for continuous development of our commitment to sustainability.

Using the example of sustainable product design, the graphic below shows the analysis of the key areas of action. Internal and external stakeholders were asked about the relevance (materiality) of presorted issues from the points of view of the stakeholder and SMA. The materiality analysis revealed that many of the issues relating to sustainable product design we identified were highly relevant.



The stakeholder dialogue was continued over the reporting period through such means as a large-scale customer satisfaction survey and an improved level of communication on sustainability. By analyzing the extensive feedback, we have learned, for example, that issues relating to the use of resources for our products are coming increasingly to the fore.

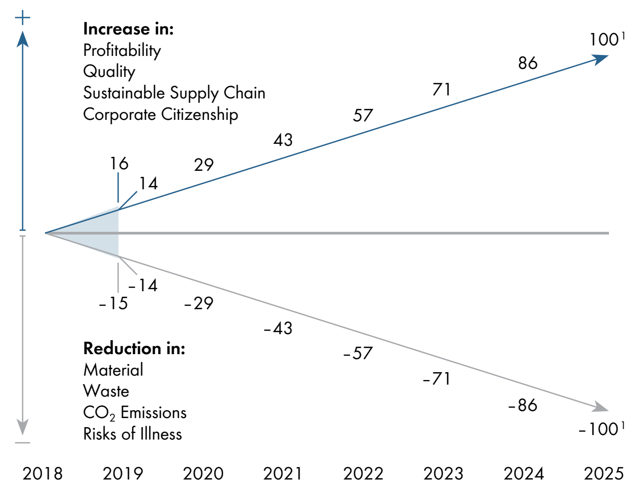
SUCCESS MEASURED BY COMPANY AND PRODUCT KPI

We have defined two key figures as primary variables that help us measure the success of our commitment to sustainability: the Company Key Figure and the Product Key Figure. In dialogue between specialists from different areas of the Company, we specified the main sustainability drivers in the four areas of action and determined the key parameters required to measure them. Each driver is allocated a formula and a measurable target, which can then be used as the basis for measuring the sustainability performance in the Company Key Figure and the Product Key Figure. This gives all stakeholders a clear picture of the progress that SMA is making with its sustainability performance. The merging of different parameters illustrates that sustainable business is possible only if there is a balance between economic, environmental and social aspects.

The Company Key Figure measures the use of resources and the value that this creates. The aim here is to create more value with fewer resources. The bigger the gap between the value created and the resources used to do so, the more sustainable the Company. We have determined the following parameters and goals for this:

Driver	Target by 2025
Profitability	Increase in EBITDA margin to > 5%
Quality	1% field failure rate
Sustainable supply chain	55% overall score for suppliers in EcoVadis assessment
Corporate citizenship	Increase in CC index by 5%
CO_2 emissions	50% reduction in scope 1 + 2 CO_2 emissions in kg/kW of inverter output produced
Waste	25% reduction in waste per metric ton of product produced
Use of Materials	25% reduction of the ratio of material input to product output
Accident frequency	Lost time incident rate of <1.5

In 2019, SMA achieved a high sustainability performance and even exceeded slightly the goals set:



[1] Planned level of target achievement by 2025 in %
Performance 2019

The Product Key Figure follows the same pattern as the Company Key Figure and measures the increase in sustainability of our products and services. We evaluate this using the following sustainability criteria and goals, which are based on the results of our stakeholder analysis and internal expert dialogue.

Driver	Target by 2025
Use of renewable energy sources	50% ratio of renewables in total energy consumption
Quality/longevity	1% field failure rate
Design for recycling/disassembly	90% of recyclable product components
Preferable materials	25% increase in the ratio of secondary raw materials used
Product footprint	25% reduction in CO_2 emissions in kg/kW of inverter output
Use of Materials	30% reduction in product weight in kg/kW of inverter output
Non-preferable materials	15% reduction in the quantity of non-preferable materials
Waste	50% reduction in special waste disposal

To determine the Product Key Figure, we mostly consult data from our product life cycle assessments. Important factors include not only materials, CO_2 emissions and energy consumption, but also the quality and service life of our products. Collecting data for the Product Key Figure involves a lot more work as it is more complex. For this reason, the 2019 data will be calculated as a basis and performance will be assessed from 2020 onward.

Developments in the Four Areas of Action in the Reporting Year

[GRI 103-1-3] As a result of the integrated management system implemented at the headquarters in Niestetal/Kassel, we follow clearly defined management approaches and also meet the requirements in accordance with DIN EN ISO 9001, DIN EN ISO 14001, DIN EN ISO 50001 and DIN EN ISO 45001. These also influenced the specification of key aspects within the four areas of action. We report below on the measures implemented and progress achieved during the reporting year in the four areas of action.

AREA OF ACTION: PRODUCTS AND PROCESSES

Customer satisfaction is the basis for the long-term economic success of the Company. With our high capacity for innovation and high quality along the entire value chain, we develop sustainable products and processes that meet the changing demands of an increasingly digitalized world, the requirements for sustainability and a circular economy. Here we concentrate on the following issues:

Ongoing Improvement of Quality and Waste Reduction in All Business Processes – Construction of New Test Center Under Way

[GRI 416-1-3] When serving our customers, our aim is to fulfill the highest quality requirements at all times. We aim for added value, zero defect tolerance and flexible quality concepts on a global level. SMA's headquarters in Kassel/Niestetal have been certified by the DIN EN ISO 9001 standard for over 20 years, thus guaranteeing compliance with internationally recognized quality principles. Our high standard of quality is also enhanced by the accreditation of our in-house Test Center for Electromagnetic Compatibility (EMC) by ISO/IEC 17025, the international standard for test and calibration laboratories. In addition to these and other management certifications, our products also meet all the safety standards required by each of our markets (e.g., UL, JET, VDE, etc.). Additionally, our sustainable product design concept focuses on the longevity of the products. Our practices of continuously reducing wearing parts and using efficient maintenance manuals serve this purpose.

Effective and efficient inspection and testing procedures help us achieve our quality goals. In the reporting period, we commenced construction work on the new EMC Test Center for large-scale inverters, which is expected to go into operation in 2020. Thanks to a sound quality index system, we can also identify sources of error at an early stage and address risks to a large extent. We have introduced recognized quality and risk management practices in supplier management and are working on developing them further.

Sustainable Profitability and Limited Capital Tie-Up – SMA Inverters Avoid Environmental Damage Amounting to €10.5 billion

[GRI 201–2, 203–2] The measures to reduce costs and increase sales that were resolved at the end of 2018 were implemented as planned in the reporting period with the aim of returning SMA quickly and sustainably to profitability. In March 2019, we concluded the sale of the Chinese subsidiaries to the local management entities and subsequently withdrew from the Chinese market. The unfortunate but unavoidable layoff of around 100 full-time positions at the headquarters in Germany was executed in a socially responsible manner by way of a voluntary severance program. This, combined with additional measures aimed at optimizing and consolidating operations, resulted in savings of over €23 million in 2019.

In addition, environmental damage avoided will increasingly be taken into account in the economic analysis of companies. Assuming an average value, SMA's total current inverter output of around 85 GW to date is equivalent to avoided environmental damage amounting to €10.5 billion. Our inverters enable a cost-effective and environmentally friendly energy supply worldwide, helping support the fight against climate change and contributing to the achievement of UN Sustainable Development Goals 7, 11 and 13. The PV inverters produced by SMA to date help prevent nearly 59 million tons of CO_2 emissions every year worldwide (calculation: 85 GW of output, 1,300 kWh of power generation a year per kW, 0.53 kg CO_2/kWh).

Achieving a Comprehensive Circular Economy – SMA Embarks on Extensive Strategy Development Process

[GRI 301–2, 3] As a sustainability-conscious Company aiming for high resource efficiency, creating a circular economy is hugely important to us. Our inverters already stand out due to a long service life. Defective devices that need to be serviced are immediately replaced by reconditioned devices, repaired wherever possible, and transferred to the replacement device pool.

In 2019, we began to develop a comprehensive circular economy strategy for SMA. This contributes to our Product Key Figure and the factors it encompasses. The aim of the strategy is to return as many materials as possible to the material cycle as secondary raw materials once our inverters reach the end of their useful lives. We thereby wish to become less dependent on raw material extraction, which involves working and environmental conditions that are difficult to control, and simultaneously improve our supply reliability.

The point of emphasis here is on relationships between materials along the entire value chain. The subject of design for recycling is becoming relevant for product development with a view to returning as many recyclable materials as possible to the material cycle. We intend to define recyclability quotas for our inverter categories and to continuously improve them on the basis of key figures. At the same time, we are also working on steadily increasing the percentage of secondary raw materials that we use in our products. Another aspect involves materials that we would like to scale down in the future or replace with substitutes. This includes not only materials that are subject to legal regulations, but also materials to be classified as critical with respect to supply reliability or based on environmental, health or human rights factors. Our aim is to assess these issues qualitatively in a matrix, which will then also serve as a basis for making material procurement decisions in product development.

Other key issues that we are bearing in mind in relation to circular economy are the high quality and service life of our products as well as their material and energy efficiency. Goals in relation to this include waste reduction, increased recovery rates and improved disposal (see also Area of Action: Environment and Energy).

Concurrently with the development of the circular economy strategy, we will expand step by step the guideline for sustainable product design that we created in 2018. One focus area here is design for recycling and disassembly. New findings from projects carried out at the Company will be incorporated into this process, including the findings from a project to investigate more homogeneous recycling of SMA inverters after they have finished being used. The goal here is to design the inverters in a way that enables high-quality raw materials to be returned to the material cycle as easy and resource-efficiently as possible.

Increasing Customer Satisfaction – International Surveys Conducted

[GRI 102–43, 44] To understand exactly what our customers expect from us, we engage in constant dialogue with them and actively request feedback. This takes place at customer events as part of the SMA partner program, at SMA Solar Academy seminars and regular international trade fairs. In 2019, we also conducted a survey of installers in select international markets that focused on how we can better support this customer group with their work. In the reporting period, we additionally rolled out a comprehensive international customer satisfaction survey for all customer groups to around 50,000 recipients worldwide. We will use the survey findings to derive ways of further improving customer satisfaction.

AREA OF ACTION: ENVIRONMENT AND ENERGY

SMA will continuously reduce its use of resources in terms of raw materials, energy, mobility and waste along the entire value chain, increase its use of renewable energies, environmentally friendly materials and sustainable forms of mobility as well as improve its recycle and reuse rates. This will be taken into consideration early on in the development of new products and solutions. Important issues here are:

Increasing Resource Efficiency Throughout the Entire Product Life Cycle – Material Efficiency Increased Again

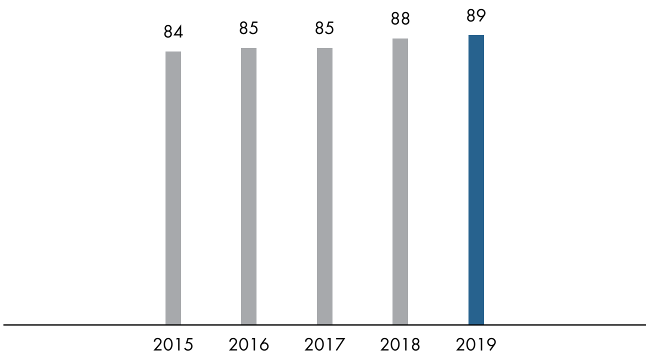
[GRI 301-1, 303-1, 304-1, 2, 306-2, 307-1] In resource efficiency, SMA sees a responsibility to the environment and also an economic advantage. Here the product life cycle assessment helps us find the greatest possibilities within our value chain, define the right goals and continuously improve the product sustainability key figure. The results of the assessment will be successively incorporated into our guidelines for sustainable product design. We have used this method in recent years for inverters of the Sunny Boy, Sunny Tripower and Sunny Central product families. We will continue this practice in order to review the impact of measures aimed at improving the product footprint. The results of previously prepared product life cycle assessments showed that the high efficiency and high quality standard of our inverters and their associated long service life have a positive influence. In the future, we will direct focus to our preliminary supply chain.

Material efficiency – We once again increased the material efficiency of our inverters in 2019. Whereas in the previous year the weight of our string inverters had averaged 2.97 kg/kW output, in the reporting year, this was brought down to just 2.47 kg/kW. We also increased the power density of our central inverters such that the weight across all products is now just 1.3 kg/kW output. Our latest generation of Sunny Central inverters now even weigh less than 1 kg/kW output. The high power density also reduces the number of inverters required within a PV power plant. We know that material savings partially go hand in hand with the use of critical raw materials. That is why, in addition to the warranty with which we already comply to avoid the use of conflict minerals in our inverters, we aim to act in accordance with material requirements such as REACH and RoHS and to gradually reduce the use of critical and rare substances. Our standard for the use of hazardous substances includes both the requirements of the Montreal Protocol and SMA's own restrictions. Our suppliers have an obligation to comply with the standard. These are all aspects that we are focusing on in our current project to develop our circular economy strategy and enhance our product development process. In this context, we are currently developing further criteria for materials to be excluded or reduced to make our products more sustainable.

Waste – The issue of waste reduction is to be closely connected with our circular economy strategy. We regard waste products as a secondary raw material and seek to avoid waste as much as possible and to reuse materials. We strive to increase the share of recyclable waste at the SMA production locations to almost 100% by 2020 and to hardly produce any residual waste. In addition to the comprehensive separation of all garbage categories that has now been introduced in all office areas, we are optimizing the homogeneous separation of production waste. This has resulted in a continuous improvement in the recycling rate, which came to 88.8% of recyclable waste in 2019. In the process of consolidating production at our location in Niestetal starting 2020, we will adapt the location's disposal concept to bring us closer to the target we are striving to achieve. SMA is also working to reduce and avoid hazardous waste materials. The packaging for some of our product groups already consists almost completely of environmentally friendly materials.

Share of Recyclable Waste in Total Waste Generation

Share of recyclable waste in %



Water – Water consumption does not play a significant role in production at SMA. In some buildings, we use well water to cool the building in an environmentally friendly way. We direct the water close to the surface, which has had the positive side effect of creating a wetland habitat. In our preliminary supply chain, we expect our key suppliers to have an environmental plan in place that provides for ways of reducing water consumption where production processes are water-intensive.

Biodiversity – Some of SMA's properties border on conservation areas. We comply in full with the conditions imposed on us in this respect. There have been no administrative penalty proceedings in this regard since the Company was founded. We offset the unavoidable space our production and administration buildings take by using green roofs on most of our buildings.

Preventive Environmental Protection – Exemplary CO_2 Balance Further Improved

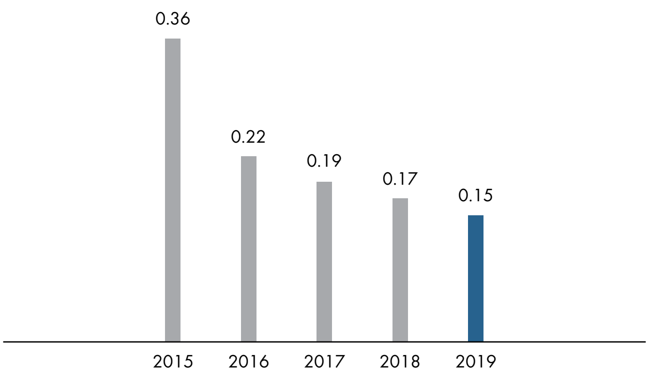
[GRI 302–2, 5, 305–1–5] The environmental management system used for our inverter production is certified in accordance with DIN EN ISO 14001. This system ensures that we avoid environmental damage at every stage of the value chain and act in accordance with current environmental legislation.

It is important to us to keep the environmental impact of our products as low as possible, beginning in the development phase. Our guidelines for sustainable product design therefore lay down key design criteria that ensure that our products become more sustainable from one generation to the next. It is not just material efficiency, efficiency and safety that contribute to sustainable design, but also the definition of "non-preferable materials." Efforts to avoid these materials, which pose environmental or health risks, or whose production involves a violation of human rights, are to be taken into consideration in the pre-development stage and tracked through to the preliminary supply chain. We also evaluate "preferable materials." These are materials that should be used as a matter of preference because they contain secondary raw materials or otherwise have a very minimal impact on health, environmental and social factors. The Product Key Figure will illustrate the progress that has been achieved in each individual area. To reach this figure, we take into account all stages of the value chain. Here responsibility throughout the supply chain plays a decisive role. Our life cycle assessments have shown us that the biggest lever for improving our product life cycles is our suppliers' use of renewable energy sources.

By collecting data in accordance with the GHG Protocol Standard, we transparently map our CO_2 footprint. At the Kassel/Niestetal location, thanks to our excellent energy and mobility management, energy-efficient buildings and a CO_2-neutral electricity supply, we already have an exemplary CO_2 balance. The aim is to extend this to all locations worldwide and become a fully CO_2-neutral Company in the medium term. Furthermore, the long-term plan is to expand this to the entire value chain and also factor in the production of raw materials, all our suppliers, the utilization phase and recycling of our products. Our goal is to reduce the already very low emissions as defined in GHG Scope 1 and GHG Scope 2 by another 5% per year. So far, we have been able to determine GHG Scope 3 emissions to a limited extent only. We again refer to our primary key figures, which show the CO_2 footprint of the Company and its products. We are currently working on recording CO_2 emissions in the supply chain. However, the results of our life cycle assessments already provide us with better insights into the main emission factors in the value chain.

Development of CO_2 Emissions per Produced kW of Inverter Output

CO_2 emissions Scope 1 + Scope 2 in kg/kW, Germany only



Excellence in Energy Management – Use of Renewable Energy Sources and Energy Efficiency Again Increased

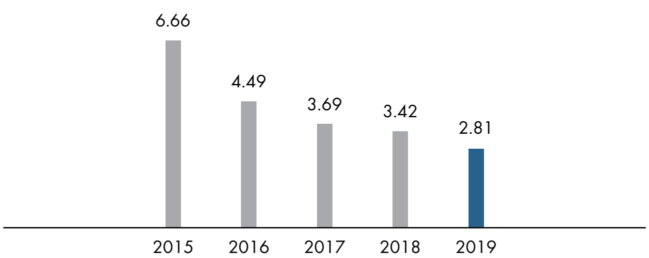
[GRI 302–1–5] Another important starting point for sustainability is our DIN EN ISO 50001-certified corporate energy management policy. SMA's energy concept is based on three levels from which we work to improve energy-related performance: avoiding energy consumption, using energy more efficiently and increasing the share of renewable energies used. The goal is to supply the German SMA locations entirely with decentralized renewable energy from the local region by 2020. In this context, the SMA Climate Roadmap forms the basis for continuous development of projects contributing to the energy transition at SMA's headquarters.

SMA has already undertaken a number of flagship projects in the past with its CO_2-neutral inverter production facility at its Solar Factory 1 in Kassel, Germany; the Solar Academy in Niestetal near Kassel, Germany, which functions independently from the utility grid; and Data Processing Center, which was completed in 2013 and is one of the most resource-efficient centers of its kind. These projects are a testament to the high priority SMA places on its sustainable energy strategy. In 2019, the amount of self-produced solar power in our total electricity consumption in Germany slightly decreased to 38% (2018: 40%). This is mainly due to the fact that we made more use of our in-house PV systems to test our own products. We aim to achieve our goal of supplying the SMA headquarters entirely with decentralized renewable energy from the local region by 2020 as part of a sponsored project involving collaboration with regional partners. This project is now delayed, however, mainly due to regulatory approval obstacles.

In the course of merging our production activities at one of our production facilities, in 2020, we will optimize energy use at our Solar Factory 3. We will take inspiration from the energy optimization of Solar Factory 1, which we completed in 2018 and has helped lower energy consumption in the heating/cooling area alone by 1,500 MWh per year. Back in 2019, we already made a start on switching the hall lighting in Solar Factory 3 over to efficient LED lighting. This will reduce our lighting energy consumption by between 30% and 50%. We also achieved an exceptionally high energy efficiency performance in the new test area for large-scale central inverters. Overall in 2019, we continued to reduce energy consumption per produced kW of inverter output to 2.81 kWh (2018: 3.42 kWh) at our headquarters in Germany. This is mainly attributable to the higher degree of utilization of our production capacities. A special energy management software makes it possible to monitor all types of consumption on an ongoing basis. A large amount of data from all our SMA locations is already being monitored by this software.

Development of Energy Consumption per Produced kW of Inverter Power

Total energy consumption in kWh/kW, Germany only



In the future, we will extend the climate roadmap from our own locations to those of our suppliers, helping them make their energy supply sustainable and efficient.

Sustainable Mobility – Around 72 Tons of CO_2 Saved on the Commute to Work

[GRI 305–5] SMA's commitment to sustainability also includes corporate mobility management that has already won multiple awards and that raises employee awareness of environmentally friendly forms of transportation. Our fleet organization, recognized by nonprofit environmental and consumer protection association Deutsche Umwelthilfe as a good example of climate protection, includes a bonus/malus system for our vehicle fleet's CO_2 emissions. By 2020, we aim to reduce the vehicles' CO_2 emissions to 95 g/km. This target is to be achieved partly by promoting e-mobility. At our headquarters in Kassel/Niestetal, we currently provide our employees and visitors with 45 charging stations, at which electric vehicles can be charged with CO_2-neutral electricity. Thanks to these charging stations, SMA employees with electric vehicles alone saved around 72 tons of CO_2 on their commute to work in 2019. In 2019, we launched a project to expand the charging infrastructure at SMA, which will involve the installation of 50 more charging stations and will aim to demonstrate that e-mobility is possible with intelligent charging and load control without the need to expand power supply structures. Some of the CO_2-neutral electricity for the charging stations will be produced directly in the PV system on the roof of the SMA parking garage.

Along with expanding the charging infrastructure, we are promoting e-mobility by giving all employees the option of electric vehicle leasing. We are also gradually changing over the in-house vehicle fleet to e-mobility. Electric vehicles already account for more than 20% of our fleet. By 2020, our goal is to have at least half of the vehicles in the fleet electrically powered using renewable energy. Another aspect of the corporate mobility management system relates to increasing the proportion of cyclists.
In 2019, more than 400 employees made use of the bicycle leasing system introduced in 2016. These and other measures have enabled us to almost double the percentage of employees who cycle to work from 9% to 17% over the past ten years. Not only this, but the flexible working option we give our employees to work from home also results in a CO_2 saving on their commute to work.

Due to its international positioning, air travel is an important issue for SMA. Measures such as the consistent use of our video conference rooms to avoid air travel reduce some of the burden in this respect. In the future, we will further increase our efforts to avoid air travel.

AREA OF ACTION: EMPLOYEES

The high level of commitment and willingness of our employees to always learn are essential factors in SMA's success. In the competition for talent, it is extremely important to us to be perceived as an attractive employer. That is why continuing to develop our corporate culture based on fairness and respect is an important part of the SMA Strategy 2020. We put our values of trust, performance and team spirit into practice in our day-to-day work, creating scope for responsible, entrepreneurial action and opportunities for shaping international collaboration.

Number of Employees Down After Layoffs

[GRI 102–7, 8, 401–1; UNGC 6] As of December 31, 2019, SMA had 3,124 employees worldwide (December 31, 2018: 3,353 employees; figures do not include temporary employees). Employee figures in Germany decreased to 2,186 (December 31, 2018: 2,212). SMA cut around 100 full-time positions in Germany through a voluntary severance program, and at the same time filled positions in strategically important future fields. The number of employees abroad fell to 938 (December 31, 2018: 1,141). Around 300 full-time positions were cut in China through the sale of the Chinese subsidiaries to local management entities. The excellent order situation meant that new jobs were created elsewhere. For instance, SMA signed a ten-year contract to provide operation and maintenance services for the North American solar portfolio of supplier TerraForm Power in the U.S., thereby growing the U.S. service team.

SMA still uses temporary employees to absorb order fluctuations. As of the reporting date, the number of temporary employees increased by 152 to 442 worldwide (December 31, 2018: 290) on the back of the excellent order situation. Temporary employees at SMA are paid the same hourly rate as SMA employees performing similar duties.

Employees

Reporting date	2019/ 12/31	2018/ 12/31	2017/ 12/31	2016/ 12/31	2015/ 12/31
Employees (excl. temporary employees)	3,124	3,353	3,213	3,345	3,330
of which domestic	2,186	2,212	2,077	2,093	2,081
of which abroad	938	1,141	1,136	1,252	1,249
Temporary employees	442	290	701	530	671
Total employees (incl. temporary employees)	3,566	3,643	3,914	3,875	4,001

Full-Time Equivalents

Reporting date	2019/ 12/31	2018/ 12/31	2017/ 12/31	2016/ 12/31	2015/ 12/31
Full-time equivalents (excl. trainees and temporary employees)	2,950	3,177	3,006	3,118	3,110
of which domestic	2,028	2,053	1,888	1,881	1,872
of which abroad	922	1,124	1,118	1,237	1,238

Additional key figures on employees, in particular on the gender balance at management level, can be found in the overview of sustainability key figures on page 129.

High Transparency and Strong Feedback Culture

[GRI 102–41, 402–1; UNGC 3] As a global Company, SMA ensures that respect for human rights, including freedom of association and the International Labour Organization (ILO) rules, is guaranteed at all locations at any time. Open and trustful interaction with each other as well as the highest possible transparency and involvement of employees in corporate decisions are highly important to us. That is why we provide our employees with regular and comprehensive information about developments and changes in the Company.

We use our annual employee appraisals to coordinate the tasks of each employee and the associated qualification requirements, to measure performance and to provide feedback on collaboration in an exchange between manager and employee. Global employee surveys, carried out at least every two years, complement our culture of feedback. We derive internal measures from the results of these surveys.

In 2019, we also finished the process of preparing and implementing the Global Leadership Fundamentals, which we had started the year before. The first step involved asking employees from all countries, hierarchical levels and areas of SMA to develop global approaches to leadership based on the values and objectives from the SMA Strategy 2020. This took place in various formats, some of which were virtual. The Managing Board and senior management team then held further workshops to take an in-depth look at the leadership principles that had been put forward. The next step involved gradually rolling out the leadership fundamentals across the Company. The fundamentals globally specify what employees can expect from their managers and what managers can expect from their employees. Leadership ambassadors from all areas help the managers with the process of implementation.

Lifelong Learning and Targeted Development of Talent

[GRI 404–1, 2] SMA operates in a dynamic environment that places high demands on our employees. Radical developments, such as rapid digitalization of the energy supply and Work 4.0, require new skills and competencies. For us, sustainable personnel development therefore means providing our employees with opportunities for lifelong learning, individual development and building qualifications to current and future challenges. In addition to external training, SMA employees benefit from a diverse internal training program comprising a variety of topics. Furthermore, we offer our Technology and Sales employees, in particular, subject-specific content via our SMA University and Online Sales Academy. To make existing knowledge accessible throughout the Company and to ensure we learn from each other, information is exchanged and channeled through peer groups. In 2019, we also continued to give attention to the topic of "new work." We focused on supporting initiatives from motivated employees, in particular, and on continuously developing working environments that are conducive to agile working practices in changing project teams.

Our talent management team aims to give employees with distinct potential long-term development opportunities at the Company. We support talented employees with individual development plans and group-oriented measures over a period of at least 12 months, and prepare them for project management or management tasks. We thus want to create a global network to ensure success in current and future business fields.

The Leadership Development Program, designed to promote a culture of leadership and cross-divisional global collaboration, is aimed at middle-management executives from all departments. The program includes various aspects of leadership topics, which are communicated through individual coaching and working on global projects and serve to promote entrepreneurial thinking and action with a focus on strategic management. We work to ensure that the composition of these programs is at least representative of the proportion of women in the Company as a whole.

In 2019, SMA invested a total of around €1.7 million in employee training.

Vocational training as a key element in securing and fostering the next generation is also a high priority at SMA. We currently offer training at the Kassel/Niestetal location in five different training occupations in the industrial/technical and commercial sectors. As of December 31, 2019, 59 young people were in vocational training at SMA (December 31, 2018: 72 people). Following vocational training, a transfer concept creates the possibility for further employment at SMA. The trainees benefit from the international nature of the organization and, apart from the opportunity to complete language training courses, they have the chance to complete an internship on project work at an international location for a defined period of time. We are committed to supporting the next generation of MINT (mathematics, information technology, natural sciences and technology) trainees in several ways, including running the annual Girls Camp at SMA.

Continuously Increasing Diversity

[GRI 405–1] We see the diversity of our employees as an asset to our Company. SMA is committed to equal opportunities and promotes collaboration in "mixed" teams. In joining the "Diversity Charter" in 2011, we undertook to create a work environment in which all employees have the same opportunities for development, regardless of gender, nationality, religion or ideology, disability, age or sexual orientation.

Given the Company's strong technology orientation, the proportion of male employees is comparatively high. On December 31, 2019, 74.7% of employees were male and 25.3% female. Our aim is to continuously increase the percentage of female employees. We offer our employees family-friendly working conditions. This includes flexible working hours and models, the possibility of working from home, childcare and other family services. Other measures to support female employees include mentoring and targeted support for self-managed internal networks.

We also aim to integrate different cultures and strengthen collaboration between employees of different nationalities. SMA employs people of 56 different nationalities in 18 countries. In addition to promoting international collaboration, the possibility of deployment to our international locations and intercultural training, in 2017, we started implementing a concept to integrate refugees into our vocational training program. In the reporting year, refugees from Afghanistan, Eritrea, Iran and Syria were carrying out vocational training at SMA.

Performance-Based Remuneration for Motivated Employees

[GRI 202–1, 401–2] In addition to appreciating our employees in the form of qualified feedback and further development opportunities, it is important to us to acknowledge their commitment and performance through appropriate remuneration. Our job level model, which has been implemented at the vast majority of global SMA locations since 2016, helps create transparency and enable comparison of pay across all areas of the Company. It is based on the requirements of each position and the individual performance.

For us, it goes without saying that there are no systematic differences in the remuneration of female and male employees. In addition to fixed and performance-related remuneration components, our remuneration system also includes non-cash remuneration and components of the Company pension plan. In addition, both permanent employees and temporary staff participate financially in the Company's success. Temporary employees at SMA are paid the same hourly rate as SMA employees performing similar duties. It also goes without saying that SMA complies with the legal provisions on minimum wage.

In the reporting period, a Benefits Day was organized to provide employees with extensive information about the numerous other benefits that make SMA an attractive employer beyond remuneration.

Attractive Employer With Exemplary Occupational Safety and Health Management

[GRI 403–1–7] Occupational safety and health management, a health promotion policy and workplace rehabilitation management are part of sustainable safeguarding of the Company's future. The focus of occupational safety and health management at SMA is on avoiding work-related accidents and illnesses. We work in accordance with the principle of prevention. The systematic performance of hazard assessments; regular safety inspections and training; the inclusion of occupational safety and health management in workplace design; and the introduction of binding regulations for occupational safety and health responsibility are just a handful of the measures that enforce prevention and ensure a safe workplace environment. Integrating laws and ordinances as well as implementing technical standards into our business processes has always been a matter of course for us. Occupational safety and health management processes are regulated by the provisions of the management system BS OHSAS 18001, which was introduced at the Kassel/Niestetal headquarters in 2012 and was superseded in 2018 by the new DIN EN ISO 45001 standard. Various subject-specific and department-specific meetings take place regularly to ensure that the topic of occupational safety and health management is firmly established within the Company. These include the quarterly meetings held by the occupational safety committee, with participation from the occupational health physicians and the responsible Managing Board member.

In 2019, the SMA Crisis Management department was also given its own website and an emergency number, clearly distinguishing it from Emergency Management. The objective of crisis management at SMA is to enable the Company and all its subsidiaries to manage the impact of unforeseeable circumstances in an effective and efficient manner. Crisis management aims to avert risks to employees and to the Company's material and immaterial assets and to limit expected losses.

As the workforce ages, health promotion, ergonomics and psychological risk assessment are becoming increasingly important. These are all part and parcel of health management at SMA. It is aimed at avoiding chronic unfavorable stress and thus minimizing the risk of illness and reducing the illness rate. Our various health measures are quality-assured and developed and implemented to meet the requirements of particular target groups and genders. One area of focus is aging- and age-adapted workplace design in production and logistics. In this context, in 2019, we also established the "Ergonomic Requirements" design guideline as an essential part of acceptance reports on our production lines, as well as consolidating the "MARIE" cooperation program in conjunction with rehabilitation clinics and pension funds to support employees with altered performance. Working alongside orthopedists, physical therapists and health insurance funds, we extended the physical therapist consultation hours and are now able to offer secondary and tertiary preventive measures for restrictions to activity caused by shoulder pain. As a result of further technical and organizational improvements, the key figure for "age-stable workplaces" that was introduced in production in 2017 showed an increase in the proportion of aging- and age-adapted workplaces to 55.9% in 2019 (2018: 53.5%).

AREA OF ACTION: CORPORATE SOCIAL RESPONSIBILITY

As an international Company, SMA meets its societal and moral responsibilities with regard to all relevant interest groups. Internationally applicable laws and standards apply to both our locations and the entire supply chain. We are a member of national and international organizations and associations to promote the growth of renewable energy sources.

Compliance With All International Regulations, Fair and Transparent Along the Entire Value Chain

[GRI 102–12, 16, 205–1–3, 407–1, 408–1, 409–1, 412–1, 3, 413–1] Respect for human rights and compliance with legal regulations are of the utmost priority to SMA. By signing the UN Global Compact in 2011, we made a public declaration of our commitment to responsible corporate governance. At the core of the UN initiative are ten principles in the areas of human rights, labor standards, environmental protection and anti-corruption.

As early as 2009, SMA signed the cross-sector code of conduct issued by the German Association of Supply Chain Management, Procurement and Logistics (BME e. V.). In 2010, we supplemented this code of conduct with SMA's own guidelines for suppliers (SMA Supplier Code). This Supplier Code covers topics such as corruption, antitrust law, ethical principles, labor standards and employee rights, environmental protection, quality and product safety. In the future, we intend to align ourselves even more closely with the UN Sustainable Development Goals. Suppliers must sign the SMA Supplier Code on conclusion of a contract.

Compliance – with legal provisions and internal directives – has become increasingly important in recent years. A risk-oriented and preventive compliance strategy is now more important than ever. The SMA Group Compliance function has formulated the business principles and directives from which basic work sequences and processes are derived and implemented globally. All employees are obligated, in the context of their work for SMA, to act ethically in accordance with the directives, laws and regulations of their country. Compliance with these obligations is consolidated through regular, global obligatory compliance training. At the end of 2018, we also published the SMA Compliance Manual, in which all corporate compliance guidelines were revised and compiled. At regular intervals, Group Compliance reports to the Managing Board and Supervisory Board with information on the latest developments, suspicious cases, measures and processes. In 2019, no risks of corruption or complaints were determined in this respect.

For employees with questions or suspicions about compliance, Group Compliance officers are on hand as a direct point of contact and information is also available on the intranet and via hotlines. Our executives are supported by the legal provisions task force on important issues in environmental and occupational safety law. There were no violations identified in these areas during the reporting period. SMA actively promotes the shaping of corporate co-determination. In Germany, the foundations for this are regulated by the Works Council Constitution Act and elsewhere.

Responsibility Along the Entire Supply Chain – 90% of Goods Volume Tested for Sustainability

[GRI 102–9, 308–1, 2, 414–1, 2] In 2019, SMA purchased goods of approximately €490 million from around 450 suppliers in Europe, North and South America and the Asia-Pacific region. Based on our comprehensive analyses of the environmental and societal impact of our products, we defined the supply chain as a key point of focus. In 2017, we began the evaluation of our entire supply chain's performance in terms of sustainability. Since 2018, this has been handled by the external company EcoVadis. Supplier participation in the evaluation is mandatory. We have already evaluated suppliers corresponding to around 90% of our goods volume. This has revealed a mostly positive picture. The evaluation criteria, which we will refine further in the coming year, include guaranteed compliance with the universal SMA standards such as respect for human rights, freedom of association, avoidance of child labor and forced labor, and the use of a sustainable, climate-friendly energy supply. They will be recorded in a "Supplier Sustainability Guideline," which alongside our Supplier Code, will formulate clear goals for our suppliers.

SMA also subjects itself to assessment by EcoVadis as a means of comparing its sustainability performance with that of its suppliers and having an external organization to show up potential areas for improvement. In 2019, EcoVadis awarded us a silver medal.

Social Commitment – Paving the Way for a Sustainable, Reliable and Cost-Effective Energy Supply

[GRI 102–13] For SMA, supporting and guiding social development for a sustainable future is a matter of course. Over the past years, we have thus supported projects, organizations and initiatives from different areas – on a regional and national level as well as in newly industrialized and developing countries. The traditional Christmas donation by SMA employees is used to support regional projects and initiatives via the fund-raising organization A.M.S. In 2019, SMA employees donated around €12,000. As in the previous years, the sum was doubled by the Managing Board.

We are particularly committed to encouraging the widespread use of renewable energies. In this regard, as part of its close partnership with the University of Kassel, SMA funds an endowed chair for the specialist field of economics with a focus on the decentralized energy industry. We are also committed to numerous networks, partnerships and initiatives that play a significant role in further development of photovoltaics, climate protection and the digitalization of the energy supply. For example, SMA is represented on the managing boards of the German Solar Industry Association (Bundesverband Solarwirtschaft) and the European industry association SolarPower Europe (SPE), where SMA experts preside over the "Digitalisation & Solar Task Force," among others. In this context, we work with politicians, industry associations and the general public advocating for increased installation of renewable energy in conjunction with cross-sector energy management and optimizing the conditions for a completely decentralized and digital energy supply based on renewable sources. This can contribute to countries' national and international obligations to reduce greenhouse gas emissions and to increase climate and resource protection.

SMA supports the EU initiative to develop a uniform eco-design directive and eco-labeling for PV systems.

Our principles on political dialogue and representation of interests form the basis for a set of responsible, reliable and honest practices aimed at reconciling commercial and social interests. One such practice is neutrality with respect to political parties and lobby groups. Unlike previous years, in 2019, we gave a total of €3,000 in donations to political parties in Germany. We donated €1,000 each to the CDU, the SPD and BÜNDNIS 90/DIE GRÜNEN. These party donations were permitted under applicable law.

Transparent Stakeholder Dialogue – Providing Information Openly and Responding to Suggestions

As a globally operating Company, we are subject to a wide variety of political changes and decisions that affect our business activities. To safeguard the future of SMA, it is important to us to communicate our Company's interests in open dialogue with governments, industry associations and organizations, as well as societal stakeholders. We also respond to our stakeholders' suggestions and interests with the same openness, valuing them as reliable partners.

We place high value on ongoing, transparent dialogue with important interest groups. We report important events within the Company in ad hoc messages, press releases, on our website and social media channels. By sharing information on all relevant issues, we ensure that we are always acting in the interests of our core stakeholders. Our stakeholder analysis, performed in 2017, enabled us to explore in more detail the key issues of a sustainable Company and sustainable products. The international customer satisfaction analysis carried out in 2019 yielded important findings with regard to further activities.

Another contribution to the stakeholder dialogue involved hosting a webinar on "greenwashing versus credible sustainability" in fall 2019, which allowed us to reach out to over 100 industry actors worldwide. The webinar was part of an initiative by the specialist publication PV Magazine that SMA is sponsoring, which is looking to increase sustainability in the PV industry. In 2019, SMA also took part in the Open Day of "The Show with the Mouse" for the first time. The event, which is organized by Germany's most successful educational children's TV program, gives children and parents an insight into various organizations, research institutes and companies. There was a great deal of interest in SMA and the event was fully booked. We took over 400 visitors on tours of our inverter production facility and test laboratories.

We will continue this open and transparent dialogue with key interest groups in the future.

FISCAL YEAR 2019

GENERAL ECONOMIC CONDITIONS AND ECONOMIC CONDITIONS IN THE SECTOR

General Economic Conditions

According to the International Monetary Fund (IMF), global economic growth again fell to 2.9% in 2019 (2018: 3.6%). After a subdued first half of the year, uncertainties over trade policy, geopolitical tensions and a strained situation in important newly industrialized countries also curbed economic activity in the second half of the year. Challenges that some countries had to contend with included not only social unrest but also weather anomalies in connection with climate change, from hurricanes in the Caribbean to flooding in the East and drought in South Africa right through to severe bushfires in Australia.

According to the IMF, economic output in industrialized countries grew by 1.7% in 2019, compared with 2.2% in the previous year. This was the result of weaker development both in the U.S. and eurozone. Japan was the only country to experience an increase in economic growth. There was a further decline in production activity toward the end of the year in Germany, where growth totaled 1.2% (2018: 1.9%). In the U.S., economic output grew by 2.3% (2018: 2.9%).

According to the IMF, growth in developing and newly industrialized countries also slowed down in the reporting period to 3.7% (2018: 4.5%). As stated by the experts, negative surprises for economic activity in some countries were a contributing factor. This was particularly true of India, where growth slowed dramatically to 4.8% (2018: 6.8%). The Chinese economy grew by 6.1% (2018: 6.6%).

Economic Conditions in the Sector

Photovoltaics have proven to be increasingly competitive in recent years. In a growing number of regions around the world, solar power is now more cost-efficient than conventionally generated electricity. For example, large-scale solar projects in the Middle East are already generating solar power at less than $0.02 per kWh. This points the way to an environment in which the industry will grow in the medium and long term even without subsidization. In the wake of the transformation of global energy supply structures, current and future objectives include offering complete solutions, intelligently interlinking different technologies, providing intermediate storage and management solutions for generated energy, and integrating users into the energy market. This is the basis for ensuring a reliable and cost-effective electricity supply from renewable energies.

INCREASE IN GLOBAL PV INSTALLATIONS AND INVESTMENTS

Based on newly installed PV power of approximately 108 GW (2018: approximately 101 GW), global PV installations were higher in 2019 than in the previous year according to SMA's estimates (these installation figures do not include retrofitting of existing PV systems with new inverters or battery inverter technology). SMA estimates that global PV inverter technology sales (including inverter retrofitting and battery inverter technology) increased by around 6% to €5.2 billion in the reporting period (2018: €4.9 billion).

As a result of the continuing decline in China, the regional distribution of demand shifted to photovoltaic markets in Europe, the Middle East and Africa (EMEA) and to the markets in the Asia-Pacific region excluding China (APAC) in the reporting period. In the EMEA region, inverter technology sales were significantly higher than in the previous year at approximately €1.5 billion (2018: €1.2 billion). The share of the EMEA region in global sales rose to around 29% (2018: 25%). System technology for storage applications and the retrofitting of existing PV systems accounted for around 20% of sales in the EMEA region. The Americas region recorded an upturn in sales to approximately €1.0 billion and accounted for roughly 20% of global sales (2018: €900 million; 19%), with growth originating from Latin American markets. The Chinese PV market recorded a decrease again. With an investment volume of approximately €900 million, China accounted for around 16% of global sales in the reporting period (2018: €1.2 billion; 24%). The Asia-Pacific photovoltaic markets (excluding China) accounted for around 35% of the global market with sales of approximately €1.8 billion, which were up on the previous year (2018: €1.6 billion; 32%).

GERMANY AND SPAIN MOST IMPORTANT MARKETS IN EMEA

In the EMEA (Europe, Middle East and Africa) region, newly installed PV power increased significantly to around 26 GW (2018: 15 GW). At around 3.9 GW each, Germany (2018: 3.0 GW) and Spain (2018: 0.3 GW) were the most important markets in terms of newly installed PV power in the reporting period. This major growth in Spain is mainly attributable to the implementation of large-scale PV projects following public calls for tender.

Development in other European countries was mixed. The United Kingdom's market significance declined as a result of the radical subsidy cuts made in past years. By contrast, there was a positive development year on year in installations in the Benelux countries.

INVESTMENTS IN U.S. MARKET STAGNATE

The U.S. market was still dominated by large-scale solar projects in the reporting period. The SMA Managing Board estimates PV installations in 2019 at around 11.5 GW (2018: 10.6 GW). Inverter technology investments were on a par with the previous year at approximately €650 million. There was an increase in the number of Latin American markets, which achieved inverter technology investments of around €350 million (2018: €250 million).

CHINA FALLS SIGNIFICANTLY SHORT OF PREVIOUS YEAR

According to SMA estimates, around 30 GW of new PV power was installed in China in 2019, with the installation volume down by around 31% on the previous year's level. The decline is still attributable to the drastic cut in subsidies announced by the Chinese Energy Agency (NEA) in May 2018.

In Japan, around 6.7 GW of new PV power was installed in the reporting period (2018: 7.8 GW). According to estimates, inverter technology investments amounted to approximately €550 million (2018: €650 million). The driving segments here were residential and commercial PV systems and retrofitting of existing PV systems.

With newly installed power of approximately 5.1 GW, Australia reported significant growth year on year (2018: 3.8 GW). Large-scale PV projects accounted for a large percentage of this strong growth, which enabled Australia to meet its target of generating 33,000 GWh from renewable energy sources, which it had set for 2020, as early as September 2019.

RESULTS OF OPERATIONS

Sales and Earnings

SMA ACHIEVES RECORD SALES AND SIGNIFICANTLY IMPROVED EARNINGS

In the 2019 fiscal year, the SMA Group sold PV inverters with accumulated power of 11,409 MW, putting output sold over the 10,000 MW threshold for the first time (2018: 8,449 MW). The SMA Group's sales increased by 20.3% to €915.1 million (2018: €760.9 million). The growth is attributable in particular to the extremely good business performance in the Home Solutions and Large Scale & Project Solutions segments. SMA regained market shares in these segments and increased sales in its target markets of Germany and the U.S., in particular, and also in several other new markets.

SMA is well positioned internationally and generates contributions to sales in all relevant regions. In the reporting period, the Company generated 50.5% of external sales in European countries, the Middle East and Africa (EMEA), 26.1% in the Asia-Pacific (APAC) region and 23.4% in the North and South American (Americas) region calculated before sales deductions (2018: 47.7% EMEA, 33.2% APAC, 19.1% Americas). The main markets for SMA in the fiscal year were again Germany, the U.S. and Australia.

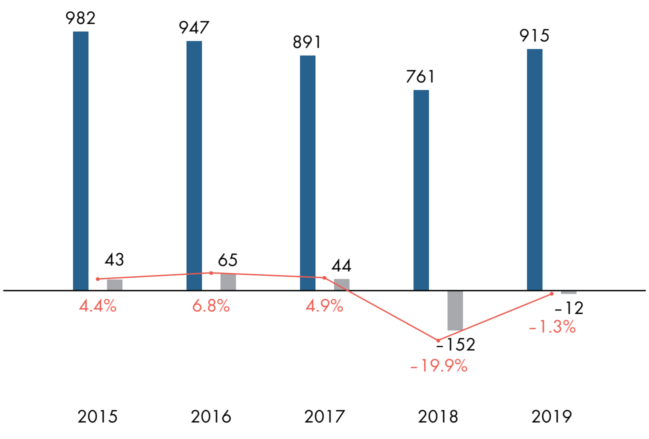
The Large Scale & Project Solutions segment made the largest contribution to sales in 2019, accounting for 41.4% (2018: 37.3%). The Business Solutions segment generated 32.4% of the SMA Group's sales, while the Home Solutions segment contributed 26.2% (2018: 38.0% Business Solutions, 24.7% Home Solutions).

As of December 31, 2019, SMA continued to have a very large order backlog of €766.2 million (December 31, 2018: €578.0 million). Of this amount, €395.0 million was attributable to product business. The product-related order backlog was thus more than twice as high as at the end of the previous year (December 31, 2018: €175.4 million). €371.2 million of the order backlog was attributable to service business. Most of this share will be implemented over the next five to ten years.

In the 2019 fiscal year, earnings before interest, taxes, depreciation and amortization (EBITDA) amounted to €34.2 million (EBITDA margin: 3.7%; 2018: –€69.1 million; –9.1%). Earnings before interest and taxes (EBIT) came to –€11.8 million (2018: –€151.7 million). This equates to an EBIT margin of –1.3% (2018: –19.9%). Net income was –€8.6 million (2018: –€175.5 million); earnings per share amounted to –€0.25 (2018: –€5.06).

Sales and EBIT

in € million



Sales and Earnings per Segment

As of January 1, 2019, the Storage and Digital Energy segments were reclassified to the Home Solutions (formerly Residential), Business Solutions (formerly Commercial) and Large Scale & Project Solutions (formerly Utility) segments, with the effect that there is no longer any separate reporting for the Storage and Digital Energy segments in the 2019 fiscal year. The figures for the previous year for the Home Solutions, Business Solutions, and Large Scale & Project Solutions segments were adjusted accordingly.

HOME SOLUTIONS SEGMENT POSTS SALES GROWTH AND POSITIVE OPERATING RESULT

In the Home Solutions segment, SMA caters to global markets for small PV systems with and without connection to a smart home solution. The portfolio comprises single- and three-phase string inverters of the Sunny Boy and Sunny Tripower product families in the lower output range of up to 12 kW, integrated services, energy management solutions, storage systems of the Sunny Island and Sunny Boy Storage product families, communication products and accessories. SMA's Home Solutions segment also offers services, such as extended warranties, spare parts and modernization of PV systems (Repowering), to enhance performance as well as digital energy services.

In 2019, external sales in the Home Solutions segment increased by 27.7% year on year to €239.8 million (2018: €187.8 million). The main reason for this increase lies in the excellent level of demand in European markets. Its share of the SMA Group's total sales was 26.2% (2018: 24.7%). The EMEA region accounted for 72.7% (2018: 65.5%) of the Home Solutions segment's gross sales, the APAC region for 11.2% (2018: 18.0%) and the Americas region for 16.1% (2018: 16.5%).

As a result of the significant growth in sales, the Home Solutions segment's EBIT increased to €1.6 million (2018: –€19.6 million). This includes a negative effect of €2.0 million in connection with updating the parameters in the calculation model for general warranty provisions. The previous year's earnings included both negative and positive one-time items totaling €9.0 million. In relation to external sales, the EBIT margin was 0.7% (2018: –10.4%).

BUSINESS SOLUTIONS SEGMENT INCREASES SALES MARGINALLY

In the Business Solutions segment, the focus is on global markets for medium-sized PV systems with and without an energy management solution. The product portfolio comprises the three-phase inverters of the product families Sunny Tripower with outputs of more than 12 kW as well as Sunny Highpower. Storage solutions and holistic energy management solutions for medium-sized PV systems based on the ennexOS platform, medium-voltage technology and other accessories round off the offering in this segment. In addition, SMA offers services up to and including system modernization and operational management of commercial PV systems (O&M business) as well as digital services.

External sales in the Business Solutions segment slightly increased to €296.5 million (2018: €289.3 million). Its share of the SMA Group's total sales was 32.4% (2018: 38.0%). 58.7% of gross sales were attributable to the EMEA region, 28.1% to the APAC region and 13.2% to the Americas region (2018: 52.6% EMEA, 34.1% APAC, 13.3% Americas).

Earnings before interest and taxes (EBIT) amounted to –€7.2 million (2018: –€9.2 million). This includes a negative effect of €5 million in connection with updating the parameters in the calculation model for general warranty provisions. In relation to external sales, the EBIT margin was –2.4% (2018: –3.2%).

LARGE SCALE & PROJECT SOLUTIONS SEGMENT IMPROVES SALES AND EARNINGS SIGNIFICANTLY

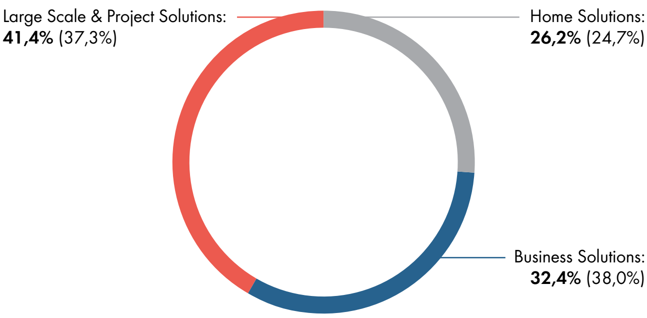
The Large Scale & Project Solutions segment focuses on international PV power plant markets with its powerful string inverters in the Sunny Highpower product family, the central inverters in the Sunny Central product family as well as the battery inverters in the Sunny Central Storage product family. The outputs of inverters in this segment range from 150 kW to the megawatts. In addition, the SMA portfolio of this segment includes complete solutions comprising central inverters with their grid service and monitoring functions as well as all medium- and high-voltage technology and accessories. The portfolio is supplemented by services, such as for the modernization and functional enhancement of PV power plants (Repowering), and operation and maintenance services (O&M business).

External sales in the Large Scale & Project Solutions segment increased by 33.4% to €378.6 million (2018: €283.8 million). Its share of the SMA Group's total sales was 41.4% (2018: 37.3%). The Large Scale & Project Solutions segment thus accounted for the largest share of the SMA Group's total sales. The APAC region accounted for 33.8% (2018: 42.7%) of the segment's gross sales, the Americas region for 35.9% (2018: 29.1%) and the EMEA region for 30.3% (2018: 28.2%).

Earnings before interest and taxes (EBIT) in the Large Scale & Project Solutions segment amounted to –€4.8 million (2018: –€68.4 million). This included positive effects on earnings of €3.5 million from a reversal of deferred revenue from prior periods due to the cancellation of a service and maintenance contract in the U.S. and €7.0 million from the updating of parameters in the calculation model for general warranty provisions. In the same period of 2018, negative effects on earnings totaled €40 million and related to individual warranty-related items, extraordinary impairment losses on capitalized development costs, and a negative one-time item from the change in estimates and recalculation of general warranty obligations. In relation to external sales, the EBIT margin was –1.3% (2018: –24.1%).

Sales by Segments [1]

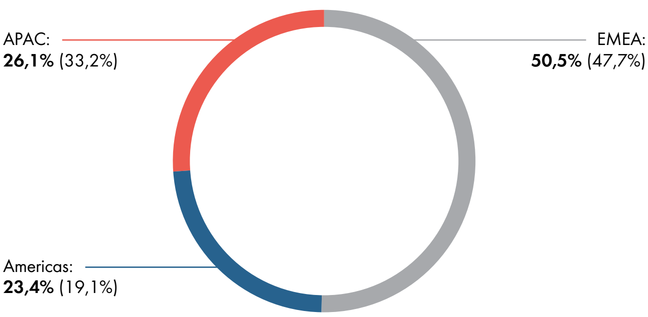
in %



[1] Gross sales before sales deductions (previous year's figures in parentheses)

Sales by Regions [1]

in %



[1] Gross sales before sales deductions (previous year's figures in parentheses)

Development of Significant Income Statement Items

Since January 1, 2019, the business units' costs have been shown under selling expenses, as they are increasingly focused on customers and markets. In previous years, they were included in research and development expenses. The previous year's figures were adjusted accordingly.

DECLINING PRICES AND INCREASING SERVICE AND WARRANTY COSTS NEGATIVELY IMPACT GROSS MARGIN

The cost of sales amounted to €749.3 million in the reporting period (2018: €688.9 million). The gross margin was 18.1% (2018: 9.5%). Despite an improvement year on year, the gross margin was negatively impacted by the continuing tangible decline in prices and increased service costs associated with service level improvement. Furthermore, expenses related to the addition of provisions for general warranty obligations went up in the second half of the year due to the significantly higher volume of sales.

Personnel expenses included in cost of sales decreased year on year to €106.4 million (2018: €118.4 million). In addition to further productivity increases, this features a pro-rata portion of the effects of the cost-reduction measures being implemented. The comparative figure for 2018 included provisions for severance payments in connection with the planned staff reduction. Due to increased inverter output sold, material expenses rose to €555.4 million (2018: €449.7 million). SMA is continuously working on the product portfolio in all segments to tackle price pressure by optimizing the cost of existing products and introducing new and less expensive products.

Depreciation and amortization included in the cost of sales amounted to €41.3 million in 2019 (2018: €73.7 million). This includes scheduled depreciation on capitalized development costs of €9.0 million (2018: €21.4 million). Other costs slightly decreased by –1.5% year on year to €46.3 million (2018: €47.0 million). The comparative figure included a positive one-time item from the change in estimates and recalculation of general warranty obligations.

Selling expenses rose to €79.8 million in 2019 (2018: €72.1 million). This increase was mainly due to organizational changes regarding sales-related departments. The cost of sales ratio was 8.7% in the reporting period (2018: 9.5%).

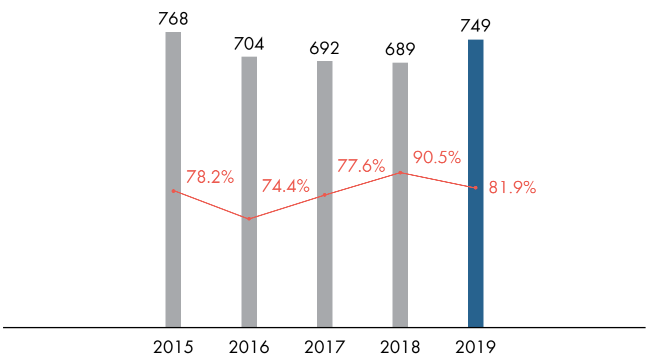
In the past fiscal year, research and development expenses, not including capitalized development costs, amounted to €52.2 million (2018: €49.0 million). The research and development cost ratio amounted to 6.9% in 2019 (2018: 8.9%). Total research and development expenses, including capitalized development projects, amounted to €63.1 million (2018: €67.8 million). Development costs were capitalized in the amount of €10.9 million in the reporting period (2018: €18.8 million).

General administrative expenses decreased and totaled €49.0 million in 2019 (2018: €55.2 million). This reflected the implementation of restructuring measures starting in the second quarter. The ratio of administrative expenses amounted to 5.4% in the reporting period (2018: 7.3%).

The balance of other operating income and expenses resulted in a positive effect on earnings of €3.5 million in the reporting period (2018: –€47.5 million). In addition to the effects of foreign currency valuation, this includes income from renting the Group's own buildings as well as expenses and income for assets measured at fair value through profit or loss. The latter include a positive effect of €3.8 million from remeasurement of the back payment agreement in the form of an earn-out to the buyer of the Chinese subsidiaries.

Cost of Sales

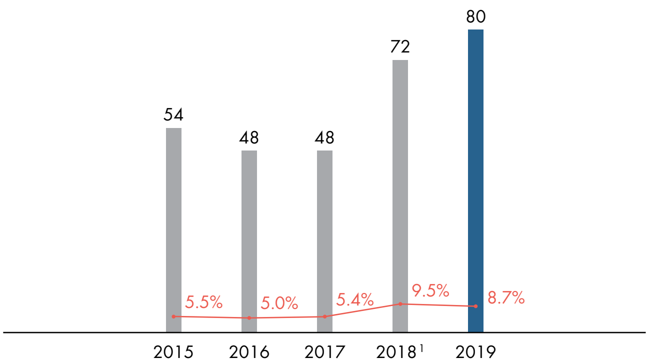
in € million



Ratio in % of sales

Selling Expenses

in € million

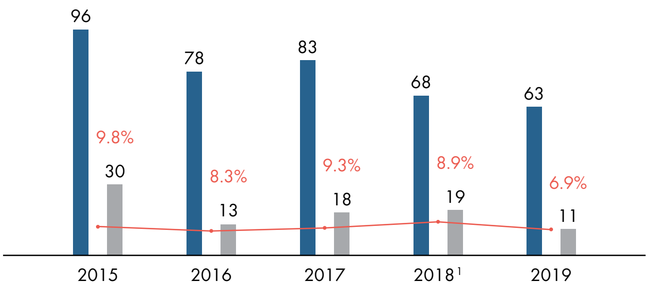


Ratio in % of sales

[1] 2018 figures adjusted for business unit allocation; figures for 2017 through 2015 were not adjusted

Research and Development Expenses

in € million

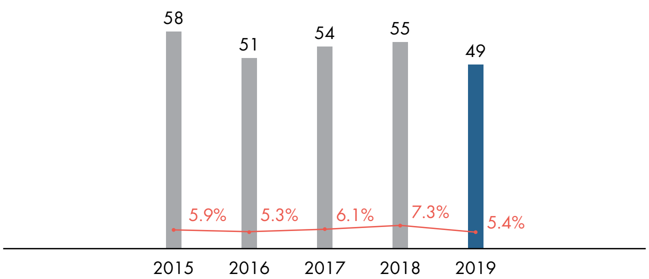


Research and development expenses
of which capitalized development projects
Ratio in % of sales

[1] 2018 figures adjusted for business unit allocation; figures for 2017 through 2015 were not adjusted

Administrative Expenses

in € million



Ratio in % of sales

FINANCIAL AND TAX RESULT

The financial result improved to €1.0 million in 2019 (2018: –€14.7 million). In the previous year, this included the complete write-off of the investment in Tigo Energy, Inc. amounting to €11.3 million, in addition to other financial income and expenses.

Earnings before interest, taxes, depreciation and amortization (EBITDA) of €34.2 million, which is a significant improvement year on year, equates to an EBITDA margin of 3.7% (2018: –€69.1 million; –9.1%).

The return on equity after taxes (net income in relation to average total assets in the reporting period) came to –2.1% in the reporting year (2018: –33.9%), the return on assets after taxes was –0.8% (2018: –15.9%).

Multi-Period Overview of Results of Operations

in %	2019	2018	2017	2016	2015
EBIT margin	–1.3	–19.9	4.9	6.8	4.4
EBITDA margin	3.7	–9.1	10.9	14.9	12.3
EBT margin (return on sales)	–1.2	–21.9	4.9	6.2	3.9
Return on equity after taxes	–2.1	–33.9	5.0	5.1	2.5
Return on assets (after taxes)	–0.8	–15.9	2.5	2.5	1.2

FINANCIAL POSITION

Principles and Objectives of Financial Management

Inflows of funds from operative business activities constitute the key source of financing. Cash holdings are managed and invested centrally by Global Treasury. The decision is based not only on returns but also on the credit rating of the bank partner. In the case of supplier credits granted, counterparty risk is monitored continuously. The decision is primarily based on the customer's payment practices and financial circumstances. To cover potential payment defaults, SMA has also taken out a commercial credit insurance.

We systematically recognize market risks – above all currency risks – that might jeopardize the operating results and preclude such risks through hedging operations, provided this is economically expedient.

Financing Analysis

In 2016, SMA agreed upon a long-term financing of €100 million with three domestic banks. At the end of 2019, only a small portion of the credit line was utilized and only in the form of guarantee credits.

In total, financial liabilities increased by €14.1 million from €20.4 million as of the end of 2018 to €34.5 million as of the end of 2019. This change is due first to the scheduled repayment of financial liabilities to banks of €3.0 million and second to the IFRS 16 disclosure obligation for finance lease liabilities amounting to €17.1 million.

Most of the provisions set aside by the SMA Group are for warranty obligations from our various product families. As of the end of 2019, the equity ratio was 37.6% (December 31, 2018: 42.9%).

Liquidity Analysis

INCREASED CASH HOLDINGS

Gross cash flows reflect operating income prior to commitment of funds. In the 2019 fiscal year, it amounted to €30.7 million (2018: –€39.4 million).

In the reporting year, net cash flow from operating activities was –€1.2 million (2018: –€54.3 million). It was impacted significantly by a substantial rise in inventories and the depositing of cash as collateral.

In order to support delivery capacity, SMA increased its inventories by 44.4% year on year to €279.9 million (2018: €193.8 million). Combined with the changes in trade payables and trade receivables and a significant rise in liabilities from advanced payments received in connection with a major project, this significantly reduced net working capital by €17.9 million to €159.5 million (2018: €177.4 million). The net working capital ratio in relation to sales over the past 12 months fell to 17.4% (December 31, 2018: 23.3%) and was thus below the range of 19% to 24% targeted by the management.

Net cash flow from investing activities amounted to €83.1 million in the reporting period after €7.4 million in the previous year. The majority of this amount was attributable to cash inflows and outflows from financial investments totaling €110.4 million (2018: €46.8 million). The outflow of funds for investments in fixed assets and intangible assets amounted to €27.6 million in the reporting period (2018: €40.3 million). At €10.9 million (2018: €18.8 million), capitalized development costs accounted for a large part of these investments.

As of December 31, 2019, cash and cash equivalents amounting to €214.8 million (December 31, 2018: €142.6 million) included cash on hand, bank balances and short-term deposits with an original term to maturity of less than three months. Together with time deposits that have a term to maturity of more than three months, fixed-interest-bearing securities, liquid assets pledged as collateral, and after deducting interest-bearing financial liabilities, this resulted in net cash of €303.0 million (December 31, 2018: €305.5 million).

Multi-Period Overview of SMA Group Financial Position

in € million	2019	2018	2017	2016	2015
Shareholders' equity	416.9	424.5	611.5	585.1	570.2
Equity ratio in %	37.6	42.9	50.3	48.3	49.1
Non-current liabilities	259.3	244.5	285.2	292.9	281.2
Current liabilities	431.1	320.3	319.5	332.8	309.1
Share of non-current provisions in total assets in %	6.8	6.6	7.5	7.4	7.5
Financial liabilities	34.5	20.4	20.8	40.4	46.9
Net cash	303.0	305.5	449.7	362.0	285.6
Net working capital	159.5	177.4	167.9	203.2	200.0
Net cash flow from operating activities	-1.2	-54.3	116.8	147.5	102.7
Net cash flow from investing activities	83.1	7.4	-81.2	-107.9	-64.0
Net cash flow from financing activities	-10.7	-14.5	-11.5	-24.6	-23.2

Investment Analysis

In the 2019 fiscal year, investments in fixed assets and intangible assets amounted to €27.6 million and were thus clearly below the previous year's figure of €40.3 million. This equates to an investment ratio in relation to sales of 3.0% compared with 5.3% in the previous year.

€15.5 million was invested in fixed assets (2018: €20.2 million), primarily for advanced payments for machinery and equipment. The investment ratio for fixed assets was 1.7% in the fiscal year (2018: 2.7%). Due to rights of use of leases to be recognized under IFRS 16 for the first time starting in 2019, scheduled depreciation of fixed assets increased year on year to €33.6 million (2018: €28.4 million).

Investments in intangible assets amounted to €12.1 million (2018: €20.1 million). These largely related to capitalized development costs. Amortization of intangible assets amounted to €11.2 million and was thus clearly below the previous year's figure of €53.5 million.

Investments Compared to Depreciation and Net Cash Flow From Operating Activities

in € million	2019	2018	2017	2016	2015
Net cash flow from operating activities	-1.2	-54.3	116.8	147.5	102.7
Capital expenditure [1]	27.6	40.3	33.2	29.0	50.6
Depreciation and amortization [2]	46.0	82.6	53.2	76.7	79.0

1 See Notes, sections 9 and 10, page 99 et seq.
2 Depreciation in 2018 and 2017 includes depreciation for "investment property" amounting to €0.7 million (2017: €0.7 million).

NET ASSETS

SMA Has a Sound Balance-Sheet Structure

Total assets increased by 11.9% to €1,107.3 million as of December 31, 2019 (December 31, 2018: €989.3 million). At €298.8 million, non-current assets were also above the previous year's level (December 31, 2018: €283.4 million) due to the implementation of the new standard for the recognition of leases (IFRS 16).

Net working capital decreased to €159.5 million (December 31, 2018: €177.4 million), corresponding to 17.4% of sales over the past 12 months. As a result of the good sales performance, trade receivables increased by 34.3% compared with December 31, 2018, to €145.5 million as of the end of the fiscal year (December 31, 2018: €108.4 million). Days sales outstanding came to 50.8 days and were considerably lower than in the previous year (December 31, 2018: 64.4 days). Inventories increased by 44.4% to €279.9 million with a view to supporting delivery capacity (December 31, 2018: €193.8 million). Increased stockpiling caused trade payables to rise by €63.9 million to €174.7 million (December 31, 2018: €110.9 million). At 15.8%, the share of trade credit in total assets was above the level of the previous year (December 31, 2018: 11.2%).

As a result of the development of earnings, the Group's equity capital base decreased to €416.9 million (December 31, 2018: €424.5 million). With an equity ratio of 37.6%, SMA still has a solid equity capital base.

Importance of Off-Balance Sheet Financing Instruments

SMA is not involved in any other off-balance sheet transactions that might have a significant impact on its financial position, net assets or results of operations.

Multi-Period Overview of Net Assets

in € million	2019	2018	2017	2016	2015
Goodwill, intangible assets and fixed assets	245.4	235.2	283.5	300.7	385.9
Financial assets and long-term securities (incl. deposits with a total term to maturity of more than three months)	72.1	177.5	225.4	159.4	97.7
Cash and cash equivalents (incl. deposits with a total term to maturity of less than three months)	214.8	142.6	234.9	216.1	200.2

SMA SOLAR TECHNOLOGY AG (NOTES BASED ON THE GERMAN COMMERCIAL CODE HGB)

In addition to reporting on the SMA Group, business development of SMA Solar Technology AG (SMA AG) is outlined below.

SMA AG is the parent company of the SMA Group and has its headquarters in Niestetal near Kassel, Germany. Its primary business operations include the development, production and sale of PV and battery inverters as well as monitoring and energy management systems for PV systems. Another area of business is providing operation and maintenance service (O&M business) as well as other services. In addition to its own operative business, SMA AG functions as a holding company for the SMA Group. All key management mechanisms of SMA AG are oriented toward the SMA Group.

The SMA AG Annual Financial Statement is prepared according to German Commercial Law (HGB). The Consolidated Financial Statements follow International Financial Reporting Standards (IFRS). This leads to differences between accounting and valuation methods. These mainly relate to intangible assets, inventory measurement, provisions, financial instruments, accrual items, and deferred taxes.

Results of Operations

SMA Solar Technology AG Income Statements in Accordance With HGB for the Period From January 1 to December 31, 2019

in €'000	2019	2018
Sales	**827,924**	**682,911**
Increase or decrease in finished goods and work in progress	8,699	6,914
	836,623	**689,825**
Other own work capitalized	5,096	3,823
Other operating income	67,795	72,544
Material expenses	581,471	466,167
Personnel expenses	136,365	148,309
Depreciation and amortization of intangible and fixed assets	27,867	29,355
Other operating expenses	195,993	239,623
Financial result	5,656	–94,324
Taxes on income	265	–398
Income after taxes	**–26,791**	**–211,188**
Other taxes	283	–49
Net loss	**–27,074**	**–211,139**
Accumulated income/losses brought forward	183,725	394,864
Profit available for distribution	**156,651**	**183,725**

SMA AG generated sales of €827.9 million in the 2019 fiscal year (2018: €682.9 million). This equates to an increase in sales of 21.2% compared with the previous year. Sold PV inverter output rose by 44.6% in the same period to 12.0 GW (2018: 8.3 GW). Of this amount, 5.9 GW (2018: 3.2 GW) were attributable to associated companies. The weaker growth in sales in relation to inverter output sold can be explained by lower selling prices.

Other operating income amounted to €67.8 million (2018: €72.5 million). This included €36.8 million (2018: €45.8 million) from the reversal and utilization of provisions. In addition, claims for compensation from insurers and suppliers of €1.1 million were reported here (2018: €1.1 million). Income from foreign currency valuation totaled €9.0 million in the fiscal year (2018: €13.8 million).

Material expenses increased by €115.3 million year on year to €581.5 million (2018: €466.2 million). The rise can be explained primarily by the larger share of merchandise.

Personnel expenses decreased by 8.1% to €136.4 million (2018: €148.3 million). The average number of SMA AG employees (not including temporary employees, trainees or interns) went down by 86 to 1,986 employees.

Depreciation and amortization of intangible and fixed assets declined by €1.5 million to €27.9 million (2018: €29.4 million). The reduction in depreciation and amortization was primarily a result of lower investing activities.

Other operating expenses fell by 18.2% to €196.0 million (2018: €239.6 million). This can be attributed, in particular, to the recognition of provisions of €52.3 million (2018: €65.2 million) and the remeasurement of trade receivables of €1.3 million (2018: €11.4 million) as well as prior-period expenses of €0.5 million (2018: €9.3 million). It also takes into account sales expenses of €30.3 million (2018: €32.7 million) and expenses relating to foreign currency valuation of €7.0 million (2018: €12.2 million).

The **financial result** amounted to €5.7 million (2018: –€94.3 million). In the previous year, it included unscheduled depreciation on SMA New Energy Technology (Jiangsu) Co., Ltd., Suzhou, China, with regard to its sales, and Tigo Energy, Inc., Los Gatos, U.S.

Taxes on income increased by €0.7 million. This item does not include tax income for previous years (2018: €0.8 million).

After tax, the Company reported an **annual net loss** of €27.1 million in 2019 compared with an annual net loss of €211.1 million in the previous year.

Net Assets and Financial Position

SMA Solar Technology AG Balance Sheet in Accordance With HGB as of December 31, 2019

in €'000	2019/12/31	2018/12/31
ASSETS		
A. Non-current assets		
I. Intangible assets	13,251	12,853
II. Fixed assets	169,851	181,575
III. Financial assets	58,743	50,395
	241,845	**244,823**
B. Current assets		
I. Inventories	166,108	128,055
II. Receivables and other assets	281,338	144,729
III. Securities	20,736	100,225
IV. Cash and cash equivalents	98,278	158,330
	566,460	**531,339**
C. Prepaid expenses and deferred charges	**2,012**	**1,845**
	810,317	**778,007**
LIABILITIES		
A. Shareholders' equity		
I. Share capital	34,700	34,700
II. Capital reserves	124,200	124,200
III. Retained earnings		
1. Statutory reserve	400	400
2. Other retained earnings	3,136	3,136
IV. Profit available for distribution	156,651	183,725
	319,087	**346,161**
B. Special account with reserve characteristics	**23**	**62**
C. Provisions	**174,570**	**168,982**
D. Trade payables	**179,222**	**120,729**
E. Accrued liabilities	**137,416**	**142,073**
	810,317	**778,007**

As of December 31, 2019, **total assets** of SMA AG rose by €32.3 million to €810.3 million (2018: €778.0 million).

Non-current assets slightly decreased by €3.0 million to €241.8 million (2018: €244.8 million). The decline is attributable to lower investing activities compared to depreciation.

As of December 31, 2019, total **inventories** of €166.1 million were above the previous year's level (2018: €128.1 million). The increase of 29.7% compared with the previous year is mainly the result of the increase in inventories of raw materials, consumables and supplies aimed at supporting delivery capacity by €16.0 million to €73.4 million.

Trade receivables increased by €5.2 million and totaled €48.2 million on the reporting date (2018: €43.0 million).

Cash and cash equivalents and securities fell by €139.6 million to €119.0 million (2018: €258.6 million).

Equity declined, as a result of earnings, by €27.0 million to €319 million compared with December 31, 2018. The equity ratio fell to 39.4% (2018: 44.5%).

The **provisions** of SMA AG largely comprise provisions for warranty obligations for our various product families and personnel provisions. The €5.6 million increase in provisions to €174.6 million (2018: €169.0 million) is attributable, in particular, to the additions to warranty provisions as a result of updating the parameters in the general warranty model.

Trade payables went up by €52.4 million year on year to €136.3 million (2018: €83.9 million).

Accrued liabilities of €137.4 million (2018: €142.1 million) were recognized for deferred sales for extended warranties sold and for long-term service and maintenance contracts.

SMA AG's **financial position** essentially corresponds to that of the SMA Group.

RISKS AND OPPORTUNITIES

The business performance of SMA AG is largely exposed to the same risks and opportunities as the SMA Group. SMA AG also partakes in the risks affecting its investments and subsidiary companies proportionate to its respective holding. The risks are presented in the Risks and Opportunities Report. The relationships with our investments can also result in negative effects from statutory or contractual provisions for liabilities (particularly financing).

OUTLOOK

As a result of SMA AG's interdependence with its Group companies and its importance within the Group, please refer to our statements in the Forecast Report for the SMA Group, which also outline the expectations for the parent company specifically.

MANAGING BOARD STATEMENT ON THE BUSINESS TRENDS IN 2019

With 11,409 MW of inverter output sold (2018: 8,449 MW), the SMA Group's sales volume in 2019 was 35% above the previous year's level. Sales increased to €915.1 million (2018: €760.9 million). SMA thus exceeded the upper end of the sales guidance of €800 million to €880 million that it published on January 24, 2019. This can be attributed primarily to the continuation of the good order situation in the reporting year and the extremely positive business performance in the second half of the year. Distribution of SMA sales was largely well balanced between all segments. Overall, the Large Scale & Project Solutions segment generated 41.4% of the SMA Group's sales in the 2019 fiscal year, while the Business Solutions segment contributed 32.4% and the Home Solutions segment 26.2% (2018: 37.3% Large Scale & Project Solutions, 38.0% Business Solutions, 24.7% Home Solutions).

EBITDA of €34.2 million (EBITDA margin: 3.7%) was in line with the guidance of between €20 million and €50 million.

Net cash came to €303.0 million and remained almost on a par with the previous year (2018: €305.5 million). The equity ratio was 37.6% at the end of the reporting period (2018: 42.9%). In addition, SMA has a long-term credit line from domestic banks of €100 million.

COST REDUCTION, CUSTOMER FOCUS AND POSITIONING IN FUTURE FIELDS ADVANCED [1]

To quickly and sustainably return SMA to profitability without negatively impacting investments in the major fields of the future, the Managing Board implemented extensive measures to reduce fixed costs and increase sales in the reporting year. They included giving up the locations in China and selling the Chinese companies to the local management as well as sharpening the Company's customer focus even more and ramping up sales activities. This allowed SMA to reduce costs by over €23 million and regain market shares in the core business.

In addition, we further advanced SMA's strategic positioning in major future fields and consequently its continued development into a provider of systems and solutions in the reporting period. The measures carried out included introducing end-to-end system packages for private and commercial applications in key target markets; establishing the elexon joint venture for electric vehicle fleet charging infrastructure; pooling the sales activities

[1] The following section is not a mandatory component of the management report as defined in Section 315 HGB in conjunction with GAS 20, and therefore not a subject of the financial audit.

for storage systems, repowering and other services within one in-house sales unit; and refining the digital energy service offering through our subsidiary coneva.

In May, SMA received the largest order in the Company's history from one of the leading project developers in the U.S. Delivery of 595 fully integrated turnkey container solutions featuring the newly launched Sunny Central UP commenced in the third quarter. We also achieved some significant accomplishments in future fields. For example, SMA supplied several large-scale storage power plants in Europe and North America and, in the reporting year, concluded contracts to supply battery inverters for large-scale storage systems with a total output of over 1 GW – three times as much as in 2018. In the operation and maintenance service (O&M) business for PV power plants, SMA signed a contract with U.S. PV system operator TerraForm Power in November. For the next ten years, SMA will carry out O&M services for TerraForm Power's North American solar portfolio, which has a total capacity of around 1 GW. Following the contract conclusion, SMA's global O&M portfolio now comprises PV systems with a total capacity of 4.5 GW.

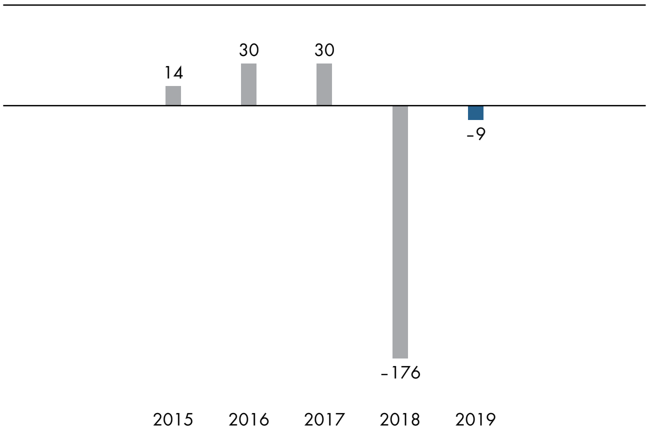
Target-Actual Comparison for 2019

	Guidance on 2019/01/24	2019 results
Sales in € million	800 to 880	915.1
Inverter output sold in GW	> 10	11.4
EBITDA in € million	20 to 50	34.2
Capital expenditure in € million	approx. 60 [1]	27.6
Net working capital in % of sales	19 to 24	17.4
Net cash in € million	> 300	303
EBIT in € million	–30 to 0	–11.8

[1] The 2019 guidance includes lease investments amounting to approximately €25 million.

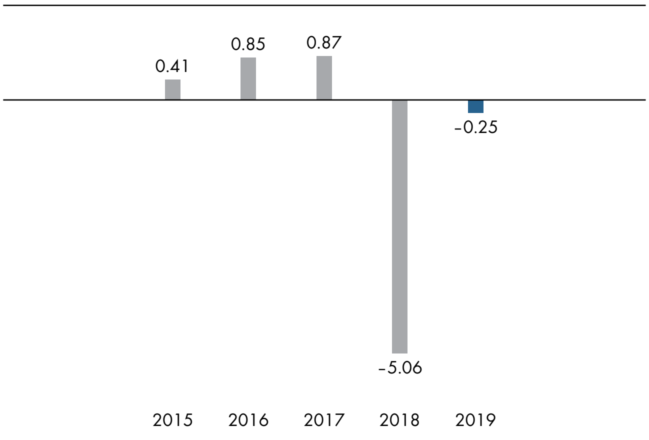
Net Income

in € million



Earnings per Share

in €



RISKS AND OPPORTUNITIES REPORT

PRINCIPLES OF THE RISK AND OPPORTUNITY MANAGEMENT SYSTEM

In the context of its business activity worldwide, SMA, as a leading global specialist for photovoltaic system technology, is exposed to a range of risks, which can impair target achievement in implementation of strategies in the business units. The Company employs appropriate measures to influence and control those risks. A risk is defined by SMA as an event that ensues from a decision made by management (strategic), an action (operative) or external circumstances and – if the risk occurs – results in a negative deviation from the planned EBIT. Opportunities are also systematically identified and assessed by means of opportunity management. For SMA, an opportunity is the possibility of an event occurring that positively influences target achievement. The Risk and Opportunity Management System is based on the COSO Enterprise Risk Management – Integrated Framework, which is an internationally accepted standard for establishing and systematically developing a company-wide Risk Management System. SMA uses a uniform software application to systematically record and report risks and opportunities and meet documentation requirements.

RISK AND OPPORTUNITY MANAGEMENT

Objectives and Strategy

The purpose of SMA's risk and opportunity management is to identify risks above a defined threshold as early as possible, present them transparently and comparably, and assess and manage them. SMA must also accept risks to a certain extent to utilize opportunities. The Managing Board laid out binding objectives for risk management in terms of risk strategy and principles of organization, analysis and communication in a risk manual. It contains all methodical and organizational regulations for dealing with risks and opportunities, requirements and value limits, as well as uniform regular and ad hoc reporting processes.

In the course of continuously developing our Risk and Opportunity Management System, we decided to revise the risk and opportunity management process in 2019. Some of the changes included a modified assessment system and reworked risk categories. The qualitative risk and opportunity assessment method was changed to a quantitative assessment method. The changed assessment method is explained in more detail in the "Risk and Opportunity Analysis" section. It results, for example, in new assessments and conclusions regarding individual risks and individual opportunities. However, the new process of assessing risks and opportunities, both individually and collectively, based on the changed assessment method has not produced any material changes to the potential influence on our net assets, financial position and results of operations. Furthermore, to ensure that identification of risks is as comprehensive as possible, the four existing risk categories of strategic risks, operating risks, financial risks and compliance risks have been expanded to include the two additional risk categories of personnel-related risks and IT risks. In addition, the risk areas of all six risk categories have also been revised and restructured.

Structure of Risk and Opportunity Management

The SMA Managing Board bears overall responsibility for effective risk and opportunity management and ensures that all risks and opportunities are considered comprehensively and uniformly. The Supervisory Board is responsible for monitoring the effectiveness of the Group-wide Risk and Opportunity Management System. In order to perform this task, the Supervisory Board's Audit Committee prepares the information for the Supervisory Board. Technical responsibility for the uniform Group-wide Risk and Opportunity Management System lies with the Corporate Audit, Risk & Information Security department. This department reports directly to the Chief Financial Officer and is responsible for implementation of Group-wide risk management standards and methods and for coordination and ongoing development of the risk and opportunity management process. All fully consolidated SMA subsidiaries and business areas are included in the scope of the risk and opportunity management process.

Risk and Opportunity Management Process

Once a quarter, select skilled employees and executives from the first two levels below the Managing Board and select central Group functions ("risk owners") assess the SMA risk and opportunity situation in a standardized IT supported "bottom-up process."

The main steps of the risk and opportunity management process are explained hereafter:

RISK AND OPPORTUNITY ANALYSIS

Risk and opportunity analysis entails both the comprehensive identification and assessment of risks and opportunities. SMA risk owners are obliged to check on a regular basis whether the individual risks and opportunities within their areas of responsibility are complete and up to date and to identify and assess new risks and opportunities. SMA assesses all individual risks and individual opportunities based on a uniform set of assessment principles. For each individual risk and opportunity, the relevant risk owner assesses its probability of occurrence and its impact (potential amount of damage caused or potential benefit generated). From this fiscal year, there are now four levels (previously two levels) for assessing the probability of occurrence of risks and opportunities and four levels as well (previously three levels) for assessing the impact of risks. For opportunities, there are now two levels (previously one level) for assessing the impact.

Individual risks are classified as follows:

Assessment System for Individual Risks

Potential financial effects in € million	Unlikely (<= 5)	Possible (> 5 to <= 25)	Likely (> 25 to <= 50)	Very likely (> 50)
Very high (> 15)	C	B	A	A
High (> 7.5 to <= 15)	C	B	B	A
Medium (> 2.5 to <= 7.5)	C	C	B	B
Low (> 0.3 to <= 2.5)	C	C	C	C

Probability of occurrence in %

The amount of damage is measured based on the potential effect on the planned EBIT. Individual risks need to be mentioned in the quarterly risk assessment reports only if the potential amount of damage resulting from the individual risk exceeds €300,000.

Individual opportunities are classified as follows:

Assessment System for Individual Opportunities

Potential financial effects in € million	Unlikely (<= 5)	Possible (> 5 to <= 25)	Likely (> 25 to <= 50)	Very likely (> 50)
High (> 2)	C	B	A	A
Low (> 0.5 to <= 2)	C	C	B	A

Probability of occurrence in %

Individual opportunities have to be mentioned in the quarterly risk assessment reports as soon as the potential benefit resulting from the individual opportunity exceeds €500,000 (previously €1 million).

Both, gross and net risk, have to be determined for every individual risk within a projection period of one year (previously two years). Gross risk represents the largest possible negative effect anticipated before implemented and effective management and monitoring tools are applied. Net risk considers risk-reduction measures. Individual opportunity assessment is based exclusively on a net principle.

To assess materiality, the individual risks and individual opportunities are classified as category A, B, or C risks and opportunities based on a combination of the assessment of probability of occurrence and the impact over the reporting period on which further internal reporting depends. Some of the individual risks and opportunities for SMA are aggregated, presented and described in the next section "Individual Analysis of Risks and Opportunities."

RISK CONTROL

While taking into account the corporate strategy, the objective of risk management is to actively influence identified and assessed individual risks. SMA's risk situation must be positively affected in a targeted way using suitable measures. In order to reduce the risk position, the risk owners have the task of developing and implementing suitable measures. The goal is to manage the identified risks actively. Possible measures include forming security reserves or transferring risks to third parties (e. g., through insurance companies). With regard to risk management, these measures and their implementation are subject to regular review and adjustment by the risk owners.

RISK AND OPPORTUNITY REPORTING

The development of all risks and opportunities is continuously monitored and reported. Our Risk and Opportunity Management System is designed to ensure that the appropriate employees can not only identify risks and changes to them early on but also report them to the decision-makers in the Company. These reports are first made to Corporate Audit, Risk & Information Security. In the regular process, the business unit heads ensure that all significant risks and opportunities for their respective business field are fully documented and correctly evaluated in the Risk and Opportunity Management System to increase reporting quality. All significant risks, opportunities and measures along with adjustments to the Risk and Opportunity Management System are presented to the Risk & Opportunity Board in regular meetings and further decisions are made if needed. In addition, every six months the Supervisory Board's Audit Committee is informed of significant risks and opportunities and any newly identified issues that are classified as at least category B. The risk owners also have a duty to inform the Managing Board of risks on an ad hoc basis if new individual risks are classified as category A risks or if existing individual risks develop into a category A risk. The Managing Board decides whether such changes are reported to the Supervisory Board's Audit Committee on an ad hoc basis or during the regular report cycle. To ensure integration with the (Group) accounting process, the risk and opportunity management process follows the coordinated schedule and thus provides all SMA functions involved in (Group) accounting and financial reporting with the relevant information in full.

KEY FEATURES OF THE INTERNAL CONTROL AND RISK MANAGEMENT SYSTEM IN RELATION TO THE (GROUP) ACCOUNTING PROCESS

SMA's Internal Control System includes all the principles, procedures and measures available to ensure business activities maintain the proper course. It is made up of systematically created organizational and technical measures and controls within the Company aimed at guaranteeing adherence to laws and regulations, as well as guidelines for preventing damage that might be caused by its employees or third parties. The Managing Board is responsible for implementation and adequacy of the Internal Control System. The Audit Committee of the SMA Supervisory Board monitors the effectiveness of the Internal Control and Risk Management System on the basis of Section 107 (3) AktG.

The Internal Control System pertaining to the accounting process is part of the overall Internal Control System, which is embedded in the Company-wide Risk and Opportunity Management System. Process-integrated and process-independent monitoring steps are elements of the internal monitoring system. Automated IT process controls are an integral part of the process-integrated measures. Additional controls are the organizational monitoring methods, such as the four-eyes principle, separation of administration, execution, settlement and approval functions and written work instructions. Furthermore, wherever possible, we protect the IT systems deployed against unauthorized access by using appropriate authorization systems and access restrictions. The Supervisory Board's Audit Committee and the Internal Audit department are intimately incorporated into the internal monitoring system with process-independent audit activities.

On the basis of a risk-oriented audit plan, the Internal Audit department regularly examines the effectiveness of the Internal Control System by means of sampling and thus also checks material parts of the Internal Control System as it pertains to the (Group's) accounting process. Alongside the Internal Audit department, the auditor of the Annual Financial Statements also carries out an evaluation. Under the terms of his/her audit of the Financial Statements, the auditor is obliged to report any risks found related to accounting and any fundamental weaknesses in the Internal Control and Risk Management System to the Supervisory Board's Audit Committee. Audits of the Annual Financial Statements and Consolidated Financial Statements by the auditor and of the local financial statements submitted by the Group companies included in the scope of consolidation, safeguard the basic process-independent monitoring mechanism in the accounting system.

Important risks in the (Group) accounting process include the possibility that the consolidated local financial statements of the Group companies fail to properly reflect the true net assets, financial position and results of operations due to unintentional or deliberate wrongdoing, or that publication of the Quarterly Statements or of the Annual Financial Statements is late. These risks may permanently impair the confidence of shareholders or the reputation of SMA. SMA's Internal Control System as it pertains to (Group) accounting is concerned with minimizing the risk of misstatements in the Group's bookkeeping as well as in external financial reporting. To ensure systematic early identification of risks Group-wide, SMA has a monitoring system to identify risks early on that threaten the existence of the Company in accordance with Section 91 (2) of the AktG. Existence-threatening and other risks are promptly identified, managed and monitored, beyond the limits of statutory regulations. The auditor assesses proper functioning of the early risk identification system in accordance with Section 317 (4) of the HGB.

The Internal Control System measures are aimed at securing proper and reliable (Group) accounting and ensure business transactions are fully, correctly and promptly recorded in accordance with legal provisions and the articles of association. They also guarantee that the process of stock taking is properly implemented and that assets and liabilities are properly recognized, measured and shown in the Annual Financial Statements and Consolidated Financial Statements. Furthermore, the regulations ensure that accounting records provide reliable and comprehensible information. The main tasks of the departments involved in the (Group) accounting process are clearly separated and their areas of responsibility are clearly assigned.

SMA constantly evaluates laws, financial reporting standards and other agreements and considers their relevance and effect on the (Group) accounting process. We promptly communicate applicable requirements to all Group companies. The uniform IT platform, Group account plan and standardized processes ensure proper and timely recording of all important business transactions. There are binding rules for the recording of manual business transactions. An accounting manual specifies the Group-wide implementation of accounting provisions in accordance with the International Financial Reporting Standards (IFRS). In addition to general accounting principles and methods, the regulations, above all, include requirements concerning the balance sheet, income statement, statement of comprehensive income, Notes, Management Report, statement of cash flows, statement of changes in equity, and segment reporting in compliance with EU legislation. By defining clear requirements, the risk of inconsistent practices when recognizing, measuring and reporting assets and liabilities should be reduced. In addition, a check is carried out centrally on the financial statements submitted by the companies included in the scope of consolidation while referring to the audit reports drafted by the local auditors. Each month upon submission of the reporting packages, those responsible at the subsidiaries also confirm the propriety and completeness of each financial statement by way of an internal declaration of completeness.

Business transactions at SMA and at all the larger subsidiaries are primarily recorded using ERP systems from SAP AG. These are protected from misuse by appropriate authorization systems and access restrictions. The authorizations granted are reviewed and amended regularly. The centralized control and monitoring of nearly all IT systems, centralized change management and regular system backups minimize not only the risk of data loss, but also the risk of IT system failures related to (Group) accounting. Smaller companies either operate local ERP systems or commission external service providers with their own IT systems.

Use of a uniform, Group-wide consolidation program ensures that all data is recorded properly, promptly and completely and that internal business transactions within the Group are eliminated. This is from where the various components of the Consolidated Financial Statements, including important data for the Notes to the Consolidated Financial Statements, are derived.

The Internal Control and Risk Management System enables control of risks that might otherwise prevent the Annual Financial Statements and Consolidated Financial Statements from being properly drawn up and is therefore continuously being improved. However, Company-wide application of the regulatory and control measures cannot guarantee absolute reliability with regard to the accurate, complete and timely recording of facts in (Group) accounting and in the detection of irregularities.

INDIVIDUAL ANALYSIS OF RISKS AND OPPORTUNITIES

In this section, SMA describes the risks classified as significant with disadvantageous effects on business and the associated net assets, financial position and results of operations of the Group and the Company’s reputation, as well as significant opportunities. The summarized overview of significant risks shows the risks described below according to SMA’s assessment after taking measures (net risks). We cannot rule out the fact that additional risks or risks that are not currently being monitored might impair the Company’s future performance to a greater extent than specified. The order in which the risk areas are presented within the six risk categories should not be taken as an order of priority:

Overview of Significant Risks

Risks	Probability of occurrence	Potential financial effects	Risk development as of December 31, 2019[1]
Strategic risks			
Political and regulatory risks	Possible	Low	–
Competition risks	Likely	Low	–
Market risks	Likely	Medium	–
Portfolio risks	Very likely	Medium	–
Operating risks			
Procurement and inventory risks	Possible	Medium	–
Product risks	Likely	High	–
Operational risks	Possible	High	–
Sales risks	Likely	Low	–
Service risks	Possible	Medium	–
Environmental risks	Possible	Low	–
Financial risks			
Liquidity risks	Likely	High	–
Interest rate and currency risks	Unlikely	Medium	–
Default risks	Likely	Low	–
Compliance risks			
Risks from violations of the law and regulations	Possible	Very high	–
Risks from breaching contracts and obligations	Likely	Low	–
IT risks			
IT security risks	Possible	Medium	–
Product cybersecurity risks	Possible	Low	–
Personnel-related risks			
Personnel recruitment risks	Possible	Medium	–
Personnel retention risks	Possible	Medium	–

1 Because of the changes to the risk categories and the assessment method, changes compared with the previous year are not meaningful.

Strategic Risks

POLITICAL AND REGULATORY RISKS

Regulatory changes with regard to government subsidy conditions in individual markets and uncertainty over new global tariff trade barriers due to bilateral trade disputes are continuing to generate a high degree of volatility in the photovoltaics sector. There are considerable regional and cyclical volume fluctuations that also affect SMA and therefore complicate corporate planning significantly.

Due to potential further price decreases for PV modules and solar technology, investments in PV systems may be postponed, which can also impact sales volumes at SMA. It is currently difficult to estimate the effects of the excess capacity, particularly at Chinese PV modules and system technology manufacturers, on the future business performance of SMA.

Now that business in the U.S. has picked up, we are not anticipating another market decline in the Americas region in the short term. However, the impact of changed subsidy conditions may still result in another downturn in the key U.S. market in the medium term. Tariff trade barriers now and in the future in the APAC (excluding China) and EMEA regions may also have an adverse effect on SMA's profitability.

It is still not yet entirely possible to foresee the effects on SMA's profitability from legislation such as the Act on the Digitalization of the Energy Transition in Germany and EU directives on technical standards and regulations. If new normative regulations are introduced and they are not implemented in the product and service portfolio properly or in a timely manner, or if the use of centralized communication units like the Smart Meter Gateway becomes compulsory, this will have a detrimental impact on SMA's profitability. If lifting of the existing cap of 52 gigawatts for subsidizing the expansion of PV systems in Germany is not enshrined in law as announced, this may lead to losses in sales over the short term.

SMA regularly performs market research to be able to respond promptly to emerging changes in trade barriers, subsidies and standards in target and existing markets. Short-term fluctuations in demand are considered in the rolling forecast process. Thanks to its high level of flexibility in production, SMA can usually react quickly to such changes. In addition, SMA works to contact the certification authorities and electric utility companies to be able to make any necessary adjustments to its product and service portfolio early on. Our employees actively contribute to new technical guidelines through standards associations and other organizations. SMA regularly reviews the assumptions and associated risks with regard to strategic projects. These procedures allow us to react quickly to regulatory and market-driven changes in what is required of our products.

For more information on development in individual markets, please see the remarks in the Forecast Report, "Future General Economic Conditions in the Photovoltaics Sector" section.

COMPETITION RISKS

The current market environment for PV systems is promoting fierce competition. Individual competitors are attempting to secure market shares through extremely aggressive policies regarding pricing and terms and conditions. Furthermore, price is crucially important across all segments as a result of growing commoditization of inverters, and technological differentiating features are becoming increasingly insignificant. This could result in substantial negative effects on SMA's business development and earnings.

In addition, it is conceivable that competitors will further improve the quality, functionality or performance of their products and adapt better than SMA to the prevailing market requirements in certain markets. Shift in demand within individual target markets also ramps up fierce competition. In the future, such competition can lead to additional declines in prices for products and services produced by SMA and to a loss in market shares.

The price decline is expected to be offset by growth in volume. In light of this, SMA is developing cost-optimized products, and in particular innovative solutions, that are in line with market requirements. With expenditure for research and development of €63.1 million (including capitalized development projects) in the 2019 fiscal year, SMA is extremely well positioned to set important trends with new products, systems and solutions. The numerous awards we have received for our high capacity for innovation underscore market orientation of development performance.

As a result of inverter commoditization, the service portfolio is becoming an increasingly important distinguishing feature for customers. However, there is a risk that SMA's service quality could deteriorate and thus no longer be perceived by market participants as a differentiating feature in comparison to its competitors. SMA counters this risk with new IT systems and improved service processes.

Cost-out measures and projects to increase efficiency are also delivering continuous results and will be pursued systematically. The restructuring of global locations, cost structures and business models has laid the groundwork for SMA's long-term success.

MARKET RISKS

Photovoltaics is becoming increasingly competitive as an energy source. In a growing number of regions around the world, solar power is now more cost-effective than conventional energy, but it is also competing with other forms of renewable energy, such as wind energy.

The risk of declining market shares in conjunction with the risk of aggressive competition or changes in market development is monitored continuously by the heads of the business units based on the forecast process with Sales. These risks are countered with adjustments to the product and solution portfolio that are appropriate to market changes and the consistent positioning of the SMA brand.

Nonetheless, there is a certain dependence on individual regions or markets (e. g., U.S. business). Inverter technology business for large-scale storage systems in Europe is characterized by considerable volatility and tremendous pressure on margins. However, the Managing Board continues to see medium-term prospects as positive. In addition, SMA can reduce its dependence on individual photovoltaic markets by being present in all major global markets.

Formation of buying syndicates can increase the dependency of SMA on a few wholesalers or specialist wholesalers and other customers generating large sales. This dependency harbors a risk as a result of these large customers gaining more negotiating power coupled with increased price pressure. By means of its targeted sales strategy, SMA avoids dependency on individual customers. The share in total sales of the ten largest customers worldwide slightly decreased to approximately 29% in the 2019 fiscal year.

For more information on development in individual markets, please see the remarks in the Forecast Report, "Future General Economic Conditions in the Photovoltaics Sector" section.

PORTFOLIO RISKS

In addition to optimizing existing products and developing future product generations, the SMA Managing Board's goal is to develop complete system solutions and digital business models in line with changing customer requirements and make them market-ready within a short time. However, this gives rise to the risk that vital technological trends are identified too late or that market launch is delayed due to development stages that are too long. As this may lead to sales losses and declining market shares, SMA counters such situations by making adequate investments in research and development activities to advance new processes, technologies, products, system solutions, and services. Products and solutions can be developed quickly and effectively by means of our product development process. SMA is consciously seeking collaboration with research facilities to advance strategic development projects. However, we cannot rule out that individual development projects will fail to deliver expected exploitable economic results or do so in the expected time frame. The plan to streamline product platforms entails the risk of temporary delays in individual power classes or product generations within a segment reaching the series production stage.

To leverage economies of scale and expand its portfolio, SMA continues to enter into select strategic alliances on a targeted basis.

For additional details, please refer to the information on research and development in the Combined Management Report.

Operating Risks

PROCUREMENT AND INVENTORY RISKS

On the procurement side, the Company is still exposed to an increased dependence on certain suppliers. We work to minimize these risks through market analyses, careful evaluation of suppliers, flexible supplier agreements, clearly defined quality standards, and reducing dependence on individual key suppliers. In future innovations, SMA will therefore significantly reduce the number of platforms, make greater use of standard components and qualify alternative suppliers to increase flexibility.

Demand for certain electronic components and individual raw materials is still extremely high worldwide, and in a few cases this has resulted in delivery problems relating to extremely long delivery times or limited availability. We do not expect the situation to improve significantly in the short term, especially with regard to the effects of the spread of the coronavirus. SMA is counteracting this situation by implementing a closely monitored, proactive stockpiling strategy, bringing on board more suppliers, optimizing supply contracts and stockpiling more critical material groups. However, there is still the risk of inverter production and delivery delays due to a shortage of certain primary materials or the loss of certain strategic suppliers. If an unexpected drastic reduction in sales volumes were to materialize in the short term, long lead times may result in purchase commitments for raw materials that are surplus to actual requirements.

Regular inventory analyses are carried out in connection with increasingly shorter innovation cycles and resulting potential inventory write-down requirements. Inventories are continuously monitored and adjusted with controlling tools and early warning systems. By monitoring changes in important raw material prices, trends should be identified in a timely manner and compensatory mechanisms developed with suppliers before they affect purchase prices and negatively influence SMA's earnings. Optimization of our purchasing structures and the long-standing purchasing partnership with Danfoss are leading to lower purchase prices and logistics costs and diminished dependence on local suppliers. In addition, we are therefore improving the specific negotiation situation and our competitive position. As part of our global purchasing and commodity strategy, these activities are being pursued and further expanded in a sustainable manner. The risk of rising electricity prices can have a detrimental impact on SMA's profitability.

If any inventory risks due to surplus inventories or obsolescence are identified, these are taken into account in corresponding impairment losses.

For more information on development in individual markets, please see the remarks in section "Overall Statement from the Managing Board on Expected Development of the SMA Group" in the Forecast Report.

PRODUCT RISKS

We are always striving to develop new products, solutions and systems according to customer demands and to improve existing ones. For this reason, we use new materials and technologies in development to make innovations possible. This can result in SMA products being defective. Large delivery lots bear the risk of errors or defects affecting a product series or several product batches. Production shortcomings may derive from SMA development errors or production faults or from defects in primary products provided by our suppliers. Unidentified incompatibilities can also emerge after products are launched, which require improvement to the customer system on-site after installation to prevent the product from posing a danger to the customer, in the worst-case scenario. A lapse of reliability of our products could result in a long-term loss of trust and reputation. In addition, any necessary repairs or replacements would have a negative impact on earnings.

If responsibility for the error lies with the supplier, then the supplier must bear the direct costs. If responsibility for the error lies with SMA, then product liability insurance covers third-party losses incurred. Newly developed products may be subject to more failures than established products. We are able to minimize this risk through comprehensive testing during the development phases, accompanying quality inspections during production and field testing prior to scheduled serial production. As soon as device failures occur that stand to cause considerable losses, an analysis is performed without delay, and measures are immediately taken to rectify them. There is also the risk that the planned implementation of measures to reduce quality costs will have to be stalled due to an unexpected rise in device failures. This risk is being mitigated by continuously monitoring quality costs.

To continuously increase the quality of our products in addition to general process improvements covering the entire value chain, new developments are backed by specific stress and qualification tests, and tests are carried out on the entire series. In the event of technical faults in the products in the field, Service assesses the nature and scope of the fault and the need for repair or replacement of the devices and carries out appropriate measures. If the sources of the fault are identified and corrective actions are established, these are taken into account via corresponding provisions for individual warranties in the balance sheet. We make provisions for legal disputes related to product risks if we consider it likely that such claims can be asserted against us.

OPERATIONAL RISKS

Numerous facilities, equipment and systems are required to operate the production and administrative infrastructure, and their smooth operation is exposed to risks due to a number of factors, including natural disasters, accidents, wear and force majeure. SMA is well aware of this and employs a preventive maintenance and servicing management strategy to mitigate the risk of operation-related infrastructure downtime or other system impairment. Appropriate property and business interruption insurance has been taken out against any potential damage. Appropriate insurance policies are also in place to cover the risk of loss or damage to movable goods and products.

Fulfillment of the various operating performance tasks in the individual function areas is still exposed to a cost and performance risk. Function operations can be impaired by staff shortages, unexpected cost increases or technical malfunctions in a way that function targets may not be met on time, to the fullest extent or only at an increased cost. Extensive cost and performance indicators are regularly assessed and monitored to minimize these risks.

When introducing new operational processes and IT systems or changing existing ones, delays, outdated systems, inadequate master data quality or design flaws may impair efficient business organization and processing. SMA counters this by means of systematic project management and a suitable structure and process organization.

SALES RISKS

SMA relies on a global sales network to sell its products. The sales risk increased slightly over the period under review as a result of the changed business environment, fierce competition, advancing digitalization and the associated development of new sales channels that this requires. If SMA experiences delivery problems or the market readiness of new products or product generations is delayed, there is also the possibility that sales volumes or profit margins are affected. For example, if sought-after SMA products are not available, this can negatively impact longstanding business relationships with our customers and result in loss of earnings, given the fierce competition in our core markets.

SMA takes particular measures to counteract these challenges, including pilot projects to develop digital energy services and online sales channels for select markets. The aim here is to gradually establish new business areas.

Risks also arise if warranty conditions do not meet market requirements in certain regions and this makes it more difficult to sell services in these regions.

SERVICE RISKS

Although our products are distinguished by their considerable longevity and reliability, SMA devices sometimes need repairing, reconditioning or replacing. The SMA Service department is responsible for the global alignment and execution of operational service business across all markets.

In the period under review, risks related primarily to operation and maintenance services for PV power plants (O&M business). Due to long-term service and maintenance contracts, SMA is obligated to carry out various services, ranging from PV system monitoring to end-to-end operational management. These O&M contracts aim to maximize the service life of systems and ensure smooth and efficient operation of PV power plants. In some cases, due to highly extensive and complex contract clauses, there is a risk of legal disputes with customers or service partners with respect to the performance and invoicing of services and a risk of compensation payments due to PV system unavailability.

If sufficient quantities of spare parts are not available at the required time in the relevant regions, delayed or incomplete services can harm our reputation or result in claims for compensation from customers.

ENVIRONMENTAL RISKS

SMA employs a small amount of hazardous substances during production that might pose a risk to the environment. The comprehensive measures we take in production and in quality management ensure that SMA products are manufactured in a way that is environmentally friendly and guarantees compliance with all environmental regulations. Furthermore, SMA has safeguarded itself against certain environmental risks, including by means of insurance solutions.

For additional details, please refer to the information in the section “Non-Financial Statement” in the Combined Management Report.

Financial Risks

LIQUIDITY RISKS

If there is decline in SMA’s cash holdings in the short term, there is a risk that external market participants, such as commercial credit insurance companies or banks, might downgrade SMA’s credit rating which might impair its financing options. The liquidity situation is constantly monitored and actively managed by means of effective financial planning systems.

The Treasury department has also secured borrowing with a long-term credit line of €100 million.

INTEREST RATE AND CURRENCY RISKS

For SMA, currency risks arise in particular from the purchase and sale of products in foreign currencies (transaction risk) and from the measurement and settlement of items denominated in foreign currencies that are recognized in the balance sheet on the balance sheet date (translation risk). The main sources of transaction risks were business transactions in USD in the U.S. and the sales activities of subsidiaries.

SMA's Treasury department manages interest rate risks, currency risks and Group financing on a centralized basis. The permissible hedging instruments were laid out by the Managing Board in Group-wide guidelines that also regulate the entire process-oriented organization, including hedging strategies, responsibilities and control mechanisms. As an example, currency hedges were concluded to the required extent.

For additional details, please refer to the information under Financial Position, section "Principles and Objectives of Financial Management" in the Combined Management Report.

For detailed information regarding the financial market risks and risk management, please also refer to the Notes to the Consolidated Financial Statements under 30. Objectives and Methods Concerning Financial Risk Management.

DEFAULT RISKS

The volatile and sometimes difficult conditions of the financial markets are conducive to potential payment difficulties for some customers, particularly in newly industrialized countries. Furthermore, the competitive situation and internationalization require extension of payment periods, accompanied by the reduction of collateral (e. g., in the form of bank guarantees). If customers can no longer keep up with their payment obligations, there is a higher default risk for receivables with negative effects on SMA's results of operations, financial position and net assets.

As part of our accounts receivable management, we minimize the risk of non-payment in accordance with the Company's credit guidelines by obtaining beforehand references and credit reports for the purposes of a credit check of customers, allocating appropriate credit limits and continuously monitoring general payment practices. If it is expected that a credit limit is not sufficient for our future business relationship, then we examine whether we should ask the customer to furnish collateral or whether we can accept the residual risk. To cover potential payment defaults, SMA has also taken out commercial credit insurance. There were no significant changes to payment periods in the past fiscal year. If non-payment risks materialize, these will be taken into account by means of corresponding impairment losses.

The central Commercial Project Management at the locations in Germany and the U.S. represents another effective measure to avoid or minimize risk to project business, which is an important aspect of SMA's portfolio. All project and service contracts entailing risks are systematically subjected to a legal and commercial risk assessment. Based on this, risky agreements are secured for SMA through additional financial securities or contractual adjustments made with both Sales and the customer. Remaining project risks are assessed and approved separately by the heads of the business units and the Managing Board, provided these risks are proportionate to earnings.

Compliance Risks

RISKS FROM VIOLATIONS OF THE LAW AND REGULATIONS

There is a risk that SMA could be involved in unlawful business conduct or that individual employees could violate laws, SMA's business principles or directives. In particular, this includes the risk of corruption and fraud.

Group Compliance thus issued business principles and directives globally. Basic work sequences and processes were derived from these and implemented worldwide. In the context of their work for SMA, all employees are obligated to act ethically and in accordance with the laws and regulations of the legal system of their country. These regulations and obligations are consolidated worldwide by mandatory, extensive training sessions on business principles.

Our goal is to minimize antitrust risks from the outset. Group Compliance has therefore issued an antitrust directive. The directive stipulates a clear code of conduct for all major business situations. In addition, all employees in the areas affected must regularly receive antitrust law training.

With our patents and through constant monitoring of technologies and competitors relevant to SMA, we work to maintain and expand our technological edge. Because competitors and research institutes also file a large number of patent applications, we cannot rule out that, in spite of regular, extensive and international research, we will not infringe on third-party patent rights or other industrial property rights or that, vice versa, our rights will be violated by third parties. If the former occurs, SMA may incur considerable costs related to claims for compensation, in its defense against such claims or in relation to royalty payments to third parties. It is therefore important to us that each product be checked for third-party rights in a timely manner before approval and market launch. Corresponding milestones are included in the guidelines and process descriptions on product development and market launch. The Corporate IP Management department actively protects proprietary technologies and monitors patent applications. We make provisions for disputes related to intellectual property when necessary, if we consider it likely that such claims might be asserted against us.

Due to its global business operations, SMA is subject to various tax laws and regulations. Tax changes in Germany and abroad could negatively affect the tax positions of SMA. In addition to legal changes, assessment and interpretation of complex tax regulations, such as those regarding transfer prices, may also affect our net assets, financial position and results of operations. SMA therefore collaborates closely with tax consultants in individual countries.

For additional details, please refer to the information in the section "Non-Financial Statement" in the Combined Management Report and on our website www.SMA.de/en/company/group-compliance.

As a result of internationalization and an international share of sales of around 75%, there are increased risks for SMA from handling the import and export of materials, services and finished products. SMA must meet the legal requirements for imports from and exports to many countries to stay competitive and meet the needs of its international customers.

Violations of trade restrictions and customs laws are subject to significant penalties and could also damage SMA's reputation. Therefore, SMA purposefully monitors its obligations under commercial and customs law using an IT system, which significantly reduces the risk of potential non-compliance.

The EU's General Data Protection Regulation gives rise to considerable organizational and technical requirements for data protection. The substantial fines for breaches of the data protection law represent a latent risk for SMA.

SMA counters data protection risks through systematic data protection management. In addition to standardized processes, this includes targeted training for those employees who process personal data and monitoring of all projects where PV system operators' personal data is processed by the Company's data protection officer.

Despite meticulously implementing requirements for processes and systems, violations of data protection law cannot be ruled out completely. SMA's digitalization strategy, in particular, extends the use of personal data, including for the Company's business models. There are also risks in the increasingly widespread storage and processing of personal data using cloud solutions, where permissibility regarding data protection law is disputed. Against the backdrop of a changing business environment and the necessary development of new sales channels, this risk is becoming increasingly significant.

RISKS FROM BREACHING CONTRACTS AND OBLIGATIONS

SMA is exposed to risks from legal disputes that may arise from its business activities. Legal disputes with suppliers, customers, employees and distributors can materialize, which can lead to contractual and legal claims for compensation or other such obligations. A sufficient level of provisions is set aside for potential financial charges resulting from legal disputes. SMA has also implemented preventive measures, such as taking out a professional indemnity insurance policy to cover liability claims from third parties. However, this does not rule out a situation in which the level of insurance cover is not sufficient for compensation claims that may arise in the future.

IT Risks

IT SECURITY RISKS

As a global technology and innovation leader and publicly traded stock corporation, SMA is in the public eye and therefore heavily under threat of industrial espionage and cybercrime. Growing connectivity is placing ever-greater demands on our IT systems, which need to be high-performance, highly available and stable to support global business processes. We reduce the risks of IT breakdowns by continually reviewing and improving IT security, and employing advanced hardware and software solutions. We use protective measures at all levels of the Company to avert this. To minimize the risk of data losses, SMA constantly implements appropriate measures, including regularly building employee awareness, distributed data centers, mirrored databases and the use of cloud solutions. All major IT systems are also continuously monitored and patched. Networks are protected, in particular, through the use of up-to-date, highly effective firewalls and e-mail systems through cutting-edge filters. Alongside securing network and server availability, it is most important to avoid potential loss or manipulation of data by employees or service providers and external attacks.

PRODUCT CYBERSECURITY RISKS

In an increasingly networked world in which SMA's products, solutions and services are also being connected, the cybersecurity of our products and the digital services we supply is a top priority. To ensure a high level of cybersecurity for SMA products and services, there are specific guidelines for the product development process, and extensive tests are carried out before and after market launch. Despite these state-of-the-art security measures, a situation cannot be ruled out in which SMA's products and services are compromised by a massive targeted hacker attack. The impact of an incident like this on SMA's reputation could be significant.

Personnel-Related Risks

PERSONNEL RECRUITMENT RISKS

Qualified and motivated employees are key to the global evolution of our enterprise and SMA's business success. Due to natural staff turnover and reorganization measures, there is a frequent need to recruit new skilled employees and managers and to fill positions with suitable candidates. Flexible personnel deployment models and temporary employees are used to cover peaks in demand. Despite there being a structured personnel recruitment strategy in place as well as networking with university research and teaching at the Kassel site and other partnerships with universities and organizations, there is a risk that positions cannot be filled quickly enough or at all by suitable permanent or temporary employees. This can lead to key projects being delayed or to products and services being supplied in reduced capacity. Current legislation on temporary work in Germany and Europe is also limiting flexibility during peak times.

SMA is continuously working on its image as an attractive employer, which enables it to bring on board highly qualified employees. It achieves this by setting relevant strategic goals, introducing changes to its leadership approaches and enhancing its employer branding.

PERSONNEL RETENTION RISKS

To ensure SMA's viability, it is important to retain highly qualified employees, such as skilled employees and managers, at the Company for the long term.

However, there is a risk that talented individuals could leave the Company and that strategic positions may not be able to be filled on short notice, either at all or by someone with the necessary qualifications. To minimize this risk, we are continuously optimizing our offerings, including performance-based remuneration systems and participation in the Company's success, flexible working hours and options for continuing education and training as well as for balancing family and career. In addition, the SMA Managing Board continuously monitors personnel structures and, if necessary, adapts them to the sales level expected in the future.

For additional details, please refer to the information in the section "Non-Financial Statement" in the Combined Management Report.

Significant Opportunities

SMA sees digitalization, system and solution business, storage applications and integration of storage solutions as providing distinct opportunities to strengthen core business. SMA is intensively developing digital business models and system solutions, which will be launched gradually. In addition, SMA collaborates with globally leading manufacturers of stationary battery-storage systems. However, the market success of storage solutions depends largely on storage system prices. Sharp declines in prices for electric battery-storage systems in recent years have improved sales prospects.

Furthermore, there are opportunities for development of additional international markets in both product and service business. SMA will continue to expand its international presence in order to benefit from the growth emerging in foreign markets. The Company is also seeing additional expansion opportunities in select European markets.

Based on the current market situation and the associated beginnings of market consolidation, SMA also sees opportunities coming from additional demand stimulus and gains in market share from competitors who have gone out of business. This consolidation is also expected to mitigate the decline in prices, which will give rise to additional opportunities for SMA in the medium and long term.

OVERALL STATEMENT ON THE GROUP'S RISK AND OPPORTUNITY SITUATION

Using our Risk and Opportunity Management System, we continue to rate the overall situation regarding risks to SMA's future development as to be manageable and controllable. However, based on the present assessment, individual risks still have been identified that, particularly if they all occurred at once, could significantly impair business development. The risk profile did not change significantly year on year. The increasing digitalization of our business areas, the system and solution business, ongoing internationalization of sales activities, and market consolidation are expected to make a significant contribution to raising the sales level and increasing profitability.

It is our objective to continue optimizing the Risk and Opportunity Management System to identify potential risks early on, to counteract them and to take advantage of any opportunities that arise.

FORECAST REPORT

PREAMBLE

The Managing Board's forecasts include all factors with a likelihood of impacting business performance that were known at the time this report was prepared. Not only general market indicators, but also industry- and Company-specific circumstances are factored into the forecasts. All assessments cover a period of one year.

THE GENERAL ECONOMIC SITUATION

Slight Recovery of Global Growth

The International Monetary Fund (IMF) expects that, in 2020, the global economy will grow again to a slightly larger extent than last year. In its most recent update to the World Economic Outlook (WEO) in January 2020, the IMF forecasts an increase in global growth of 3.3% for the current year (2019: 2.9%). Among other factors, this is based on the first signs of stabilization in the manufacturing industry and in global trade as well as on a widespread shift toward a more accommodative monetary policy. Aside from indications that global economies are progressively stabilizing, the experts believe that there are still significant risks that could undermine their forecast. They include growing geopolitical tensions, particularly between the U.S. and Iran, social unrest, a further deterioration in relations between the U.S. and its trading partners, and economic disputes between other countries.

In February, IMF Managing Director Kristalina Georgieva retracted the global growth forecast for 2020 by one basis point to 2.8% due to the spreading coronavirus. This scenario anticipates a return of the Chinese economy to normal activity in the second quarter and only minor and short-lived effects on the world economy. However, more dire consequences for the global economy are possible if the virus were to spread for a longer period and more globally.

In its January prognosis, the IMF is anticipating growth of 1.6% in 2020 for industrialized countries, which is around the same level as in the previous year (2019: 1.7%). On the other hand, experts believe that, at 4.4%, developing and newly industrialized countries will achieve a much stronger rate of growth than last year (2019: 3.7%).

At 2%, the January prognosis also includes IMF estimates that U.S. economic growth will be weaker in 2020 than in the previous year (2019: 2.3%). For the eurozone, the experts anticipate growth to remain virtually the same as in 2019 at 1.3% (2019: 1.2%). The IMF forecasts widespread recovery in 2020 in newly industrialized countries, with the exception of China. India stands out in particular among the major newly industrialized countries with projected growth of 5.8% (2019: 4.8%). In its WEO update from January, the IMF still assumed 6.0% growth (2019: 6.1%) for China. Due to the negative effects of the spread of the coronavirus on the Chinese economy, experts revised this assessment to expected growth of 5.6%.

In 2021, at 3.4%, the IMF expects global economic growth to be on a par with 2020.

FUTURE GENERAL ECONOMIC CONDITIONS IN THE PHOTOVOLTAICS SECTOR

Renewable Energies Are the Key to Combating Climate Change

The fight against climate change is now one of the most central issues in the public, politics and economics. The international Fridays for Future movement and, more notably, unusual weather phenomena such as severe storms, droughts and flooding in various regions of the world, not to mention the unprecedented bushfires in Australia, have helped raise the profile of this issue.

Greater efforts to expand renewable energies is widely regarded as the central pillar in the response to climate change. These attitudes will drive forward their expansion over the coming years and decades at an ever-greater pace. To meet international climate change targets, the International Renewable Energy Agency (IRENA) is pushing for globally installed renewable power capacity to be tripled from its current level to 7.7 TW between now and 2030.

Other factors driving the projected rapid growth of solar and wind energy include a disproportionally increasing demand for electricity in connection with the electrification of additional sectors and further decreases in the cost of solar and wind energy, which are already considered some of the most cost-effective energy sources in many parts of the world.

In its World Energy Outlook 2019, the International Energy Agency (IEA) estimates that photovoltaics will become the leading source of energy worldwide. The experts from Bloomberg New Energy Finance (BNEF) confirm this. In their New Energy Outlook

2019, they forecast that by 2050, photovoltaic and wind turbine systems will account for around 50% of global power generation. The share of photovoltaics will increase from 2% now to 22%. According to the BNEF experts, wind and photovoltaics are already the most cost-effective energy sources in more than two-thirds of all countries and will also beat the production costs of existing coal and gas power stations almost everywhere by 2030.

In addition to the ever-decreasing consumer cost of electricity from PV systems thanks to technological advancements, the generation of solar power in the vicinity of the consumer makes photovoltaics particularly appealing. The increasingly affordable storage systems and modern communication technologies combined with services for cross-sector energy management will harmonize energy production and demand. The SMA Managing Board is therefore convinced of the market appeal and has thus positioned SMA to ensure it benefits from future developments in the field of photovoltaics, storage technologies and digital energy services.

Global New PV Installations Increase to 123 GW

The SMA Managing Board anticipates a growth in newly installed PV power worldwide of around 14% to approximately 123 GW in 2020. The growth is being driven by all regions. Global investments in system technology for traditional photovoltaic applications will increase only by around 1% due to a decline in price development. Investments in system technology for storage applications (excluding investments in batteries) will rise by approximately €60 million compared to the previous year. Overall, the SMA Managing Board therefore expects investments in PV system technology (including system technology for storage systems) of around €5.3 billion in 2020 (2019: €5.2 billion). The Managing Board rates the medium-term prospects for the PV industry as positive. This is due to the lower costs of photovoltaics and the accelerating transformation of the energy sector toward decentralized, digital and connected energy generation.

Considerable Increase in Demand in the EMEA Region

The SMA Managing Board anticipates a significant increase in newly installed PV power of approximately 26% to around 33 GW in the Europe, Middle East and Africa (EMEA) region in 2020. In addition to growth in the countries in the Middle East and Africa, this is also due to the positive development in European markets, such as Germany, France, the Netherlands and Italy, as well as East European markets. According to SMA estimates, investments in PV and storage system technology will grow to approximately €1.7 billion (2019: €1.5 billion). Battery-storage systems are gaining importance in European countries, especially in Germany, the UK and Italy. In addition to business involving new systems for consumption of self-generated energy, retrofitting of existing systems with new inverters and storage systems will yield high potential in the medium term. For more and more PV systems, government subsidization will end in the years to come. Self-consumption of solar power is a particularly attractive option for the operators of these systems.

South American Markets Gain Importance in the Americas Region

For the Americas region, the SMA Managing Board anticipates growth in newly installed PV power of around 13% to 23 GW. Roughly 16 GW of this amount is attributable to the North American markets. Inverter technology investments are expected to increase slightly to almost €1.1 billion (2019: €1.0 million). While the Managing Board forecasts growth in South American markets, it expects marginal downturns in the investments in North American markets as a result of high price pressure. Here the residential and commercial segments are currently influenced by strict regulations set forth in the National Electrical Code (NEC). Medium-term prospects are positive for manufacturers that can offer products that comply with the new standard.

Investments in the Asia-Pacific Region Slightly Below Previous Year's Level

The most important markets in the APAC region include China, India, Japan and Australia. In Japan and Australia, the installation of PV systems combined with battery-storage systems to supply energy independently of fossil energy carriers offers additional growth potential. The SMA Managing Board estimates that new PV installations in China will increase by around 13% and reach 34 GW in 2020 (2019: 30 GW). At €900 million, investments in inverter technology are expected to be on a par with last year. For the APAC region, excluding China, the SMA Managing Board expects newly installed PV power to increase by approximately 5% to around 33 GW in 2020 (2019: 32 GW). The growth will be driven, in particular, by the Indian and Australian markets. However, high price pressure will erode volume growth. The SMA Managing Board therefore expects investments of approximately €1.7 billion in inverter technology for this region (2019: €1.8 billion).

Growth Markets: Energy Management, Digital Energy Services and Operational Management

The trend to regionalize power supplies is progressing. More and more households, cities, and companies are becoming less dependent on energy fuel imports and rising energy costs by having their own PV systems. This will lead to a rise in demand for energy storage solutions in the residential, commercial and industrial sectors. In addition, energy will be increasingly distributed via smart grids to manage electricity demand, avoid consumption peaks and take the strain off utility grids. E-mobility is also expected to become an important pillar of these new energy supply structures a few years from now. Integration of electric vehicles will help increase self-consumption of renewable energies and offset fluctuations in the utility grid. Using artificial intelligence, the behavior of decentralized energy consumers and storage systems can be adapted to the fluctuating production of electricity from renewable energies, thus enabling the overall system to be optimized.

In this context, the SMA Managing Board holds that innovative system technologies that temporarily store solar power and provide energy management to private households and commercial enterprises offer worthwhile business opportunities. Rising prices for conventional domestic power and many private households and companies wanting to drive forward the energy transition by making their contribution to a sustainable and decentralized energy supply are the basis for new business models. Demand for solutions that increase self-consumption of solar power is likely to rise, particularly in European markets, the U.S., Australia and Japan. In these markets, renewable energies are already taking on a greater share in the electricity supply. In addition, power supply companies are increasingly using battery-storage systems to avoid expensive grid expansions, stabilize grid frequency and balance fluctuations in the power feed-in from renewable energy sources. The SMA Managing Board expects the volume of the still fairly new storage market to be around €700 million in 2020 (excluding investments in batteries). Estimated demand is already included in the specified development projections for the entire inverter technology market.

In addition to storage technology, digital energy services aimed at optimizing household and commercial enterprises' energy costs and their connection to the energy market are becoming increasingly significant. The SMA Managing Board expects this area to represent an addressable market of approximately €400 million in 2020. The market will grow exponentially in the medium and long term.

Technical management of commercial PV systems and large-scale PV power plants is another growth segment. This includes a range of services, such as repairs and device replacements as well as visual inspections and maintenance of entire systems. The market in these segments had an accumulated installed capacity of over 530 GW at the end of 2019 and will have an expected 630 GW by the end of 2020. The SMA Managing Board estimates the addressable market share, which is not yet or no longer under contract, at 170 GW in 2020, which corresponds to a potential of at least €1.1 billion. Prices are calculated yearly per MW and vary significantly depending on the regions and services included.

OVERALL STATEMENT FROM THE MANAGING BOARD ON EXPECTED DEVELOPMENT OF THE SMA GROUP

Managing Board Anticipates Sales and Earnings Growth

On February 7, 2020, the SMA Managing Board published its sales and earnings guidance for the current fiscal year for the first time. It predicts a sales increase to between €1.0 billion and €1.1 billion (2019: €915.1 million). Significant impulses are anticipated from the ongoing positive market performance expected in Europe and America and from the continued growth of the storage market. SMA is well positioned to benefit from this market growth and gain additional market shares. In addition, the SMA Managing Board is implementing further cost reduction measures. The Managing Board is confident that lower production costs and the leveraging of economies of scale accompanied by a leveling off of price declines will bolster SMA's profitability. In this context, the SMA Managing Board is also expecting a significant increase in earnings. The Managing Board estimates that operating earnings before interest, taxes, depreciation and amortization (EBITDA) will amount to between €50 million and €80 million in 2020 (2019: €34.2 million). Depreciation and amortization are expected to come to approximately €45 million. On this basis, the Managing Board expects an EBIT of between €5 million and €35 million. The SMA Managing Board currently sees no threat to the forecast due to the spread of the coronavirus. However, final assessment is currently not possible.

SMA's business model is not capital-intensive. With approximately €50 million, in 2020, capital expenditure (including capitalized development costs and lease investments) will roughly be on a par with the previous year (2019: €27.6 million plus lease investments amounting to €26.8 million).

For details regarding risks, please refer to the Risks and Opportunities Report on pages 59 et seq.

SMA Group Guidance for 2020 at a Glance

Key figure	2020	2019
Sales in € million	1,000 to 1,100	915.1
Inverter output sold in GW	14 to 15	11.4
EBITDA in € million	50 to 80	34.2
Capital expenditure in € million	approx. 50	27.6[1]
Net working capital in % of sales	18 to 22	17.4
Net cash in € million	> 250	303
EBIT in € million	5 to 35	–11.8

[1] The actual figure 2019 only includes investments without leases. The 2020 guidance includes investments, including leases, amounting to approximately €15 million. Starting 2020, the actual figure will also include leases. The 2019 lease investments amounted to €26.8 million.

SMA's sales and earnings depend on global market growth, market share and price dynamics. Our global presence and our comprehensive portfolio of products and solutions for all segments (Home Solutions, Business Solutions and Large Scale & Project Solutions) enable us to respond quickly to changing market conditions, offset fluctuations in demand and take advantage of developments in global photovoltaic markets. Its broad product and solution portfolio in all market segments is a major distinguishing feature for SMA. The SMA Managing Board forecasts the following performance for individual SMA segments in fiscal year 2020:

Segment Guidance for 2020 at a Glance

Segment	Sales	EBIT
Home Solutions	Up slightly	Constant
Business Solutions	Up	Up
Large Scale & Project Solutions	Up	Up

SMA Will Continue on Its Path to Greater Sales and Profitability

The implementation of extensive cost-cutting measures, a greater customer focus and enhanced sales activities allowed SMA to gain market shares in its core business and considerably improve its sales and earnings in the past fiscal year.

We also continued to advance our positioning in major future fields by introducing end-to-end system packages for private and commercial applications into key target markets, establishing the elexon joint venture for electric vehicle fleet charging infrastructure, pooling the sales activities for storage systems, repowering and other services within one in-house sales unit, and refining the digital energy service offering through our subsidiary coneva. SMA intends to pursue this successful course of action in the years to come and works continuously to transform itself into a systems and solutions provider with the aim of generating additional sales potential and developing new business models for the future.

SMA Will Reap the Benefits of Megatrends [1]

The urgent need for greater efforts in the fight against climate change and the keen awareness of sustainability issues across large parts of the public, economics and politics will accelerate the expansion of renewable energies and storage systems worldwide, thereby advancing the decentralization and digitalization of the energy supply. At the same time, there will be a continuation of the global PV market consolidation which had already started. This is releasing market shares and is also expected to slow down the decline in prices of PV inverters over the coming years.

SMA is well positioned to benefit from these trends in all market segments and regions. No other competitor has similar international presence combined with similar extensive technical expertise that encompasses all PV applications. In addition, our total installed inverter output of around 85 GW worldwide is a particularly good foundation for data-based business models, as inverters are the most suitable sensors for compiling valuable energy data. Our extensive knowledge of managing complex battery-storage systems and linking solar power systems to other energy sectors, such as heating, ventilation and cooling technology, and e-mobility, is an excellent basis for developing future growth potential for digital energy solutions.

Our subsidiary coneva develops white label solutions for public utility companies, which integrate both prosumers and traditional energy customers of utility companies into the world of digital energy and enable them to use energy simply and cost-effectively. The individual solutions for commercial customers range from monitoring energy flows and optimizing energy costs across all sectors to matching supply and demand on the energy management platform ennexOS developed by SMA. In both segments, coneva has already established successful partnerships and projects with leading electric utility companies and supermarket chains.

[1] The following section is not a mandatory component of the management report as defined in Section 315 HGB in conjunction with GAS 20, and therefore not a subject of the financial audit.

Through the elexon joint venture founded in the past fiscal year, SMA is also strengthening its positioning in the future field of e-mobility. elexon is a single-source supplier of turnkey solutions for planning, installing and servicing efficient e-vehicle charging parks. Based on their production capacities and experience, the joint venture partners are also focusing on industrial solutions for charging parks and large fleets.

SMA Will Take Advantage of the Opportunities Posed by Digitalization [1]

Thanks to its extensive knowledge and experience in PV system technology, its ability to quickly implement changes, the alignment of its subsidiaries toward future business areas and its numerous strategic partnerships, SMA is well prepared for the digitalization of the energy industry and will take advantage of the opportunities that it yields. As a specialist in complete solutions in the energy sector, we will help shape the energy supply of the future, launch a number of innovations and establish new strategic partnerships. In the process, we will build on our unique strengths to design additional system solutions for the conversion to a cost-effective, reliable and sustainable energy supply that is based on decentralized renewable energy. We will be helped in this endeavor by SMA's extraordinary corporate culture and our motivated employees who make a decisive contribution to the Company's long-term success and are therefore also given a share in SMA's financial success.

Niestetal, March 6, 2020

SMA Solar Technology AG
The Managing Board

[1] The following section is not a mandatory component of the management report as defined in Section 315 HGB in conjunction with GAS 20, and therefore not a subject of the financial audit.

OTHER ELEMENTS OF THE COMBINED MANAGEMENT REPORT

The following sections are elements of the Combined Management Report:

→ The Corporate Governance Statement in accordance with Sections 289a and 315d HGB starting on page 16

→ Information Concerning Takeovers starting on page 20

→ The Remuneration Report starting on page 21

CONSOLIDATED FINANCIAL STATEMENTS

INCOME STATEMENT SMA GROUP

in €'000	Note	2019	2018
Sales	3	**915,069**	**760,934**
Cost of sales [1]		749,303	688,856
Gross profit		**165,766**	**72,078**
Selling expenses [2]		79,844	72,067
Research and development expenses [2]		52,179	49,023
General administrative expenses		49,030	55,244
Other operating income	4	42,286	35,451
Other operating expenses		38,770	82,905
thereof impairments according to IFRS 9		1,538	11,918
Operating profit (EBIT)		**–11,771**	**–151,710**
Result from at equity-accounted investments		0	–13,134
thereof impairments		0	–11,297
Financial income		2,194	2,125
Financial expenses		1,199	3,662
Financial result	6	**995**	**–14,671**
Profit before income taxes		**–10,776**	**–166,381**
Income taxes	7	–2,150	9,106
Profit from continuing operations		**–8,626**	**–175,487**
Net income		**–8,626**	**–175,487**
of which attributable to shareholders of SMA AG		**–8,626**	–175,487
Earnings per share, basic/diluted (in €)	8	–0.25	–5.06
thereof from continuing operations (in €)		–0.25	–5.06
thereof from discontinued operation (in €)		0.00	0.00
Number of ordinary shares (in thousands)		34,700	34,700

1 Thereof impairment loss for development projects of €0.0 million (2018: €29.5 million).
2 Since January 1, 2019, the business units' costs have been shown under selling expenses. In previous years, they were included in research and development expenses. The previous year's figures were adjusted by €19.3 million accordingly

STATEMENT OF COMPREHENSIVE INCOME SMA GROUP

in €'000	Note	2019	2018
Net income		**–8,626**	**–175,487**
Unrealized gains (+)/losses (–) from currency translation of foreign subsidiaries		1,038	597
Changes recognized outside profit or loss (currency translation differences) [1]		**1,038**	**597**
Overall result		**–7,588**	**–174,890**
of which attributable to shareholders of SMA AG		–7,588	–174,890

[1] All items of other comprehensive income may be reclassified to profit or loss.

BALANCE SHEET SMA GROUP

in €'000	Note	2019/12/31	2018/12/31
ASSETS			
Intangible assets	9	37,227	36,351
Fixed assets	10	208,172	198,884
Investment property	12	14,274	16,212
Other financial investments		3	2
Investments in associates	11	8	0
Deferred taxes	7	39,091	31,928
Non-current assets		**298,775**	**283,377**
Inventories	13	279,883	193,795
Trade receivables	14	145,530	108,375
Other financial assets (total)	15	112,292	185,379
Cash equivalents with a duration of more than 3 months and asset management		72,059	177,509
Rent deposits and cash on hand pledged as collaterals		30,995	3,364
Remaining other financial assets		9,239	4,506
Receivables from tax authorities (total)		45,568	36,285
Income taxes	7	23,567	20,637
Claims for VAT refunds	14	22,001	15,648
Other receivables	14	9,977	7,469
Cash and cash equivalents	16	214,793	142,637
		808,043	**673,940**
Assets classified as held for sale	17	500	31,952
Current assets total		**808,543**	**705,892**
Total assets		**1,107,318**	**989,269**

in €'000	Note	2019/12/31	2018/12/31
LIABILITIES			
Share capital		34,700	34,700
Capital reserves		119,200	119,200
Retained earnings		262,993	270,582
SMA Solar Technology AG shareholders' equity	18	**416,893**	**424,482**
Provisions [1]	19	75,287	65,657
Financial liabilities [2]	20	23,462	15,013
Other liabilities [1] (total)		160,557	163,835
Contract liabilities	23	157,468	161,769
Remaining other liabilities	23	3,089	2,066
Deferred taxes	14	9	10
Non-current liabilities		**259,315**	**244,515**
Provisions [1]	19	77,946	91,368
Financial liabilities [2]	20	11,051	5,402
Trade payables		174,742	110,851
Income tax liabilities	14	3,135	4,106
Other liabilities [1] (total)		164,236	77,220
Human Resources department	23	14,121	15,289
Contract liabilities (prepayments received)	23	91,143	13,928
Contract liabilities (other)	23	49,403	38,322
Other financial liabilities (current)	22	1,241	741
Remaining other liabilities (current)	23	8,328	8,940
		431,110	**288,947**
Liabilities directly associated with assets classified as held for sale		0	31,325
Current liabilities		**431,110**	**320,272**
Total equity and liabilities		**1,107,318**	**989,269**
Total cash (in € million)			
Cash and cash equivalents with a duration of more than 3 months and asset management + rent deposits and cash on hand pledged as collaterals		318	324
Net cash (in € million)			
Total cash minus interest-bearing financial liabilities to banks		303	305

1 Not interest-bearing.
2 Includes not-interest-bearing current and non-current derivatives amounting to €0.3 million (2018: €2.0 million).

STATEMENT OF CASH FLOWS SMA GROUP

in €'000	Note	2019	2018
Net income		–8,626	–175,487
Income taxes		–2,150	9,106
Financial result		–995	14,671
Depreciation and amortization of fixed assets and intangible assets		45,963	82,610
Change in provisions		–3,792	975
Result from the disposal of assets		1,267	803
Change in non-cash expenses/revenue		8,388	39,547
Interest received		354	1,412
Interest paid		–821	–882
Income tax paid		–8,918	–12,144
Gross cash flow		**30,670**	**–39,389**
Change in inventories		–90,977	–57,862
Change in trade receivables		–38,705	39,458
Change in trade payables		63,894	–19,581
Change in other net assets/other non-cash transaction		33,934	23,106
Net cash flow from operating activities		**–1,184**	**–54,268**
Payments for investments in fixed assets		–15,481	–20,234
Proceeds from the disposal of fixed assets		122	863
Payments for investments in intangible assets		–12,101	–20,091
Payments for the acquisition of shares in associated companies		–8	0
Proceeds from the disposal of available for sale assets net of cash		127	0
Proceeds from the disposal of securities and other financial assets		155,443	118,553
Payments for the acquisition of securities and other financial assets		–45,049	–71,732
Net cash flow from investing activities		**83,053**	**7,359**
Payments for lease liabilities		–7,610	0
Redemption of financial liabilities		–3,063	–2,376
Dividends paid by SMA Solar Technology AG		0	–12,145
Net cash flow from financing activities		**–10,673**	**–14,521**
Net increase/decrease in cash and cash equivalents		71,196	–61,430
Changes due to exchange rate effects		960	–93
Cash and cash equivalents as of January 1		142,637	234,853
Less cash and cash equivalents of available for sale assets		**0**	**30,693**
Cash and cash equivalents as of December 31	27	**214,793**	**142,637**

STATEMENT OF CHANGES IN EQUITY SMA GROUP

in €'000	Note	Share capital	Capital reserves	Difference from currency translation	Other retained earnings	Consolidated shareholders' equity
Shareholders' equity as of January 1, 2018		**34,700**	**119,200**	**3,680**	**453,936**	**611,516**
Net income					–175,487	–175,487
Other comprehensive income after tax	18			597		597
Overall result						–174,890
Dividend payments of SMA Solar Technology AG					–12,145	–12,145
Shareholders' equity as of December 31, 2018		**34,700**	**119,200**	**4,277**	**266,304**	**424,481**
Shareholders' equity as of January 1, 2019		**34,700**	**119,200**	**4,277**	**266,304**	**424,481**
Net income					–8,626	–8,626
Other comprehensive income after tax	18			1,038		1,038
Overall result						–7,588
Shareholders' equity as of December 31, 2019		**34,700**	**119,200**	**5,315**	**257,678**	**416,893**

NOTES SMA GROUP

GENERAL INFORMATION

1. Basics

The Consolidated Financial Statements of SMA Solar Technology AG for the year ending December 31, 2019, were prepared in compliance with the International Financial Reporting Standards (IFRS) as adopted by the EU, as well as in compliance with the regulations of Section 315e of the German Commercial Code (HGB). The requirements of the standards applied were met completely and provide a fair view of the net assets, financial position and results of operations of SMA Solar Technology AG and its subsidiary companies included in the scope of consolidation (hereinafter: SMA Group or the Group).

The registered office of the Company is Sonnenallee 1, 34266 Niestetal, Germany. The Company is registered at the commercial court of Kassel under the trade register number HRB 3972. Shares of SMA Solar Technology AG have been traded publicly since June 27, 2008. They are listed in the Prime Standard of the Frankfurt Stock Exchange. The Company has been listed in the SDAX since September 24, 2018.

The Consolidated Financial Statements are prepared using the amortized acquisition cost principle. Exceptions to this are provisions, deferred taxes, derivative financial instruments, and available-for-sale securities.

The income statement is classified according to the cost of sales method. The Consolidated Financial Statements were prepared in euro. Unless indicated otherwise, all amounts stated are in euro rounded to whole thousands (€'000) or millions (€ million), rounding differences may arise as a result.

The Managing Board of SMA Solar Technology AG authorized the Consolidated Financial Statements on March 6, 2020, for submission to the Supervisory Board. The Supervisory Board has the duty of reviewing the Consolidated Financial Statements and declaring whether it approves the Consolidated Financial Statements.

SMA Solar Technology AG (SMA AG) and its subsidiaries (SMA Group) develop, produce and sell solar inverters, transformers, chokes, and monitoring systems for solar power systems. In addition, the Company offers intelligent energy management solutions and services, including operation and maintenance services for photovoltaic power plants (O&M business). Another business segment is digital services for the future energy supply.

More detailed information on the segments is provided in section 3.

1.1. CONSOLIDATION PRINCIPLES

All domestic and foreign subsidiaries in which SMA Solar Technology AG, directly or indirectly, has the option of controlling the financial and operating policies are included in the Consolidated Financial Statements of the SMA Group. The included statements are prepared based on uniform principles.

An associate is a company over which the Group exercises significant influence. Significant influence means the option to participate in the financial and operating policy decisions of the company, in which the investment is held, but not to exercise control or joint control over the decision-making processes.

Non-controlling interests are recognized at the proportionate value of the assets acquired and liabilities assumed. They are not accounted for at fair value.

1.2. SCOPE OF CONSOLIDATION

With the exception of Tigo Energy, Inc. and elexon GmbH, all companies within the scope of consolidation are fully consolidated. Tigo Energy, Inc. is recognized as an associate in the Consolidated Financial Statements according to the equity method. elexon GmbH is also accounted for as an associate. The company was newly established in the year under review. It is a joint venture in charging infrastructure facilities, in which the Group holds a 33.34% stake. Investment holdings within the scope of consolidation as of December 31, 2019, changed in comparison with December 31, 2018, as follows. The companies SMA America Production LLC, SMA Technology Korea Co., Ltd. and SMA Technology Hellas AE left the scope of consolidation as a result of liquidation. The companies SMA New Energy Technology (Jiangsu) Co., Ltd., SMA New Energy Technology (Yangzhong) Co., Ltd. and SMA New Energy Technology (Shanghai) Co., Ltd. are no longer included in the scope of consolidation as a result of their disposal. The scope of consolidation was expanded again with the establishment of SMA Solar Technology (Shanghai) Co., Ltd. The company SMA Sub-Sahara Production (Pty.) Ltd. was renamed emerce Africa (Pty.) Ltd. The UNIKIMS GmbH entitled to investments in the list of shareholdings is not consolidated due to its subordinate importance.

The scope of consolidation of the SMA Group is presented in the complete list of shareholdings shown below pursuant to Section 313 of the German Commercial Code:

Name of parent company	Registered office	Share in capital	Consolidation
SMA Solar Technology AG	Niestetal, Germany		F
Shares in affiliated companies			
Australia Zeversolar New Energy Pty. Ltd.	Sydney, Australia	100%	F
coneva GmbH	Munich, Germany	100%	F
emerce Africa (Pty.) Ltd.	Cape Town, South Africa	100%	F
emerce GmbH	Fritzlar, Germany	100%	F
SMA America Holdings LLC	Denver, U.S.	100%	F
SMA Solar Technology America LLC	Rocklin, U.S.	100% [3]	F
SMA Australia Pty. Ltd.	North Sydney, Australia	100%	F
SMA Benelux BVBA	Mechelen, Belgium	100% [1]	F
SMA France S.A.S.	Saint Priest, France	100%	F
SMA Ibérica Tecnología Solar, S.L.	Sant Cugat del Vallès (Barcelona), Spain	100%	F
SMA Immo Beteiligungs GmbH	Niestetal, Germany	100%	F
SMA Immo GmbH & Co. KG	Niestetal, Germany	100%	F
SMA Italia S.r.l.	Milan, Italy	100%	F
SMA Japan Kabushiki Kaisha	Tokyo, Japan	100%	F
SMA Magnetics Sp. z o.o	Zabierzów, Poland	100%	F
SMA Middle East Limited	Abu Dhabi, United Arab Emirates	100%	F
SMA Solar Beteiligungs GmbH	Niestetal, Germany	100%	F
SMA Solar India Private Limited	Mumbai, India	100% [1]	F
SMA Solar Technology Beteiligungs GmbH	Niestetal, Germany	100%	F
SMA Solar Technology Canada Inc.	Vancouver, Canada	100%	F
SMA Solar Technology de México S. de R.L. de C.V.	Guadalajara, Mexico	100%	F
SMA Solar Technology (Shanghai) Co., Ltd.	Shanghai, China	100%	F
SMA Solar Technology South Africa (Pty.) Ltd.	Cape Town, South Africa	100%	F
SMA Solar (Thailand) Co., Ltd.	Bangkok, Thailand	100% [2]	F
SMA Solar UK Ltd.	Banbury, Great Britain	100%	F
SMA South America SpA	Santiago, Chile	100%	F
SMA Brasil Tecnologia Ferroviária e Solar Ltda.	Campinas, Brazil	100% [3]	F
SMA Sunbelt Energy GmbH	Niestetal, Germany	100%	F
Zeversolar GmbH	Munich, Germany	100%	F
Investments			
elexon GmbH	Aachen, Germany	33.34%	R
UNIKIMS GmbH	Kassel, Germany	9.6%	N
Tigo Energy, Inc.	Los Gatos, U.S.	28.27%	R

F = fully consolidated; N = not consolidated; R = recognized at equity
1 0.1% are held by SMA Solar Technology Beteiligungs GmbH.
2 0.001% are held by SMA Solar Technology Beteiligungs GmbH and 0.001% are held by SMA Solar UK Ltd.
3 Indirect investment

SMA Solar Technology AG and SMA Magnetics Sp. z o.o are manufacturing companies. The others are sales and service companies.

All SMA Group companies prepare their annual Financial Statements as of December 31, with the exception of our Indian subsidiary SMA Solar India Private Limited, which prepares its Financial Statements as of March 31 due to statutory regulations.

The companies SMA Immo GmbH & Co. KG (Section 264b German Commercial Code – HGB) and SMA Solar UK Ltd. (Section 479A Companies Act 2006) exercised exemption clauses regarding the preparation and publication of Financial Statements.

1.3. TRANSLATION OF FINANCIAL STATEMENTS INTO FOREIGN CURRENCIES

The Consolidated Financial Statements are prepared in euro, which is the reporting currency of the Group. Each company within the Group defines its own functional currency, which is normally the local currency. The items contained in the Financial Statements of each company are valued using this functional currency.

Transactions denominated in foreign currencies are translated initially into the functional currency by applying the spot rate valid at the time of the transaction. On each subsequent due date, monetary assets and liabilities denominated in foreign currencies are translated into the functional currency by applying the spot rate valid on that day. All translation differences are recognized through profit or loss.

Assets and liabilities of subsidiaries preparing their balance sheets in a currency other than the euro are translated using the current exchange rate on the balance sheet date. Items on the income statement are translated periodically using the average rate of the relevant month. The equity components of subsidiaries are translated at the corresponding historical exchange rate applicable upon accrual. Any resulting translation differences are recorded under other income within equity as adjustment items for foreign currency translation or in shares of other shareholders. The accumulated amount recorded in equity is recognized through profit or loss upon the disposal of the foreign subsidiary concerned.

2. Accounting Principles and Amendments to Accounting Standards

2.1. NEW IASB ACCOUNTING STANDARDS AND INTERPRETATIONS TO BE APPLIED FOR THE FIRST TIME IN THE FISCAL YEAR

New standards and interpretations that are not explained in detail here do not result in any significant changes in the Group at present.

Application of IFRS 16 Leases

IFRS 16 replaces the existing IAS 17 and accompanying interpretations. IFRS 16 applies to reporting periods beginning on or after January 1, 2019. For lessees, the new standard provides an accounting model that does not differentiate between operating and finance leases. Most leases will thus have to be recognized on the balance sheet. For lessors, the regulations of IAS 17 Leases are largely unchanged, so the distinction between finance and operating leases has to be retained, resulting in different consequences for accounting. The Group is mainly affected as a lessee. At present, the Group has around 630 rental and lease contracts. These particularly involve real estate contracts, car and bike leasing contracts. The “right-of-use asset method” entails capitalizing rights of use and corresponding recognition of lease liabilities. The equity ratio and gearing will be affected accordingly. Within the income statement, IFRS 16 will lead to adjustment between other operating expenses, depreciation and amortization as well as financial expenses, and have a positive effect on EBIT and EBITDA.

The transition took place using the modified retrospective method as defined in IFRS 16.C5 (b). At the date of first-time application, SMA exercised the option not to make an assessment as to whether or not a contract constitutes a lease as defined in IFRS 16. The definition of a lease in accordance with IAS 17 and IFRIC 4 therefore continues to apply to leases that were concluded or amended before January 1, 2019.

When calculating the book value of the right-of-use asset, there is an option between the amount that would result if the standard had always been applied and the amount of the lease liability at the date of first-time application. In accordance with IFRS 16.C8 (b), the modified retrospective approach for leases allows the option to recognize the right-of-use asset in an amount identical to the lease liability at the date of first-time application in the case of contracts previously categorized as operating leases in accordance with IAS 17 at the date of first-time application of IFRS 16. This option was exercised at SMA. The comparative figures from the same periods of the previous year have not been adjusted. Furthermore, the option was used not to take the initial direct costs into account. In accordance with IFRS 16.C8 (a), the lease liability is recognized at the present value of the remaining lease payments, discounted at the incremental borrowing rate (IBR) at the date of first-time application. The following interest rates were used:

in %	3 years	5 years	10 years
Germany (and other countries)	0.7	1.2	2.2
Poland	2.0	2.2	2.8
U.S.	3.7	4.0	4.7

As part of the transition to IFRS 16 as of January 1, 2019, assets for rights of use for the leased items were recognized in the amount of €23.5 million and lease liabilities were recognized in an identical amount. Amortization of rights of use amounted to €7.5 million in the fiscal year. The new provisions are not applied to leases whose term will end within 12 months of the date of initial application, as SMA exercises the relevant option here. In this case, these leases are accounted for as short-term leases and recognized in expense.

Obligations under leases and other financial liabilities amounted to €34.4 million as of December 31, 2018. This includes obligations under leases in the amount of €23.5 million. Other financial liabilities were reported in the amount of €10.9 million.

In addition, the Group applies the rule that subleasing contracts can be accounted for in accordance with IAS 19 if the conditions of IAS 19.8 are met. Accounting in accordance with IAS 19 is applied to the bikes made available to employees. There is no subleasing relationship as a result of the application. In conclusion, the simplification rule can be used for head lease, meaning that these are classified as "low-value." The resulting expenses are reported under employee benefits.

STANDARDS AND INTERPRETATIONS PUBLISHED BUT NOT YET MANDATORY

In its 2019 Consolidated Financial Statements, SMA did not apply the following accounting standards, which had already been adopted by the IASB but were not yet mandatory for this fiscal year.

They will be implemented in the year of compulsory first-time application if they are implemented and applied in the EU. Earlier application is not permitted.

IFRS 17 Insurance Contracts

The new IFRS 17 standard was published in May 2017. It has yet to be endorsed for use in the EU. The standard will not be applied by the Group.

Amendments to IFRS 10 Consolidated Financial Statements and IAS 28 Investments in Associates

These amendments clarify that in transactions involving associates or joint ventures, the extent of gain or loss recognition depends on whether the assets sold or contributed constitute a business. Mandatory application of these amendments has been postponed indefinitely in the EU.

Amendments to the references in the conceptual framework

The amendments apply to IFRS 2, IFRS 3, IFRS 6, IFRS 14, IAS 1, IAS 8, IAS 34, IAS 37, IAS 38, IFRIC 12, IFRIC 19, IFRIC 20, IFRIC 22 and SIC-32. The amendments have to be applied for the first time for annual periods beginning on or after January 1, 2020. Earlier application is permitted. It has yet to be endorsed for use in the EU.

Amendments to IFRS 3 Business Combinations

The IASB has published "Definition of a Business Operation." This definition is intended to solve the problems that arise in connection with assessing whether a company has acquired a business operation or a group of assets. The amendments are applicable to business combinations for which the acquisition date is on or after the start of the first annual reporting period beginning on or after January 1, 2020.

Amendments to IAS 1 and IAS 8 Definition of Material

On October 31, 2018, the Board published amendments to the definition of materiality in IAS 1 Presentation of Financial Statements and IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors. The amendment is aimed at avoiding duplication of the definition of materiality in IAS 1 and IAS 8. The amendments have to be applied for the first time for annual periods beginning on or after January 1, 2020. Earlier application is permitted.

Amendments to IFRS 9, IAS 39 and IFRS 7 Interest Rate Benchmark Reform

On May 3, 2019, the IASB published proposed amendments to IAS 39 and IFRS 9 to mitigate the effects of the IBOR reform on financial reporting. The amendments aim to ensure that hedge accounting continues to exist or can be designated despite the expected replacement of various reference interest rates. The amendments are mandatory for annual periods beginning on or after January 1, 2020. Earlier voluntary application is possible. The amendments will not have any effect on the Group's accounting.

2.2. DISCLOSURES TO THE ACCOUNTING AND VALUATION POLICIES

Intangible assets acquired with a finite useful life are valued at acquisition costs. They decline via straight-line amortization over their useful lives and accumulated impairments.

The costs for internally generated intangible assets are recognized in the period in which they accrue, with the exception of development costs that can be capitalized.

Research and development expenses include all expenses that can be attributed directly to research or development activities. Expenditure on research is recognized as expenditure in the period in which it is incurred. The development costs of a project are capitalized as an intangible asset, only after SMA can demonstrate both the technical and economic feasibility of the intangible asset so that it will be available for internal use or sale and has the intention to complete the intangible asset and either use or sell it. Development costs are recognized at cost pursuant to IAS 36.66, less accumulated amortization and impairment. Amortization commences at the end of the development phase and from the moment the asset can be used. Amortization is effected over the period during which future benefit will be expected. No borrowing costs are capitalized in connection with the activation of development costs. In addition, there are currently no qualifying assets for which borrowing costs are capitalized.

Company acquisitions in previous years resulted in low **goodwill**. See also section 9. Intangible Assets. There were no other intangible assets with an indefinite useful life in the periods under review.

Intangible assets with finite useful lives are amortized on a straight-line basis over a period of three to five years, including development projects, software and licenses. Patents are written off over ten years. In the case of intangible assets with a finite useful life, the period of amortization and the amortization method are reviewed at least at the end of each fiscal year. Any adjustments to the amortization period that become necessary because of changes in the expected useful life are accounted for as changes to estimates. Amortization is recorded under the expense category that corresponds to the function of the intangible asset in the enterprise.

Any gains or losses from derecognition of intangible assets are determined as the difference between the net disposal proceeds and the book value of the asset. They are recognized in profit or loss in the period in which the asset is derecognized.

Fixed assets are valued at cost of acquisition or sales less straight-line depreciation and accumulated impairment losses. Borrowing costs are added to cost of acquisition and sales in the event of qualifying assets. The cost of replacement of a part of a fixed asset is included in the book value of this asset when incurred if the criteria for recognition are fulfilled. When major inspections are carried out, the costs are capitalized according to the book value of the relevant assets if the criteria for recognition are met. All other maintenance and repair costs are expensed immediately.

The depreciation period is based on the expected useful life. Depreciation is recognized under the expense category that corresponds to the function of assets in the enterprise. Scheduled straight-line depreciation is based on the following useful life of assets:

	Useful life
Leasehold improvements	10 years
Buildings	25 to 35 years
Technical equipment and machinery	6 to 8 years
Business and office equipment	5 to 10 years

A fixed asset is derecognized either upon its disposal or when no further economic benefit is expected from the further use or sale of the asset. Gains or losses from derecognition of the asset are determined as the difference between the net disposal proceeds and the book value of the asset. This difference is recognized through profit or loss in the income statement as other operating income or other operating expenses when the asset is sold.

The residual values, useful lives and depreciation methods are reviewed at the end of each fiscal year and adjusted if necessary.

Fixed assets that are held to generate rental income are recognized as "Investment Property" in accordance with IAS 40. Investment properties must be capitalized at cost on acquisition. SMA recognizes investment properties at amortized cost. An internal opinion on the determination of the market value has been drawn up. The market value of the property was determined on the basis of a tax valuation method. The main input parameters are the discount rate, estimated vacancy and the development of market rents, and the method reflects a level 3 rating in the sense of IFRS 13. The market value corresponds to the highest and best benefit of the property. The market value thus measured is €15.8 million (2018: €16.4 million). Please refer to the explanations in section 12. Investment Property.

Fixed assets that constitute non-current assets held for sale and discontinued operations are classified as held for sale according to IFRS 5. The condition is that the associated book value is realized largely through disposal and not through continued use. On the date of classification, these assets are measured at the lower value of book value and fair value less costs to sell, and no longer depreciated or amortized.

Impairment of intangible assets and fixed assets: On each balance sheet date, the Group reviews whether there are any indicators that the value of an asset might be impaired. If such indicators exist or if an annual impairment test of an asset is required, the Group determines the recoverable amount of the relevant asset. The recoverable amount of an asset is its fair value less costs to sell or its value in use, whichever is higher. As a rule, the recoverable amount will be determined for each individual asset. If it proves impossible to determine the recoverable amount for individual assets because the cash flows depend on those of other assets, the cash flows are determined for the next higher group of assets (cash-generating unit). In assessing the value in use, the estimated future cash flows are discounted to their present value using a pretax discount rate that reflects current market assessments regarding the interest effect and the risks specific to the asset. To determine the fair value less costs to sell, an adequate valuation model is used. This is based on valuation multipliers, market prices of quoted shares or other available indicators.

If the book value of an asset or a cash-generating unit exceeds the recoverable amount, impairment is recognized for the asset or the cash-generating unit in question, and it is written down to the recoverable amount. Impairment costs are recognized under the expense category that corresponds to the function of the impaired asset in the enterprise. In fiscal year 2019, no impairment on development projects was recognized (2018: €29.5 million). See also section 9. Intangible Assets.

For assets, a test is carried out on each balance sheet date to determine whether a previously recognized impairment loss has ceased to exist or has diminished. Additions are made if the recoverable amount has increased in subsequent periods. An impairment loss recognized in prior periods is reversed only if there have been significant changes to the measurement parameters used to originally determine the asset's recoverable amount since the last impairment loss was recognized. If this is the case, the book value of the asset is increased to as much as its recoverable amount. However, an addition is limited to the amount that would have resulted based on scheduled depreciation without recognizing an impairment. The addition is recognized in the income statement. Impairment on goodwill is not reversed. This was not the case in the year under review or in the previous year.

Inventories are measured at the lower value of the cost of acquisition or sales and net realizable value. The costs of acquisition or production include all costs incurred during acquisition and production as well as other costs incurred in bringing the inventories to their present location and condition. Borrowing costs are not taken into account here. In general, when determining the acquisition costs of raw materials, consumables and supplies, moving average prices are used. The cost of sales of work in progress and finished goods is determined using detailed cost accounting. The net realizable value consists of the estimated sales proceeds that can be achieved through the ordinary course of business, less the estimated costs incurred up to completion and the estimated necessary selling expenses. Value adjustments are particularly made in the case of a lack of standardization, discontinued products and surplus stocks of non-product-specific materials. A time horizon of 36 months is used to carry out range analyses. If the reasons that have resulted in an impairment of inventories no longer exist, a corresponding addition is made.

As a rule, **financial instruments** are reported as soon as an entity of the SMA Group becomes a contracting party to a financial instrument. A financial instrument is a contract that gives rise to both a financial asset held by one entity and a financial liability or an equity instrument held by another entity. If the trading date and the settlement date of financial assets are different, then the settlement date is decisive for initial recognition. The date of contract conclusion is only decisive in the case of financial derivatives.

Financial assets and financial liabilities are measured at fair value upon their initial recognition. Financial instruments are also designated to measurement categories in accordance with IFRS 9. Further explanations are provided in section 24. Additional Disclosures Relating to Financial Instruments. If permitted and necessary, redesignations are made at the end of the fiscal year. In the case of financial instruments for which there is no measurement at fair value through profit or loss, the transaction costs that are directly attributable to the purchase of the financial asset or to the issue or assumption of the financial liability are also included. These are those directly attributable to the acquisition of the financial asset or the issue of financial liabilities.

Financial instruments are generally stated separately. They are netted only if there is a right of offsetting them on the relevant date and also if the intention is to perform the settlement on a net basis.

Their subsequent measurement is based on the previous categories pursuant to IFRS 9. For the SMA Group, the measurement categories "Amortized Cost" and "Fair Value Through Profit or Loss" are particularly relevant. Any loans and receivables granted and other financial liabilities are measured at amortized cost of acquisition using the effective interest method.

Assets measured "At Fair Value Through Profit or Loss" are measured at fair value. These primarily include derivative financial instruments that are not part of an effective hedging relationship. Derivative financial instruments are reported as assets or liabilities if their fair values are positive or negative. Gains and losses resulting from changes in the fair value of derivative financial instruments are recognized directly through profit or loss, as long as no hedging relationship was created for them. Gains or losses resulting from subsequent measurement are recognized through profit or loss in the Income statement.

At each reporting date, the accounting values of the financial assets, which are not measured at fair value through profit or loss, are then examined to see whether objective evidence indicates an impairment. Any impairment loss, which is based on a lower value than the carrying amount, is recognized in the Income statement.

A financial asset is removed from the books if the enterprise has relinquished control of the contractual rights related to the financial asset. A financial liability is removed from the books if the obligation underlying the liability is discharged, cancelled or has expired.

For the majority of the financial instruments that come under the impairment regulations at SMA, trade receivables without a significant financing component, the standard mandatorily stipulates a simplified two-level model. Under this model, a risk provision in the amount of the expected losses over the remaining term is recognized for all instruments, irrespective of their credit quality. The amount of the risk provision at level 2 is calculated based on a flat rate. This rate is applied to the entire SMA Group, as there are no different default rates for different regions or business units. The application of IFRS 9 resulted in a rate of 0.45% (2018: 0.44%). When determining the default rate, a looking-forward component is taken into account, in the sense that SMA is in a very volatile environment and, despite all market fluctuations and changes, there were no significant influences on the default rates of the receivables. Due to the management assessment, no change is expected in the future.

As described, trade receivables are all allocated to level 2 on acquisition and are transferred to level 3 if there are objective indications of impairment. Despite the general focus on internal risk management, it is assumed that a default event occurs at the latest when a receivable is 90 days past due. However, this assumption can be disproved based on suitable information. Because high-risk receivables are collateralized and high-risk customers receive services only if they pay in advance, the level of bad debt losses in the Group is not significant (less than 1% of receivables). For this reason, a default event is not assumed until the receivable is 180 days past due. Receivables are impaired after being overdue.

For all other financial instruments (cash and cash equivalents, debt securities [non-market-traded], rent collateral and pledges, time deposits and other short-term deposits [> 3 months], non-current assets) that fall under the impairment requirements of IFRS 9, the general model applied. Additional information on default risk and expected credit losses of the relevant balance sheet items (cash and cash equivalents, bonds [non-market-traded], rental collateral and pledges, time deposits and other short-term deposits [> 3 months], contractual assets) is waived for materiality reasons.

Government grants are not recognized until there is reasonable assurance that SMA will meet all the conditions for receiving the grants. Government grants are initially recognized directly in equity. They are to be recognized through profit or loss in line with planning along with the corresponding expenses to be offset by the grants. Government grants that are paid to compensate for expenses or losses already incurred or to provide immediate financial support without directly associated expense are recognized in the income statement in the period in which the corresponding claim arises.

Provisions account for all recognizable present (legal and constructive) obligations of the Group to third parties as a result of past events that are expected to lead to an outflow of resources with an economic benefit to settle the obligation and the amount of which can be estimated reliably. Provisions are recognized in line with IAS 37 at the estimated amount required to settle them. Insofar as the Group expects to receive a repayment, at least in part, for a reported provision (e. g., for an insurance contract), the repayment is recorded as a separate asset if the inflow of the payment is highly probable. The expense arising from the formation of the provision is recognized in the Income statement. Non-current provisions are carried in the balance sheet at their settlement amount discounted to the balance sheet date using corresponding term-dependent market interest rates. If the amount is discounted, the increase of provisions caused by expiration is recorded under finance costs. Additions to the provisions for guarantees outlined under section 19. Provisions are recognized in cost of sales. It is not carried out by a delimitation of revenue. In addition to individual circumstances, provisions for general warranty risks are also taken into account when setting aside provisions for warranty obligations. In the case of warranty risks, an obligation of five to ten years is generally adopted as a base. The change in estimates made in the previous year were systematically continued this year.

At the beginning of the contract, the Group as a lessee assesses whether the contract constitutes or contains a **lease**. For all leases where the Group is the lessee, the Group recognizes a right-of-use asset and a corresponding lease liability. Exceptions to this include short-term leases (term up to 12 months) and leases for low-value assets (printers et al.). For these leases, the Group recognizes lease payments on a straight-line basis over the lease term under "Other expenses," unless another systematic basis is more representative.

Upon initial recognition, the lease liability is measured at the present value of the lease payments not yet paid at the beginning of the lease, discounted at the interest rate underlying the lease. If this interest rate cannot be determined easily, the Group uses the incremental borrowing rate. Upon initial recognition, it is also taken into account whether the contracts have an extension option. If such options exist, an assessment must be made at the outset, or when new evidence becomes available, as to whether the extension options will be exercised. The Group has building contracts with extension options. In general, contracts have an annual option to extend by one year or an option to extend for another five years.

The discount rate is calculated using the following method in each case: First, the risk-free interest rate with matching maturities is calculated within a region (as an EU state, Poland initially has an identical interest rate to Germany, but this is adjusted by a country-specific risk premium). A rating result for SMA has to be calculated based on credit quality.

The incremental borrowing rate was calculated for three different term ranges with regard to standardized contract terms. To reflect the economic environment, different discount rates were calculated for three distinct major regions with existing contracts.

The following lease payments are included in the assessment of the lease liability:

→ Fixed lease payments

→ Variable lease payments

→ Expected lease payments due to residual value guarantees

→ Exercise prices of call options

→ Penalties for the early termination of leases

Variable lease payments that do not depend on an index or exchange rate are not included in the assessment of the lease liability and the right-of-use asset.

The lease liability is subsequently measured by increasing the carrying amount by the interest on the lease liability and reducing the carrying amount by the lease payments made.

In the following cases, the Group reassesses the lease liability and adjusts the right-of-use asset accordingly:

→ The term of the lease has been amended

→ Amendments to lease payments

A lease has been amended and the amendments to the lease are not recognized as a separate lease.

The rights of use are initially measured at the amount of the corresponding lease liability less lease payments made at or before the beginning of the lease, lease incentives received and initial direct costs. Subsequent measurement is at original cost less accumulated amortization and impairment.

If the Group is obliged to dismantle or reduce a leased asset, to restore the site on which the asset is located or to restore the asset underlying the lease to the condition required by the terms of the lease, a provision is recognized and measured in accordance with IAS 37. If the costs relate to a right-of-use asset, the costs are recognized in the corresponding right-of-use asset, unless these costs are incurred for the production of inventories.

The examination as to whether a value adjustment of a right-of-use asset is necessary is carried out in accordance with IAS 36.

Due to the relief provisions, a separation between non-leasing components and leasing components has to be waived and leasing agreements with associated non-leasing components have to be accounted for accordingly as a single agreement in accordance with IFRS 16.

The Group makes use of the relief provision provided that the leasing component and the non-leasing components are not reported separately.

The Group has entered into a sublease contract as a lessor, which is classified as an operating lease. The main lease and the sublease are accounted for as two separate contracts. Classification as a finance or operating lease of the sublease is based on the right-of-use asset and not the asset underlying the lease from the main lease.

Rental income from operating leases is recognized on a straight-line basis over the term of the respective lease. Initial direct costs incurred in negotiating and agreeing a lease are added to the carrying amount of the leased asset and allocated on a straight-line basis over the lease term.

Amounts due from lessees under finance leases are reported as receivables in the amount of the Group's net investment in the leases. Income from finance leases is distributed over the respective reporting periods to ensure a constant periodic rate of return on the Group's net investment outstanding in respect of the leases.

Employee benefits are usually reported as a liability if an employee has provided work in exchange for benefits payable in the future and are recognized as an expense if the entity has received the economic benefit resulting from the work provided by an employee in exchange for future benefits.

Long-service rewards and death benefits are granted on the basis of a company agreement. Measurement of obligations to pay benefits is carried out by applying the projected unit credit method. This method takes into account both the claims for payment of long-service rewards and death benefits and the acquired pension rights known as of the balance sheet date, and payments of long-service rewards and death benefits expected in the future.

In 2009, SMA Solar Technology AG introduced value-based lifelong working-time accounts. Under certain conditions, employees may have time credits or special benefits reposted to these value accounts. They may take paid leave of absence at a later date using the credit balances extrapolated. The employees' value claims are protected against insolvency and are reinsured. Personnel expenses of €0.3 million were added in the current year (2018: €0.4 million).

Income from goods deliveries is recognized at the time of transfer of control. Prepayments for part deliveries are recognized as contract liabilities (prepayments received) within other liabilities. For transportation services, which constitute a performance obligation in their own right, revenue is recognized on a time proportion basis. Sales revenue from services, provided these services are not rendered over time, is recognized at the point in time at which the obligation to the customer is satisfied in accordance with IFRS 15.38. Sales from services recognized at a point in time are generated by SMA when commissioning large-scale projects and carrying out repair orders. Revenue from services rendered over time, including extended warranty or service/maintenance contracts, is recognized over the contractual periods to which these services relate according to the output-based customer perspective. The output-based method leads to an accurate presentation as it best represents the value of the goods and services transferred in the context of the constant commitment to the customer. Cash inflows received in advance do not contain any material finance components. They are the result of a number of end-customer contracts each with small individual contract volumes. With regard to the delivery of goods, in the Home and Business Solutions segments full payment is made on delivery depending on the transfer of control, while in the Large Scale & Project Solutions segment advance payments on deliveries are often made in addition to this. These are recognized in revenue upon full delivery depending on the transfer of control. Services provided over time, such as extended warranties in the Home and Business Solutions segments, are paid mainly in full in advance. They are reported as non-current contractual obligations and recognized in revenue over the contractual term. Service and maintenance contracts in the Large Scale & Project Solutions segment are paid beforehand over shorter periods, generally for a period of 12 months. Over this period, they are recognized in revenue in line with the passage of time. There were no significant changes in the balances of assets and contractual obligations as defined in IFRS 15.118 in 2019. Depending on the region and product group, SMA products are sold with a factory warranty of 2, 5, 10 or 25 years. The factory warranty includes the statutory warranty and grants the right to an exchange or replacement in the case of defects that are not caused by external factors.

There are no general rights of return for purchased products. Transaction prices are not adjusted retroactively.

Customer bonuses in the Home Solutions segment are reported as contract liabilities. The reported sales revenue and impairment on receivables relate exclusively to items from contracts with customers as defined in IFRS 15.

Contract assets arising from contracts with customers are reported under the balance sheet item "Other financial assets."

In the case of customer contracts under which multiple performance obligations recognized at different points in time are sold for a single transaction price or a discount has to be assigned, there is an allocation of the transaction price. This allocation is based on the ratio between the individual sale prices, which are determined based on historical prices for comparable customers in comparable circumstances. If different options are available, the probability of their being exercised is assessed based on comparable cases. As of December 31, 2019, the total amount of outstanding performance obligations came to €766.2 million (December 31, 2018: €578.0 million). Half of the outstanding performance obligations are attributable to the product and half to the service business. In the product business, revenue will mainly be realized in 2020. Revenue in the service business will be recognized within the next 12 years.

Interest income is recognized when an interest claim has accrued (using the effective interest rate, i. e., the internal rate used to discount estimated future cash inflows over the expected term of the financial instrument to the net book value of the financial asset). Dividend income is recognized when the right to receive payment is established.

Current **tax receivables and tax liabilities** for the ongoing and for previous periods are measured at the amount which is expected to be reimbursed by the tax authority or to be paid to the tax authority. Tax rates and tax laws applicable on the balance sheet date are used to calculate this amount. Income taxes include current and deferred taxes. Current taxes that relate to items stated directly in equity are not recognized in the income statement but rather in the overall result.

Deferred taxes are calculated according to IAS 12 based on the standard international balance-sheet-related liability method. This requires deferred tax items to be recognized for all temporary differences between the tax base of an asset or liability and the carrying amount in the consolidated balance sheet as well as for tax loss carryforwards. However, deferred tax assets are recognized only if there will be sufficient taxable income available in the future.

Deferred taxes are measured using the tax rates that, under current legislation, would apply in the future on the probable date of reversal of the temporary differences. The effects of amendments to tax legislation on deferred tax assets and liabilities are recognized in profit or loss in the period in which the material conditions for such amendments to come into force arise. Deferred tax assets and liabilities are not discounted according to the regulations of IAS 12. Deferred tax assets and deferred tax liabilities are offset at the same maturity, provided that they relate to the same entity.

2.3. SIGNIFICANT JUDGEMENTS, ESTIMATES AND ASSUMPTIONS

Preparation of the Consolidated Financial Statements requires the Company management to make judgements, estimates and assumptions that affect the amounts of revenues and expenses, assets and liabilities reported on the reporting date as well as the disclosure of contingent liabilities. Uncertainty related to these assumptions and estimates may lead to results that require material adjustments to the book values of the relevant assets or liabilities in the future. When applying the accounting and valuation policies, the Company management made the judgements outlined below, which had a significant effect on the amounts recognized in the Consolidated Financial Statements.

The key assumptions concerning the future and other key sources of estimation uncertainty on the reporting date associated with a significant risk of causing a material adjustment to the book values of assets and liabilities during the next fiscal year are explained below:

Development costs are capitalized when all required conditions are given. Initial capitalization of costs is based on an estimate by the Company management that a project's technical and economic feasibility has been proven. This is normally the case when a development project has reached a specific milestone or a specific quality gate in the development process. When determining the amounts to be capitalized, the Company management makes further valuation assumptions regarding the amount of expected future cash flows from assets, the discounting rates to be applied and the period of inflow of expected future cash flows generated by assets. With this in mind, development costs of €10.9 million (2018: €18.8 million) were capitalized in the 2019 fiscal year. Research and development expenses of €52.2 million (2018: €49.0 million) were incurred.

In addition to individual circumstances, **provisions** for general warranty risks are also taken into account when setting aside provisions for warranty obligations. In the case of warranty risks, an obligation of five or ten years is generally adopted as a base. The expected warranty expenditure is based on historical values in previous fiscal years. Expenses are forecast based on historical values. The expenses are allocated to forecast undesirable developments. The undesirable developments are based on historical values of the different product groups. This provides a forecast for the future development of Group-wide warranty costs. Individual facts are recognized separately if they are not part of the general warranty provisions. This may be the case if they are to be assessed separately on the basis of their significance, or if they represent a special circumstance that has not yet been reflected in historical values. The value of the provision for individual cases and general warranty risks amounted to €139 million as of December 31, 2019 (December 31, 2018: €130 million). More information is provided in section "19. Provisions".

Sales from long-standing service and maintenance contracts and extended warranties are collected over the contract term as sales because a linear progression of warranty costs is adopted as the best possible estimation method.

On each balance sheet date, the Group examines whether there are indicators for an impairment of non-financial assets. Estimating the value in use requires the Company management to make an estimate of the expected future cash flows from the asset or the cash-generating unit and to choose a suitable discount rate. The discounted cash flows are then used to determine the present value of the asset or cash-generating unit. No discretionary impairments were recognized on non-financial assets in 2019.

Further estimates arose from the valuation of the earn out provision – see further explanations under 24. Additional Disclosures Relating to Financial Instruments.

Deferred tax assets are recognized for all unused tax loss carryforwards to the extent that it is probable that there will be sufficient taxable profit to enable the loss carryforwards to actually be used. Determining the amount of deferred tax assets requires the Company management to use significant discretion regarding the expected time of accrual and the amount of taxable income in the future as well as regarding future tax planning strategies. In contrast to the previous year, deferred tax assets on loss carryforwards amounting to €14.0 million were recognized in the fiscal year on the basis of the current tax planning (2018: €0 million).

A significant portion of the reported assets is based on planning assumptions in the detailed three-year plan developed by the Managing Board and approved by the Supervisory Board. Significant assumptions regarding the sales performance and cost reduction and the development of different markets are therefore of considerable significance to the amount of assets

3. Segment Reporting

The segments of the SMA Group are described in the organizational and reporting structure on page 28 as well as individually explained in Results of Operations in the Management Report on page 47 et seq. SMA's segment structure has changed in comparison with the 2018 fiscal year.

The Residential, Commercial and Utility segments were renamed Home Solutions, Business Solutions and Large Scale & Project Solutions. The Storage and Digital Energy segments are no longer managed separately, but instead are integrated into the three segments. The allocation was based on the product portfolio. The SMA Group operates under a compact and functional organization. The previous year's figures were adjusted.

The investment approach of Tigo Energy, Inc. is not assigned to a segment because the earnings effects are allocated to the financial result.

Segment	Activities
Home Solutions	In the **Home Solutions segment**, SMA caters to global markets for small PV systems with and without connection to a smart home solution. The portfolio comprises single- and three-phase string inverters of the Sunny Boy and Sunny Tripower product families in the lower output range of up to 12 kW, integrated services, energy management solutions, storage systems of the Sunny Island and Sunny Boy Storage product families, communication products and accessories. SMA's Home Solutions segment also offers services, such as extended warranties, spare parts and modernization of PV systems (Repowering), to enhance performance as well as digital energy services.
Business Solutions	In the **Business Solutions segment**, the focus is on global markets for medium-sized PV systems with and without an energy management solution. The product portfolio comprises the three-phase inverters of the product families Sunny Tripower with outputs of more than 12 kW and Sunny Highpower. Storage solutions and holistic energy management solutions for medium-sized PV systems based on the ennexOS platform, medium-voltage technology and other accessories round off the offering in this segment. In addition, SMA offers services up to and including system modernization and operational management of commercial PV systems (O&M business) as well as digital services.
Large Scale & Project Solutions	The **Large Scale & Project Solutions segment** focuses on international PV power plant markets with its powerful string inverters in the Sunny Highpower product family, the central inverters in the Sunny Central product family as well as the battery inverters in the Sunny Central Storage product family. The outputs of inverters in this segment range from 150 kW to the megawatts. In addition, the SMA portfolio of this segment includes complete solutions comprising central inverters with their grid service and monitoring functions as well as all medium- and high-voltage technology and accessories. The portfolio is supplemented by services, such as for the modernization and functional enhancement of PV power plants (Repowering), and operation and maintenance services (O&M business).

The operating result of the segments is monitored separately by the Managing Board to make decisions on the allocation of resources and to determine the profitability of the segments. Group financing, currency and interest rate hedging and the income tax burden are controlled at the Group level and are therefore not allocated to the individual operating segments.

Regarding information on geographical segments, sales are assigned to countries using the destination principle. The Company refrains from presenting non-current assets or other items such as the breakdown of sales deductions per segment, as these are not included in monthly reports and the costs of producing this information would be excessively high.

The Group measures the performance of its segments through a measurement of segment profit or loss, which is referred to as EBIT in the internal management and reporting system. This measurement comprises gross profit, selling and general administrative expenses, research and non-capitalized development costs as well as other operating income (balance of other operating income and expenses).

Segment assets comprise the intangible assets attributed to each segment and its fixed assets, inventories and trade receivables. Segment liabilities include trade payables that are directly attributable to the relevant segments. Internal management reporting is in line with the accounting policies of external reporting.

The transfer prices between the business segments are determined using management prices based on usual arm's length market conditions. Income from external third parties is reported using the same valuation parameters as shown in the income statement.

No asymmetrical allocations are made to individual segments.

Financial Ratios by Segments and Regions

in € million	External product sales 2019	External product sales 2018	External services sales 2019	External services sales 2018	Total sales 2019	Total sales 2018	Operating profit (EBIT) 2019	Operating profit (EBIT) 2018
Segments [1]								
Home Solutions	227.2	171.1	12.6	16.7	239.8	187.8	1.6	–19.6
Business Solutions	293.0	282.0	3.5	7.3	296.5	289.3	–7.2	–9.2
Large Scale & Project Solutions	328.6	248.7	50.0	35.1	378.6	283.8	–4.8	–68.4
Total segments	848.8	701.8	66.1	59.1	914.9	760.9	–10.4	–97.2
Reconciliation	0.1	0.0	0.1	0.0	0.2	0.0	–1.4	–54.5
Continuing operations	**848.9**	**701.8**	**66.2**	**59.1**	**915.1**	**760.9**	**–11.8**	**–151.7**

in € million	Segment assets 2019	Segment assets 2018	Segment liabilities 2019	Segment liabilities 2018	Capital expenditure 2019	Capital expenditure 2018	Depreciation and amortization 2019	Depreciation and amortization 2018
Segments [1]								
Home Solutions	66.3	65.7	15.0	1.8	2.9	4.1	3.5	7.1
Business Solutions	87.8	84.0	12.1	10.4	5.2	14.8	3.6	22.2
Large Scale & Project Solutions	248.8	151.5	21.5	8.8	7.4	2.6	5.4	24.9
Total segments	402.9	301.2	48.6	21.0	15.5	21.5	12.5	54.2
Reconciliation	703.9	656.1	641.8	512.5	12.1	18.8	33.5	28.4
Continuing operations	**1,106.8**	**957.3**	**690.4**	**533.5**	**27.6**	**40.3**	**46.0**	**82.6**

[1] Due to the reclassification of the Storage segment into the Home, Business and Large Scale & Project Solutions segments, the former Storage and Digital Energy segments are no longer valid. The previous year's figures were adjusted.

Sales by regions (target market of the product)

in € million	2019	2018
EMEA	474.0	370.7
Americas	219.4	148.8
APAC	244.4	257.6
Sales deductions	–22.7	–16.2
External sales	**915.1**	**760.9**
thereof Germany	223.9	150.6

Reconciliation of the segment figures to the correlating figures in the Financial Statements is as follows:

in € million	2019	2018
Total segment earnings (EBIT)	–10.4	–97.2
Eliminations	–1.4	–54.5
Consolidated EBIT	–11.8	–151.7
Financial result	1.0	–14.7
Earnings before income taxes	**–10.8**	**–166.4**
Total segment assets	402.9	301.2
Other central items and eliminations	117.5	99.6
Centrally administered land and buildings	164.6	152.8
Cash and long-term time deposits	286.8	320.2
Financial instruments not designated and other assets	72.3	30.9
Deferred tax assets and income tax receivables	62.7	52.6
Group assets	**1,106.8**	**957.3**
Total segment liabilities	48.6	21.0
Other central items and eliminations	217.3	103.8
Financial instruments not designated, liabilities and provisions	421.5	404.6
Income tax liabilities and deferred tax assets	3.0	4.1
Group liabilities	**690.4**	**533.5**

Circumstances are shown in the reconciliation, which by definition are not part of the segments. In particular, this comprises unallocated parts of Group head offices, including centrally managed cash and cash equivalents, financial instruments, financial liabilities and buildings, the expenses of which are allocated to the segments. The reconciliation in the previous year mainly included impairments from the valuation of the held-for-sale subgroup China (€25.0 million), expenses for severance payments (€8.6 million) and impairments on trade receivables (€12.3 million, previous year: €1.4 million). The other amounts relate to currency translation effects that are not allocated to individual segments. Business relationships between the segments are eliminated in the reconciliation.

In 2019, as in the previous year, no customer accounted for a share of more than 10% of Group sales.

The additions resulting from the first-time application of IFRS 16 are recognized in the central corporate functions.

NOTES TO THE INCOME STATEMENT SMA GROUP

4. Other Operating Income and Expenses

Other operating income includes a positive effect of €3.8 million from remeasurement of the back payment agreement in the form of an earn out to the buyer of the Chinese subsidiaries. This item also includes government grants of €1.7 million (2018: €1.8 million) and income from foreign currency translation of €16.7 million (2018: €14.1 million).

Other operating expenses include expenses from foreign currency translation in the amount of €22.8 million (2018: €21.3 million).

In the previous year, other operating expenses included impairment pursuant to IFRS 5 in conjunction with IFRS 36 on assets of the disposal group of the subgroup SMA New Energy Technology (Jiangsu) Co., Ltd. and SMA New Energy Technology (Shanghai) Co., Ltd. in the amount of €25.0 million. The impairments were not allocated to any segment. In addition, expenses for severance payments amounting to €8.6 million were recorded in the previous year.

5. Employee and Temporary Employee Benefits

in €'000	2019	2018
Wages and salaries	169,976	189,328
Expenses for temporary employees	13,497	13,799
Social security contribution and welfare payments	27,532	29,083
	211,005	**232,210**

Wages and salaries include expenses of €0.2 million in connection with bike leasing contracts, attributable to employee benefits.

Voluntary contributions to private pensions amounted to €1.1 million in 2019 (2018: €1.2 million).

The average number of employees in the Group amounted to:

	2019	2018
Research and Development	569	635
Production and Sales	1,601	1,879
Distribution and Administration	766	770
	2,936	3,284
Apprentices and interns	96	112
Temporary employees	364	526
	3,396	**3,922**

6. Financial Result

in €'000	2019	2018
Loss from at equity-accounted investments	**0**	**13,134**
Interest income	1,418	2,023
Other financial income	702	1
Income from interest derivatives	74	101
Financial income	**2,194**	**2,125**
Interest expenses	1,174	1,989
Other financial expenses	0	1,630
Interest portion from valuation of provisions	25	43
Financial expenses	**1,199**	**3,662**
Financial result	**995**	**–14,671**

The previous year's loss from equity-accounted investments results from the pro rata annual loss and an impairment loss of €11.3 million for Tigo Energy, Inc.; see information under section 11. Investments in Associates.

Interest expenses from leases amounted to €0.3 million as of December 31, 2019.

7. Income Taxes

Actual income taxes (paid or payable) and deferred taxes are recognized as income taxes. They break down as follows:

in €'000	2019	2018
Actual income taxes		
for current fiscal years	3,776	5,572
for previous years	393	–829
Deferred taxes		
from temporary differences	7,655	–8,881
from tax loss carryforwards	–13,974	13,244
Income taxes	**–2,150**	**9,106**

Income taxes comprise trade tax, corporation tax and the solidarity surcharge in Germany as well as comparable income taxes abroad. The expected income tax expense that would result from applying the tax rate of the parent company SMA Solar Technology AG to the IFRS net income before taxes can be reconciled to income taxes shown in the Income statement as follows:

in €'000	2019	2018
Net income before income taxes	**–10,776**	**–166,380**
Tax rate of the parent company	33.0%	30.4%
Expected income tax expenses	**–3,559**	**–50,586**
Differences related to differing tax rates domestic and abroad	–982	–2,527
Effects due to changes in tax rates	–228	92
Tax-free income	0	0
Non-deductible expenses	96	23,036
Tax effects from loss carryforwards	1,435	39,139
Taxes relating to previous years	393	–829
Other tax effects	695	781
Actual income taxes (according to Income statement)	**–2,150**	**9,106**
Effective Group tax rate	20.0%	–5.5%

The corporation tax rate of 15% and the solidarity surcharge rate of 5.5% are to be applied to corporations based in Germany. In addition, domestic companies and partnerships are subject to trade tax, which is influenced by assessment rates specific to the particular municipality. The average effective Group tax rate was affected, in particular, by the decrease in deferred taxes on loss carryforwards associated with corporate planning. The average trade tax rate to be applied at the level of the parent company was 17.2% (2018: 14.6%). The overall tax rate of the Group's parent company was thus 33.0% (2018: 30.4%).

The effects of deviations between the relevant tax rates at the level of the domestic and foreign Group companies and the overall tax rate at the level of the Group's parent company are shown in the reconciliation statement under deviations related to tax rate in Germany and abroad.

No deferred taxes were formed for the undistributed profits of foreign subsidiaries, including accrued currency translation differences because this income and these translation differences are either not subject to corresponding taxation or will not be distributed in the foreseeable future.

As of December 31, 2019, there were current income tax receivables amounting to €23.6 million (2018: €20.6 million) and current income tax liabilities of €3.1 million (2018: €4.1 million). Tax liabilities are the result of global business activity and a share of foreign sales of 76.1%. As a result, SMA is subject to various tax laws and regulations in other countries. Tax changes in Germany and abroad could affect the tax positions of SMA. In addition to changes of legal regulations, the assessment and interpretation of complex tax regulations, for example the transfer prices, can influence our earnings, financial and asset position. We work closely with tax consulting companies in the individual countries to identify risks, perform regular audits and take appropriate precautions.

No deferred tax assets or deferred tax liabilities were recorded directly in item "Other comprehensive income" in 2019 (2018: €0.0 million). Deferred tax assets and liabilities were distributed across the following items:

	2019/12/31		2018/12/31	
in €'000	Deferred tax assets	Deferred tax liability	Deferred tax assets	Deferred tax liability
Intangible assets	233	–7,124	246	–8,913
Fixed assets	5,679	–1,900	7,245	0
Inventories	5,619	–625	10,108	–83
Other assets	2,276	–744	2,876	0
Other provisions	4,270	–2,110	8,923	–1,300
Other liabilities	20,062	–528	13,554	–738
Gross amount	38,139	–13,031	42,952	–11,034
Loss carryforwards	13,974	0	0	0
Balancing	–13,022	13,022	–11,024	11,024
	39,091	**–9**	**31,928**	**–10**

The Company has examined the right to a possible offsetting of temporary differences by increasing the validity of the financial statements and the better comparability with the financial statements of other companies. There were no results-effective effects.

The deferred tax assets are considered realizable as far as sufficiently high future taxable income is to be expected. This was based on a planning horizon of three years. Based on the current corporate planning in the current fiscal year, deferred tax assets for loss carryforwards of €14.0 million (2018: €0.0 million) were recognized in the current fiscal year.

Of the deferred taxes for loss carryforwards, €7.7 million (2018: €0.0 million) is attributable to domestic loss carryforwards and €6.3 million (2018: €0.0 million) to foreign loss carryforwards.

No deferred taxes were recognized on tax loss carryforwards or temporary differences of €297.6 million in the current fiscal year, as it can be assumed that the tax loss carryforwards and temporary differences will probably not be able to be utilized within the framework of tax-related earnings planning.

The majority of the non-usable loss carryforwards are attributable to SMA Solar Technology AG. As of December 31, 2019, corporation tax loss carryforwards in the amount of €321.3 million (2018: €285.4 million) as well as trade tax loss carryforwards of €349.4 million (2018: €314.0 million) existed. These loss carryforwards have no time limit. In the case of foreign companies, the main loss carryforwards do not expire before 2030. Of this amount, €5.6 million will be usable in the 2021 fiscal year and €0.7 million in the following nine fiscal years.

8. Earnings per Share

Earnings per share are calculated by dividing the net income attributable to the shareholders by the weighted average of ordinary shares in circulation during the period. The number of shares in the 2019 fiscal year amounted to 34.7 million, as in the previous year.

The net income attributable to the shareholders is the net income after tax. As there were no shares held by the Company on the reporting date or any other special cases, the number of ordinary shares issued equated to the number of shares in circulation.

The calculation of earnings in relation to the weighted average number of shares in accordance with IAS 33 resulted in earnings of –€0.25 per share for the period from January 1, 2019 to December 31, 2019, with an average weighted number of shares of 34.7 million and earnings of –€5.06 per share for the period from January 1, 2018 to December 31, 2018, with an average weighted number of shares of 34.7 million.

There were no options or conversion options as of the reporting date. Therefore, there were no diluting effects and the diluted and basic earnings per share were the same.

NOTES TO THE BALANCE SHEET SMA GROUP

9. Intangible Assets

Intangible assets evolved in the fiscal years under review as follows:

in €'000	Goodwill	Development projects	Patents/ licenses/rights	Software	Intangible assets in progress	Total
Acquisition costs						
2019/01/01	13,660	192,328	5,961	48,799	17,997	278,745
Changes in currency	0	74	1	6	–2	79
Additions	0	5,626	10	385	6,080	12,101
Disposals (–)	0	0	0	62	0	62
Transfers	0	13,896	118	1,465	–15,479	0
2019/12/31	13,660	211,924	6,090	50,593	8,596	290,863
Depreciation and amortization						
2019/01/01	13,178	175,450	2,288	46,601	4,877	242,394
Changes in currency	0	74	0	4	0	78
Additions	0	9,029	405	1,793	0	11,227
Disposals (–)	0	0	0	63	0	63
Transfers	0	2,184	0	0	–2,184	0
2019/12/31	13,178	186,737	2,693	48,335	2,693	253,636
Net value 2018/12/31	**482**	**16,878**	**3,673**	**2,198**	**13,120**	**36,351**
Net value 2019/12/31	**482**	**25,187**	**3,397**	**2,258**	**5,903**	**37,227**
Acquisition costs						
2018/01/01	13,660	173,347	20,865	48,606	17,773	274,251
Changes in currency	0	–244	–117	–22	0	–383
Additions	0	7,624	108	120	12,239	20,091
Disposals (–)	0	0	6	42	0	48
Transfers	0	11,601	8	568	–12,015	162
Classified as "held for sale"	0	0	14,897	431	0	15,328
2018/12/31	13,660	192,328	5,961	48,799	17,997	278,745
Depreciation and amortization						
2018/01/01	12,862	128,052	15,677	45,022	1,707	203,320
Changes in currency	0	–245	–104	–16	1	–364
Additions	316	47,643	524	1,864	3,169	53,516
Disposals (–)	0	0	5	41	0	46
Transfers	0	0	–1	1	0	0
Classified as "held for sale"	0	0	–13,803	–229	0	–14,032
2018/12/31	13,178	175,450	2,288	46,601	4,877	242,394
Net value 2017/12/31	**798**	**45,295**	**5,188**	**3,584**	**16,066**	**70,931**
Net value 2018/12/31	**482**	**16,878**	**3,673**	**2,198**	**13,120**	**36,351**

€5.3 million (2018: €11.2 million) of the additions of intangible assets in progress included development projects.

In relation to development projects, amortization of intangible assets is posted in the income statement under cost of sales. Amortization of software is allocated to the functional areas dependent on use.

The goodwill is assigned to cash-generating units on the basis of the organizational structure. The goodwill resulting from the asset deal with Phoenix is assigned to the Large Scale & Project Solutions segment (€0.2 million), while that of SMA Magnetics (€0.3 million) is assigned to the Home Solutions segment.

The existing goodwill was confirmed in the impairment reviews at the end of the fiscal year. The progression of cash flow was extrapolated for the period after the third year on the basis of a constant annual growth rate of 1.0% (2018: 1.0%). This was conservatively derived from the average long-term growth rate on the photovoltaic market. The after-tax interest rates applied ranged between 7.8% and 11.4% (pretax interest rates: 11.2% to 14.0%). The Managing Board believes that no reasonably conceivable change in basic assumptions on the basis of which the recoverable amount is determined would result in the cumulative book value of the cash-generating unit exceeding its cumulative recoverable amount.

10. Fixed Assets

Fixed assets evolved as follows in the 2019 fiscal year:

in €'000	Land and buildings, incl. buildings on third-party property	Rights of use for buildings	Technical equipment/ machinery	Other equipment, plant and office equipment	Rights of use for vehicle fleet	Prepayments and assets under construction	Total
Acquisition costs							
2019/01/01	226,020	0	71,824	186,988	0	5,644	490,476
Changes in currency	52	63	117	128	11	39	410
Additions resulting from the first-time application of IFRS 16 as of January 1	0	21,576	0	0	1,946	0	23,522
Additions	54	2,080	255	915	1,227	14,257	18,788
Disposals (–)	92	117	4,027	16,126	132	0	20,494
Transfers	1,844	0	2,060	10,112	206	–14,222	0
Reclassified from "investment property"	1,198	0	0	0	0	0	1,198
2019/12/31	229,076	23,602	70,229	182,017	3,258	5,718	513,900
Depreciation and amortization							
2019/01/01	86,288	0	44,821	160,520	0	0	291,629
Changes in currency	42	13	79	4	4	0	142
Additions	9,977	6,219	4,387	11,599	1,432	0	33,614
Disposals (–)	92	117	3,281	16,035	132	0	19,657
Transfers	0	0	17	–96	79	0	0
2019/12/31	96,215	6,115	46,023	155,992	1,383	0	305,728
Net value 2018/12/31	**139,732**	**0**	**27,003**	**26,467**	**0**	**5,681**	**198,883**
Net value 2019/12/31	**132,861**	**17,487**	**24,206**	**26,025**	**1,875**	**5,718**	**208,172**

Fixed assets of €13.7 million (2018: €16.3 million) were negatively affected by mortgage liens used to secure financial liabilities.

Amounts recognized in the income statement as part of accounting in accordance with IFRS 16:

in €'000	2019
Expenses from short-term leases	150
Expenses from leases with low-value assets	91

Expenses from short-term leases and from leases with low-value assets correspond to the cash outflows. The "total cash flow" from leases amounts to €8.2 million.

Fixed assets evolved as follows in the 2018 fiscal year:

in €'000	Land and buildings, incl. buildings on third-party property	Rights of use for buildings	Technical equipment/ machinery	Other equipment, plant and office equipment	Rights of use for vehicle fleet	Prepayments and assets under construction	Total
Acquisition costs							
2018/01/01	239,246	0	75,963	190,932	0	2,398	508,539
Changes in currency	53	0	–84	–102	0	–14	–147
Additions	69	0	500	928	0	18,737	20,234
Disposals (–)	11,033	0	1,662	12,175	0	0	24,870
Transfers	2,866	0	926	11,512	0	–15,436	–132
Classified as "held for sale"	5,181	0	3,819	4,107	0	41	13,148
2018/12/31	226,020	0	71,824	186,988	0	5,644	490,476
Depreciation and amortization							
2018/01/01	88,224	0	44,592	163,171	0	0	295,987
Changes in currency	86	0	–69	–20	0	0	–3
Additions	11,161	0	5,018	12,178	0	0	28,357
Disposals (–)	10,741	0	1,119	11,976	0	37	23,873
Transfers	0	0	–472	472	0	0	0
Classified as "held for sale"	–2,442	0	–3,129	–3,305	0	0	–8,876
2018/12/31	86,288	0	44,821	160,520	0	–37	291,592
Net value 2017/12/31	**151,022**	**0**	**31,371**	**27,761**	**0**	**2,398**	**212,552**
Net value 2018/12/31	**139,732**	**0**	**27,003**	**26,467**	**0**	**5,681**	**198,883**

11. Investments in Associates

SMA has a 28.27% stake in Tigo Energy, Inc. Tigo Energy, Inc. is a specialist in the field of smart module technology. SMA uses the technology in particular with the products of the Business Solutions segment. The associate is included in the Consolidated Financial Statements according to the equity method. The Group regularly determines whether there are objective indications of impairment for its investments in the associate. During the previous fiscal year, it became clear that the company still would not leave the loss-making zone due to the poor medium-term chances of success in the highly competitive market for smart module technology. If there are objective indications that the recoverable amount is lower than the carrying amount, the difference between the recoverable amount of the investment in the associate and the carrying amount of the "share in the earnings of associates" is recognized in profit or loss as an impairment loss. The value in use is calculated using a DCF method that includes the future sales and earnings forecasts. The value in use measured in this way amounted to €0.0 million in the previous fiscal year, and the book value of the investment was therefore fully written off. Due to the continuing loss situation of the company, no write-up of the at-equity book value was made in the current fiscal year.

in €'000	2019	2018
Current assets	6,499	15,621
Non-current assets	1,433	1,608
Current liabilities	10,691	13,329
Non-current liabilities	8,626	8,743
Sales	22,193	22,516
Annual earnings	-3,418	-5,391
Other comprehensive income	-744	-1,107
Overall result	-4,161	-6,498

Tax income is negligible as a result of the loss situation. The book value of the associate was written off as of the reporting date.

In the current reporting year, a profit share of €1.0 million is attributable to SMA. This corresponds to the cumulative negative result of the at-equity investment.

The reconciliation of the presented financial information to the book value is as follows:

in €'000	2019/12/31	2018/12/31
Net assets Tigo	-11,385	-4,843
Holdings (%)	28.27	28.27
Group share in the net assets	-3,219	-1,369
Goodwill	0	12,313
Other adjustments	0	-10,944
Book value of the Group investment	**0**	**0**

The at-equity investment in elexon GmbH does not yet contain any material assets and liabilities due to the fact that operating activities have not yet fully commenced.

12. Investment Property

in €'000	2019/12/31	2018/12/31
Level at the beginning of the year	**16,212**	**16,979**
Transfers from fixed assets (net book value)	-1,199	-30
Depreciation and amortization (-)	739	737
Level at the end of the reporting period	**14,274**	**16,212**

Income and expenses included in the profit and loss account

in €'000	2019	2018
Rental income	1,648	1,748
Attributable expenses	474	627

In the 2016 fiscal year, SMA began to rent two buildings that it had previously been using itself. The investment properties are accounted for using the cost model, whereby the properties are measured according to IAS 16, i. e., at historical cost less depreciation plus impairment and reversals of impairment. The buildings are depreciated on a straight-line basis over their economic useful life. The underlying useful life of the two buildings is 33 years. Attributable expenses must be assigned in full to the investment properties responsible for generating the rental income.

The tenancy agreements for the buildings do not contain any conditional rental payments, but they each offer an option to extend, which can be exercised by the tenant. The non-cancelable rental periods are five years and six years. The distribution of rental income is shown in the table below.

in € million	< 1 year	> 1 – 5 years	> 5 years	Total
Rental income	1.8	4.1	1.3	7.2

13. Inventories

SMA Group inventories are made up as follows:

in €'000	2019/12/31	2018/12/31
Raw materials, consumables and supplies	92,951	71,191
Unfinished goods, work in progress	12,241	13,943
Finished goods and goods for resale	152,341	104,913
Prepayments	22,350	3,748
	279,883	**193,795**

Inventories are measured at the lower value of the cost of acquisition or sales and net realizable value. Inventories increased due to customer project delays and in order to support delivery capacity. The balance of impairment accounts amounted to €29.1 million as of the end of the fiscal year (2018: €45.2 million) and relates entirely to central corporate functions. The addition to impairment on inventories, included under expenses as cost of sales, amounted to €5.8 million (2018: €29.9 million).

14. Trade Receivables and Other Receivables

Trade receivables are non-interest-bearing and, with the exception of the Chinese market, usually due between 30 and 90 days. No significant extensions to payment terms were granted in the reporting period. It is possible that different payment terms are granted in project business.

The other receivables mainly comprise prepaid expenses and other receivables due from tax authorities, which were not overdue on the reporting date.

The age structure of trade receivables was as follows on the reporting dates:

			Not impaired portion of overdue receivables			
in €'000	Book value	Neither overdue nor impaired	< 30 days	30 to 60 days	60 to 90 days	> 90 days
2019	145,530	99,833	21,767	18,888	726	4,316
2018	108,375	83,291	14,394	2,470	2,587	5,633

As of December 31, 2019, value adjustments with a nominal value of €23.7 million (2018: €25.7 million) were carried out on aging trade receivables. No value adjustments were made regarding overdue receivables as of December 31, 2019, this amounted to €45.7 million (December 31, 2018: €25.1 million) as there were no significant changes in the credit rating of customers. Settlement of the receivables is expected. The credit rating of customers with whom trade receivables exist, which are neither overdue nor impaired, is considered to be good.

The value adjustment account of trade receivables evolved as follows:

in €'000	Specific valuation allowance	Value correction on portfolio basis	Total
As of 2018/01/01	23,077	264	23,341
Additions with effect on the expenses (net)	12,268	205	12,473
Usage	-1,693	0	-1,693
Release	-467	-88	-555
Exchange rate difference	-55	1	-54
Classified as "held for sale"	**-7,463**	**0**	**-7,463**
As of 2018/12/31	25,667	382	26,049
Additions with effect on the expenses (net)	2,539	203	2,742
Usage	-3,405	0	-3,405
Release	-1,135	-69	-1,204
Exchange rate difference	7	5	12
As of 2019/12/31	23,673	521	24,194

With the exception of the past fiscal year, additions recognized as expenses in the past three years were in the low, single-digit millions. There are no indications of a change in the future. Furthermore, no adjustments had to be made for other receivables. With regard to other financial assets, please refer to the information below under note 15. The receivables are adjusted individually based on individual assessments. The maximum default risk equates to the carrying amount shown in the balance sheet.

15. Other Financial Assets Due to Tax Authorities

As of December 31, 2019, other current financial assets included in particular financial assets and time deposits with a term to maturity of over three months and accrued interest totaling €72.1 million (2018: €177.5 million). Receivables from tax authorities from sales tax refund claims of €22.0 million were recognized as of December 31, 2019 (2018: €15.6 million). In addition, free derivatives amounting to €0.9 million are included (2018: 1.3 million).

As of December 31, 2019, there was a shift within the “Other Financial Assets” item due to new guarantee agreements.

16. Cash and Cash Equivalents

Cash and cash equivalents comprise cash in hand as well as bank balances, checks, payments in transit and deposits with an original term to maturity of less than three months. Bank balances bear interest at variable interest rates applicable to deposits subject to call.

As of December 31, 2019, the Group had unused credit lines amounting to €84.8 million (2018: €86.3 million), for which all conditions for use had been met.

17. Assets and Asset Groups Held for Sale

The sale of the companies SMA New Energy Technology (Jiangsu) Co., Ltd., SMA New Energy Technology (Yangzhong) Co., Ltd. and SMA New Energy Technology (Shanghai) Co., Ltd. was completed in the first quarter of the current fiscal year. The companies Australia Zeversolar New Energy Pty. Ltd. and Zeversolar GmbH from the Chinese subgroup remained part of the Group. The sold companies related to Chinese locations for production, commissioned development work and purchasing activities. The sale took place for a purchase price of RMB 1.0 million (€0.1 million). In total, current assets of €50.9 million, non-current assets of €17.0 million, current liabilities of €35.4 million and non-current liabilities of €5.7 million were deconsolidated in connection with the sale. In the 2018 fiscal year, impairment totaling €25.0 million had already been recognized on the companies’ assets.

in €’000	2019/12/31	2018/12/31
Land classified as held for sale	500	500
Assets attributable to the China disposal group	0	31,452
	500	**31,952**
Liabilities attributable to the China disposal group	0	31,325

In the current fiscal year, land in the amount of €0.5 million was still held for sale.

18. Shareholders’ Equity

The change in equity, including effects not shown in the income statement, is presented in the statement of changes in equity. Significant impact was caused by the net income and disposals in the scope of consolidation as well as effects from foreign exchange gains/losses.

The capital reserve contains agio amounts from the issuance of SMA Solar Technology AG shares.

The other retained earnings contain mainly the retained profit and the statutory reserve. In addition, retained earnings include other equity components such as the difference between foreign currency translation.

Shares in SMA AG are no-par value bearer shares, which were fully paid in.

The Articles of Incorporation include the provisions on the powers of the Managing Board regarding Authorized Capital II. The Managing Board, after obtaining the consent of the Supervisory Board, is entitled to increase the share capital on one or several occasions by up to a total of €3.4 million by issuing new bearer shares in return for cash contributions and/or contributions in kind in the period up to May 23, 2023. The Managing Board, with the consent of the Supervisory Board, is entitled to cancel the statutory subscription rights of shareholders: (a) in the case of capital increases in return for contributions in kind for the acquisition of or investment in companies, parts of companies or investments in companies, (b) for the purpose of issuing shares to employees of the Company and companies affiliated with the Company, (c) to exclude fractions and (d) in the case of capital increases in return for cash contributions if the issue amount of the new shares does not fall significantly below the stock exchange price of shares of the same class and terms that are already listed at the time the Managing Board sets the final issue amount, and the total pro rata amount of the issued capital attributable to the new shares in respect of which the subscription right is excluded may not exceed 10% of the issued capital available at the time the new shares are issued.

Furthermore, following a resolution adopted by the Annual General Meeting on May 31, 2016, the Managing Board, in the period up to May 30, 2021, is entitled on behalf of the Company to acquire its own shares up to a value of 10% of the existing capital stock at the time the resolution was adopted by the Annual General Meeting, and to dispose of shares acquired in this way with the consent of the Supervisory Board by means other than through the stock exchange, or an offer made to all the shareholders, provided the shares are sold in return for cash at a price that does not fall significantly below the stock exchange price of shares in the Company issued under the same terms or the shares are sold in return for in-kind contributions, or they are offered in return for shares held by persons that either had or have an employment relationship with the Company, or with one of its affiliated companies, or members of bodies in companies that depend on the Company. Furthermore, if the Managing Board sells the Company's own shares by offering them to all the shareholders with the consent of the Supervisory Board, the Managing Board is entitled to exclude the shareholders' right of subscription for fractions. In addition, the Managing Board is entitled to cancel any own shares acquired after obtaining the consent of the Supervisory Board.

The Annual General Meeting of SMA Solar Technology AG held on May 28, 2019, followed the Managing and Supervisory Boards' proposal to distribute no dividend for the 2018 fiscal year (2017: €0.35 per dividend-bearing share).

The objectives of capital management are to maintain SMA's financial substance and ensure necessary flexibility.

The equity ratio is used to measure the financial security of SMA. This is the ratio of equity shown in the consolidated balance sheet to total assets. Accordingly, the financing structure is characterized by a conservative capital structure dominated by internal financing. As of the reporting date, the equity ratio was 37.6% (2018: 42.9%). External financing occurs almost exclusively through liabilities arising from operative business.

19. Provisions

Provisions accounted for all discernible risks from pending transactions and contingent liabilities on the balance sheet dates and broke down as follows:

in €'000	Warranties	Personnel	Other	Total
As of 2019/01/01	**130,433**	**13,032**	**13,560**	**157,025**
Additions	56,621	1,043	3,499	61,163
Usage	34,670	6,280	7,021	47,971
Release	13,878	1,005	2,635	17,518
Compounding	0	25	0	25
Transfers	0	–2,598	2,598	0
Changes in currency	356	4	149	509
As of 2019/12/31	**138,862**	**4,221**	**10,150**	**153,233**
Current in 2019	67,354	1,104	9,488	77,946
Non-current in 2019	71,508	3,117	662	75,287
	138,862	**4,221**	**10,150**	**153,233**
As of 2018/01/01	**136,351**	**5,095**	**14,603**	**156,049**
Additions	66,409	7,774	13,948	88,131
Usage	28,214	696	4,710	33,620
Release	44,744	23	7,033	51,800
Compounding	23	19	2	44
Transfers	1,870	860	–860	1,870
Changes in currency	1,225	3	69	1,297
Classified as "held for sale"	**2,487**	**0**	**2,459**	**4,946**
As of 2018/12/31	**130,433**	**13,032**	**13,560**	**157,025**
Current in 2018	68,200	10,128	13,041	91,369
Non-current in 2018	62,233	2,904	519	65,656
	130,433	**13,032**	**13,560**	**157,025**

The provisions for statutory warranties are attributable to the segments as follows:

in €'000	2019/12/31	2018/12/31
Home Solutions	41,873	32,364
Business Solutions	45,798	34,779
Large Scale & Project Solutions	51,186	53,935
Storage	0	5,965
Other Business	5	3,390
	138,862	**130,433**

Warranty provisions consist of general warranty obligations (periods of between five and ten years) for the various product areas within the Group. In addition, provisions are set aside for individual cases that are expected to be used in the following year.

Personnel provisions mainly include obligations for long-service anniversaries, death benefits and partial retirement benefits. Personnel provisions affect cash in relation to contractual commitments made.

Other provisions include, in particular, restoration obligations, provisions for tax risks, and purchase commitments.

20. Financial Liabilities

in €'000	2019/12/31	2018/12/31
Liabilities due to credit institutions	14,862	17,881
Derivative financial liabilities	280	2,382
of which liabilities from derivatives outside of hedge accounting	280	2,382
Lease liabilities	19,371	152
	34,513	**20,415**

In the 2019 fiscal year, liabilities to credit institutions mainly comprise liabilities for the financing of SMA Immo properties and an SMA AG PV system. They have an average time to maturity of ten years. The changes in liabilities to banks and from leases are fully reflected in the net cash flow from financing activities.

Derivative financial liabilities predominantly include negative market values for currency futures presented in hedge accounting. Liabilities aside from the recognized hedging relationships consist of interest derivatives and currency futures.

The change in net cash flow from financing activities is besides the change in group financing mainly due to the recognition of new leases directly in equity at the time of initial application in the amount of €23.5 million and additions in the current year in the amount of €3.4 million less the repayment of lease liabilities in the amount of €7.6 million.

21. Trade Payables

Trade payables are non-interest bearing and are normally due within 30 to 90 days.

22. Other Financial Liabilities (Current)

in €'000	2019/12/31	2018/12/31
Other financial liabilities (current)	1,241	741
	1,241	**741**
Current	1,241	741
Non-current	0	0
	1,241	**741**

Other financial liabilities include costs for preparing the financial statements, among others.

23. Other Liabilities

Other liabilities [1]

in €'000	2019/12/31	2018/12/31
Contract liabilities	298,014	214,019
Accrual item for extended warranties	172,831	176,732
Liabilities from prepayments received	91,143	13,928
Accruals for service and maintenance contracts	12,564	11,867
Other contract liabilities	21,476	11,492
Liabilities in the Human Resources department	14,121	15,289
Other	11,417	11,006
	323,552	**240,314**
Current	162,995	76,479
Non-current	160,557	163,835
	323,552	**240,314**

1 Other liabilities do not include other financial liabilities.

Contract liabilities (prepayments received) include prepayments and deliveries of goods. The increase is mainly due to prepayments in connection with a major project. Other contract liabilities entail accrual items for extended warranties, service and maintenance contracts, and bonus agreements. Non-current contractual obligations mainly include liabilities from chargeable extended warranties granted for products from the Home Solutions and Business Solutions business units. The fulfillment of the non-current contractual obligations will extend over a period of five to 15 years from the start of the extended warranties. Current contractual obligations mainly include prepayments received, accruals for service and maintenance contracts and bonus agreements.

The current contractual obligations will mostly be fulfilled within the next 12 months. In the fiscal year revenues in the amount of 13.3 million Euro (previous year: 22.6 million Euro) were realized, which were included in the balance of contract liabilities at the beginning of the period.

Liabilities in the Human Resources department contain obligations to employees regarding performance-based bonuses and positive vacation and flextime balances as well as variable salary components and contributions to the workers' compensation association and to social insurance systems. Other miscellaneous liabilities include liabilities to tax authorities amounting to €5.7 million (2018: €6.6 million), which chiefly consist of tax liabilities from payroll accounting, and liabilities from subsidies received in the amount of €0.6 million (2018: €0.7 million), which include taxable government grants from funds of the common-task program "Improvement of the Regional Economic Structure" (EU GA), granted as investment subsidies. The total amount of retransfer of government grants is stated under other operating income.

Liabilities from bonus agreements with customers are also reported.

24. Additional Disclosures Relating to Financial Instruments

in €'000	Assessment category according to IFRS 9	2019/12/31 Book value	2018/12/31 Book value
Cash and cash equivalents	AC	214,793	142,637
Trade receivables	AC	145,530	108,375
Other financial investments	FVOCI	3	2
Other financial assets		**112,292**	**185,379**
of which institutional mutual funds	FVPL	27,010	101,447
of which other (time deposits)	AC	80,590	82,649
of which other securities	FVPL	3,800	0
of which derivatives that do not qualify for hedge accounting	FVPL	892	1,283
Trade payables	AC	174,742	110,851
Financial liabilities		**34,513**	**20,415**
of which liabilities due to credit institutions	AC	14,862	17,881
of which lease liabilities	AC	19,371	152
of which derivatives that do not qualify for hedge accounting	FVPL	280	2,382
Other financial liabilities (current)	AC	**1,241**	**741**
Of which aggregated according to valuation categories in accordance with IFRS 9			
Financial assets measured at amortized cost	AC	440,913	333,661
Financial liabilities measured at amortized cost	AC	190,845	129,473
Financial assets measured at fair value through profit and loss	FVPL	31,702	102,730
Financial liabilities measured at fair value through profit and loss	FVPL	280	2,382
Fair value through other comprehensive income	FVOCI	3	2

The book values represent reasonable approximations of the fair values of the assets and liabilities, which is why a separate indication of the fair amounts is omitted. The fair value of liabilities to credit institutions also differs only insignificantly from the book value.

Cash and cash equivalents, trade receivables and time deposits mainly have short terms to maturity. Accordingly, their book values on the reporting date were almost identical to their fair value.

The fair values of other non-current receivables correspond to the present values of the payments related to the assets while taking into account current interest parameters, which reflect market- and partner-related changes in conditions and expectations (level 2).

Other financial investments relate to investments not included in the scope of consolidation.

Trade payables and other current financial liabilities normally have short terms to maturity. The recognized values are almost identical to the fair values.

Fair values of other non-current financial liabilities are determined by referring to the present values of the payments associated with the debts. For discounting, term-related commercially available interest rates were used (level 2).

For most borrowings, the fair values are not materially different from the book values, as interest payments on these borrowings are either close to current market rates or borrowing is short-term.

Derivative financial instruments are used to hedge against currency risks arising from operative business. These include currency futures and options inside and outside of hedge accounting. In principle, these instruments are only used for hedging purposes. As is the case with all financial instruments, they are recognized at fair value upon initial recognition. The fair values are also relevant for subsequent measurements. The fair value of traded derivative financial instruments is identical to the market value. This value may be positive or negative. The measurement of forward transactions is based on forward contract rates. The parameters that were used in the valuation models are in line with market data.

Due to the earn out provisions granted in connection with the sale of the Chinese SMA New Energy companies and the Zeversolar companies, the item “Other securities” includes the fair value of an additional purchase price in the amount of €3.8 million.

Any change in the fair value of the purchase price claim until the earn out provisions expire in 2029 is generally recognized in the income statement.

The present value of the additional purchase price claim was determined using a discounted cash flow methodology (level 3 of the fair value hierarchy), taking into account the adjusted contractual earn out provisions. Under this arrangement, the additional purchase price claim is calculated as the sum of the contractually guaranteed profit contributions between the actual sale in 2019 and the 2029 fiscal year. The additional purchase price claim is mainly dependent on the operating results of the Chinese subsidiaries as non-observable input factors and the underlying interest rate for calculating the present value. These are derived from the internal planning of the respective companies. A sensitivity analysis shows that a 10% increase in the companies´ earnings before taxes would result in a change in the present value of the additional purchase price claim of around +€400k, and that a 10% reduction in earnings would lead to a change in the present value of around –€400k. A change in the interest rate by +/–100 basis points would also lead to a change in the present value of the purchase price claim in the amount of around +/–€200k.

The following table shows the allocation of our financial assets and liabilities measured at fair values in the balance sheet, using the three levels of the fair value hierarchy:

in €’000

2019	Level 1	Level 2	Level 3	Total
Financial assets, measured at fair value				
Institutional mutual funds	27,010	0	0	27,010
Other securities	0	0	3,800	3,800
Derivative financial instruments	0	892	0	892
Financial liabilities, measured at fair value				
Derivative financial instruments	0	280	0	280

2018	Level 1	Level 2	Level 3	Total
Financial assets, measured at fair value				
Institutional mutual funds	101,447	0	0	101,447
Derivative financial instruments	0	1,283	0	1,283
Financial liabilities, measured at fair value				
Derivative financial instruments	0	2,382	0	2,382

The levels of the fair value hierarchy and their application to our assets and liabilities are described below.

Level 1: Quoted prices for identical assets or liabilities in active markets.

Level 2: Inputs other than quoted prices that are observable directly (e. g., prices) or indirectly (e. g., derived from prices).

Level 3: Inputs that are not based on observable market data for assets and liabilities.

The 2019 net results for financial instruments are as follows:

in €'000	From interest	From subsequent measurement: Currency translation	From subsequent measurement: Value correction	From disposal	Net result
Financial assets measured at amortized cost (AC)	358	1,656	–1,538	–131	345
Financial liabilities measured at amortized cost (AC)	–1,070	0	0	0	–1,070
Financial assets measured at fair value through profit and loss (FVPL)	767	0	–3,182	–886	–3,301
Financial liabilities measured at fair value through profit and loss (FVPL)	–77	0	74	0	–3
Total	**–22**	**1,656**	**–4,646**	**–1,017**	**–4,029**

The 2018 net results for financial instruments are as follows:

in €'000	From interest	From subsequent measurement: Currency translation	From subsequent measurement: Value correction	From disposal	Net result
Financial assets measured at amortized cost (AC)	716	3,603	–11,918	–370	–7,969
Financial liabilities measured at amortized cost (AC)	–804	0	0	0	–804
Financial assets measured at fair value through profit and loss (FVPL)	1,185	0	–6,378	–4,326	–9,519
Financial liabilities measured at fair value through profit and loss (FVPL)	–109	0	101	0	–8
Total	**988**	**3,603**	**–18,195**	**–4,696**	**–18,300**

Interests from financial instruments are shown in the financial result. The SMA Group recognizes other components of the net result in other operating expenses and other operating income.

In detail, the nominal payment obligations of financial liabilities are as follows:

in €'000	Book value	Total cash flows	< 1 year	1 to 3 years	4 to 5 years	> 5 years
2019						
Trade payables	174,742	174,742	174,742	0	0	0
Financial liabilities	34,513	35,888	11,554	10,750	8,794	4,790
of which from liabilities due to credit institutions	14,862	16,237	3,904	6,068	4,122	2,143
of which from lease liabilities	19,371	19,371	7,380	4,672	4,672	2,647
of which from derivatives outside of hedge accounting	280	280 [1]	270	10	0	0
Other financial liabilities (current)	1,241	1,241	1,241	0	0	0
2018						
Trade payables	110,851	110,851	110,851	0	0	0
Financial liabilities	20,415	22,429	6,052	7,446	4,760	4,171
of which from liabilities due to credit institutions	17,881	19,894	3,657	7,306	4,760	4,171
of which from lease liabilities	152	152	66	86	0	0
of which from derivatives outside of hedge accounting	2,382	2,383 [1]	2,329	54	0	0
Other financial liabilities (current)	741	741	741	0	0	0

[1] Contains the net cash flow from forward exchange transactions amounting to €667k, providing a gross fulfillment. Payment obligations amount to €56,258k, payment claims amount to €56,925k. The closing rate was used for the conversion of the foreign currency transactions.

An average interest rate of 3.45% was used to calculate future cash flows from liabilities due to credit institutions.

25. Other Financial Liabilities

At the end of the reporting period, other financial liabilities to third parties under the purchase order commitment for investment orders placed amounted to €5.6 million (2018: €5.2 million). There were financial liabilities for intangible assets amounting to €5.5 million (2018: €8.6 million). The other financial liabilities were within the framework customary for the business.

26. Contingencies

As of December 31, 2019, there were no changes compared to the previous year (€0.05 million).

27. Cash and Cash Equivalents Reconciliation

For the purposes of the Consolidated Statement of Cash Flows, cash and cash equivalents include cash on hand, bank balances and short-term deposits with an original term to maturity of less than three months. Cash and cash equivalents at the end of the fiscal year, as presented in the Consolidated Statement of Cash Flows, can be reconciled to the corresponding items of the Consolidated Balance Sheet as follows:

in €'000	2019	2018
Cash on hand and bank balances	207,654	136,927
Short-term deposits (maturity < 3 months)	7,139	5,710
	214,793	**142,637**

OTHER DISCLOSURES

28. Events After the Balance Sheet Date

There were no events after the balance sheet date.

29. Related Party Disclosures

According to the definition contained in IAS 24, related persons are persons responsible for planning, controlling and monitoring the Company's activities. Related persons include the members of the Managing Board and the Supervisory Board of SMA Solar Technology AG as well as their close relatives. Danfoss A/S and Tigo Energy, Inc. belong to the group of related entities. The investment in elexon GmbH is currently not part of the group of related entities due to its subordinate importance.

Related persons:

On the SMA Solar Technology AG Managing Board, Chief Executive Officer Dr.-Ing. Jürgen Reinert is responsible for Strategy, Sales and Service, Operations and Technology. Ulrich Hadding is in charge of Finance, Human Resources and Legal.

Dr.-Ing. Jürgen Reinert sits on the supervisory board of Danfoss A/S, Denmark, and in the advisory committee of KraftPowercon, Sweden.

In the year under review, the members of the Supervisory Board of SMA Solar Technology AG were as follows:

Shareholder Representatives:
Dr. Erik Ehrentraut, Consultant, Chairman
Kim Fausing, General Manager and CEO Danfoss, Deputy Chairman
Roland Bent, General Manager Phoenix Contact
Peter Drews, Chairman of the Foundation Managing Board
Alexa Hergenröther, General Manager of K+S Kali GmbH
Ilonka Nußbaumer, Senior Vice President, Head of Group HR Danfoss A/S.

Employee Representatives:
Johannes Häde
Yvonne Siebert
Dr. Matthias Victor
Hans-Dieter Werner
Oliver Dietzel, Trade Union Secretary
Heike Haigis, Trade Union Secretary

On June 30, 2019, Reiner Wettlaufer resigned from the Supervisory Board after many years of dedicated service. Ilonka Nußbaumer was newly elected to the Supervisory Board on August 13, 2019.

Remuneration of key management members of the Group, which must be disclosed under IAS 24, includes remuneration of the Managing Board and the Supervisory Board.

The total compensation of the members of the Managing Board amounted to €1.5 million in the year under review (2018: €2.8 million). The non-performance-related portion amounted to €1.5 million (2018: €2.7 million), the performance-related portion to €0.0 million (2018: €0.2 million). The benefits are exclusively short-term benefits.

The total compensation of the members of the Supervisory Board amounted to €0.4 million in the year under review (2018: €0.4 million). Of this amount, €0.3 million (2018: €0.3 million) was attributable to non-performance-related fixed compensation and €0.1 million (2018: €0.1 million) to compensation for committee activities. As in the previous year, no variable compensation is included. Kim Fausing and Ilonka Nußbaumer renounce their claims against society. The union representatives pay their salaries. The compensation for members of the Managing Board and Supervisory Board is presented individually in a separate remuneration report in accordance with the criteria of the Corporate Governance Code. The complete remuneration report is part of the Combined Management Report.

Members of the Supervisory Board hold the following positions in statutory supervisory boards and similar controlling bodies of commercial enterprises:

Roland Bent, member on the boards of four international Phoenix Contact companies: Phoenix Contact (China) Holding Co. Ltd.; Phoenix Contact (Nanjing) R&D and Engineering Center Co. Ltd.; Phoenix Contact Holding Inc., U.S.; and Phoenix Contact Development & Manufacturing Inc., U.S.

Kim Fausing, member of the board of directors at Hilti AG, Liechtenstein.

Related entities:

On May 28, 2014, SMA concluded an agreement regarding a close strategic partnership with Danfoss A/S. As part of this partnership, Danfoss acquired a 20% stake in SMA and therefore also belongs to the group of related entities. SMA entered into a strategic partnership with Danfoss in the areas of purchasing, sales, and research and development. SMA also performs services on behalf of Danfoss. All agreements were concluded under fair market conditions. The business relationships between SMA and Danfoss in the fiscal year are presented in the table below. There is no material collateralization nor are there guarantees. No impairment losses were recognized from transactions with Danfoss.

in € million	2019	2018
Goods acquired by SMA	32.1	35.6
Services acquired by SMA	6.9	7.2
Services sold by SMA	1.0	0.5
Outstanding receivables at the end of the year	1.0	0.1
Outstanding liabilities at the end of the year	6.9	6.2

SMA has a 28.27% stake in Tigo Energy, Inc. SMA entered into a strategic partnership with Tigo Energy, Inc. in the areas of development, sales and service. SMA has a seat on Tigo Energy's board of directors. The business relationships between SMA and Tigo in the fiscal year are presented in the table below.

in € million	2019	2018
Goods acquired by SMA	0.0	7.0
Outstanding liabilities at the end of the year	0.0	0.0

Furthermore, elexon GmbH is recognized as an associate. The company was newly founded in the year under review. It is a joint venture in the field of charging infrastructure facilities, in which the Group holds a 33.34% stake. No significant business transactions occurred in the 2019 fiscal year.

Another related entity is the cdw foundation, which can be traced back to the founders of SMA, with its operating company cdw Stiftung gGmbH. No transactions requiring disclosure under IAS 24 were made with this entity in the reporting period.

30. Objectives and Methods Concerning Financial Risk Management

Financial risk management is integrated into the Group-wide hedging policy. Deliberate treatment of potential risks and sound control as well as successful management of such risks when they occur are supported by an accompanying information and communication policy as well as by further education and training of employees. The principle underlying the Group's hedging policy in the financial field is to protect against significant price, currency and interest risks by means of contracts and hedging transactions to an economically reasonable extent.

The financial instruments of the Group relate primarily to trade receivables and cash resulting directly from operating activities. In addition, there is a particular amount of trade payables that also arise from operating activities. The Group also uses derivative financial instruments as part of exchange and interest rate hedging. The Group's main risks in relation to financial instruments are interest-based cash flow risks as well as liquidity, currency and credit risks. The strategies and procedures for controlling individual types of risks defined in the context of the Group's overall hedging policy are presented below.

INTEREST RATE RISK

Interest rate risks within the SMA Group mainly arise in the case of financial liabilities and non-current portions of certain provisions. Interest on liabilities and provisions is not paid by the contracting party and is therefore discounted at the interest rate usual in the market, which means that there is no separate control of the interest rate risk. The variable interest-bearing portion of existing financial liabilities is secured through an interest rate swap. This ensures that interest rates are hedged in the long term and allows financing costs to be reliably calculated over the contract's term. The following sensitivities can be calculated for the financial instruments held on the balance sheet date:

If the market interest rate had increased by 1.0 percentage point, the impact on the period result would have been neutral (2018: neutral). When calculating sensitivities with regard to a decline in interest rates of 1.0 percentage point, the effect on period earnings would have been neutral (2018: neutral), and the effect on equity would have been neutral as well (December 31, 2018: neutral).

FOREIGN CURRENCY RISK

As a globally active company, the SMA Group is exposed to both transaction-related and translation-related foreign currency risks.

SMA assesses risks from an economical point of view. Using this point of view, foreign currency risks arise in the form of direct transaction risks that derive from any (current or planned) receivable or payable denominated in a foreign currency and the resulting payment flow. The SMA Group's extensive business activity in North America means that foreign currency risks arise to a great extent in USD. In light of the fact that a pro-rata portion of the local added value attributable to the North American companies and supplier contracts based on USD is generated locally and sales in the local currency are balanced by expenditure in the local currency, the operational foreign currency risk in the SMA Group is limited.

Currency risks also arise, in particular, from the sales activity of our Japanese and Australian subsidiaries.

An intra-Group guideline ensures that SMA companies report their foreign currency risks to Corporate Treasury, provided there are no country-specific restrictions in this regard. The remaining Group-wide risk is hedged by Corporate Treasury through the use of currency derivatives concluded externally with banks. Forward exchange transactions are the most commonly used method in this case. The use of options as part of the hedging strategy is also possible.

Translation risks mainly occur when the assets and liabilities of subsidiaries denominated in a foreign currency are converted to the parent company's domestic currency when preparing the Consolidated Financial Statements. Translation risks are not included within the scope of the active control of foreign currency risks.

Items denominated in foreign currencies and the development of the exchange rate of those currencies are monitored continuously and the risks are hedged, provided this is economically reasonable. The risks from hedging transactions in themselves are limited to the possibility that opportunities arising from a better price performance cannot be realized.

To present market risks, IFRS 7 requires sensitivity analyses which show the effects of hypothetical changes in relevant risk variables on earnings and equity. Currency risks are caused by financial instruments that are denominated in a currency other than the functional currency and which are of a monetary nature; differences related to exchange rates from the translation of financial statements into the Group currency are not taken into account. The USD is deemed to be a relevant risk variable. The currency sensitivity analysis is based on original financial instruments in the form of receivables. Through the use of hedging transactions (derivatives), which are designed to hedge the underlying transaction, the opposing effects that accompany changes in the exchange rate of the USD are evened out. Measurement of the hedging transactions concluded for the 2020 fiscal year results in a positive contribution to earnings of €0.7 million from fair value measurement (2018: –€1.0 million).

An increase of 5% in the euro with respect to the USD on December 31, 2019, would have led to a positive change in the currency derivatives of €1.1 million (2018: €4.0 million). A decrease of 5% in the euro on December 31, 2019, would have led to a reduction in the value of the currency derivatives of €1.0 million (2018: –€4.5 million).

An increase of 5% in the euro with respect to the JPY on December 31, 2019, would have led to a positive change in the currency derivatives of €1.0 million (2018: €0.6 million). A decrease of 5% in the euro on December 31, 2019, would have led to a reduction in the value of the currency derivatives of €1.1 million (2018: –€0.7 million).

An increase of 5% in the euro with respect to the AUD, which was included in the hedging strategy for the first time on December 31, 2019, would have led to a positive change in the currency derivatives of €0.7 million. A decrease of 5% in the euro on December 31, 2019, would have led to a reduction in the value of the currency derivatives of €0.8 million.

As of December 31, 2019, the currency hedges related to EUR/USD, EUR/JPY and EUR/AUD.

As of December 31, 2019, there were no currency hedgings that were shown in hedge accounting as in the previous year.

Pursuant to IFRS, currency risks affect monetary financial instruments that are denominated in a foreign currency (i. e., in a currency other than the functional currency). This means that the foreign currency is the relevant risk variable. Translation-related risks are not taken into account. Because the individual Group companies mainly conduct their operative business in their own functional currency, we rate the risk from exchange rate fluctuations resulting from our ongoing business activity as insignificant.

CREDIT RISK

For all deliveries to customers, collateral is requested depending on the volume of the respective transaction and the specific customer and country risk. Data from the customer's previous business relationship, including payment practices and additional credit reports, are also used to avoid non-payment. In addition, the Group performs a customer credit check, which is based on certain financial key ratios. By setting a credit limit in a timely manner or suspending orders, the Group avoids being exposed to a significant risk of non-payment. If possible, the default risk is also limited by commercial credit insurance. The maximum non-payment risk is limited to the book value disclosed in section 14. Trade Receivables and Other Receivables. There are no major concentrations of non-payment risks within the Group.

With respect to all of the Group's other financial assets, such as cash and cash equivalents, available-for-sale financial investments and derivative financial instruments, the maximum credit risk, should the counterparty fail to pay, corresponds to the book value of these instruments. This counterparty default risk is analyzed on a continuous basis and managed by means of corresponding business allocation – also taking into account potential opportunities – with regard to cluster risks and credit risks.

LIQUIDITY RISK

One element of liquidity protection is the credit line of €100 million agreed upon with three domestic banks in 2016. At the end of 2019, only a small portion of the credit line was utilized in the form of guarantee credits.

The Company uses financial planning tools for early detection of future liquidity requirements. According to current planning, it can be assumed that the financial requirements will be covered in a reliably predictable time frame. Insurance contracts are concluded to hedge against the financial consequences of possible liability risks and damage claims, insofar as this is reasonable and possible. The cover provided by such contracts is reviewed and adapted regularly.

CAPITAL MANAGEMENT

The strategic objective of capital management within the SMA Group is to ensure financial flexibility and independence to make rapid use of the opportunities in a photovoltaic market characterized by strong growth. Profitable employment of the capital is measured through regular monitoring of net working capital. Within the SMA Group, net working capital is defined as the sum of inventories and trade receivables less trade payables. To be able to usefully measure relative capital consumption even in the event of strong corporate growth, net working capital is expressed in relation to sales. Through debtor management, which ensures that receivables are collected in good time, and linking inventories to sales as well as a constant dividend policy, the Company positions itself to achieve its objectives of financial flexibility and independence. In accordance with our intra-Group guidelines, the net working capital ratio determined in this way has to be below 25%. In the reporting year, the equity ratio of the SMA Group was 37.6% (2018: 42.9%) and the net working capital ratio was 17.4% (2018: 23.3%).

31. Auditor's Fees

The fees paid to the auditor and recorded as an expense in the year under review break down as follows:

in €'000	**2019**
Financial statement auditing	438
Other services	12
	450

The cost of financial statement auditing comprises the fees for the audit of the Consolidated Financial Statements as well as for the audit of the Financial Statements of SMA Solar Technology AG and its domestic subsidiaries, provided they are obligated to perform an audit pursuant to Section 316 of the German Commercial Code. The fees for audit-related services and other audit work mainly include expenses for EMIR audits.

32. Declaration on the German Corporate Governance Code in Accordance With Section 161 AktG

The declaration required under Section 161 AktG on the recommendations issued by the Government Commission German Corporate Governance Code was given by the Managing Board and the Supervisory Board on December 5, 2019, and made permanently available to shareholders on the SMA website at www.SMA.de/en.

33. Consolidated Financial Statements

As the supreme parent company, SMA Solar Technology AG prepared the Consolidated Financial Statements as of December 31, 2019, which are filed with the operator of the Electronic Federal Gazette and subsequently published in the Electronic Federal Gazette.

Niestetal, March 6, 2020

SMA Solar Technology AG
The Managing Board

Dr.-Ing. Jürgen Reinert Ulrich Hadding

RESPONSIBILITY STATEMENT

We assure to the best of our knowledge that, in accordance with the applicable accounting standards, the Consolidated Financial Statements give a fair view of the net assets, financial position and results of operations of the Group and that the Consolidated Management Report gives a fair view of the course of business including the results of operations and the Group's position and describes the fundamental opportunities and risks of the probable development of the Group.

Niestetal, March 6, 2020

SMA Solar Technology AG
The Managing Board

Dr.-Ing. Jürgen Reinert Ulrich Hadding

INDEPENDENT AUDITOR'S REPORT

(Translation – the German text is authoritative)

To SMA Solar Technology AG, Niestetal

NOTE ABOUT THE AUDIT OF THE CONSOLIDATED FINANCIAL STATEMENTS AND COMBINED MANAGEMENT REPORT

Audit opinion

We audited the Consolidated Financial Statements of SMA Solar Technology AG, Niestetal, Germany, and its subsidiaries (the Group) – which consisted of the consolidated balance sheet as of December 31, 2019, consolidated income statement, consolidated statement of cash flows and the consolidated equity change statement for the fiscal year from January 1 to December 31, 2019, as well as the Notes to the Consolidated Financial Statements, including a summary of the relevant accounting methods. In addition, we audited the Consolidated Management Report of SMA Solar Technology AG, Niestetal, including the Management Report of the parent company for the fiscal year from January 1 to December 31, 2019. The contents of the sections of the Combined Management Report mentioned in the annex to the auditor's report have not been audited in accordance with German law.

In our opinion, based on the findings of the audit:

→ The Consolidated Financial Statements attached comply with the IFRS as adopted by the EU in all material respects and the additional requirements of the German statutory provisions pursuant to Section 315e (1) of the HGB, and gives a true and fair picture of the assets and financial position of the Group as of December 31, 2019, and its results of operations for the fiscal year from January 1 to December 31, 2019, in accordance with these requirements.

→ As a whole, the Combined Management Report attached provides a suitable illustration of the Group's position. In all material respects, this Combined Management Report is consistent with the Consolidated Financial Statements, complies with German statutory provisions and suitably presents the opportunities and risks of future developments. Our audit opinion on the Combined Management Report does not include the contents of the sections of the Combined Management Report mentioned in the annex to the auditor's report.

In accordance with Section 322 (3) Sentence 1 of the HGB, we declare that our audit did not raise any objections against the correctness of the Consolidated Financial Statements and the Combined Management Report.

Basis for the audit opinion

We performed our audit of the Consolidated Financial Statements and the Combined Management Report in accordance with Section 317 of the HGB and the EU regulation on statutory audits of public interest entities (no. 537/2014) in consideration of the generally accepted standards for financial audits in Germany as defined by the Institute of Public Auditors (IDW). Our responsibility under these provisions and standards is described in more detail in the "Responsibility of the auditor to check the Consolidated Financial Statements and the Combined Management Report" section of our auditor's report. We are independent of the Group companies in compliance with EU law provisions, German commercial law and the German rules of professional conduct, and we have fulfilled our professional obligations applicable in Germany in accordance with these requirements. Furthermore, in accordance with Article 10, Paragraph 2 f) of the EU regulation on statutory audits of public interest entities, we declare that we did not render any prohibited non-audit services as per Article 5, Paragraph 1 of the EU regulation on statutory audits of public interest entities. We believe that the audit evidence we have obtained is sufficient and suitable to provide a basis for our audit opinion on the Consolidated Financial Statements and the Combined Management Report.

Key audit matters in the Consolidated Financial Statements audit

Key audit matters are those matters that, in our professional judgement, were of most significance in our audit of the Consolidated Financial Statements for the financial year January 1, 2019 to December 31, 2019. These matters were considered as a whole in conjunction with our audit of the Consolidated Financial Statements and also taken into account when we formed our audit opinion. We do not provide a separate audit opinion on these matters.

Below, we outline the key audit matters from our point of view:

1. Realization of revenue on an accrual basis, particularly in accordance with IFRS 15
2. Evaluation of the general warranty provision
3. Evaluation of inventories

We have structured our presentation of these key audit matters as follows:

a) Description of key audit matter (including reference to related information in the Consolidated Financial Statements)

b) Auditing procedure

1. REALIZATION OF REVENUE ON AN ACCRUAL BASIS

a) Total sales of €915,069,000 are stated in the accounts from the supply of PV inverters and the associated equipment as well as service provisions and maintenance services. With this item of significant amount, there is a risk that the revenue will not be realized at the correct time, especially when close to the reporting date. Particularly with regard to the delivery of PV inverters, for which an Incoterm must be agreed upon as a delivery condition and according to which, unlike the standard process, the transfer of risk takes place only in the target country, there is the risk of premature revenue recognition. An additional risk regarding revenue recognition on an accrual basis results from the application of the rules of IFRS 15.

Due to the risk of revenue recognition on a non-accrual basis in relation to IFRS 15 and the intrinsic fraud risk, we have defined the realization of revenue as a whole as well as in relation to certain Incoterms, in particular, as a key audit matter.

The information on sales provided by the legal representatives can be found especially in the sections "Accounting Principles and Amendments to Accounting Standards," "Segment Reporting," "Other Financial Liabilities" and "Other Liabilities" of the Notes to the Consolidated Financial Statements.

b) For risk assessment, we assessed the results of the internal audit concerning this matter. In our audit, we then evaluated the appropriate implementation of revenue realization, in particular through a structural and functional check of the sales process and analytical validation of the revenue split up according to business units. We ensured that the accounting guideline continued to be applied consistently by way of a critical evaluation of high-risk contracts. With regard to the high-risk Incoterms, random checks were performed before and after the balance sheet date by comparing postings on the revenue accounts with the corresponding outgoing invoices along with the proof of delivery as well as cut-off audit procedures.

2. EVALUATION OF THE GENERAL WARRANTY PROVISION

a) In the Consolidated Financial Statements under the balance sheet item "Provisions," provisions for statutory warranties totaling €138,862,000 (i. e., 13% of the consolidated balance sheet total) are stated in the accounts, of which €103,430,000 represents general warranty risks and €35,432,000 represents individual circumstances.

In June 2018, the previous estimate for calculating the general warranty provision was changed. According to an extensive analysis by the Company's Quality Management department, the error patterns for each equipment group can be ascertained on the basis of error histories by evaluating existing records. In addition, specific cost rates for the error patterns for each equipment group can be determined via new evaluations of cost accounting. As a consequence of the newly acquired options for measuring future expected damage at equipment group level, the legal representatives modified the accounting practice last year (change in estimates in accordance with IAS 8.32 et seq.).

Because of the risk of an erroneous evaluation of the general warranty provision and due to the size of the amount, we identified the measurement of general warranty provisions as a key audit matter.

Information from SMA Solar Technology AG's legal representatives on the general warranty provisions can be found in the sections "Disclosures to the Accounting and Valuation Policies," "Significant Judgements, Estimates and Assumptions" and "Provisions" in the Notes to the Consolidated Financial Statements.

b) As a first step, we determined the change in the estimation of general warranty provisions and checked its consistent continuation based on explanations from the Company's Quality Management employees and documents on how error patterns for each equipment group are determined. In particular, we checked the completeness of actual warranty claims resulting from reported damage and made sure that allocation of the respective error patterns to the relevant equipment groups was correct. In addition, we examined the selected forecast method and reviewed it with regard to completeness and correctness of the quantity component (number of expected warranty cases). To assess the reliability of the estimates for error pattern frequency, we compared the historical forecasts with the actual events of damage in the past. Subsequently, we checked the accuracy of the calculation of costs for remediation of expected damage. To this end, we inspected the cost accounting for full allocation of warranty costs to the individual error patterns. More specifically, in the review of total costs per claim for each equipment group, we assured that recognition of direct costs was correct and inclusion of indirect costs was appropriate.

3. EVALUATION OF INVENTORIES

a) Inventories totaling €279,883,000 (i. e., 25% of the consolidated balance sheet total) are stated in the accounts. This takes into account value adjustments totaling €5,805,000, which are formed, in particular, in the event of low inventory turnover. In addition, devaluations for discontinued products and surplus inventories of materials unrelated to specific products are included as these inventories are no longer likely to be used in the production process based on the days in inventory analysis performed. SMA uses a time horizon of 36 months for the usage of the item to calculate excess inventories. All inventory items not needed for the next 12 months are value adjusted at 100%. Material management and the determination of discontinuations is the responsibility of the established steering committees and Launch Management.

We determined this as a key audit matter because impairments and risks resulting from the scope for decisions of judgement in the inventory valuation regarding this item of significant amount for the Consolidated Financial Statements are considerable.

Information from SMA Solar Technology AG's legal representatives on the inventory value adjustments can be found in the sections "Disclosures to the Accounting and Valuation Policies" and "Inventories" of the Notes to the Consolidated Financial Statements.

b) As part of the audit of the valuation of the inventories, we attached particular importance to performing a structural and functional check to assess the correct use of the Group-specific devaluation regulations by the system within the scope of testing the lowest values according to turnover for raw materials, consumables and supplies as well as unfinished and finished goods. In the case of materials that have been discontinued or that are part of a discontinued product, we were satisfied with the correct execution of the exclusivity test, which is performed by Supply Chain Management in collaboration with Controlling and Procurement and forms the basis for the respective discontinuation as well as the days in inventory analysis, including the resulting value adjustments posted. Subsequently, we checked whether the devaluations determined from the lowest value tests were considered to be correct and complete as per the inventory valuation.

Other information

The legal representatives are responsible for other information. The other information includes:

→ The sections of the Combined Management Report mentioned in the annex to the auditor's report, the content of which has not been audited

→ The responsibility statement of the legal representatives on the Consolidated Financial Statements and Consolidated Management Report according to Section 297 (2) Sentence 4, resp. Section 315 (1) Sentence 5 of the HGB

→ The other sections of the Annual Report, with the exception of the audited Consolidated Financial Statements and the Combined Management Report as well as our auditor's report

Our audit opinions on the Consolidated Financial Statements and the Combined Management Report do not extend to the other information and, accordingly, we do not provide an audit opinion or any other kind of audit conclusion on them.

In connection with our audit of the Consolidated Financial Statements, we have a responsibility to read the other information and, in doing so, to assess whether the other information

→ demonstrates any significant inconsistencies with the Consolidated Financial Statements, the Combined Management Report or the knowledge that we have acquired from the audit, or

→ otherwise appears incorrect.

Responsibility of the legal representatives and the Supervisory Board for the Consolidated Financial Statements and the Combined Management Report

The legal representatives are responsible for the preparation of the Consolidated Financial Statements, which comply with the IFRS as applicable in the EU and the additional statutory regulations applicable in Germany as per Section 315e (1) of the HGB in all material respects, and for ensuring that the Consolidated Financial Statements give a true and fair picture of the net assets, financial position and results of operations of the Group in compliance with these requirements. Furthermore, the legal representatives are responsible for the internal controls they have deemed necessary to enable preparation of Consolidated Financial Statements that are free of material misstatements, whether intentional or unintentional.

When preparing the Consolidated Financial Statements, the legal representatives are responsible for assessing the Group's ability to continue with its business activity. In addition, they are in charge of disclosing any matters related to the continuation of the business activity, where relevant. Furthermore, they are responsible for reporting on the continuation of the business activity based on the accounting policy unless there is an intention to liquidate the Group or cease business operations, or if there is no realistic alternative.

The legal representatives are also responsible for preparing the Combined Management Report, which provides an accurate view of the Group’s position overall, is consistent with the Consolidated Financial Statements in all material respects, complies with German law and suitably presents the risks and opportunities of future development. Moreover, the legal representatives are responsible for the precautions and measures (systems) that they considered necessary to enable the preparation of a Combined Management Report in compliance with the applicable legal regulations in Germany and the provision of suitable evidence for statements made in the Combined Management Report.

The Supervisory Board is responsible for monitoring the accounting process of the Group for preparing the Consolidated Financial Statements and the Combined Management Report.

Responsibility of the auditor to check the Consolidated Financial Statements and the Combined Management Report

Our aim is to obtain reasonable assurance about whether the Consolidated Financial Statements as a whole are free of material misstatements – whether intentional or unintentional – as well as whether the Combined Management Report provides an accurate view of the Group’s position overall, is consistent with the Consolidated Financial Statements and any knowledge gained from the audit in all material respects, complies with German law, suitably presents the risks and opportunities of future development, and to provide an auditor’s report containing our audit opinions on the Consolidated Financial Statements and the Combined Management Report.

Reasonable assurance is a high degree of certainty but no guarantee that an audit performed in compliance with Section 317 of the HGB and the EU regulation on statutory audits of public interest entities in consideration of the generally accepted standards for financial audits in Germany as defined by the Institute of Public Auditors (IDW) will always reveal a material misstatement. Misstatements may result from inaccuracies or infringements and are considered material if it could be reasonably expected for them to influence the economic decisions made by the addressees, whether individually or as a whole, based on these Consolidated Financial Statements and Combined Management Report.

During the audit, we exercise professional judgement and maintain a critical stance. Furthermore:

- → We identify and assess the risks of material misstatements – whether intentional or unintentional – in the Consolidated Financial Statements and the Combined Management Report, plan and implement audit procedures as a response to these risks and gather audit evidence that is sufficient and appropriate to serve as the basis for our audit opinions. The risk that material misstatements will not be revealed is higher in the event of infringements as opposed to inaccuracies because infringements may include fraudulent collaboration, forgeries, intentional incompleteness, misleading representations, or the bypassing of internal controls.

- → We gain an understanding of the internal control system relevant to the audit of the Consolidated Financial Statements and of the precautions and measures relevant to the audit of the Combined Management Report in order to plan audit activities that are appropriate for the given circumstances. However, we do not aim to provide an audit opinion on the effectiveness of these systems.

- → We assess the appropriateness of the accounting methods applied by the legal representatives as well as the tenability of the values estimated by the legal representatives and the related information.

- → We draw conclusions about the appropriateness of the accounting policy for the continuation of business activity used by the legal representatives and, based on the audit evidence acquired, whether a material uncertainty exists in connection with occurrences or circumstances, which may raise significant doubts about the ability of the Group to continue with its business activity. If we reach the conclusion that a material uncertainty exists, we are obliged to draw attention to the relevant information in the Consolidated Financial Statements and the Combined Management Report in the auditor’s report or, if these statements are inadequate, modify our respective audit opinion. We draw our conclusions based on the audit evidence obtained up to the date of our auditor’s report. However, future occurrences or circumstances can result in the Group no longer being able to continue with its business activity.

- → We assess the overview, structure and content of the Consolidated Financial Statements, including the information provided, and check whether the Consolidated Financial Statements present the underlying business transactions and occurrences in such a way that the Consolidated Financial Statements give a true and fair picture of the net assets, financial position and results of operations of the Group in accordance with the IFRS as applicable in the EU and the additional statutory regulations applicable in Germany as per Section 315e (1) of the HGB.

- → We obtain sufficient and appropriate audit evidence for the accounting information of the companies or business activities within the Group in order to provide audit opinions on the Consolidated Financial Statements and the Combined Management Report. We are responsible for guiding, monitoring and implementing the audit of the Consolidated Financial Statements. We bear sole responsibility for our audit opinions.

- → We assess the correlation of the Combined Management Report with the Consolidated Financial Statements, its compliance with the law and the view of the Group’s position conveyed by it.

- We subject the forward-looking statements presented by the legal representatives in the Combined Management Report to audit procedures. In particular, we use sufficient and suitable audit evidence to trace the significant assumptions on which the forward-looking statements are based and assess the proper deduction of the forward-looking statements stemming from these assumptions. We do not provide a separate audit opinion on the forward-looking statements or the underlying assumptions. There is a significant unavoidable risk that future occurrences may differ significantly from the forward-looking statements.

Among other things, we discuss the planned scope and timing of the audit with those responsible for overseeing it as well as significant audit findings, including any deficiencies in the internal control system that we identify during our audit.

We provide those responsible for overseeing the audit with a declaration that we have met the relevant independence requirements and discuss with them all the relationships and other circumstances that could reasonably be expected to affect our independence and the precautions taken for this purpose.

From the matters we discussed with those responsible for overseeing the audit, we determine those that were most significant to the audit of the Consolidated Financial Statements for the current reporting period and are therefore the key audit matters. We describe these key audit matters in the auditor's report unless the public disclosure of a key matter is ruled out by law or other statutory provisions.

OTHER LEGAL AND STATUTORY REQUIREMENTS

Remaining information in accordance with Article 10 of the EU regulation on statutory audits of public interest entities

We were selected as the Group auditor at the Annual General Meeting on May 28, 2019. We were also commissioned by the Supervisory Board on May 28, 2019. We have worked continuously as a Group auditor for SMA Solar Technology AG, Niestetal, since fiscal year 2009.

We hereby declare that the audit opinions contained in this auditor's report conform with the additional report submitted to the audit committee in accordance with Article 11 of the EU regulation on statutory audits of public interest entities (auditor's report).

RESPONSIBLE AUDITOR

The auditor responsible for the audit is Elmar Meier.

Annex to the auditor's report: Sections of the Combined Management Report, the content of which has not been audited

We have not audited the content of the following sections of the Combined Management Report:

- The Corporate Governance Statement in accordance with Section 289f HGB and Section 315d HGB contained in the Corporate Governance Report in accordance with No. 3.10 of the German Corporate Governance Code
- The non-financial statement according to Sections 289b to 289e and 315b and 315c of the HGB, which is contained in the section "Non-Financial Statement" of the Combined Management Report
- The other sections of the Combined Management Report marked as unaudited.

Hanover, March 6, 2020

Deloitte GmbH
Wirtschaftsprüfungsgesellschaft

(Thorsten Schwibinger)	(Elmar Meier)
German Public Auditor	German Public Auditor

OTHER INFORMATION

GLOSSARY

TECHNICAL GLOSSARY

A

AC (Alternating Current)
Grid-compliant current

C

Central Inverter
Inverters for large-scale PV power plants that are used with centralized design concepts

Change-of-Control Clause
Provision in the board member and management employment contracts that provides a special termination right in case of a change of ownership or a change in majority shareholders, usually against payment of a firmly agreed compensation, continued payment of remuneration, often also a corresponding pension provision

Compliance
Legally compliant conduct

Corporate Governance
Procedures for managing and controlling companies in a manner that is responsible and aimed at long-term value creation

D

DC (Direct Current)
Direct current must be converted to grid-compliant alternating current (AC) for the grid supply or household use.

G

Grid Management
For decentralized generation plants, participation in grid management means that they have to adapt their feed-in to meet current grid distribution capacities. It affects all PV systems feeding in at medium voltage level.

I

Inverter
An electrical device that converts direct into alternating voltage or direct into alternating current

M

Medium Voltage
Voltage range from 1,000 V to 60,000 V

P

PV-Diesel Hybrid Systems
So-called PV-diesel hybrid systems combine photovoltaics with diesel generators and if applicable with battery-storage systems. Integration of photovoltaics and storage systems into diesel power supply systems substantially reduces fuel costs and carbon emissions. PV-diesel hybrid systems are used mainly where an energy supply is not possible via a central utility grid.

R

Repowering
Modernization of older PV systems with new software and hardware components to enhance performance and optional extension with further functionalities such as storage or energy management

S

String Inverter
With string technology, the PV generator is divided into individual module areas, and each of these individual "strings" is assigned its own string inverter.

W

W, kW, MW, GW, TW
Units of power:

1 kilowatt (kW) = 1,000 watts (W)
1 megawatt (MW) = 1,000 kilowatts
1 gigawatt (GW) = 1,000 megawatts
1 terawatt (TW) = 1,000 gigawatts

FINANCIAL GLOSSARY

E

Earn-out
An earn-out clause in a purchase agreement defines a portion of the purchase price that is paid at a later date on a performance-related basis.

EBIT
Earnings before interest and taxes

EBITDA
Earnings before interest, taxes, depreciation and amortization

EBIT Margin
The higher the percentage, the higher the earnings power. The EBIT margin is calculated by putting operating profit in relation to sales.

EBITDA Margin
The higher the percentage, the higher the earnings power. The EBITDA margin is calculated by putting EBITDA in relation to sales.

EBT
Earnings before taxes

Equity Ratio
Shows the share of equity in total assets.

F

Free Cash Flow
Operating cash flow minus investments plus negative investments in fixed and intangible assets. Free cash flow is important because it allows a company to pay dividends or to buy back shares. Therefore, free cash flow is a measure of how much cash can be paid to the shareholders of a company.

Free Cash Flow (Adjusted)
Operating cash flow minus investments plus negative investments in fixed and intangible assets before cash inflows or outflows from time deposits or investments in securities. Adjusted free cash flow is an indicator of ability to repay debt financing.

G

Gross Cash Flow
Shows the operating income prior to any commitment of funds. It is calculated by considering earnings before income tax and the financial result – plus interest received, depreciation and amortization, changes in other provisions, profit/loss from the disposal of fixed assets and other non-cash expenses/revenues less interest paid and income tax paid.

Gross Profit
Sales minus cost of sales

I

IAS
International Accounting Standards; newer standards refer to the initials IFRS.

IASB
International Accounting Standards Board

IFRIC
Interpretations of the International Financial Reporting Interpretations Committee on IAS/IFRS

IFRS
International Financial Reporting Standards defined by the IASB

N

Net Cash
Liquid funds and securities contained within working capital and cash on hand pledged as collatoral less interest-bearing financial liabilities to banks

Net Cash Flow From Financing Activities
Outflow/inflow of liquid funds from equity financing and debt financing

Net Cash Flow From Investing Activities
Outflow/inflow of liquid funds from investments and disinvestments

Net Cash Flow From Operating Activities
Outflow/inflow of liquid funds, unaffected by investments, disinvestments and financing activities

Net Working Capital
The total amount of short-term, interest-free working capital (inventories plus trade receivables) less trade payables and liabilities from advanced payments received for orders

Net Working Capital Ratio
Net working capital in relation to net sales

O

Operating Profit (EBIT)
Earnings before interest and taxes

Order Backlog
This includes current sales and sales expected in the future. In this context, the requirements for all orders pending delivery and deliveries that have already been made but not yet posted as goods issue are taken into account based on their volume and value.

R

Return on Assets (After Taxes)
The return on assets (after taxes) is the consolidated net profit divided by the average total assets of the reporting period (average of total assets at the beginning and end of the reporting period).

Return on Equity (After Taxes)
The return on equity (after taxes) is the consolidated net profit divided by the averaged total equity for the reporting period (average of total equity at the beginning and end of the reporting period).

Return on Sales
Ratio of EBT to sales

GRI INDEX AND UN GLOBAL COMPACT PRINCIPLES

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SUSTAINABILITY KEY FIGURES OF THE SMA GROUP

AREA OF ACTION: PRODUCTS AND PROCESSES

		2019	2018
Sales	€ million	915.1	760.9
Inverter output sold	MW	11,409	8,449
Capital expenditure	€ million	27.6	40.3
Research and development costs (including own work capitalized)	€ million	63.1	87.1
Research and development ratio in relation to sales	%	6.9	11.4
EBITDA	€ million	34.2	–69.1
EBITDA margin	%	3.7	–9.1
Patents and utility models		1,491	1,244
Prevented emissions [1]	Millions of tons of CO_2	59	52
Prevented environmental damage [2]	€ million	10,541	7,492
Quality – field failure rate	%	1.44	0.71

[1] Global CO_2 savings by SMA products compared with the fuel mix in Germany of 0.53 kg/kWh

[2] €180 per prevented ton of CO_2 emissions (source: Federal Environment Agency)

AREA OF ACTION: ENVIRONMENT AND ENERGY [1]

		2019	2018
Total energy consumption	GWh	28.47	28.62
Energy consumption per kW [2]	kWh/kW	3.09	3.75
Total energy consumption, Germany	GWh	25.89	26.06
Energy consumption per kW, Germany	kWh/kW	2.81	3.42
Total power consumption	GWh	22.76	22.43
Power consumption per kW [2]	kWh/kW	2.47	2.94
Total power consumption, Germany	GWh	20.97	20.70
Power consumption per kW, Germany [2]	kWh/kW	2.27	2.72
Share of photovoltaics in total electricity consumption, Germany	%	38	40
Share of regional/decentralized renewable electricity, Germany	%	86.4	86.6
Total heat consumption	GWh	5.71	6.19
Total heat consumption, Germany	GWh	4.92	5.36
Water/effluent [3]	m^3/employee	8.74	11.1
Total waste	t	1,835	2,101
Total waste, Germany	t	1,603	1,781
Share of recyclable waste	%	88.8	87.5
Share of hazardous waste	%	10.0	12.2
Waste per GW, Germany [2]	t/GW	173.7	234.4
CO_2 emissions S1+S2 total	t	2,940	2,870
CO_2 emissions S1+S2 per kW [2]	kg/kW	0.32	0.38
Total CO_2 emissions S1+S2, Germany	t	1,339	1,195
CO_2 emissions S1+S2 per kW, Germany [2]	kg/kW	0.15	0.17
CO_2 emissions of SMA vehicle fleet passenger cars, Germany [3]	kg/employee	173.1	186.8
Ø CO_2 emissions of company cars [4]	g/km	112	108
CO_2 emissions S3			
CO_2 emissions aircraft [3]	kg/employee	485.0	464.4
CO_2 emissions rail [3]	kg/employee	1.86	3.25
CO_2 emissions logistics truck	%	16	4
CO_2 emissions logistics aircraft	%	69	88
CO_2 emissions logistics ship	%	15	8
CO_2 emissions logistics rail	%	0	0

[1] Total SMA production locations (Germany and Poland), if not specified otherwise, previous year's values were partly adjusted accordingly as last year only Germany was reported

[2] In relation to inverter output produced

[3] In relation to the number of employees at the end of the period

[4] In accordance with manufacturer specifications as outlined in the WLTP standard

AREA OF ACTION: EMPLOYEES

		2019/12/31	2018/12/31
SMA Group employees			
Employees (excl. temporary employees)		3,124	3,353
of which domestic		2,186	2,212
of which abroad		938	1,141
Temporary employees		442	290
Total employees (incl. temporary employees)		**3,566**	**3,643**
Trainees		**59**	**72**
Gender diversity of SMA employees			
male	%	74.7	74.6
female	%	25.3	25.4
SMA Group executives			
male	%	83.7	85.7
female	%	16.3	14.3
Domestic executives			
male	%	88.4	90.5
female	%	11.6	9.5
Managing Board			
male	%	100	100
female	%	0	0
General Managers/Vice Presidents			
male	%	94.1	93.5
female	%	5.9	6.5
Directors			
male	%	86.2	90.6
female	%	13.8	9.4
Executives abroad			
male	%	76.1	78.6
female	%	23.9	21.4
SMA Supervisory Board			
male	%	67	75
female	%	33	25
Occupational safety and health			
Domestic Lost Work Day Rate [1]	Sick days/ working hours	13.37	14.41
Domestic Lost Time Incident Rate [2]	Accidents/ working hours	1.68	1.41

1 Sick days due to work-related accidents x 200,000 in relation to working hours
2 Accidents > 1 lost day x 200,000 in relation to working hours

AREA OF ACTION: CORPORATE SOCIAL RESPONSIBILITY

		2019	2018
Sustainability evaluation of suppliers according to EcoVadis [3]	%	48.6	48.0
Locations assessed for risks of corruption	%	86	6
Employees given corruption avoidance training		1,177	2,037
Cases of corruption		0	0

3 Since 2018, sustainability performance evaluation of the main suppliers is done by EcoVadis. The sustainability performance of SMA suppliers is in the green area of the EcoVadis scale.

REGISTERED TRADEMARKS

DISCLAIMER

The Annual Report, in particular the Forecast Report included in the Management Report, includes various forecasts and expectations as well as statements relating to the future development of the SMA Group and SMA Solar Technology AG. These statements are based on assumptions and estimates and may entail known and unknown risks and uncertainties. Actual development and results as well as the financial and asset situation may therefore differ substantially from the expectations and assumptions made. This may be due to market fluctuations, the development of world market prices for commodities, of financial markets and exchange rates, amendments to national and international legislation and provisions or fundamental changes in the economic and political environment. SMA does not intend to and does not undertake an obligation to update or revise any forward-looking statements to adapt them to events or developments after the publication of this Annual Report.

FINANCIAL CALENDAR

2020/05/14	Publication of Quarterly Statement: January to March 2020 Analyst Conference Call: 09:00 a. m. (CET)
2020/06/04	Annual General Meeting 2020
2020/08/13	Publication of Half-Yearly Financial Report: January to June 2020 Analyst Conference Call: 09:00 a. m.(CET)
2020/11/12	Publication of Quarterly Statement: January to September 2020 Analyst Conference Call: 09:00 a. m. (CET)

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