

SAP Integrated Report

2022



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About This Report

Content

The SAP Integrated Report 2022 presents our annual financial, social, and environmental performance in one integrated report (“SAP Integrated Report”) available at www.sapintegratedreport.com.

We report on our contribution to the UN Sustainable Development Goals (SDGs) and embedded the recommended disclosures of the Task Force on Climate-Related Financial Disclosures (TCFD), of the SASB standards, and of the World Economic Forum (WEF) stakeholder capitalism metrics.

Basis of Presentation

Our combined management report is prepared in accordance with the German Commercial Code and the relevant German Accounting Standards. The combined management report is also a management commentary complying with the International Financial Reporting Standards (IFRS) Practice Statement Management Commentary.

The report encompasses SAP SE and all subsidiaries which we control and, hence, include in our consolidated financial statement according to IFRS. Joint arrangements and associates are not included in the sustainability reporting. Any further deviations for the sustainability reporting are specifically mentioned in the respective chapters. Our executive management has confirmed the effectiveness of our internal controls over financial reporting.

The social and environmental data and information included in the SAP Integrated Report is prepared in accordance with the GRI Standards. This indicates that a report contains a comprehensive picture of its material topics and related impacts, and how these are managed. We apply the GRI principles (sustainability context, stakeholder inclusiveness, materiality, and completeness) for defining report content. We also report on SDGs identified as material to our strategy.

Greenhouse gas data is prepared based on the Greenhouse Gas Protocol.

Data

All financial and non-financial data and information for the reporting period is reported utilizing SAP software solutions and sourced from the responsible business units.

The reporting period is fiscal year 2022. The report encompasses SAP SE and all subsidiaries of the SAP Group. To make this report as current as possible, we have included relevant information available up to the auditor’s opinion dated February 22, 2023. The report is available in English and German.

Independent Audit and Assurance

KPMG AG Wirtschaftsprüfungsgesellschaft has audited our consolidated financial statements and our combined management report. Information relating to the non-financial statement included in SAP’s management report has been audited with limited assurance by KPMG. Additionally, KPMG has provided assurance on selected sustainability information in accordance with the International Standard on Assurance Engagements (ISAE) 3000, a pertinent standard for the assurance of sustainability reporting. The Independent Auditor’s Report and the Assurance Reports of KPMG for the non-financial statement and selected sustainability information are available in the *Independent Auditor’s Report* section, the *Independent Assurance Practitioner’s Report* and the *Assurance Report of the Independent Auditor regarding Sustainability Information* section.

Concept and Realization

This report was designed by SAP and created with SAP S/4HANA software and the SAP Disclosure Management application.

To Our Stakeholders

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Letter from the CEO



Dear Fellow Shareholders,

It's hard to summarize the year 2022 in a few words – as the pandemic continued, the world also faced new and unexpected challenges, such as the terrible war in Ukraine, that hugely impacted all of our lives. We have faced conflicts and geopolitical tensions, climate change, the energy crisis, inflation, and volatile markets. Yet, once again, we have seen solidarity in times of crisis – people coming together to provide support to those in need when it mattered most. Despite the ongoing uncertainties in the world, SAP has remained in a strong position.

2022 marked the 50th anniversary of SAP, which we celebrated together with our customers, partners, and colleagues across the world. Five decades ago, our founders set out to redefine business software and in doing so, forever changed the way the world runs. Their innovative thinking, pioneering spirit, and drive laid the foundation for the rise of SAP – and they are still the basis for our success today, as we are carrying their legacy forward to drive positive change for our planet and its people – something that has never been more relevant or important than today.

Our hearts remain with the people impacted by the war in Ukraine. As announced, SAP has stopped all sales in Russia and Belarus, and we are in the process of a total withdrawal from these markets. For 2023, while business wind-down continues, our focus is on further reducing the remaining SAP footprint in Russia. We hope for the swift restoration of peace and will continue to help those affected by this war.

The last year was a stark reminder that no one business, government, or society can tackle the greatest challenges of our time alone. For that, a change is needed, and technology plays a key role in finding solutions to our global challenges.

Over two years ago, we embarked on our transformation journey to move SAP towards a cloud company. This, together with our vision to enable every organization and every industry to become a network of intelligent, sustainable enterprises, is perfectly aligned with the challenges our customers face. From increasing speed and agility, building transparent and resilient supply chains, and recording, reporting, and acting on sustainability, our solutions provide the value our customers need:

- With RISE with SAP, we enable **organizations to become agile, intelligent enterprises**.
- With the SAP Business Network, we connect millions of companies, allowing **organizations to benefit from connected networks**.
- With our SAP sustainability solutions, we enable **organizations to truly operate sustainably**.

Looking at our financial numbers, we met all of our outlook metrics in 2022. Our strong full-year 2022 results at a glance:

- Cloud revenue continued to be our main growth driver, increasing by 24%¹.
- Current cloud backlog increased by 24%¹.
- Total revenue grew 5%¹.
- IFRS Operating profit was flat, while non-IFRS operating profit decreased by 7%¹.
- Free cash flow was €4.35 billion.

2022 was a volatile year on the market, with technology stocks particularly hard hit. Our shares were not immune from this overall trend. Our share price decreased 22.8% in 2022, below the DAX, which lost 12.4%, but better than the NASDAQ 100, which decreased 33% over the course of the year. We want our shareholders to participate in our success. Therefore, we have proposed an annual dividend of €2.05 per share², an increase of approximately 5% over the prior year's regular dividend.

Customer Net Promoter Score (NPS) decreased 7 points year over year to 3 in 2022, hitting the lower end of the revised outlook range. SAP's Employee Engagement Index decreased 3 percentage points to 80%, a continued high level of engagement at the low end of the revised outlook range. The software as a service-industry scores overall have declined over the past few years of the pandemic. SAP continues to get feedback about needed improvements around pricing increases, licensing structure, product-related topics, support, service and stability of account team relationships. This type of transparent feedback and accountability helps provide us with the information to better focus investments and further improve our customer relationships. SAP's retention rate was 92.3% (2021: 92.8%). Further, the proportion of women in management increased to 29.4% (2021: 28.3%) and we also reached 35% of women in the workforce. Net carbon emissions continued to decrease, at 85 kilotons in 2022, down 25 kt year over year.

In addition to driving our ESG goals internally, we also take our wider social and environmental responsibility very seriously:

- In total, SAP donated more than €4.2 million to support Ukraine in cooperation with organizations such as UNICEF, UNHCR, and the German Red Cross. This includes our employee donation campaign which became SAP's largest employee donation campaign to date.
- SAP extended its partnership with UNICEF through Generation Unlimited (GenU), focusing on employability. The partnership also supports SAP Educate to Employ, a new program educating

¹ At constant currencies

² Pending approval of Annual General Meeting of Shareholders

youth in need on soft skills, foundational knowledge, and SAP skills to enable a pathway to a successful career in the SAP ecosystem.

- Together with partners, we launched the TRANSFORM Support Hub offering virtual pro bono consulting opportunities worldwide, connecting SAP employees to social enterprises.

Net-net: We believe that together with our customers, colleagues, and partners around the world, we can turn the world's greatest challenges into opportunities for a prosperous and greener future. 2022 was one of the most important years in our history. As we head into 2023, we are committed to further optimizing and improving our business. We are deepening our focus on delivering lifetime value to current and new customers in the cloud and on high-growth opportunities where SAP can lead.

Across SAP, we are laying the foundation for SAP's ongoing success, expanding our position as the #1 Enterprise Application company on the planet, powered by our leading platform.

Finally, I want to express my deepest thanks for your continuous trust in SAP. I certainly look back on 2022 with pride and gratitude for the many ways SAP's teams around the world are making a difference. I'm very much looking forward to 2023, and the great achievements our over 100,000 colleagues will continue to deliver as we pursue our vision to enable every organization and every industry to become a network of intelligent, sustainable enterprises.

Sincerely,

Christian Klein

CEO, SAP SE

SAP Executive Board

Christian Klein **Chief Executive Officer (CEO)**

Joined SAP: 1999

Appointed to the Executive Board: 2018

Current Executive Board term expires: 2025

Nationality: German

Year of Birth: 1980

Other board memberships:

Supervisory Board, adidas AG, Herzogenaurach, Germany



Sabine Bendiek **Chief People & Operating Officer, Labor Relations Director**

Joined SAP: 2021

Appointed to the Executive Board: 2021

Current Executive Board term expires: 2023

Nationality: German

Year of Birth: 1966

Other board memberships: Executive Board, Bitkom e.V., Berlin, Germany;

Supervisory Board, Schaeffler AG, Herzogenaurach, Germany



Luka Mucic **Chief Financial Officer**

Joined SAP: 1996

Appointed to the Executive Board: 2014

Current Executive Board term expires: 2023

Nationality: German

Year of Birth: 1971

Other board memberships:

Supervisory Board, HeidelbergCement AG, Heidelberg, Germany



**Dr.-Ing. Juergen Mueller
Chief Technology Officer**

Joined SAP: 2013
Appointed to the Executive Board: 2019
Current Executive Board term expires: 2024
Nationality: German
Year of Birth: 1982

**Scott Russell
Customer Success**

Joined SAP: 2010
Appointed to the Executive Board: 2021
Current Executive Board term expires: 2024
Nationality: Australian
Year of Birth: 1973

**Thomas Saueressig
SAP Product Engineering**

Joined SAP: 2004
Appointed to the Executive Board: 2019
Current Executive Board term expires: 2025
Nationality: German
Year of Birth: 1985

Other board memberships:
Board of Directors, Nokia Corporation, Espoo, Finland

**Julia White
Chief Marketing & Solutions Officer**

Joined SAP: 2021
Appointed to the Executive Board: 2021
Current Executive Board term expires: 2024
Nationality: U.S. citizen
Year of Birth: 1973



Investor Relations

Multiple Crises Dampen Markets

After more than one and a half decades, the era of cheap money came to a faster and more drastic end in 2022 than originally planned. This was mainly attributable to Russia's war in Ukraine with all its consequences for the world economy, notably in the form of sharply rising energy and commodity prices and unusually high inflation. Companies, national economies, and stock markets alike found themselves facing difficult adjustments and uncertainty. This was exacerbated by aggressive interest rate hikes by the world's central banks that repeatedly triggered fears of recession and generally curbed appetite for risky investments such as equities. While this was particularly evident in previously highly valued technology stocks, many other stock indices also suffered significant losses amid high volatility. In the end, however, SAP stock development diverged from the general negative trend for technology stocks thanks to the Company's strong performance. The SAP stock, with an annual decline of 22.8%, finished the year higher than the NASDAQ 100 (-33.0%), which had its worst performance since the 2008 financial crisis. The DAX declined 12.4% for the year and stated its weakest performance since 2018. With a market capitalization of €118.5 billion at year end, SAP was once again the second most valuable company on the DAX.

SAP Stock Affected by Market Sentiment

Having started the year at €124.90 (1, see graphic below), the Xetra closing price on December 30, 2021, SAP stock largely followed the global downward trend in the technology sector, marking its high for the year early on at €124.82 (2).

Publication of our annual results (3), could not reverse this trend, despite exceeding the forecast which had been raised several times, bringing instead a daily loss of 6%. The market had hoped for a better free cash flow projection for the year. Our subsequent announcement of a renewed dividend increase (4) was lost on the weak overall market as well due to the outbreak of war in Ukraine. In March (5), investors reacted negatively to the news of SAP CFO Luka Mucic's departure from the Company in 2023.

Our first-quarter figures for 2022 (6) later reaffirmed strong growth in our cloud business, yet SAP stock declined 2.0% in response to investors criticizing the low profit margins related to our investment activity. Though it quickly recovered the ex-dividend markdown of €2.45 in May (7), SAP stock then suffered another setback at the end of June, losing 3.6% on the heels of a negative analyst report that saw potential demand risks in the software sector due to the manifold crises.

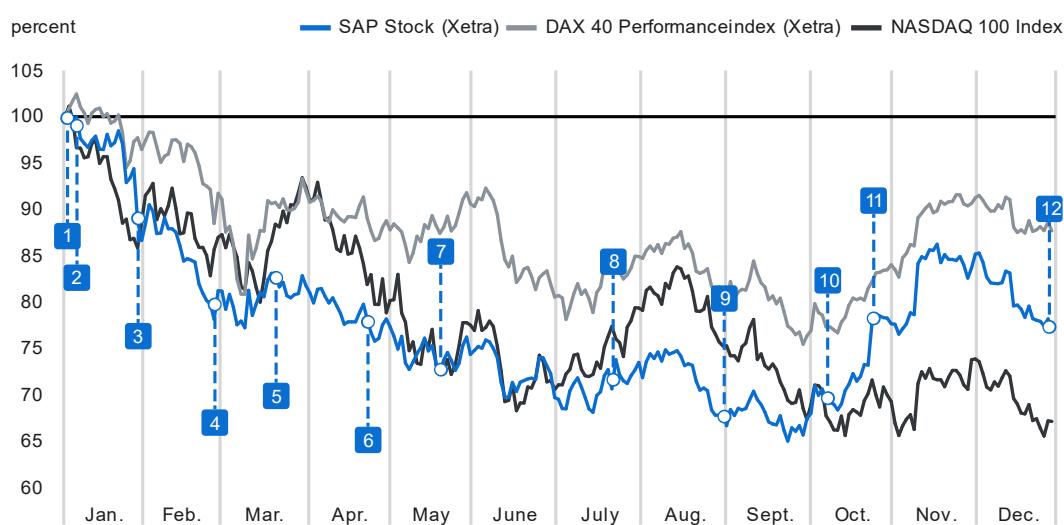
Our half-year results published in July (8) showed strong growth in cloud key figures, once again underpinned our growth strategy. SAP stock nevertheless slipped 2.8% in a heterogenous market environment before eventually rebounding the following day with an increase of 4.4%.

Over the remainder of the quarter, SAP stock more or less mirrored the movement of the DAX. At the end of August, the appointment of Airbus' CFO Dominik Asam (9) as future SAP CFO and successor to Luka Mucic lifted the share price slightly in a weak overall market. This was followed by further dips and a yearly low (10) of €81.06 in September, but SAP stock rallied back to eventually close the gap to the benchmark indices. Among other things, it benefited from improved sentiment for the technology sector overall as well as for SAP shares.

Continuing to display this relative strength through October, SAP shares gained further momentum at the end of the month following a positive analyst report and solid results for the third quarter (11), which set SAP stock further apart from the overall market. Surprisingly good U.S. inflation data stimulated the bull market in technology stocks in November, pushing SAP stock past the €100 mark

for the first time since April. It reached an interim high of €107.68 before then realigning itself to the overall markets, albeit weighed down by a negative analyst report suggesting SAP's strict cost control could jeopardize the achievement of its medium-term targets. Then, in the middle of December, the central banks dashed nascent market hopes about interest rates, putting renewed pressure primarily on technology stocks again. SAP stock was not immune and lost all the ground it had gained vis-à-vis the DAX. The stock ultimately closed the year at €96.39 (12), down 22.8% for 2022 overall.

SAP Stock Versus Major Indices (December 31, 2021 to December 30, 2022)



- | | |
|---|--|
| 1. December 30, 2021 Closing price €124.90 | 7. May 19, 2022 Ex dividend, €2.45 per share |
| 2. January 5, 2022 Annual high | 8. July 21, 2022 Financial results Q2 2022 |
| 3. January 27, 2022 Final results Q4 / Full year 2021 | 9. August 31, 2022 Dominik Asam named new CFO |
| 4. February 24, 2022 Dividend announcement | 10. September 23, 2022 Annual low 2022 |
| 5. March 18, 2022 CFO announcement | 11. October 25, 2022 Financial results Q3 2022 |
| 6. April 22, 2022 Financial results Q1 2022 | 12. December 30, 2022 Closing price €96.39 |

Continuous Engagement with the Investment Community

SAP continued its engagement with the investment community in 2022. Throughout the year, members of the Executive Board of SAP SE and the Investor Relations (IR) team discussed our latest strategy, its execution and business development, and how SAP was helping customers meet the many challenges faced by companies today, with institutional investors, analysts, and private investors worldwide.

The IR team, together with senior management, held more than 230 meetings in 2022 to maintain the dialogue with investors and analysts, including one-on-one phone calls, video conferences, and road shows. Members of the Executive Board and the IR team significantly increased its presence at conferences, attending more than 25 conferences across an expanded geographical mix. In May, we hosted the Financial Analyst Conference as a part of our Sapphire event in Orlando, Florida, USA. Once again, SAP held the 2022 Annual General Meeting of Shareholders (AGM) virtually without physical presence.

We continued our dialogue with investors focusing on environmental, social and governance (ESG) topics, providing them with insights into our sustainability policies and products. SAP's leadership in this area has been recognized by leading sustainability rating organizations.

SAP representatives engaged with retail shareholders at virtual events. The IR team and the Treasury team also maintained regular communication with the debt investor community.

We provide a wide range of information online about SAP and its shares. Our communications channels include our Twitter feed @sapinvestor and the quarterly SAP INVESTOR magazine. Shareholders can reach the IR team directly by telephone hotline and by e-mail at investor@sap.com. We also publish an overview of the latest analyst consensus on the Investor Relations Web site.

In addition, we provide a Webcast for all key investor events at which members of our Executive Board speak, and we post all relevant presentations on the Investor Relations Web site.

Key Facts About SAP Stock/SAP ADRs

Listings	
Germany	Berlin, Frankfurt, Stuttgart
United States (ADRs)	New York Stock Exchange
IDs and symbols	
WKN/ISIN	716460/DE0007164600
NYSE (ADRs)	803054204 (CUSIP)
Reuters	SAPG.F or .DE
Bloomberg	SAP GR
Weight (%) in indexes as at 12/31/2022¹	
DAX 40	8.47
Prime All Share	6.95
CDAX	8.28
HDAX	7.38
TecDax	9.81
Dow Jones STOXX 50	2.17
Dow Jones EURO STOXX 50	3.48

¹ Source: Société Générale

Return on SAP Common Stock — WKN 716460/ISIN DE007164600

Percent, unless otherwise stated

Initial investment €10,000	12/31/2012	12/31/2017	12/31/2021
Date of investment	12/31/2012	12/31/2017	12/31/2021
Period of investment	10 years	5 years	1 year
Value as at 12/31/2022 ¹ (in €)	15,882	10,315	7,717
Average annual return	4.7	0.6	-22.8
Performance comparators			
DAX 40 Performance — total return index	6.2	1.5	-12.3
NASDAQ100 index	15.2	11.3	-33.0
REX General Bond — total return index	-0.7	1.5	-12.8
S&P 500 Composite — total return index	12.7	10.0	-14.4
S&P North American Technology Software Index	17.8	13.4	-31.8

¹Source: Bloomberg

Return on SAP ADRs — 803054204 (CUSIP)

Percent, unless otherwise stated

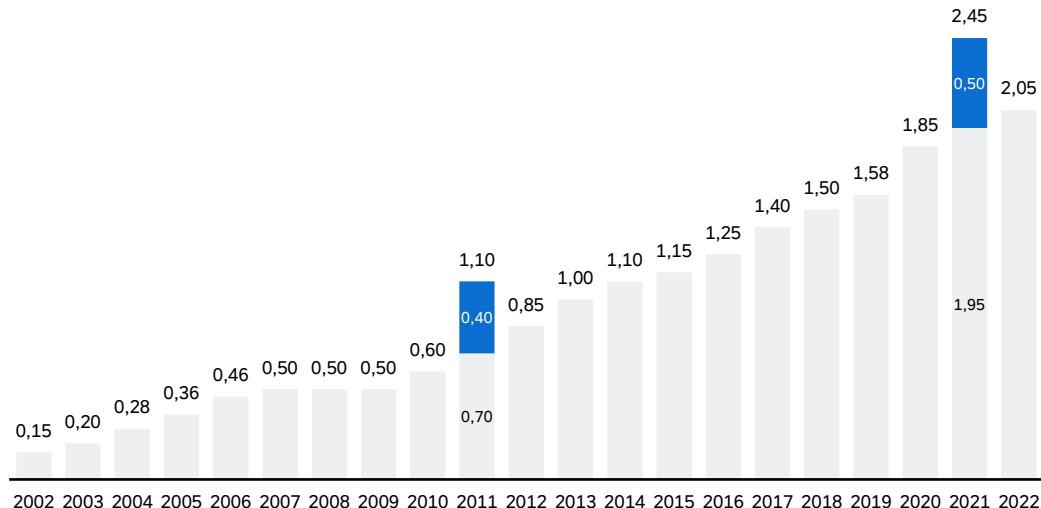
Initial investment US\$10,000	12/31/2012	12/31/2017	12/31/2021
Date of investment	12/31/2012	12/31/2017	12/31/2021
Period of investment	10 years	5 years	1 year
Value at 12/31/2022 ¹ (in US\$)	12,838	9,184	7,365
Average annual return	2.5	-1.7	-26.4
Performance comparators			
S&P 500 Composite — total return index	10.4	7.5	-19.4
NASDAQ100 index	15.2	11.3	-33.0

¹ Source: Bloomberg

Dividend of €2.05 Proposed

It is our policy to pay a dividend totaling 40% or more of IFRS profit after tax.

At the Annual General Meeting of Shareholders, the Executive Board and the Supervisory Board of SAP SE will recommend a total dividend for fiscal year 2022 of €2.05 (2021: €2.45). Note the prior year dividend included a special dividend of €0.50 to celebrate SAP's 50th anniversary. Excluding the special dividend, the dividend increase is 5%. The payout ratio would be 140% (2021: 53%, excluding special dividend 43%).



Capital Stock Unchanged

SAP's capital stock as at December 31, 2022, was €1,228,504,232 (2020: €1,228,504,232). It is issued as 1,228,504,232 no-par shares, each with an attribute value of €1 in relation to capital stock.

Shareholder Structure

Applying the definition accepted on the Frankfurt Stock Exchange, which excludes treasury stock from the free float, as at December 31, 2022, the free float stood at 83.3% (December 31, 2021: 85%). The decrease in free float is due to an increase in treasury shares as a result of the recent share buyback programs.



*43% of institutional investors are classified as ESG investors.

Report by the Supervisory Board

Dear Shareholders,

In the following, we would like to inform you about the work of the Supervisory Board in the fiscal year 2022.

Collaboration Between the Supervisory Board and the Executive Board

In the past fiscal year, the Supervisory Board of SAP SE discharged the duties imposed on it by the law and by the Company's Articles of Incorporation. It advised the Executive Board on an ongoing basis with regard to the running of the Company and it scrutinized and monitored the work of management.

The Supervisory Board received regular, full, and timely reports from the Executive Board, both from members in person and in written documents. The Supervisory Board was also in regular exchange with senior internal officers through its various committees. This ensured that we were always up to date, even between meetings, on the Company's strategy, planning, business performance, risks, risk management, compliance (in other words, adherence to laws, to the Company's Articles of Incorporation, and to internal policies), and on transactions of special significance for SAP. In its reports, the Executive Board also informed us in particular where business deviated from plan or target, and why. We questioned and probed the Executive Board's reports to satisfy ourselves that the information it gave us was plausible. The Executive Board fully met our requirements when it came to providing information.

In addition, the Supervisory Board chairperson and the CEO were in continuous contact, which meant the Supervisory Board chairperson was always apprised without delay of all important events that were significant for assessing SAP's situation and progress or for the management and governance of the Company. Moreover, the chairperson of the Supervisory Board and the CEO regularly discussed matters related to SAP's strategy, business performance, risk position, risk management, and compliance.

All management transactions requiring approval by the Supervisory Board whether by law, the Articles of Incorporation, or the Supervisory Board's list of transactions requiring its consent were presented to us in the proper manner and we carefully examined and discussed same with the Executive Board prior to approval.

Supervisory Board Meetings and Resolutions

In the past fiscal year, the Supervisory Board of SAP SE held four ordinary meetings and three extraordinary meetings at which we deliberated and resolved on all matters of relevance to the Company. Due to the ongoing contact restrictions and other safety measures imposed on us as a result of the COVID-19 pandemic, we continued to partly conduct our plenary meetings and Committee meetings, which are normally held as physical meetings, in 2022 as video conferences or as hybrid sessions, where some members attended physically and the remainder online. We also adopted nine resolutions by correspondence vote. The following table provides an overview of the individual members' attendance at the Supervisory Board's plenary sessions and committee meetings in the year under review. This report also contains a table that shows which meetings of the Supervisory Board and its committees were held as a physical meeting, as a video or telephone conference, or as a hybrid session.

Meeting Participation of SAP SE Supervisory Board Members During Fiscal Year 2022

Supervisory Board Members	Plenum		Committees		All Meetings		
	Meetings	Participation	Meetings	Participation	Meetings	Participation	Participation in %
Prof. Dr. h. c. Hasso Plattner (Chairperson)	7	7	14	12	21	19	90%
Lars Lamadé (Deputy Chairperson)	7	7	14	14	21	21	100%
Manuela Asche-Holstein	7	6	11	11	18	17	94%
Aicha Evans	7	6	14	13	21	19	90%
Prof. Dr. Gesche Joost	7	7	10	10	17	17	100%
Margret Klein-Magar	7	6	20	20	27	26	96%
Monika Kovachka-Dimitrova	7	7	14	14	21	21	100%
Peter Lengler	7	7	18	18	25	25	100%
Jennifer Xin-Zhe Li (from 5/18/2022)	2	2	11	11	13	13	100%
Bernard Liautaud (until 5/18/2022)	5	3	6	4	11	7	64%
Dr. Qi Lu	7	6	10	10	17	16	94%
Gerhard Oswald	7	7	14	14	21	21	100%
Christine Regitz	7	7	21	21	28	28	100%
Dr. Friederike Rotsch	7	7	18	18	25	25	100%
Heike Steck	7	7	21	21	28	28	100%
Helmut Stengel ¹	7	7	n/a	n/a	7	7	100%
Dr. Rouven Westphal	7	7	23	23	30	30	100%
Gunnar Wiedenfels	7	6	21	19	28	25	89%
James Wright	7	7	25	25	32	32	100%

¹Currently not a member of any Supervisory Board committee

The Supervisory Board and its committees also regularly convened wholly or partly without the Executive Board as necessary to deliberate on matters that pertained to the Executive Board, required internal discussion among Supervisory Board members alone or did not require the Executive Board's presence, or to facilitate discussion between the Supervisory Board or its respective committee and the auditor without the Executive Board present. This was the case in two of the plenary sessions and in six committee meetings in 2022. In addition, the shareholder representatives and the employee representatives independently discussed individual agenda items as required prior to the adoption of resolutions in plenary sessions. The Supervisory Board addressed the following key topics during the year:

Russia's War Against Ukraine

Like the rest of the world, SAP's Supervisory Board members were shocked, shaken, and dismayed by the events that unfolded in Ukraine in 2022. The Executive Board and Supervisory Board have liaised closely from the outset to discuss the impact of the war on SAP employees in Ukraine and on business activities there, as well as the implementation of sanctions. At the beginning of the war, the Supervisory Board was updated weekly on the latest developments. Though SAP implemented all sanctions levied against Russia, and additionally stopped all sales in Russia and Belarus effective March 2, 2022, it was still criticized publicly by the Ukrainian government. The Supervisory Board therefore held an extraordinary meeting on March 25, 2022, at which the CEO updated us on his talks with German and other European government representatives and the Deputy Prime Minister of Ukraine concerning this matter. In addition, the Executive Board explained to us the measures SAP had taken toward an exit of operations in Russia and the options available for the way ahead.

Numerous Supervisory Board committees focused on this topic as well: at the People and Culture Committee's meeting at the end of March 2022, the Executive Board member responsible for HR matters reported on the status of SAP's exit from Russia and how the Company was supporting affected employees and their families in Ukraine. The Audit and Compliance Committee discussed the risks that Russia's war against Ukraine posed for SAP. The exit process initiated by the Executive Board had to be continually adapted to the ever-stricter sanctions and Russia's corresponding countermeasures. In each of our ordinary meetings in April, July, and October, we had the opportunity to review the implementation of the Executive Board's chosen strategy for an orderly exit and to support the Executive Board in its efforts. The Go-To-Market and Operations Committee likewise examined the exit approach in its April meeting and thereafter reported on its deliberations to the full Supervisory Board. When implementing the exit measures, SAP had to observe complex legal requirements, particularly when it came to the termination of customer and employee contracts. In the October meeting, we were informed that SAP's exit from Russia would be largely but not fully completed by the end of the year.

Corporate Governance

The Supervisory Board and its Personnel and Governance Committee dealt in-depth with corporate governance topics in the reporting year. The Supervisory Board chairperson held discussions with investors as early as the beginning of March 2022 on the topics of strategy and corporate governance. The Supervisory Board's focus was on efforts to take account of the views of our institutional investors concerning the independence of the Supervisory Board chairperson, and to comply with the new recommendations of the updated German Corporate Governance Code ("GCGC"), which came into effect on April 28, 2022.

When the Personnel and Governance Committee met on February 9, 2022, in preparation for the Annual General Meeting of Shareholders on May 18, 2022, and the proposed reelection there of the Supervisory Board chairperson for his last term in office, it deliberated on the creation of a Lead Independent Director ("LID") role on the Supervisory Board. The Supervisory Board subsequently approved the creation of this role in its meeting on February 23, 2022, and Friederike Rotsch was appointed SAP's LID effective May 18, 2022. While the role of LID is still rather uncommon in Germany, the Supervisory Board's introduction of same further strengthens the independence of the SAP Supervisory Board. For more information about the role and powers of an LID, see the [Corporate Governance section of SAP's Web site](#) and the [Corporate Governance Statement for 2023](#). One of the first activities of our new LID was a Corporate Governance Roadshow in September 2022 at which Friederike Rotsch met with 17 SAP investors and members of a shareholder association to talk about governance and supervisory board-related topics and share ideas for reworking executive board compensation systems. She reported on the results of this Roadshow to the Supervisory Board in October. As a further measure to strengthen its independence – the Supervisory Board chair having previously also stepped down as chairperson of the Personnel and Governance Committee in 2021 – a shareholder representative newly elected to the Nomination Committee was appointed chair of that Committee pursuant to a Supervisory Board resolution of February 23, 2022.

In its meeting on July 27, 2022, the Personal and Governance Committee focused on the new GCGC recommendations and resolved to propose that the Supervisory Board introduce a "qualification matrix" for the Supervisory Board and amend the profile of skills and expertise by including expertise on sustainability. The Supervisory Board adopted this proposal by way of a circular correspondence vote in August 2022 in preparation for its October 27, 2022, meeting, at which the Supervisory Board examined the new GCGC recommendations and SAP's implementation of them. Following this analysis, the Supervisory Board then adopted, in agreement with the Executive Board, the annual [declaration of implementation](#) of the GCGC. The Supervisory Board also dealt with the topic of independence at our October meeting under the agenda item Corporate Governance. Based on the findings from our own examination, we determined that all shareholder representatives were independent in the meaning of the GCGC and were therefore to be named as such in the [Corporate Governance Statement](#). We also resolved on what we believe to be the appropriate number of independent shareholder representative members, and determined that the Supervisory Board has an

appropriate number of independent members in the meaning of the GCGC, also when the shareholder structure is taken into account.

In its ordinary meetings in April and July 2022, the Personnel and Governance Committee updated the list of transaction categories for which the Executive Board must obtain the Supervisory Board's prior consent. The Supervisory Board then enacted the prepared changes by way of correspondence vote in August. The Supervisory Board at this time also decided to set itself the goal of always having at least two women on the Executive Board on a voluntary basis, over and above the statutory quota. In this connection, the diversity concept for the Executive Board was adjusted accordingly.

Sustainability

Sustainability is becoming an increasingly important topic in many areas of business, including corporate governance. The current version of the GCGC published on April 28, 2022, includes a recommendation that company management consider sustainability-related factors in their corporate planning. Sustainability is already deeply anchored in SAP's corporate strategy, and from the Supervisory Board's point of view, this is proving to be a great advantage for the Company. SAP achieves its sustainability objectives in two different ways: by enabling companies to pursue their own sustainability strategies by way of SAP products, and by leading by example and striving for sustainability in all of its own business operations. In 2022, the Supervisory Board devoted considerable time discussing SAP's sustainability objectives and the increased demands placed on sustainability-related tasks. In addition, ESG (Environmental, Social and Governance) issues were addressed by various committees from different perspectives: By the Audit and Compliance Committee notably in connection with sustainability reporting, the audit of sustainability metrics, and the monitoring of cybersecurity matters; by the Personnel and Governance Committee in the context of sustainability targets relevant to Executive Board compensation; by the Technology and Strategy Committee with respect to sustainability-related products and software as well as IT security; and by the People and Culture Committee in addressing sustainability as it relates to social issues. Given this range of sustainable corporate management at SAP, which provides for coverage of all areas by several committees, the Supervisory Board has waived the need to set up a committee dedicated purely to ESG or sustainability matters. The Supervisory Board likewise dealt with SAP's sustainability strategy and consulted the Executive Board on their goals, targets, and implementation. To this end, in our meeting on October 27, an external expert expounded the growing significance of sustainability in the corporate world and outlined the tasks of a supervisory board in this regard. Following this report, SAP's Chief Sustainability Officer explained the two elements of SAP's sustainability strategy to us, namely: to lead by good example and strive to avoid waste and emissions as much as possible while at the same time enable other companies to pursue their own sustainability strategies with the help of SAP technologies. We were also updated on SAP's current lineup of sustainability products at this meeting. In December 2022, the members of the Supervisory Board had the opportunity to further deepen their sustainability know-how in the course described later in this report (see the "Training and Professional Development" section below).

Executive Board Compensation

In the course of our regular deliberations on Executive Board compensation and our continuous review of the current compensation system, we came to the conclusion that there is a need to further develop the compensation system. In fiscal 2022, we therefore worked intensively on revising the Executive Board compensation system, which is to be submitted to the Annual General Meeting in May 2023 for approval and take effect at the beginning of fiscal 2024. We did so in close collaboration with an independent consultant on compensation, taking special account of external feedback from investors in our deliberations. The groundwork for this new system was carried out by the Personnel and Governance Committee, which dealt extensively with this topic in all of its four ordinary meetings and developed the principles of the new compensation system together with the independent consultant on compensation and further experts both internal and external. The Committee reported regularly to the plenum on the status of the project and consulted with the full Supervisory Board on fundamental issues. In addition, the Committee chair, in her capacity as LID, gathered feedback on

specific structural considerations for the new system from the investors she met at the Corporate Governance Roadshow in September. The Supervisory Board and its Personnel and Governance Committee then took this feedback into account in their decision-making and development of the new compensation system. At its meeting in October, the Supervisory Board discussed at length the new compensation concept as presented to us, comparing its parameters with those customary in executive board compensation in Germany and elsewhere. Concluding the discussion, we approved the proposed concept, based on which a detailed compensation system was then drafted. The plenum subsequently approved the detailed draft by correspondence vote in December 2022 on the recommendation of the Personnel and Governance Committee.

At our ordinary Supervisory Board meeting on February 20, 2022, we adopted the resolutions required under the current Executive Board compensation package for fiscal 2021 and 2022. We first determined performance against the defined target for the short-term incentive (STI) 2021, and then set the performance targets for the STI 2022. In addition, we resolved the individual allocation amount for the 2022 tranche of the long-term incentive 2020 (LTI 2020). Finally, we evaluated the appropriateness of the Executive Board members' compensation for 2022, and in each case found it to be appropriate in terms of amount, structure, objective criteria, and reasonable and appropriate in relation to the Company's circumstances, including its profit and outlook. We referred in this regard to a certificate obtained beforehand from an independent compensation consultant.

For more information about the STI 2021 and 2022, the LTI 2020, and the other elements of the Executive Board compensation, see the [Compensation Report](#).

Other key topics addressed at our meetings in 2022 notably included the following:

Extraordinary Meeting in February

At our extraordinary meeting on February 5, 2022, we dealt with SAP's communication with the financial markets. We were concerned about the negative market reactions to our quarterly results of late and therefore discussed the reasons for such reaction as well as future changes to SAP's financial market communication.

Meeting in February (Meeting to Discuss the Financial Statements)

In the plenary session on February 23, 2022, we received an Executive Board report on business in 2021 and adopted the budget for 2022 after discussing same extensively with the Executive Board. In addition, we turned our attention to the SAP SE financial statements and the consolidated financial statements for 2021. The Supervisory Board approved the audit and gave its consent to the financial statements and the consolidated financial statements for 2021 as well as the compensation system as presented to us. We endorsed the Executive Board's proposal concerning the appropriation of retained earnings for 2021, in accordance with the Audit and Compliance Committee's recommendation to us, and subsequently passed the proposed resolutions for the SAP SE Annual General Meeting of Shareholders on May 18, 2022. In particular, this included approving the proposal to the Annual General Meeting concerning the election of an auditor for 2022 and 2023 taking the upcoming change in auditor into account, and the adjustment of Supervisory Board compensation. The decision on the recommendation regarding the election of the auditors was preceded by a review by the Audit and Compliance Committee of the proposed auditors' independence, qualifications, and quality of work. In addition, the Executive Board gave us an overview of the Company's equity investments in 2021 and SAP's donation activities.

Extraordinary Meeting in March

On March 18, 2022, we agreed with Luka Mucic to end his Executive Board appointment contract prematurely with effect from March 31, 2023.

Meeting in April

The focus of our meeting on April 14, 2022, was SAP's profitability in its various areas of operation, the forecast operating margin, and planned investments.

Meeting in July

When we met on July 29, 2022, the Executive Board reported on the significant developments in the second quarter and gave an account of the current difficult macroeconomic situation. We also consulted with the Executive Board on the status of important projects with respect to specific products and improving SAP's performance. An ongoing cross-Company portfolio check had revealed that SAP's Litmos business, an established learning and education platform, partially overlapped some of SAP's other offerings. We therefore approved, on recommendation of the Finance and Investment Committee, the proposed sale of the Litmos business to Francisco Partners, a tech-sector investor based in the United States. The Executive Board then outlined its strategy for collaborating with the venture capital firm Sapphire Ventures in relation to the SAP-financed Sapphire Ventures funds, and explained the significance of these investment funds for the Company's development. On recommendation for the Finance and Investment Committee, which had looked in-depth at SAP's venture capital investment activities, we consented to the establishment of a new Sapphire Ventures Fund VII of US\$1.25 billion and approved a fund-of-funds investment of US\$100 million for the Sapphire Ventures Fund IV. In addition, we increased the size of the Audit and Compliance Committee from six to eight members effective August 1, 2022, and to that end elected two further Committee members.

Meeting in October

At our meeting on October 27, 2022, the Executive Board first reported on business performance in the third quarter. It also submitted the analysis requested by us of the performance of SAP S/4HANA Cloud, public edition, and explained its plans for expanding the Company's marketing strategy and sales activities for this area.

Resolutions by Correspondence Vote

We adopted, besides the above resolutions, a number of resolutions by correspondence which the relevant Committees had deliberated on in advance and recommended to us, as follows:

- **January:** Approval of the appointment of regional presidents for the EMEA South (Europe, Middle East, and Africa) and MEE (Middle and Eastern Europe) regions. Also in January, we consented to the acquisition of SAP's long-time partner Taulia, headquartered in San Francisco, USA.
- **February:** Approval of the Corporate Governance Statement for 2022.
- **April:** Resolution on management's response to a counter motion regarding an item on the agenda of the Annual General Meeting on May 18, 2022.
- **May:** Resolution on the appropriation of retained earnings as amended, and resolution to change the composition of the Supervisory Board committees at the conclusion of the 2022 Annual General Meeting of Shareholders.
- **July:** Approval of SAP's planned share buy-back program of up to €500 million.
- **August:** Resolution on the appointment of Dominik Asam as new Chief Financial Officer (CFO) effective March 7, 2023.
- **December:** Resolution on adjustments to the Executive Board members' portfolios effective January 1, 2023, necessitated by the departure of SAP's current CFO, Luka Mucic at the end of March 2023 and the assumption of his portfolio by his successor, Dominik Asam.

Format of Meetings in Fiscal 2022

	Committees							
	Plenary	Personnel and Governance	Audit and Compliance	Technology and Strategy	Nomination	People and Culture	Finance and Investment	Go-To-Market and Operations
Total number of meetings	7	4	11	6	4	5	11	4
Thereof physical meeting	0	0	2 ¹	1 ¹	0	0	0	0
Thereof hybrid session	4	3	9 ²	5 ³	2	0	10 ^{2,3}	4
Thereof telephone/video conference	3	1	0	0	2	5	1	0

¹ Thereof one joint meeting between the Technology and Strategy Committee and the Audit and Compliance Committee

² Thereof two joint meetings between the Finance and Investment Committee and the Audit and Compliance Committee

³ Thereof one joint meeting between the Finance and Investment Committee and the Technology and Strategy Committee

The Work of the Supervisory Board Committees

The committees made a key contribution to the work of the Supervisory Board in 2022, notably by preparing relevant agenda items and resolutions for Supervisory Board meetings and by regularly reporting on their deliberations in general and on their decisions taken. The following committees were in place in the year under review:

- **Personnel and Governance Committee, Audit and Compliance Committee, Finance and Investment Committee, Technology and Strategy Committee, People and Culture Committee, Nomination Committee, Go-To-Market and Operations Committee**

Each of the aforementioned committees was active in 2022. For more information about the Supervisory Board committees, particularly their respective composition, tasks, and responsibilities, see the [Corporate Governance Statement](#) and the [Corporate Governance section of SAP's Web site](#).

Besides the matters described above, the committees focused primarily on the following topics in 2022:

- The *Personnel and Governance Committee* held four regular meetings in the reporting year. In particular, the Committee, in fulfillment of the tasks assigned to it, extensively prepared and discussed in advance the deliberations of the Supervisory Board and its resolutions on the new Executive Board compensation system. It also approved two loans for officers of SAP who hold procura powers. At its meeting in February, it did preparatory work on the Supervisory Board's proposal to the 2022 Annual General Meeting of Shareholders with respect to the adjustment of Supervisory Board compensation. It also deliberated on the draft Supervisory Board report for the financial year 2021, SAP's competitive position, and the Executive Board's customer relationship management (CRM) strategy. When the Committee met in April 2022, it reviewed the composition of the Supervisory Board committees that was envisaged after the Annual General Meeting of Shareholders on May 18, 2022. On July 27, 2022, the Committee conducted its regular review of pension payments made to former Executive Board members and deliberated on the creation of a formalized process for the feedback of the Supervisory Board vis-à-vis Executive Board members. In addition, it updated the target number of women on the Executive Board and the diversity concept. It was resolved that SAP should voluntarily keep to its target of having two women on the Executive Board. The Committee additionally dealt, at both its April and July meetings, with the search for a successor to SAP's CFO Luka Mucic, who would be leaving the Company in March 2023. Even between meetings, the Committee members were in continual contact with the

personnel consulting firm that had been enlisted for this purpose, and conducted interviews of potential candidates. The Committee chairperson reported on the status of the candidate search in the meetings of the full Supervisory Board. Finally, in August, the Committee initiated the proposed resolution by the full Supervisory Board on the appointment of the new CFO. The focus of the October 2022 meeting was once again the aforementioned feedback process and its implementation. In addition, the Committee deliberated on the process for cultivating and shortlisting internal talents who were considered potential successors to Executive Board positions.

- The *Audit and Compliance Committee* held 11 regular meetings in 2022 – two of which jointly with the Finance and Investment Committee and one jointly with the Technology and Strategy Committee. Said schedule included one short telephone conference per quarter to vote on the quarterly reporting, and one session per quarter to address regular and topical agenda items. In its meetings, the Committee also had the opportunity to engage with the auditor without the Executive Board present, which was an integral part of the meeting agenda. The Committee comprehensively prepared the resolutions of the Supervisory Board for all topics assigned to it, as described above. Regular agenda items included the course of business in the respective quarter, the accounting processes, the preparation of end-of-quarter closings, and the quarterly reports due for publication. In addition, the (new) Committee chairperson was in regular contact with the auditor. Other recurring meeting topics included the monitoring of SAP's risk management system, internal control system, and compliance system (including specific compliance issues, the status of corresponding SAP-internal investigations, and case-related collaboration with authorities), and cybersecurity. In its February 2022 meeting, the Committee prepared the Supervisory Board's resolutions on the financial statements of SAP SE and the Group for 2021 in the run-up to the Annual General Meeting of Shareholders, which were adopted at the audit meeting. Other material topics dealt with by the Committee beyond the regular meeting topics in its ordinary meetings and those described in the "Sustainability" section of this report included quarter-specific matters and the compensation system for SAP's Sales organization. Further, the Committee monitored the progress of selected lawsuits involving SAP. The Audit and Compliance Committee also received regular updates on activities relating to the change in auditor for SAP's financial statements and consolidated financial statements, particularly progress reports on the onboarding of the new auditor. In addition, the Committee continually monitored the quality of the current and future auditor and the management report. To this end – in addition to evaluating satisfaction surveys for the previous year's audit by the current auditor – the Committee obtained and referred to regular reports from the auditor on its internal quality assurance standards and to any material findings from internal quality audits, external quality controls, and peer reviews, and from any investigations conducted by the government or regulators into the auditor's audits. The Committee discussed the audit focus for 2022 with the auditor at its meeting in July. As reported in more detail below, the Committee also held two joint meetings with the Finance and Investment Committee in February and December 2022 to discuss the Group annual plan for 2022 and the preliminary Group annual plan for 2023. The joint meeting with the Technology and Strategy Committee in July focused on the results of the assessment by NIST (National Institute of Standards and Technology, a department of the U.S. Department of Commerce) and the progress of certain internal audits. The auditor attended all Audit and Compliance Committee meetings except for the joint meetings with the Finance and Investment Committee and the Technology and Strategy Committee, and reported in depth on its audit work and on its quarterly reviews of selected software and cloud agreements.
- The *Finance and Investment Committee* held six regular meetings and five extraordinary meetings in 2022, and outside these meetings it passed two resolutions by correspondence. It held a joint meeting with the Audit and Compliance Committee in February and again in December 2022, and a joint meeting with the Technology and Strategy Committee in December 2022 as described in more detail below. In an extraordinary meeting in January 2022, the Committee approved the acquisition of a minority interest in Icertis, a contract lifecycle management specialist based in the United States. It also discussed the planned acquisition of Taulia, an American working capital management firm, at length and ultimately resolved to recommend the acquisition to the Supervisory Board. In the joint meeting with the Audit and Compliance Committee in

February 2022, the members of both Committees discussed the annual budget for 2022 and voted in favor of recommending its approval to the Supervisory Board. At the Finance and Investment Committee meeting on the same day, the new head of the Investor Relations team introduced himself, provided an overview of the core topics in his remit, and presented his strategic concept. When it met in April, the Committee and the Executive Board discussed selected investor relations and capital market topics, strategic business plans for various product areas, plans for future collaboration with SAP partners, and potential divestments. The Executive Board also reported on the major investments planned and on its analysis of employee efficiency. During the Committee's first meeting in July, it deliberated on the sale of the Litmos business as described above. At its second meeting in July, the Committee dealt with Investor Relations matters and engaged in a detailed discussion about the efficiency of SAP's development organization. The Executive Board also presented its new strategy for investing in the venture capital sector in collaboration with the Sapphire Ventures team. After extensive consultation, the Committee resolved to recommend that the Supervisory Board approve the set-up of a new fund for direct investments totaling US\$1.25 billion and a further venture capital fund for fund-of-funds investments totaling US\$100 million. The Committee also resolved, by way of correspondence, to recommend the Supervisory Board's consent to a share buy-back program worth €500 million and approved the extension of existing bilateral bank loans. In the October meeting, the Executive Board updated the Committee on investor relations and treasury topics, explained its plans to streamline the portfolio, and presented its regular report on the success of the Company's recent acquisitions. Beyond this, the Committee and the Executive Board discussed management efficiency and competency, and examined process optimizations in the cloud. In addition, the Committee reviewed its own activities and the format of its meetings, with a view to good corporate governance. At its two extraordinary meetings held on December 12 and 13, 2022, the Committee was apprised of planned improvements to selected business areas and drafted a resolution to recommit funds previously dedicated in July 2022 for Sapphire Ventures fund-of funds activities. In December 2022, the Committee held a second joint meeting with the Audit and Compliance Committee, at which the Executive Board presented the preliminary Group annual plan for 2023. This meeting was held in preparation for the Supervisory Board meeting in February 2023, at which the full Supervisory Board resolved to approve the Group annual plan for 2023.

- The *Technology and Strategy Committee* held six meetings in 2022, which included one joint meeting with the Audit and Compliance Committee and one joint meeting with the Finance and Investment Committee. The Committee discussed the outlook for key technology trends in the software industry in the years to come and SAP's corporate and product strategies. The Executive Board explained SAP's midmarket and customer experience strategies to the Committee members at its February meeting, where the two bodies also discussed the specific requirements resulting from the rapid growth and expansion of medium-sized customers. In April, the Committee turned its attention to artificial intelligence and "data to value" – the act of deriving business value from data – placing particular focus on the integration of data sources in compliance with legal and regulatory requirements. In July 2022, the Executive Board updated the Committee on the strategic plans for process intelligence and automation and explained how SAP Signavio solutions would be used to expand SAP's opportunities in the business process optimization space. At the joint meeting with the Audit and Compliance Committee, also in July, the Committee was updated on progress in the areas of enterprise vulnerability management and asset management. When it met in October 2022, the Committee examined SAP's innovation strategy as regards business transformation, business network, and sustainability. At their joint meeting in December, the Technology and Strategy Committee and the Finance and Investment Committee deliberated on the efficiency of SAP's development organization and were given an overview of SAP's current development processes and tools by the Executive Board.
- The *People and Culture Committee* met five times in the reporting year. The focus of its February meeting was on strategic personnel planning as relate to the "the future of work" concept and the evolution of skills. The Committee was presented in this regard with a detailed overview of the past and expected demographic development of the SAP SE workforce, and discussed the skills and

expertise the Company would require of employees in the future. In addition, the global head of Diversity and Inclusion introduced herself to the Committee, following which the Committee looked at the career development of employees in expert functions and discussed the refining of SAP's leadership culture introduced the year before. Performance management was a key topic of the July meeting, where an initiative to promote appreciation and respect at the Company was presented. The Committee then reviewed the progress made in this initiative and the feedback received from employees in this connection at its October meeting, where it also looked at investments in headcount and the compensation budgets for 2023. The Committee held an extraordinary meeting in November where it and the Executive Board looked in-depth at the talent development process the Company was pursuing in the SAP S/4HANA area. The two bodies addressed three specific aspects in this regard: improving the quality of the recruitment process, training and upskilling staff, and promoting the performance culture at SAP.

- The *Nomination Committee* met four times in 2022. In February 2022, it deliberated on proposed successors for the departing Supervisory Board member Bernard Liautaud. Following corresponding interviews and careful evaluation of the competencies of all persons under consideration, it resolved the nomination of Jennifer Li as further candidate for election to the Supervisory Board by the Annual General Meeting on May 18, 2022. The Committee came to the conclusion that Jennifer Li had the best qualifications to succeed Bernard Liautaud and that her other mandates outside SAP would not prevent her from performing her duties as a member of the Supervisory Board and making valuable contributions to the work of the SAP Supervisory Board. The Committee also met on July 27, 2022, where it discussed succession planning on the Supervisory Board, particularly for the position of chairperson, and agreed that the search for suitable candidates should continue to be conducted both within SAP and outside the Company. As in the past, the Committee enlisted the help of a renowned personnel consulting firm for this purpose. In its meeting on October 27, 2022, the Committee members discussed the status of the candidate search and the initial results submitted to it by the consulting firm. At the Committee's meeting in December, the personnel consultant presented a short list of candidates, which the Committee discussed in depth before deliberating on the next steps in the search.
- The *Go-To-Market and Operations Committee* likewise met four times in the reporting year. At the February meeting, the Committee was informed of the cloud revenues generated in 2022 versus the year before, apprised of the current cloud backlog growth, and presented with the Executive Board's current strategy to accelerate growth in the cloud. In April, the Executive Board presented a new strategy for technology and sales that addressed how SAP would position its technologies in the market going forward and the role SAP Business Technology Platform would play in this. In July, the Committee was updated on SAP's competitive situation and, based on this information, discussed with the Executive Board what strategic decisions would result from this. The two bodies then deliberated on how SAP cloud solutions could be run more efficiently in key strategic business areas. The October meeting focused on the transformation of the Cloud Success Services (CSS) area, which had been triggered at the beginning of 2021. The core of this transformation was the merger of various user departments into one CSS unit that supported SAP's cloud portfolio. The Executive Board first explained how this measure was intended to ensure end-to-end customer relationships that focused on customer success and customer lifetime value. It then presented the Committee with the CSS targets and the Company's plans for expanding the organization further. The Committee also examined how SAP's partner ecosystem evolved with the shift to the cloud. The business update included a discussion about how SAP would react in the event of interruptions to its energy supply. The Executive Board explained to the Committee how SAP was currently protecting its data centers and for which scenarios the Company was preparing itself, including in the case of hyperscalers and their server systems, which would likewise be affected by energy bottlenecks.

The work of the committees and their regular reports to the full Supervisory Board ensured that we were kept fully informed of all matters covered by the committees and were able to discuss them thoroughly.

Conflicts of Interest

Members of the Supervisory Board and of the Executive Board had no conflicts of interest that recommendations E.1 and E.2 of the GCGC require to be disclosed to the Supervisory Board. Insofar as Supervisory Board members hold executive positions in companies or have material equity in companies that currently have business dealings with SAP, we do not see any impairment of their independence. The scope of these transactions is relatively small and, moreover, takes place at arm's length.

Training and Professional Development

The members of the Supervisory Board were once again offered various training and professional development opportunities throughout the year, with appropriate support from the Company. Onboarding sessions and leaflets are available for new Supervisory Board members to familiarize themselves with their tasks and responsibilities when they assume office. Where it made sense, presentations and training offerings were recorded and placed on a specially configured training platform to enable the remaining Supervisory Board members to take part in them as well. The members of the Audit and Compliance Committee were invited to short seminars in April 2022 on "New EU reporting requirements for sustainability" (Corporate Sustainability Reporting Directive), and on the "OECD/G20 New World Tax Order for Digital Business" (a basic approach adopted by OECD/G20 to reform international business taxation). An external expert attending the Supervisory Board's meeting in October provided a general overview of the importance of sustainability for companies and the expectation of investors where this was concerned. In December 2022, external experts held an information session for members of the Supervisory Board on the future legal framework in the area of ESG and its relevance for the work of the Supervisory Board.

SAP SE and Consolidated Financial Reports for 2022

KPMG AG Wirtschaftsprüfungsgesellschaft, Berlin (KPMG) audited the SAP SE and consolidated financial reports for 2022. The Annual General Meeting of Shareholders elected KPMG as the SAP SE and SAP Group auditor on May 18, 2022. The Supervisory Board proposed the appointment of KPMG on the recommendation of the Audit and Compliance Committee. Prior to the proposed resolution being put to the Annual General Meeting of Shareholders, KPMG had confirmed to the chairperson of the Supervisory Board and the Audit and Compliance Committee that circumstances did not exist that might prejudice or raise any doubt concerning its independence as the Company's auditor. In that connection, KPMG informed us of the volume of the services that were not part of the audit which it had either provided to the Group in the past year or was engaged to provide in the year to come. The Supervisory Board has agreed with KPMG that the auditor should report to the Supervisory Board and record in the auditor's report any fact found during the audit that is inconsistent with the declaration given by the Executive Board and the Supervisory Board concerning implementation of the German Corporate Governance Code. KPMG examined the SAP SE financial statements prepared in accordance with the German Commercial Code, the consolidated financial statements prepared in accordance with International Financial Reporting Standards (IFRSs) as required by the German Commercial Code, section 315e, and the combined SAP Group and SAP SE management report prepared in accordance with the German Commercial Code, and certified them without qualification. The auditor thus confirmed that, in its opinion and based on its audit in accordance with the applicable accounting principles, the SAP SE and consolidated financial statements give a true and fair view of the net assets, financial position, and results of operations of SAP SE and the SAP Group. The auditor also confirmed that the combined SAP SE and SAP Group management report is consistent with the corresponding financial statements and as a whole gives a suitable view of the position of SAP SE and the SAP Group and of foreseeable opportunities and risks. In accordance with section 317 (3a) of the German Commercial Code, the auditor also examined and confirmed that the renderings of the financial statements, the management report, the consolidated financial statements, and the combined management report contained in the files submitted on an electronic data carrier, which can be accessed by the issuer on the secure client portal, and prepared for the purposes of

disclosure comply in all material respects with the requirements of section 328 (1) of the German Commercial Code regarding the electronic reporting format ("ESEF format"). KPMG had completed its audit of SAP's internal control over financial reporting and certified without qualification that it complies with the applicable U.S. standards. The auditor stated in its opinion that it considers SAP's internal controls with respect to the consolidated financial statements to be effective in all material respects. Additionally, it provided assurance on the non-financial declaration and the disclosures contained therein on the topics identified as material – namely, the environment, employees, human rights, corruption and bribery, customer loyalty, and data privacy and data security – in the combined management report, and on the separate review of the compensation report and selected qualitative and quantitative sustainability disclosures outside of the financial statements and management report. All Audit and Compliance Committee members and Supervisory Board members received – initially in the form of drafts that were identical to the final documents – the documents concerning the financial statements mentioned above, the audit reports prepared by KPMG, and the Executive Board's proposal concerning the appropriation of retained earnings in good time. On February 22, 2023, the Executive Board prepared the financial accounts of SAP SE and the Group for 2022, comprising the SAP SE financial statements, the consolidated financial statements, and the combined management report, and submitted them without delay to the Supervisory Board.

The Executive Board explained the financial statements of SAP SE and the SAP Group and its proposal concerning the appropriation of retained earnings at the meeting of the Audit and Compliance Committee on February 22, 2023 (based on the drafts identical to the final documents) and at the meeting of the Supervisory Board on February 22, 2023. Members of the Executive Board answered questions from the Committee and the Supervisory Board. At the Audit and Compliance Committee meeting, they also explained the compensation report and the Annual Report on Form 20-F prepared in accordance with the applicable U.S. standards.

After the Executive Board had explained them, the Audit and Compliance Committee and the Supervisory Board reviewed the financial statement documents (based on drafts identical to the final documents), taking KPMG's audit reports (or the drafts identical to the final documents) into account. The Audit and Compliance Committee then passed the compensation report on to the Supervisory Board for release. The representative of the auditor who attended presented full reports on the audit and the results of the audit to the Audit and Compliance Committee and Supervisory Board meetings and explained its audit reports (or final drafts thereof). The auditor also reported that it had not identified any material weaknesses in SAP's internal control and risk-management systems for financial reporting. Both the Audit and Compliance Committee and the Supervisory Board asked detailed questions about the form, scope, and results of the audit. The Audit and Compliance Committee reported to the Supervisory Board on its own review of the financial statements of SAP SE and the SAP Group, its discussions with the Executive Board and with the auditor, and its supervision of the financial reporting process. It confirmed that, as part of its supervisory work, it had addressed the SAP Group's internal control, risk management, and internal auditing systems, and found the systems to be effective.

The Committee also reported that KPMG had told it that no circumstances had arisen that might give cause for concern about KPMG's impartiality, and informed us about the services KPMG had provided that were not part of the audit. The Committee reported that it had examined the auditor's independence, taking the non-audit services it had rendered into consideration, and stated that, in the Committee's opinion, the auditor possessed the required degree of independence and professional qualification.

The Audit and Compliance Committee and the Supervisory Board satisfied themselves that KPMG had conducted the audit properly. In particular, they concluded that both the audit reports and the audit itself fulfilled the legal requirements. On the basis of the report and the Audit and Compliance Committee's recommendation, the Supervisory Board approved the results of the audit and, since there were no findings from our own examination, we gave our consent to the SAP SE financial statements, the consolidated financial statements, the combined Group management report, and adopted the compensation report pursuant to the German Stock Corporation Act, section 162. The

financial statements and combined management report were thus formally adopted upon approval by the Supervisory Board. The Supervisory Board's opinion of the Company and the Group coincided with that of the Executive Board as set out in the combined management report. The Supervisory Board considered the proposal presented by the Executive Board concerning the appropriation of retained earnings. We had regard to the requirements of dividends policy, the effects on the liquidity of SAP SE and the SAP Group, and the interests of the shareholders. We also discussed these matters with the auditor. We then endorsed the Executive Board's proposal concerning the appropriation of retained earnings, in accordance with the Audit and Compliance Committee's recommendation. The corporate governance statement pursuant to the German Commercial Code, sections 315d and 289f was approved for publication by the Supervisory Board by way of correspondence vote prior to the meeting to discuss the financial statements. Finally, we adopted this present Report.

Changes on the Executive Board and Supervisory Board in 2022

There were no changes on our Executive Board in 2022. The appointment of the new CFO as described above will only come into effect in 2023.

The Supervisory Board bade farewell in 2022 to Bernard Liautaud who, after 14 years as a member, resigned from his position with effect from the closing of the Annual General Meeting of Shareholders on May 18, 2022. The Supervisory Board thanks Bernard Liautaud for his commitment to SAP. On May 18, 2022, the Annual General Meeting of Shareholders elected Jennifer Li to the Supervisory Board as his successor.

In addition to the ongoing COVID-19 pandemic, we now face major challenges from the war in Ukraine and its humanitarian, geopolitical, and economic implications. The Supervisory Board thanks the members of the Executive Board and all SAP employees for their tireless commitment to SAP under these extraordinary circumstances.

For the Supervisory Board

Professor Hasso Plattner

(Chairperson)

Responsibility Statement

To the best of our knowledge, and in accordance with the applicable reporting principles, the Consolidated Financial Statements give a true and fair view of the assets, finances, and operating results of the SAP Group, and the management report of the Group and SAP SE includes a fair review of the development and performance of the business and the position of the Group and SAP SE, together with a description of the principal opportunities and risks associated with the expected development of the Group and SAP SE.

Walldorf, February 22, 2023

SAP SE

Walldorf, Germany

Executive Board of SAP SE

Christian Klein

Sabine Bendiek

Luka Mucic

Dr. Jürgen Müller

Scott Russell

Thomas Saueressig

Julia White

Independent Auditor's Report

To SAP SE, Walldorf

Report on the Audit of the Consolidated Financial Statements and of the Group Management Report

Opinions

We have audited the consolidated financial statements of SAP SE, Walldorf, and its subsidiaries (the Group), which comprise the consolidated statements of financial position as at December 31, 2022, consolidated income statements, consolidated statements of comprehensive income, consolidated statements of changes in equity and consolidated statements of cash flows for the financial year from January 1 to December 31, 2022 and notes to the consolidated financial statements, including a summary of significant accounting policies.

In addition, we have audited the combined Group Management Report by the SAP Group and the Management Report of SAP SE, Walldorf ("Group Management Report") for the financial year from January 1 to December 31, 2022. In accordance with German legal requirements, we have not audited the content of those components of the Group Management Report specified in the "Other Information" section of our auditor's report.

In our opinion, on the basis of the knowledge obtained in the audit,

- the accompanying consolidated financial statements comply, in all material respects, with the IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to Section 315e (1) HGB [Handelsgesetzbuch: German Commercial Code], as well as the IFRSs as adopted by the International Accounting Standards Board and, in compliance with these requirements, give a true and fair view of the assets, liabilities and financial position of the Group as at December 31, 2022, and of its financial performance for the financial year from January 1 to December 31, 2022 and
- the accompanying Group Management Report as a whole provides an appropriate view of the Group's position. In all material respects, this Group Management Report is consistent with the consolidated financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development. Our opinion on the Group Management Report does not cover the content of those components of the Group Management Report specified in the "Other Information" section of the auditor's report.

Pursuant to Section 322 (3) sentence 1 HGB, we declare that our audit has not led to any reservations relating to the legal compliance of the consolidated financial statements and of the Group Management Report.

Basis for the Opinions

We conducted our audit of the consolidated financial statements and of the Group Management Report in accordance with Section 317 HGB and the EU Audit Regulation No. 537/2014 (referred to subsequently as "EU Audit Regulation") and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer [Institute of Public Auditors in Germany] (IDW) as well as in supplementary compliance with the International Standards on Auditing (ISAs) and guidelines of the Public Company Accounting Oversight Board (United States).

Our responsibilities under those requirements, principles and standards are further described in the "Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report" section of our auditor's report. We are independent of the group entities in accordance with the requirements of European law and German commercial and professional law, and we have fulfilled our other German professional responsibilities in accordance with these requirements. In addition, in accordance with Article 10 (2) point (f) of the EU Audit Regulation, we declare that we have not provided non-audit services prohibited under Article 5 (1) of the EU Audit Regulation. We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our opinions on the consolidated financial statements and on the Group Management Report.

Key Audit Matters in the Audit of Consolidated Financial Statements

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements for the financial year from January 1 to December 31, 2022. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, we do not provide a separate opinion on these matters.

Software license revenue recognition

Refer to note (A.1) – Revenue and Group Management Report, section Risk Management and Risks.

THE FINANCIAL STATEMENT RISK

In the financial year 2022 SAP generated revenue of EUR 30,871 million, of which EUR 13,965 million relate to revenues from sales of software licenses and support.

The evaluation of software licenses revenue recognition bears an inherent risk of errors as SAP's software customer contracts are complex. SAP defined detailed policies, procedures and processes to manage the accounting for its customer contracts, which are also described in the notes. Applying them often requires significant judgments, in particular in the assessment of the following:

1. whether various contracts are economically interrelated,
2. whether products and services qualify as separate performance obligations, and
3. the allocation of the transaction price of a customer contract to the performance obligations in the contract based on standalone-selling prices.

There is the financial statement risk that the recognition cut-off of software license revenue as at the balance sheet date is incorrect and that revenues are allocated incorrectly.

OUR AUDIT APPROACH

On software revenue recognition, we evaluated the compliance of SAP's accounting policies with the IFRS Framework and IFRS 15.

We evaluated the design and tested the operating effectiveness of certain internal controls related to the revenue process including controls related to the identification of economically interrelated contracts, separate performance obligations and allocation of the transaction price to the performance obligations in the contract.

For a sample of customer contracts, which were selected using a statistical approach, we:

- inspected the underlying contractual agreements and other related documents as well as inquired with SAP's accounting and/or sales representatives to evaluate SAP's assessment of whether contracts were economically interrelated as well as to evaluate the identified performance obligations and allocation of transaction price,

- obtained and inspected external confirmations of the key terms and conditions from the respective customers to test whether contracts were economically interrelated, as well as to evaluate the identified performance obligations,
- evaluated the allocation of the transaction price for each of the deliverables that qualified as a separate performance obligation by assessing the methodology applied and testing mathematical accuracy of the underlying calculations.

For the majority of software support revenue, we compared the actual support revenue with the support revenue that is expected based on last year's support revenue, the loss rate of last year's support contracts and the current year software sales that trigger additional support revenue.

OUR OBSERVATIONS

SAP has developed an adequate framework for determining the accounting treatment for its revenue. For the vast majority of the software arrangements entered into during 2022, it was clear which of SAP's revenue recognition policies should be applied. Where there was room for interpretation, SAP's judgment was balanced and appropriate.

Assessment of the Group's uncertain tax treatments

Refer to note (C.5) – Income Taxes, and Group Management Report section Risk Management and Risks.

THE FINANCIAL STATEMENT RISK

SAP operates in multiple tax jurisdictions with complexities and uncertainties due to different interpretations of tax laws, such as those involving transfer pricing and intercompany transactions between SAP Group entities. The determination of provisions for tax uncertainties requires SAP to make judgments on tax issues and develop estimates regarding SAP's exposure to tax risks. SAP regularly engages external experts to provide tax opinions to support their own risk assessment. The risk for the consolidated financial statements relates to the completeness, measurement and disclosure of the provision for uncertain tax treatments. As of December 31, 2022 SAP disclosed contingent liabilities relating to tax uncertainties of EUR 1,571 million.

OUR AUDIT APPROACH

We evaluated the design and tested the operating effectiveness of certain internal controls over the tax process including controls over the Group's assessment of tax law and the process to estimate the related exposures. We assessed the competency, skills and objectivity of the external experts and evaluated the related expert opinions. We inquired of the Group's tax department and inspected correspondence with the relevant tax authorities. We involved tax professionals with specialized skills and knowledge, who assisted in evaluating SAP's conclusions over the estimate of tax uncertainties based on their knowledge and experience regarding the application of relevant legislation by tax authorities and courts.

Finally, we assessed whether the disclosures in the notes with respect to uncertain tax treatments are complete and appropriate.

OUR OBSERVATIONS

SAP's judgments as to the amounts recognized as tax provisions for tax uncertainties as of December 31, 2022 are appropriate. The disclosures in the notes to the consolidated financial statements are complete and appropriate.

Valuation of unlisted equity securities

Refer to note (D.6) – Equity Investments and note (F.2) – Fair Value Disclosures on Financial Instruments

THE FINANCIAL STATEMENT RISK

As of December 31, 2022, the Company holds unlisted equity securities with a carrying amount of EUR 4,879 million. These financial instruments are classified as equity securities at fair value through profit and loss and their valuations are based on significant unobservable inputs (Level 3 of the fair value hierarchy).

The measurement of fair value of such investments is complex and, with regard to the assumptions made, highly dependent on management's estimates and judgments. This applies particularly to selection of the appropriate valuation method and the determination of the significant unobservable inputs.

There is the risk for the consolidated financial statements that the valuations are not appropriate. There is also the risk that the related disclosures in the notes are not appropriate.

OUR AUDIT APPROACH

We evaluated the design and implementation and tested the operating effectiveness of certain internal controls over the Company's investments process. This included controls related to selection of the valuation model and the relevance and reliability of the significant unobservable inputs. We also involved financial instrument valuation professionals with specialized skills and knowledge, who assisted in testing management's ability to produce a fair value estimate compliant with IFRS 13 Fair Value Measurements for a selection of investments by (1) testing the appropriateness of the valuation method selected by comparing it to our expectation based on industry experience and knowledge of the investment, and (2) assessing the reliability and relevance of the significant unobservable inputs by comparing them to historical and market information.

Finally, we assessed whether the related disclosures in the notes regarding the determination of fair value are appropriate.

OUR OBSERVATIONS

The valuation method used for the valuation of unlisted equity securities is appropriate and in line with the accounting policies. The Company's underlying assumptions and data are appropriate. The related disclosures in the notes are appropriate.

Other Information

The Executive Board and the Supervisory Board, respectively, of SAP SE is responsible for the other information. The other information comprises the following components of the Management Report, whose content was not audited:

- the combined non-financial statement, included in section "Non-Financial Statement Including Information on Sustainable Activities" of the Group Management Report,
- the corporate governance statement, referred to in section "Corporate Governance Fundamentals" of the Group Management Report, and
- information extraneous to the Group Management Report and marked as unaudited.

The other information also includes the annual report on Form 20-F and remaining parts of the annual report.

The other information does not include the consolidated financial statements, group management report information and our auditor's report thereon.

Our opinions on the consolidated financial statements and on the Group Management Report do not cover the other information and consequently we do not express an opinion or any other form of assurance conclusion thereon.

In connection with our audit, our responsibility is to read the other information and, in so doing, to consider whether the other information

- is materially inconsistent with the consolidated financial statements, with the Group Management Report information audited for content or our knowledge obtained in the audit, or
- otherwise appears to be materially misstated.

If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

In addition, we were engaged to perform an independent assurance engagement on selected qualitative and quantitative sustainability disclosures of the integrated report 2022. In regard to the nature, extent and conclusions of this independent assurance engagement we refer to our Independence Assurance Report dated on February 22, 2023.

Responsibilities of the Executive Board and the Supervisory Board for the Consolidated Financial Statements and the Group Management Report

The Executive Board of SAP SE is responsible for the preparation of the consolidated financial statements that comply, in all material respects, with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to Section 315e (1) HGB as well as IFRSs as adopted by the International Accounting Standards Board and that the consolidated financial statements, in compliance with these requirements, give a true and fair view of the assets, liabilities, financial position, and financial performance of the Group. In addition, the Executive Board is responsible for such internal control as the Executive Board has determined necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud (i.e., fraudulent financial reporting and misappropriation of assets) or error.

In preparing the consolidated financial statements, the Executive Board is responsible for assessing the Group's ability to continue as a going concern. The Executive Board also has the responsibility for disclosing, as applicable, matters related to going concern. In addition, the Executive Board is responsible for financial reporting based on the going concern basis of accounting unless there is an intention to liquidate the Group or to cease operations, or there is no realistic alternative but to do so.

Furthermore, the Executive Board is responsible for the preparation of the Group Management Report that, as a whole, provides an appropriate view of the Group's position and is, in all material respects, consistent with the consolidated financial statements, complies with the German legal requirements and appropriately presents the opportunities and risks of future development. In addition, the Executive Board is responsible for such arrangements and measures (systems) as the Executive Board has considered necessary to enable the preparation of the Group Management Report that is in accordance with the applicable German legal requirements, the German Accounting Standards number 17 and 20 (GAS 17, GAS 20) and the IFRS Practice Statement Management Commentary and to be able to provide sufficient appropriate evidence for the assertions in the Group Management Report.

The Supervisory Board is responsible for overseeing the Group's financial reporting process for the preparation of the consolidated financial statements and of the Group Management Report.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and whether the Group Management Report as a whole provides an appropriate view of the Group's position and, in all material respects, is consistent with the consolidated financial statements and the knowledge obtained in the audit, complies with the German legal requirements and appropriately presents the opportunities and risks of future development, as well as to issue an auditor's report that includes our opinions on the consolidated financial statements and on the Group Management Report.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Section 317 HGB and the EU Audit Regulation and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer (IDW) as well as in supplementary compliance with ISAs and guidelines of the Public Company Accounting Oversight Board (United States) will always detect a material misstatement. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements and this Group Management Report.

We exercise professional judgment and maintain professional scepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements and of the Group Management Report, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinions. The risk of not detecting a material misstatement resulting from fraud is higher than the risk of not detecting a material misstatement resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit of the consolidated financial statements and of arrangements and measures (systems) relevant to the audit of the Group Management Report in order to design audit procedures that are appropriate in the circumstances.
- Evaluate the appropriateness of accounting policies used by the Executive Board and the reasonableness of accounting estimates made by the Executive Board and related disclosures.
- Conclude on the appropriateness of the Executive Board's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in the auditor's report to the related disclosures in the consolidated financial statements and in the Group Management Report or, if such disclosures are inadequate, to modify our respective opinions. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to be able to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements present the underlying transactions and events in a manner that the consolidated financial statements give a true and fair view of the assets, liabilities, financial position and financial performance of the Group in compliance with IFRSs as adopted by the EU as well as with IFRSs as adopted by the International Accounting Standards Board and the additional requirements of German commercial law pursuant to Section 315e (1) HGB.

- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express opinions on the consolidated financial statements and on the Group Management Report. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our opinions.
- Evaluate the consistency of the Group Management Report with the consolidated financial statements, its conformity with German law, and the view of the Group's position it provides.
- Perform audit procedures on the prospective information presented by the Executive Board in the Group Management Report. On the basis of sufficient appropriate audit evidence we evaluate, in particular, the significant assumptions used by the Executive Board as a basis for the prospective information, and evaluate the proper derivation of the prospective information from these assumptions. We do not express a separate opinion on the prospective information and on the assumptions used as a basis. There is a substantial unavoidable risk that future events will differ materially from the prospective information.

We communicate with the Supervisory Board regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide the Supervisory Board with a statement that we have complied with relevant independence requirements and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable the actions taken or safeguards applied to eliminate independence threats.

From the matters communicated with the Supervisory Board, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report, unless law or regulation precludes public disclosure about the matter.

Other Legal and Regulatory Requirements

Report on Internal Control over Financial Reporting in the Consolidated Financial Statements pursuant to PCAOB

Opinion on Internal Control over Financial Reporting in the Consolidated Financial Statements

We have audited the internal control over financial reporting in the consolidated financial statements of SAP SE, Walldorf, and its subsidiaries in place as at December 31, 2022. This control system is based on criteria set out in the Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, SAP maintained, in all material respects, effective internal control over financial reporting in the consolidated financial statements as at December 31, 2022 based on the criteria set out in the Internal Control – Integrated Framework (2013) issued by the COSO.

Executive Board's and Supervisory Board's Responsibility for the Internal Control over Financial Reporting in the Consolidated Financial Statements

SAP SE's Executive Board is responsible for maintaining effective internal control over financial reporting in the consolidated financial statements and assessing its effectiveness, which is included in the Executive Board's report on the internal control over consolidated financial reporting.

A company's internal control over financial reporting in the consolidated financial statements is a process designed to provide reasonable assurance regarding the reliability of financial reporting in the consolidated financial statements and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial

reporting in the consolidated financial statements includes policies and procedures to (1) ensure an accounting system that in reasonable detail accurately and fairly reflects the transactions and dispositions of the company's assets, (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect material misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

The Supervisory Board is responsible for overseeing the Group's internal control over financial reporting in the consolidated financial statements.

Auditor's Responsibility for the Internal Control over Financial Reporting in the Consolidated Financial Statements

Our responsibility is to express an opinion on the internal control over financial reporting in the consolidated financial statements based on our audit. We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audits to obtain reasonable assurance about whether effective internal control over financial reporting in the consolidated financial statements was maintained in all material respects. Our audit of internal control over financial reporting in the consolidated financial statements included obtaining an understanding of internal control over financial reporting, assessing the risk of material deficiencies in internal control, testing and evaluating the design and operating effectiveness of internal control based on this assessment, and performing such other procedures as we considered necessary in the circumstances.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Report on the Assurance on the Electronic Rendering of the Consolidated Financial Statements and the Group Management Report Prepared for Publication Purposes in Accordance with Section 317 (3a) HGB

We have performed assurance work in accordance with Section 317 (3a) HGB to obtain reasonable assurance about whether the rendering of the consolidated financial statements and the group management report (hereinafter the "ESEF documents") contained in the electronic file „sap-2022-12-31-DE.zip“ (SHA256-Hashwert: 80f4afbc863116ce74f79636274454b3ed17912533f2b0fca74443e6d9ac657a) made available and prepared for publication purposes complies in all material respects with the requirements of Section 328 (1) HGB for the electronic reporting format ("ESEF format"). In accordance with German legal requirements, this assurance work extends only to the conversion of the information contained in the consolidated financial statements and the group management report into the ESEF format and therefore relates neither to the information contained in these renderings nor to any other information contained in the file identified above.

In our opinion, the rendering of the consolidated financial statements and the group management report contained in the electronic file made available, identified above and prepared for publication purposes complies in all material respects with the requirements of Section 328 (1) HGB for the electronic reporting format. Beyond this assurance opinion and our audit opinion on the accompanying consolidated financial statements and the accompanying group management report for the financial year from January 1, 2022 to December 31, 2022 contained in the "Report on the Audit of the Consolidated Financial Statements and the Group Management Report" above, we do not

express any assurance opinion on the information contained within these renderings or on the other information contained in the file identified above.

We conducted our assurance work on the rendering of the consolidated financial statements and the group management report contained in the file made available and identified above in accordance with Section 317 (3a) HGB and the IDW Assurance Standard: Assurance Work on the Electronic Rendering of Financial Statements and Management Reports Prepared for Publication Purposes in Accordance with Section 317 (3a) HGB (IDW AsS 410 (6.2022)). Our responsibility in accordance therewith is further described below. Our audit firm applies the IDW Standard on Quality Management 1: Requirements for Quality Management in Audit Firms (IDW QS 1).

The company's management is responsible for the preparation of the ESEF documents including the electronic rendering of the consolidated financial statements and the group management report in accordance with Section 328 (1) sentence 4 item 1 HGB and for the tagging of the consolidated financial statements in accordance with Section 328 (1) sentence 4 item 2 HGB.

In addition, the company's management is responsible for such internal control that they have considered necessary to enable the preparation of ESEF documents that are free from material intentional or unintentional non-compliance with the requirements of Section 328 (1) HGB for the electronic reporting format.

The Supervisory Board is responsible for overseeing the process of preparing the ESEF documents as part of the financial reporting process.

Our objective is to obtain reasonable assurance about whether the ESEF documents are free from material intentional or unintentional non-compliance with the requirements of Section 328 (1) HGB.

We exercise professional judgement and maintain professional scepticism throughout the assurance work. We also:

- Identify and assess the risks of material intentional or unintentional non-compliance with the requirements of Section 328 (1) HGB, design and perform assurance procedures responsive to those risks, and obtain assurance evidence that is sufficient and appropriate to provide a basis for our assurance opinion.
- Obtain an understanding of internal control relevant to the assurance on the ESEF documents in order to design assurance procedures that are appropriate in the circumstances, but not for the purpose of expressing an assurance opinion on the effectiveness of these controls.
- Evaluate the technical validity of the ESEF documents, i.e. whether the file made available containing the ESEF documents meets the requirements of the Delegated Regulation (EU) 2019/815, as amended as at the reporting date, on the technical specification for this electronic file.
- Evaluate whether the ESEF documents provide an XHTML rendering with content equivalent to the audited consolidated financial statements and the audited group management report.
- Evaluate whether the tagging of the ESEF documents with Inline XBRL technology (iXBRL) in accordance with the requirements of Articles 4 and 6 of the Delegated Regulation (EU) 2019/815, as amended as at the reporting date, enables an appropriate and complete machine-readable XBRL copy of the XHTML rendering.

Further Information pursuant to Article 10 of the EU Audit Regulation

We were elected as group auditor at the annual general meeting on May 18, 2022. We were engaged by the Chairman of the Audit and Compliance Committee of the Supervisory Board of SAP SE on June 9, 2022, and this engagement was confirmed on July 13, 2022. We have been the group auditor of SAP SE without interruption since the financial year 2002.

We declare that the opinions expressed in this auditor's report are consistent with the additional report to the audit committee pursuant to Article 11 of the EU Audit Regulation (long-form audit report).

In addition to the financial statement audit, we have provided to group entities the following services that are not disclosed in the consolidated financial statements or in the Group Management Report:

We audited the financial statements of SAP SE and performed various financial statement audits at subsidiaries. Furthermore, other assurance services required by law or on a contractual basis were performed, including an assurance engagement on selected qualitative and quantitative sustainability disclosures of the Integrated Report 2022 and an EMIR assurance service pursuant to section 20 of German Securities Trading Act [WpHG] and service organization attestation procedures.

Other matter – Use of the Auditor's Report

Our auditor's report must always be read together with the audited consolidated financial statements and the audited group management report as well as the examined ESEF documents. The consolidated financial statements and group management report converted to the ESEF format – including the versions to be entered in the company register – are merely electronic renderings of the audited consolidated financial statements and the audited group management report and do not take their place. In particular, the ESEF report and our assurance opinion contained therein are to be used solely together with the examined ESEF documents made available in electronic form.

German Public Auditor Responsible for the Engagement

The German Public Auditor responsible for the engagement is Bodo Rackwitz.

Mannheim, February 22, 2023

KPMG AG
Wirtschaftsprüfungsgesellschaft

Rackwitz
Wirtschaftsprüfer
German Public Auditor

Melliand
Wirtschaftsprüfer
German Public Auditor

Independent Assurance Practitioner's Report

To the Supervisory Board of SAP SE, Walldorf

We have performed a limited assurance engagement on the non-financial statement of SAP SE (further "Company" or "SAP") and on the non-financial statement of the parent company that is combined with it, which are published in the Management Report, (further "combined non-financial statement") for the period from January 1 to December 31, 2022.

Responsibilities of Management

Management of the company is responsible for the preparation of the combined non-financial statement in accordance with Sections 315c in conjunction with 289c to 289e HGB ["Handelsgesetzbuch": German Commercial Code] and Article 8 of REGULATION (EU) 2020/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of June 18, 2020 on establishing a framework to facilitate sustainable investment and amending Regulation (EU) 2019/2088 (hereinafter the "EU Taxonomy Regulation") and the Delegated Acts adopted thereunder, as well as for making their own interpretation of the wording and terms contained in the EU Taxonomy Regulation and the delegated acts adopted thereunder as set out in section "Sustainable Finance: EU Taxonomy Disclosures" of the combined non-financial statement.

This responsibility includes the selection and application of appropriate non-financial reporting methods and making assumptions and estimates about individual non-financial disclosures of the group that are reasonable in the circumstances. Furthermore, management is responsible for such internal control as they consider necessary to enable the preparation of a combined non-financial statement that is free from material misstatement, whether due to fraud or error.

The EU Taxonomy Regulation and the Delegated Acts issued thereunder contain wording and terms that are still subject to considerable interpretation uncertainties and for which clarifications have not yet been published in every case. Therefore, management has disclosed their interpretation of the EU Taxonomy Regulation and the Delegated Acts adopted thereunder in section "Sustainable Finance: EU Taxonomy Disclosures" of the combined non-financial statement. They are responsible for the defensibility of this interpretation. Due to the immanent risk that indeterminate legal terms may be interpreted differently, the legal conformity of the interpretation is subject to uncertainties.

Independence and Quality Assurance of the Assurance Practitioner's firm

We have complied with the independence and quality assurance requirements set out in the national legal provisions and professional pronouncements, in particular the Professional Code for German Public Auditors and Chartered Accountants (in Germany) and the quality assurance standard of the German Institute of Public Auditors (Institut der Wirtschaftsprüfer, IDW) regarding quality assurance requirements in audit practice (IDW QS 1).

Responsibility of the Assurance Practitioner

Our responsibility is to express a conclusion with limited assurance on the combined non-financial statement based on our assurance engagement.

We conducted our assurance engagement in accordance with International Standard on Assurance Engagements (ISAE) 3000 (Revised): "Assurance Engagements other than Audits or Reviews of

"Historical Financial Information" issued by the IAASB. This standard requires that we plan and perform the assurance engagement to obtain limited assurance about whether any matters have come to our attention that cause us to believe that the company's non-financial statement, is not prepared, in all material respects, in accordance with Sections 315c in conjunction with 289c to 289e HGB and the EU Taxonomy Regulation and the Delegated Acts issued thereunder as well as the interpretation by management disclosed in section "Sustainable Finance: EU Taxonomy Disclosures" of the combined non-financial statement. We do not, however, issue a separate conclusion for each disclosure.

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

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

- Interviewing employees responsible for the materiality analysis at group level in order to obtain an understanding on the approach for identifying key issues and related reporting limits of SAP,
- Carrying out a risk assessment, inclusive of media analysis, on relevant information on sustainability performance of SAP in the reporting period,
- Assessing the design and implementation of systems and processes for identifying, handling, and monitoring information on environmental, employee and social matters, human rights and combating corruption and bribery, including the consolidation of data,
- Interviewing staff on group level, who are responsible for the disclosures on concepts, due diligence processes, results and risks, the performance of internal control activities and the consolidation of the disclosures,
- Inspecting selected internal and external documents,
- Analytically assessing the data and trends of the quantitative information, which is reported on group level of all locations,
- Evaluating the local data collection, validation, and reporting processes as well as the reliability of the reported data by means of a sampling survey at two locations,
- Interviewing of responsible staff on group level to obtain an understanding of the approach to identify relevant economic activities in accordance with the EU taxonomy,
- Evaluating the design and implementation of systems and procedures for identifying, processing, and monitoring information on turnover, capital expenditures and operating expenditures for the taxonomy-relevant economic activities for the first two environmental objectives climate change mitigation and climate change adaptation,
- Evaluating the data collection, validation, and reporting processes, as well as the reliability of the reported data for the taxonomy-aligned economic activities in conjunction with the assessment of the technical evaluation criteria for the substantial contribution, the fulfilment of the DNSH-criteria and the documentation of the minimum safeguard,
- Assessment of the overall presentation of the disclosures.

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

Assurance Opinion

Based on the assurance procedures performed and the evidence obtained, nothing has come to our attention that causes us to believe that the combined non-financial statement of SAP SE, Walldorf for

the period from January 1 to December 31, 2022 has not been prepared, in all material respects, in accordance with Sections 315c in conjunction with 289c to 289e HGB and the EU Taxonomy Regulation and the Delegated Acts issued thereunder as well as the interpretation by management as disclosed in section "Sustainable Finance: EU Taxonomy Disclosures" of the combined non-financial statement.

Restriction of Use

This assurance report is solely addressed to SAP SE, Walldorf.

Our assignment for SAP SE, Walldorf and professional liability is governed by the General Engagement Terms for Wirtschaftsprüfer (German Public Auditors) and Wirtschaftsprüfungsgesellschaften (German Public Audit Firms) (Allgemeine Auftragsbedingungen für Wirtschaftsprüfer und Wirtschaftsprüfungsgesellschaften) in the version dated January 1, 2017 (https://www.kpmg.de/bescheinigungen/lib/aab_english.pdf). By reading and using the information contained in this assurance report, each recipient confirms having taken note of provisions of the General Engagement Terms (including the limitation of our liability for negligence to EUR 4 million as stipulated in No. 9) and accepts the validity of the attached General Engagement Terms with respect to us.

Mannheim, den 22. Februar 2023

KPMG AG
Wirtschaftsprüfungsgesellschaft

Beyer
Wirtschaftsprüfer
[German Public Auditor]

Wiegand
Wirtschaftsprüfer
[German Public Auditor]

Assurance Report of the Independent Auditor regarding Sustainability Information

To the Executive Board of SAP SE, Walldorf

We have performed a limited assurance engagement on selected qualitative and quantitative sustainability disclosures as well as on selected quantitative sustainability indicators included in the Integrated Report 2021 (further “Report”) for the period from January 1 to December 31, 2022, of SAP SE, Walldorf (further “Company” or “SAP”).

For the selected quantitative sustainability indicators Business Health Culture Index; Employee Engagement Index; Employee Retention Rate; Ratio of Women in Management; Total Gross and Net Greenhouse Gas Emissions (Scope 1, Scope 2 and selected Scope 3 emissions including, for instance, business flights and employee commuting); Renewable Energy Certificates (Energy Attribute Certificates); Total Energy Consumption; and Customer Net Promoter Score, including the explanatory notes supplementing these indicators (further “sustainability indicators”), a reasonable assurance engagement was performed.

For selected qualitative and quantitative sustainability disclosures included in “Further Information on Economic, Environmental, and Social Performance” (sections: About This Further Information on Economic, Environmental, and Social Performance; Materiality; Stakeholder Engagement; Sustainability Management; Social Investments; Sustainable Procurement; Waste and Water; Public Policy; Non-Financial Notes: Environmental Performance; GRI Content Index excluding quantitative and qualitative information in relation to GRI 207 Tax) and the chapter “About This Report” (further “sustainability disclosures”) a limited assurance engagement was performed.

Responsibilities of Management

Management of the company is responsible for the preparation of the Report in accordance with the Reporting Criteria. SAP’s Report applies the principles and standard disclosures of the Global Reporting Initiative (GRI) Sustainability Reporting Standards, the Corporate Accounting and Reporting Standard, the Greenhouse Gas Protocol Scope 2 Guidance, and the Corporate Value Chain (Scope 3) Accounting and Reporting Standard of the Greenhouse Gas Protocol Initiative by the World Resources Institute and the World Business Council for Sustainable Development, in combination with internal guidelines, as described in the respective sections and the “Non-Financial Notes: Environmental Performance” as Reporting Criteria (further: “Reporting Criteria”).

This responsibility includes the selection and application of appropriate methods to prepare the Report and making assumptions and estimates about individual qualitative and quantitative sustainability disclosures of the group that are reasonable in the circumstances. Furthermore, management is responsible for such internal control as they consider necessary to enable the preparation of the Report that is free from material misstatement, whether due to fraud or error.

Independence and Quality Assurance of the Assurance Practitioner's firm

We have complied with the independence and quality assurance requirements set out in the national legal provisions and professional pronouncements, in particular the Professional Code for German Public Auditors and Chartered Accountants (in Germany) and the quality assurance standard of the German Institute of Public Auditors (Institut der Wirtschaftsprüfer, IDW) regarding quality assurance requirements in audit practice (IDW QS 1).

Responsibility of the Assurance Practitioner

Our responsibility is to express a conclusion based on our work performed within the assurance engagement on the sustainability indicators and the sustainability disclosures described above. We conducted our work in accordance with the International Standard on Assurance Engagements (ISAE) 3000 (Revised): "Assurance Engagements other than Audits or Reviews of Historical Financial Information", published by IAASB.

Accordingly, we have to comply with our professional duties and to plan and perform the assurance engagement in such a way that we, respecting the principle of materiality, reach our conclusion with a reasonable level of assurance on the above-mentioned sustainability indicators. The assurance of the sustainability indicators encompasses the performance of assurance procedures to obtain evidence for the information included in the Report. The choice of assurance procedures is subject to the professional judgment of the assurance practitioner.

This standard requires that we plan and perform the assurance engagement to obtain limited assurance about whether any matters have come to our attention that cause us to believe that the above-mentioned sustainability disclosures for the reporting period January 1 to December 31, 2022 are not prepared, in all material respects, in accordance with the Reporting Criteria. We do not, however, issue a separate conclusion for each disclosure. In a limited assurance engagement, the procedures performed are less extensive than in a reasonable assurance engagement, and accordingly, a substantially lower level of assurance is obtained. The selection of the assurance procedures is subject to the professional judgment of the assurance practitioner.

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

- Inquiries of group-level employees responsible for the materiality analysis in order to understand the processes for determining material topics and respective reporting boundaries for SAP SE,
- A risk analysis, including a media search, to identify relevant information on SAP SE's sustainability performance in the reporting period,
- Evaluation of the design and implementation of systems and processes for the collection, processing and monitoring of the qualitative and quantitative disclosures included in the scope of this engagement, including the consolidation of data,
- Inquiries of group-level personnel who are responsible for determining and consolidating disclosures and for performing internal controls, including the explanatory notes,
- Inspection of selected internal and external documents,
- Analytical procedures for the evaluation of data and of the trends of the quantitative disclosures as reported at group level by all sites,
- Evaluation of local data collection, validation, and reporting processes as well as of the reliability of the reported data based on a sample of two locations,
- Evaluation of the consistency of GRI Standards as reported by SAP SE with the qualitative and quantitative disclosures in the sustainability report,

- Assessment of the overall presentation of the disclosures.

In addition, we conducted the following procedures to obtain reasonable assurance:

- An evaluation of the design, implementation and operating effectiveness of the systems and methods used to collect and process the data reported for Business Health Culture Index, Employee Engagement Index, Employee Retention Rate, Ratio of Women in Management, Customer Net Promoter Score, Total Gross and Net Greenhouse Gas Emissions (Scope 1 and 2 as well as selected Scope 3 emissions including business flights and employee commuting), Renewable Energy, Total Energy Consumed, including the aggregation of the data into the information as presented in the online Integrated Report,
- Auditing the 2022 data using internal and external documentation in order to determine in detail whether the data correspond to the information in the relevant underlying sources, and whether all the relevant information contained in such underlying sources has been included in SAP's online Integrated Report,
- Conducting site visits to Walldorf, St. Leon Rot and (remote) Seoul (South Korea) to assess the quality of information management systems and the reliability of the data as reported to corporate level.

In our opinion, we obtained sufficient and appropriate evidence for reaching a conclusion for the assurance engagement.

Assurance Opinion

In our opinion the above-mentioned selected quantitative sustainability indicators in the Report, including the Non-Financial Notes supplementing these indicators, of SAP SE for the period from January 1 to December 31, 2022, are presented, in all material respects, in accordance with the Reporting Criteria.

Based on the assurance procedures performed and the evidence obtained for the limited assurance, nothing has come to our attention that causes us to believe that the above-mentioned selected qualitative and quantitative sustainability disclosures of SAP SE for the period from January 1 to December 31, 2022, published in the Report, are not prepared, in all material respects, in accordance with the Reporting Criteria.

Restriction of Use

This assurance report is solely addressed to SAP SE, Walldorf. We assume no responsibility with regard to any third parties.

Our assignment for SAP SE, Walldorf and professional liability is governed by the General Engagement Terms for Wirtschaftsprüfer (German Public Auditors) and Wirtschaftsprüfungs-gesellschaften (German Public Audit Firms) (Allgemeine Auftragsbedingungen für Wirtschaftsprüfer und Wirtschaftsprüfungsgesellschaften) in the version dated January 1, 2017 (https://www.kpmg.de/Bescheinigungen/lib/aab_english.pdf). By reading and using the information contained in this assurance report, each recipient confirms having taken note of provisions of the General Engagement Terms (including the limitation of our liability for negligence to EUR 4 million as stipulated in No. 9) and accepts the validity of the attached General Engagement Terms with respect to us.

Mannheim, February 22, 2023

KPMG AG
Wirtschaftsprüfungsgesellschaft

Beyer
Wirtschaftsprüfer
[German Public Auditor]

Wiegand
Wirtschaftsprüfer
[German Public Auditor]

Combined Group Management Report

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General Information About This Management Report

Basis of Presentation

This combined group management report by the SAP Group (collectively, “we,” “us,” “our,” “SAP,” “Group,” or “Company”) and the management report of SAP SE have been prepared in accordance with sections 289, 289a, 289b, 289f, 315, 315a, 315b, and 315d of the German Commercial Code and German Accounting Standards (GAS) No. 17 and 20. The combined group management report is also a management commentary complying with the International Financial Reporting Standards (IFRS) Practice Statement “Management Commentary.”

Our auditor, KPMG AG Wirtschaftsprüfungsgesellschaft (KPMG), audited SAP's combined group management report, except for some information that relates to the *Non-Financial Statement Including Information on Sustainable Activities* that was not subject to the statutory audit of our combined group management report, but on which a limited assurance engagement was performed. The *Security, Data Protection, and Privacy; Employees; Energy and Emissions; Business Conduct; and Human Rights* sections also include such information that was not subject to the statutory audit of our combined group management report, but on which a limited assurance engagement was performed. These sections contain further explanations about the audit scope in an info box at the end of the respective section marked by the symbol Q.

For more information about the scope of the assurance and the underlying reporting criteria, see KPMG's *Independent Auditor's Report*, the *Independent Assurance Practitioner's Report* regarding the limited assurance engagement on the combined non-financial statement, and the *Assurance Report of the Independent Auditor Regarding Sustainability Information*.

All of the information in this report relates to the situation as at December 31, 2022, or the fiscal year ended on that date, unless otherwise stated. As figures are rounded, numbers presented throughout this document may not add up precisely to the totals we provide and percentages may not precisely reflect the absolute figures.

Forward-Looking Statements

This management report contains forward-looking statements and information based on the beliefs of, and assumptions made by, SAP management using information currently available to them. Any statements contained in this report that are not historical facts are forward-looking statements as defined in the U.S. Private Securities Litigation Reform Act of 1995. We have based these forward-looking statements on our current expectations, assumptions, and projections about future conditions and events. As a result, our forward-looking statements and information are subject to uncertainties and risks, many of which are beyond our control. If one or more of these uncertainties or risks materializes, or if management's underlying assumptions prove incorrect, our actual results could differ materially from those described in or inferred from our forward-looking statements and information. We describe these risks and uncertainties in the *Risk Management and Risks* section.

The words “aim,” “anticipate,” “assume,” “believe,” “continue,” “could,” “counting on,” “is confident,” “development,” “estimate,” “expect,” “forecast,” “future trends,” “guidance,” “intend,” “may,” “might,” “outlook,” “plan,” “predict,” “project,” “seek,” “should,” “strategy,” “want,” “will,” “would,” and similar expressions as they relate to us are intended to identify such forward-looking statements. Such statements include, for example, those made in the *Operating Results* subsection, our quantitative and qualitative disclosures about market risk pursuant to the International Financial Reporting Standards (IFRS), namely IFRS 7 and related statements in our Notes to the Consolidated Financial

Statements; *Expected Developments and Opportunities* and *Risk Management and Risks* sections; and other forward-looking information appearing in other parts of this report.

To fully consider the factors that could affect our future financial results, both this report and our Annual Report on Form 20-F should be considered, as well as all of our other filings with the U.S. Securities and Exchange Commission (SEC). Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date specified or the date of this report. We undertake no obligation to publicly update or revise any forward-looking statements as a result of new information that we receive about conditions that existed upon issuance of this report, future events, or otherwise, unless we are required to do so by law.

This report includes statistical data about the IT industry and global economic trends that comes from information published by sources including International Data Corporation (IDC), Gartner, the European Central Bank (ECB), and the International Monetary Fund (IMF). This type of data represents only the estimates of IDC, Gartner, the ECB, the IMF, and other sources of industry data. SAP does not adopt or endorse any of the statistical information provided by sources such as IDC, Gartner, the ECB, the IMF, or other similar sources that is contained in this report. The data from these sources is subject to risks and uncertainties, and subject to change based on various factors, including those described above, in the *Risk Management and Risks* section, and elsewhere in this report. These and other factors could cause our results to differ materially from those expressed in the estimates made by third parties and SAP. We caution readers not to place undue reliance on this data.

Strategy and Business Model

Overview of SAP

Founded in 1972, SAP is a global company headquartered in Walldorf, Germany. Our legal corporate name is SAP SE. SAP has been named a market share leader in the following areas worldwide: enterprise applications software,³ enterprise resource management applications,⁴ supply chain management applications,⁵ procurement applications software,⁶ travel and expense management software,⁷ and enterprise resource planning software,⁸ among others. The SAP Group has a global presence and employs more than 110,000 people as at December 31, 2022.

Our ordinary shares are listed on the Frankfurt Stock Exchange. American Depository Receipts (ADRs) representing SAP SE ordinary shares are listed on the New York Stock Exchange (NYSE). SAP is a member of Germany's DAX and TecDAX as well as the Dow Jones EURO STOXX 50, the Dow Jones Sustainability Index World, and the Dow Jones Sustainability Index Europe. As at December 31, 2022, SAP was the second most valuable company in the DAX based on market capitalization and maintained industry leadership as one of two companies in the software industry in the S&P Global Corporate Sustainability Assessment for the sixteenth consecutive year.

Our Purpose

Our purpose at SAP is to "help the world run better and improve people's lives." We strive to achieve this as both an enabler and an exemplar of sustainable business. Our products and services aim to help our customers both meet the challenges and take advantage of the opportunities presented by today's rapidly changing world.

In addition, we want our own business operations and practices to be intelligent, sustainable, and inclusive. SAP is committed to the goal set by the Paris Agreement of limiting global warming to 1.5 degrees Celsius in comparison to pre-industrial levels. SAP has announced the intention to become carbon neutral in our own operations by the end of 2023 – two years earlier than previously stated. Further, in January 2022, SAP announced the commitment to achieve net-zero along our value chain in 2030. We also support the United Nations Sustainable Development Goals (UN SDGs). Together with our customers and partners, we are engaged in initiatives across the UN SDGs.

³ IDC, IDC Semiannual Software Tracker: 2022H1 Final Historical, October 2022

⁴ IDC, Worldwide Enterprise Resource Management Software Market Shares, 2021: Digital-First World Propelling the Market, Doc #US48564022, July, 2022

⁵ IDC, Worldwide Supply Chain Management Applications Market Shares, 2021: Growth Resumed, Doc ##US49846822, Dec. 2022

⁶ IDC, Worldwide Procurement Applications Software Market Shares, 2021: Consistent Sector Growth as Dominant Players Maintain Share, Doc #US49273722, June, 2022

⁷ IDC, Worldwide Travel and Expense Management Software Market Shares, 2021: Data Management Forms New Foundation for T&E, Doc #US48515722, August 2022

⁸ IDC, Worldwide Enterprise Planning, Budgeting, and Forecasting Applications 2022 Vendor Assessment, Doc #US48985622, December 2022

Our Vision

SAP's vision is to reinvent how the world runs as a network of intelligent,⁹ sustainable enterprises. In our pursuit of this vision, we focus on three areas:

Helping Our Customers Become Intelligent and Sustainable Enterprises

Intelligent enterprises use data with embedded artificial intelligence (AI) and experience management to remove friction across business processes and drive innovation, enabling people to work more flexibly.

Bringing Enterprises Together into a Global Business Network

Businesses are playing an even greater role in their communities – forming a network that expands far beyond the walls of any one company. We deliver innovation and intelligent technologies across procurement, logistics, asset management, and industry-specific offerings to enable a global business network spanning industries and value chains. This becomes even more important when companies face supply chain disruptions, as our software aims to enable stakeholders in the network to react to disruption in real time.

Enabling a Sustainable World

The traditional focus of businesses on productivity and profitability is expanding to include a new measurement for business success – how operations impact the environment, or the “green line.” With the overview and transparency of business processes and ability to connect value chains end to end provided by SAP software, we help companies to measure and improve sustainability across entire networks, allowing them to effectively pursue key milestones such as zero emissions, zero waste, and zero inequality.

Our strategy is firmly rooted in our goal to be an innovative and trusted partner for our ecosystem, supporting them on their journey to reinvent how their businesses run. With this strategy, we aim to achieve our overarching objectives of creating resilient, profitable, and sustainable business outcomes for our customers.

Our Business Model

Our business model, through which we implement our vision and strategy, can be summarized as follows:

We create value by identifying the business needs of our customers, then by developing and delivering cloud solutions, software, services, and support addressing these needs. By proactively obtaining customer feedback on a regular basis, we strive to continuously improve our solutions, identify further business needs, and deliver enhanced value to our customers across the whole lifecycle and thus increase customer loyalty.

We derive revenue from fees charged to our customers through subscriptions for use of our cloud solutions. Software licenses, on-premise support, consulting, development, training, and other services also contribute significant revenue.

For an overview of our product portfolio, see the *[Our Product Strategy](#)* section.

⁹ An “intelligent enterprise” is an event-driven, real-time business powered by technology that includes machine learning, robotic process automation, Internet of Things, and analytics capabilities to help scale innovation.

Subsidiaries, Acquisitions, and Joint Ventures

Subsidiaries

SAP SE is the parent company of the SAP Group. As at December 31, 2022, the SAP Group comprised 288 companies.

For a list of our subsidiaries, associates, and other equity investments, see the Notes to the Consolidated Financial Statements, [Note \(G.9\), Scope of Consolidation, Subsidiaries, and Other Equity Investments](#).

Material Acquisitions

We continue to focus on organic investments in technology and innovations that ensure sustainable growth of our solution portfolio. Additionally, we may make targeted acquisitions to complement our solution offerings and improve coverage in key strategic markets.

In March 2022, SAP acquired a majority stake of **Taulia**, a leading provider of working capital management solutions. We expect Taulia to further expand SAP's business network and to strengthen our cloud solution portfolio for the CFO office. Taulia's solutions are integrated into SAP's portfolio as well as continuing to be available as standalone solutions. Taulia operates as a separate business segment with its own brand within the SAP Group.

For more information about Taulia, see [Note \(D.1\), Business Combinations and Divestitures](#).

Divestitures

Litmos

On August 17, 2022, SAP and Francisco Partners (FP) announced that FP had signed a definitive agreement with SAP America, Inc. under which FP would acquire **SAP Litmos** from SAP. The transaction closed on December 1, 2022, following satisfaction of applicable regulatory and other approvals.

For more information about Litmos, see [Note \(D.1\), Business Combinations and Divestitures](#).

SAP to Explore a Sale of its Stake in Qualtrics

On January 26, 2023, SAP announced that in line with the strategic initiative to streamline its portfolio, SAP has decided to explore a sale of its stake in Qualtrics. In the event of a successful transaction, SAP intends to remain a go-to-market and technology partner, servicing its joint customers and contributing to its growth and category leadership. A final decision on any transaction, its conditions and timing is subject to market conditions, agreement on acceptable terms, regulatory approvals and the approval of the SAP SE Supervisory Board.

For more information about Qualtrics, see [Note \(G.8\), Events after the Reporting Period](#).

Sapphire Ventures

In addition to our investments in organic growth and acquisitions, SAP also supports entrepreneurs that aspire to build industry-leading businesses through venture capital funds managed by **Sapphire Ventures**. Sapphire Ventures manages more than US\$10 billion (over €9 billion) and has invested in more than 200 companies. It pursues opportunities in which it can help fuel enterprise growth by adding expertise, relationships, geographic reach, and capital. It places a particular focus on companies in Europe, Israel, the United Kingdom, and the United States.

Our Product Strategy

SAP's suite of applications allows enterprises to manage their resources, spend, employees, and customer relationships. The **SAP Business Technology Platform (SAP BTP)** is the platform for SAP, our customers, and our ecosystem.

The strategic pillars of SAP's product strategy and their corresponding updates for the year are as follows:

ERP Cloud

SAP S/4HANA provides software capabilities mainly for finance, risk management, project management, procurement, manufacturing, supply chain management, asset management, and research and development. It also includes platform capabilities such as database (SAP HANA), data management, and lifecycle/solution management, as well as cloud ERP solutions, which our customers consume as part of their transformation to SAP S/4HANA. At our flagship conference SAP Sapphire in May 2022, SAP announced the launch of **SAP Digital Manufacturing Cloud**, a solution designed to help customers optimize manufacturing performance by integrating production execution, visibility, and analysis. In addition, SAP and Apple have expanded their partnership and released a new suite of iOS apps designed to streamline the digital supply chain and equip workers with intuitive tools.

Human Experience Management

SAP SuccessFactors solutions for human resources aim to empower organizations to create an agile and future-ready workforce in a rapidly changing workplace. Customers can use new offers like skills ontology, personal growth portfolio for employees, and dynamic teams to work across traditional organizational structures. The portfolio includes core HR and payroll, talent management, employee experience management, and people and workforce analytics.

Spend Management

SAP's **intelligent spend management** solutions aim to provide a more unified view of a customer's spending to reduce costs, mitigate risks, improve collaboration, and make sure every spend decision is aligned with the business strategy. They cover direct and indirect spend, travel and expense, and external workforce management. SAP Ariba combines industry-leading cloud-based applications to help companies discover and collaborate with a global network of partners.

Customer Experience

The **SAP Customer Experience portfolio** aims to deliver a personalized view across customers and business partners, connecting the front- and back office with solutions spanning from point-of-sale to manufacturing, to logistics, customer experience, and returns management.

SAP Business Technology Platform

SAP Business Technology Platform (SAP BTP) is a unified, business-centric, and open platform that helps enable customers and partners to build, integrate, and extend applications while gaining insights from business data in a cloud-native way. SAP BTP aims to bring together capabilities across application development, automation, data and analytics (including planning), integration, and artificial intelligence (AI) into one platform.

In 2022, we launched the **SAP Build** portfolio, bringing together **SAP Build Apps** (formerly **SAP AppGyver**); **SAP Build Process Automation** (formerly **SAP Process Automation**); and **SAP Build Work Zone** (formerly **SAP Work Zone**) into a unified development environment as part of SAP BTP. The SAP Build portfolio aims to enable business users to integrate systems; intelligently monitor, analyze, and automate processes; and build applications using SAP BTP and business application data from SAP – all without moving data to an external system.

Industry Cloud

SAP's **industry cloud solutions** provide the opportunity for SAP and our partners to extend our core with modular solutions addressing industry-specific functions built on SAP BTP.

Business Network

The **SAP Business Network** solution portfolio aims to enable companies to collaborate with trading partners for greater supply chain visibility.

SAP Signavio

Our **business process transformation** solutions help our customers scan their operations to understand and improve their business process landscape. We support analysis of current processes, benchmarking against best practices, and reconfiguring current processes towards future processes. The portfolio includes **SAP Signavio** solutions as well as **SAP Process Automation**. SAP also announced the general availability of "journey-to-process" analytics. This offering aims to give companies a better understanding of their end-to-end business processes by correlating experience data from Qualtrics user surveys with operational data from underlying IT systems.

Sustainability

SAP offers sustainability solutions and services that can help customers drive sustainable practices not only inside their organization, but across the entire value chain. **SAP Cloud for Sustainable Enterprises** brings together a comprehensive solution portfolio for businesses that aims to enable businesses to manage sustainability holistically. Product innovations include the following solutions: **SAP Sustainability Control Tower** for holistic steering and reporting across ESG metrics, **SAP Product Footprint Management** for emissions accounting and management, and **SAP Responsible Design and Production** to reduce waste and accelerate circular business. SAP also plans to further complement the sustainability portfolio with solutions that support environmental, social, and governmental topics. At the end of the year, SAP and PwC announced a new co-innovation strategy to make sustainability an integral part of standard business operations to help organizations achieve their ESG and net zero target.

Experience Management

Experience management (XM) refers to both Qualtrics technology as well as the discipline of seeking out and closing the experience gaps across the four core areas of businesses – customer, product, employee, and brand.

Partners and Ecosystem

SAP's ecosystem consists of more than 20,000 partners worldwide in more than 140 countries. Partners can choose from a variety of SAP solutions to create their own unique SAP-qualified partner-packaged solution to provide small and midsize enterprises with fixed-scope packaged solutions.

Services and Support

In April 2022, SAP announced that we reimagined our cloud services and support portfolio to focus on customer adoption and consumption. This portfolio includes **SAP Enterprise Support** which comes with foundational tools and services, curated content, and mission-critical support. It can be enhanced with incremental success plans such as **SAP Preferred Success** and **SAP Cloud Application Services**, and success services through business journeys and consulting services to address specific objectives, timelines, and plans. When customers pursue enterprise-wide transformational change, SAP offers **SAP MaxAttention** and **SAP ActiveAttention** plans for tailored, long-term strategic engagement.

Our Customers

Vision and Strategy

Focusing on Customer Success

We aim to maximize the value our customers derive from their investment in and relationship with SAP at every touchpoint in their experience with us over the engagement lifecycle. Our customer-facing teams – across solutions, sales, services, customer engagement, ecosystem, and others – work together along an operating model that aims to harmonize internal processes with the goal of delivering improved outcomes for our customers.

Company-Wide Global Experience Program

To further address and improve on customer feedback through research conducted using Qualtrics solutions, we developed a **Company-Wide Global Experience (XM) Program**. This program aims to achieve a consistent end-to-end experience for our customers. It includes standardizing experience initiatives and methodologies to help identify and improve experience gaps across SAP.

Due Diligence

Governance

The head of Customer Success leads all customer-facing functions across sales, services, partner, and cloud engagements for SAP's businesses globally. The Chief Marketing & Solutions Officer leads the development of our solution value propositions to provide clarity on SAP's core differentiators. The People & Operations Board area is responsible for conducting the Company-Wide XM Program, including conducting the **Customer Net Promoter Score (NPS)** survey.

Guidelines and Policies

Policies such as the **Global Code of Ethics and Business Conduct for Employees** and applicable General Terms and Conditions for our product govern our relationships with our customers.

How We Measure and Manage Our Performance

We use the Customer Net Promoter Score (NPS) as a feedback mechanism to measure customer loyalty. This and other results from the customer survey allow us to directly understand the customer experience and identify key pain points for action. Because of the importance of our customers to SAP, Customer NPS is one of our main KPIs.

In 2022, our Customer NPS¹⁰ decreased 7 points year over year to 3 (2021: 10), which is at the low end of our adjusted target range of 3 to 8.¹¹ The decrease was driven by feedback provided around pricing increases and licensing structure, product-related topics, and support and services. The XM Program ensures that the feedback received is heard by the responsible organizations within SAP so they can act to continually improve the customer experience.

Beginning in 2023, we will adjust the calculation of NPS to better reflect the business priorities of the Company. For comparison purposes, the NPS for 2022 would be 7 according to the new calculation. For 2023, we expect an NPS of 8 to 12, representing an increase of 1 to 5 points against the new baseline. Further, we aim to see continuous improvements and increase the score steadily in the medium term.

Customer NPS is a KPI in Executive Board remuneration as part of the short-term incentive component. Further, it is included as a KPI in some customer-facing employee bonus plans.

For more information about the Customer NPS, see the *Performance Management System* section.

¹⁰ Due to the Russian invasion of Ukraine, customers in Ukraine and the CIS region were excluded from the second quarter 2022.

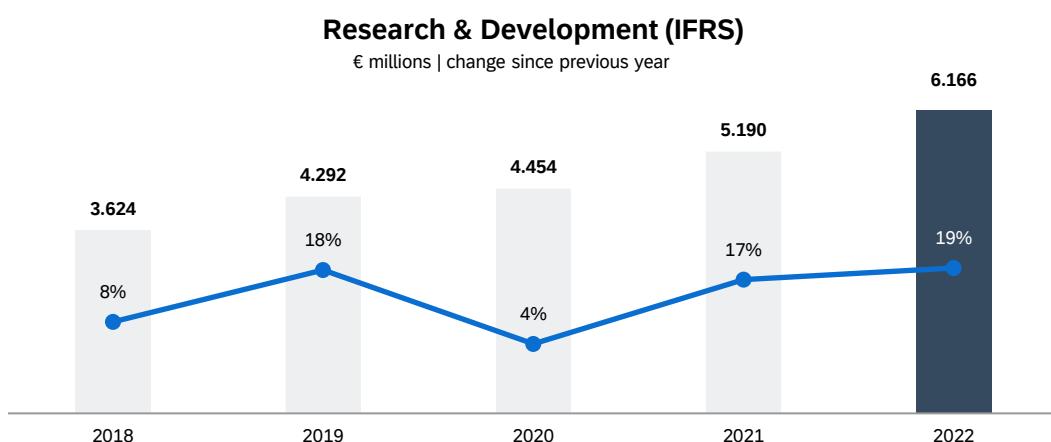
¹¹ The initial guidance range provided in January 2022 was 11 to 15 and was adjusted to a range of 3 to 8 in October 2022.

Related Risks for SAP

For related financial risks, see *Sales and Services* in the *Risk Management and Risks* section.

Our Investments in Innovation

SAP's strong commitment to R&D is reflected in our expenditures (see graphic below).



In 2022, our IFRS R&D ratio, reflecting R&D expenses as a portion of total operating expenses, increased 1.1 percentage points (pp) to 23.5% (2021: 22.4%). Our non-IFRS R&D ratio increased 0.4pp to 24.2% year over year (2021: 23.8%). At the end of 2022, our total full-time equivalent (FTE) headcount in development was 34,122 (2021: 32,244). Measured in FTEs, our R&D headcount was 30% of total headcount, remaining stable compared to 2021.

Total R&D expense not only includes our own personnel costs but also the external costs of work and services from the providers and cooperation partners we work with to deliver and enhance our products. We also incur external costs for the following:

- Translating, localizing, and testing products
- Obtaining certification for products in different markets
- Patent attorney services and fees
- Consulting related to our product strategy
- Professional development of our R&D workforce

Patents

Our investment in R&D has resulted in numerous patents. As at December 31, 2022, SAP held a total of close to 13,000 (2021: more than 11,000) validated patents worldwide. Of these, more than 800 (2021: 793) were granted and validated in 2022.

While our intellectual property is important to our success, we believe our business as a whole is not dependent on any particular patent or a combination of patents.

Competitive Intangibles

The majority of (intangible) resources that are the basis for our current as well as future success does not appear in the book value of equity in our Consolidated Financial Statements. This is apparent from a comparison of the market capitalization of SAP SE (based on all issued shares), which was €118.4 billion at the end of 2022 (2021: €153.4 billion), with the book value of our equity in the Consolidated Financial Statements, which was €42.8 billion (2021: €41.5 billion). This means that the market capitalization of our equity is more than two times higher than the book value. The difference is mainly due to certain internally generated intangible resources that the applicable accounting standards do not allow to be recorded (at all or at fair value) in the Consolidated Financial Statements. These resources include customer capital (our customer base and customer relations); employees and their knowledge and skills; our ecosystem of partners; the majority of internally developed software; our ability to innovate; the brands we have built up, in particular, the SAP brand itself; and our organization.

According to the Interbrand "Best Global Brands" annual survey, SAP ranked as the 20th most valued brand in the world (2021: 20th). Against other German brands, the SAP brand ranks third behind Mercedes-Benz and BMW, and third globally against other brands in the business services sector. Interbrand determined our brand value to be US\$31 billion, an increase of 3% compared to the previous year (2021: US\$30 billion). Kantar BrandZ recognized SAP as the world's 31st most valuable brand in its 2022 Most Valuable Global Brands ranking (2021: 26th). The ranking estimates SAP's brand value at US\$69 billion, unchanged compared to the previous year.

Measuring Our Success

We use the following financial and non-financial objectives to steer our company:

- Growth
- Profitability
- Customer loyalty
- Employee engagement
- Carbon impact

The table below provides an overview of the specific KPIs used to measure performance within these objectives and compares this performance with our goals.

Outlook and Results for 2022

Strategic Objective	KPI	2022 Outlook*	2022 Results
Growth	Cloud revenue ²	€11.55 billion to €11.85 billion	€11.68 billion
	Cloud and software revenue ²	€25.0 billion to €25.5 billion	€25.02 billion
Profitability	Operating profit ^{1,2}	€7.6 billion to €7.9 billion	€7.68 billion
	Free cash flow	Approx. €4.5 billion	€4.35 billion
Customer Loyalty	Customer Net Promoter Score	3 to 8	3
Employee Engagement	Employee Engagement Index	80% to 84%	80%
Carbon Impact	Net carbon emissions	90 kt to 95 kt	85 kt

* The 2022 outlook was communicated in January 2022 and was updated in April, July, and October 2022. The 2022 outlook numbers above reflect the updated outlook from October 2022.

¹ Non-IFRS

² At constant currencies

Note: A reconciliation of non-IFRS results to IFRS equivalents is available in the [Performance Management System](#) section.

Outlook for 2023

Strategic Objective	KPI	2022 Results	2023 Outlook
Growth	Cloud revenue	€12.56 billion	€15.3 billion to €15.7 billion ²
	Cloud and software revenue	€26.52 billion	€28.2 billion to €28.7 billion ²
Profitability	Operating profit	€8.03 billion ¹	€8.8 billion to €9.1 billion ^{1,2}
	Free cash flow	€4.35 billion	Approximately €5.0 billion
Customer Loyalty	Customer Net Promoter Score (2022 methodology)	3	---
	Customer Net Promoter Score (2023 methodology) ³	7	8 to 12
Employee Engagement	Employee Engagement Index	80%	76% to 80%
Carbon Impact	Net carbon emissions	85 kt	0 kt

¹ Non-IFRS² At constant currencies³ The calculation methodology has been adjusted from 2023 to better reflect the business priorities of SAP. For reference, we are providing the 2022 number calculated according to the new methodology for better comparison.Note: A reconciliation of non-IFRS results to IFRS equivalent is available in the [Performance Management System](#) section.

Ambitions for 2025

SAP expects to update its mid-term ambition in the first half of 2023.

Strategic Objective	KPI	2025 Ambition
Growth	Cloud revenue	More than €22 billion
	Total revenue	More than €36 billion
Profitability	Operating profit ¹	More than €11.5 billion
	Free cash flow	Approximately €8 billion
Customer Loyalty	Customer Net Promoter Score	Steady increase
Employee Engagement	Employee Engagement Index	84% to 86%
Carbon Impact	Net carbon emissions	0 kt (from 2023 onward; net zero along our value chain by 2030)

¹ Non-IFRSNote: A reconciliation of non-IFRS results to IFRS equivalents is available in the [Performance Management System](#) section.

Performance Management System

We use various performance measures to manage our performance with regard to our primary financial objectives, which are growth and profitability, and our primary non-financial objectives, which are customer loyalty, employee engagement, and carbon impact. We view growth and profitability as indicators of our current performance, while we see customer loyalty, employee engagement, and carbon impact as indicators of our future performance.

Measures to Manage Our Financial Performance

Measures to Manage Our Operating Financial Performance

In the reporting year, we used cloud revenue, cloud and software revenue, share of more predictable revenue, current cloud backlog and operating profit (non-IFRS) as our key measures to manage our operating financial performance. In addition to these, we used several supporting measures to provide further insight into our financial performance:

Cloud revenue: This revenue driver comprises the main revenues of our fast-growing cloud business. Revenue from cloud is derived from fees earned from providing customers with any of the following:

- Software as a service (SaaS)
SaaS comprises all offerings which are not included in PaaS and IaaS.
- Platform as a service (PaaS)
PaaS primarily includes SAP Business Technology Platform and SAP Signavio.
- Infrastructure as a service (IaaS)
Major portion of IaaS comes from SAP HANA Enterprise Cloud.

For more information regarding the composition of cloud revenue and a description of these services, see the Notes to the Consolidated Financial Statements, [Note \(A.1\)](#).

We use the cloud revenue measure at both actual currencies and constant currencies.

Cloud and software revenue: We use cloud and software revenue expressed in both actual currencies and constant currencies to measure our product growth. Our cloud and software revenue includes cloud revenue plus software license revenue and software support revenue. Cloud revenue and software support revenue are our two largest revenue streams. Customers that purchase software licenses also enter into related support contracts that generate recurring support revenue after the software sale. Support contracts cover standardized support services and unspecified future software updates and enhancements.

SAP S/4HANA cloud revenue: We use SAP S/4HANA cloud revenue expressed in both actual currencies and constant currencies as an additional metric to measure our cloud core ERP growth. SAP offers a choice of SAP S/4HANA cloud deployments – as a public cloud or private cloud software-as-a-service (SaaS) offering.

Total revenue: We use total revenue to measure our growth at both actual currencies and constant currencies.

Share of more predictable revenue: We use share of more predictable revenue as a measure to provide additional insight into our sustained business success. The total of cloud revenue and support revenue divided by total revenue is the share of more predictable revenue.

Cloud backlog: We use the following measures in both actual and at constant currencies, to measure our forward-looking cloud performance:

- Total cloud backlog (TCB)
- Current cloud backlog (CCB)
- SAP S/4HANA CCB

As of a specific key date, the TCB is the total contractually committed cloud revenue we expect to recognize and the CCB is the contractually committed cloud revenue we expect to recognize over the upcoming 12 months. Thus, they are subcomponents of our overall remaining performance obligations following IFRS 15.120. For our committed cloud business, we believe the TCB and the CCB are valuable indicators of our go-to-market success, as it reflects both new contracts closed as well as existing contracts renewed.

As an additional metric we use SAP S/4HANA CCB to measure the contractually committed cloud core ERP revenue we expect to recognize over the upcoming 12 months as of a specific key date.

Cloud gross profit (non-IFRS): We use cloud gross profit (non-IFRS) expressed in both actual currencies and constant currencies to measure the process efficiency and performance of our cloud business.

Operating profit (non-IFRS): We use operating profit (non-IFRS) expressed in both actual currencies and constant currencies to measure our overall operational process efficiency and overall business performance.

Cloud gross margin (non-IFRS): We use our cloud gross margin (non-IFRS) to measure our process efficiency in our cloud business. Cloud gross margin (non-IFRS) is the ratio of our cloud gross profit (non-IFRS) to cloud revenue, expressed as a percentage.

Operating margin (non-IFRS): We use operating margin to measure our overall operational process efficiency. Operating margin (non-IFRS) is the ratio of our operating profit (non-IFRS) to total revenue, expressed as a percentage.

Measures to Manage Our Non-Operating Financial Performance

We used the following supporting measure to provide insight into our non-operating financial performance:

Financial income, net: This measure provides insight into the return on liquid assets and capital investments and the cost of borrowed funds. To manage our financial income, net, we focus on cash flow, the composition of our liquid assets and capital investment portfolio, and the average rate of interest at which assets are invested. We also monitor average outstanding borrowings and associated finance costs.

Measures to Manage Overall Financial Performance

We used free cash flow as key measure to manage our overall financial performance. In addition to that, we used several supporting measures to provide further insight into our overall financial performance:

Earnings per share (EPS) (IFRS and non-IFRS): EPS (basic and diluted) measures our overall performance because it captures all operating and non-operating elements of profit as well as income tax expense. It represents the portion of profit after tax attributable to equity holders of SAP SE allocable to each SAP share outstanding. EPS is influenced not only by our operating and non-operating business and income taxes but also by the number of shares outstanding.

Effective tax rate (IFRS and non-IFRS): We define our effective tax rate as the ratio of income tax expense to profit before tax, expressed as a percentage.

Operating, investing, and financing cash flows and free cash flow: Our consolidated statement of cash flows provides insight into how we generate and use cash and cash equivalents. When applied in conjunction with the other primary financial statements, it provides information that helps us evaluate the changes in our net assets, our financial structure (including our liquidity and solvency), and our ability to affect the amounts and timing of cash flows to adapt to changing circumstances and opportunities. We use our free cash flow measure to determine the cash flow remaining after all expenditures required to maintain or expand our organic business have been paid off. This measure provides management with supplemental information to assess our liquidity needs. We calculate free cash flow as net cash from operating activities minus purchases (other than purchases made in connection with business combinations) of intangible assets and property, plant, and equipment, as well as payments of lease liabilities.

Measures to Manage Our Non-Financial Performance

In 2022, we used customer net promoter score, employee engagement index and net carbon emissions as our key measures to manage our non-financial performance. In addition to these, we used leadership trust score as supporting measure to provide further insight into our non-financial performance:

Customer Net Promoter Score (NPS): The annual assessment of customer loyalty is based on a survey that includes the Customer Net Promoter Score (NPS) metric. The Customer NPS score is calculated based on the NPS Likelihood to Recommend question with its proprietary scoring, identified on a scale of 0–10. We use this measure as we are convinced that we can only achieve our financial goals when our customers are loyal to, and satisfied with, SAP and our solutions. To derive the Customer NPS, we start with the percentage of “promoters” of SAP, that is, those giving us a score of 9 or 10 on a scale of 0–10. We then subtract the percentage of “detractors,” that is, those giving us a score of 0–6. The method ignores “passives,” that is, those giving us a score of 7 or 8. Consequently, the range of achievable scores is –100 to +100, with the latter being the best achievable score for customer loyalty as measured by the Customer NPS methodology.

Starting in 2023, SAP will adjust the methodology used to calculate Customer NPS. The adjusted methodology is meant to provide better quality data and better align the sample with SAPs business priorities. In the new methodology the following exclusions would be implemented: partially completed responses, respondents who self-report that they have no influence in purchasing decisions and restricting the number of eligible responses from Concur.

We determine the **Employee Engagement Index** and the **Leadership Trust Score** as the average of the scores retrieved in each of the surveys we run within a fiscal year. Using the experience management (XM) philosophy from Qualtrics, our engagement survey program “#Unfiltered” runs according to a continuously listening approach that includes multiple data collections throughout the year. The average scores provide an assessment of the full year engagement and trust level of our employees.

We measure both the Employee Engagement Index as well as Leadership Trust Score to get insights on the following:

- **Employee Engagement Index:** We use this index to measure the satisfaction and commitment of our employees, how proud they are of our company, and how strongly they identify with SAP. Applying this measure is recognition that our growth strategy depends on engaged employees. The index is measured as percent of favorable responses using five questions in our engagement survey program “#Unfiltered”.
- **Leadership Trust Score:** We use this score to further enhance accountability and to measure our collective effort to foster a work environment based on trust. It is derived from a question in our surveys that gauges employees’ trust in our leaders. Based on the NPS methodology, the Leadership Trust score is calculated as the percentage of “promoters” (a score of 9 or 10 on a 10-point scale) minus the percentage of “detractors” (a score of 1 through 6). The method ignores

"passives" (a score of 7 or 8). Consequently, the value range of Net Promoter Scores is -100 to +100, with the latter being the best achievable score.

Net carbon emissions: We use this metric to measure our progress towards our ambitious short-term and long-term carbon reduction targets. We measure our net carbon emissions according to the **Greenhouse Gas (GHG) Protocol**. The net carbon emissions are calculated by deducting emission savings such as self-produced renewable energy, renewable energy certificates, and carbon offsets from our gross carbon emissions.

Value-Based Management

Our holistic view of the performance measures described above, together with our associated analyses, comprises the information we use for value-based management. We use planning and control processes to manage the compilation of these key measures and their availability to our decision-makers across various management levels.

SAP's long-term strategic plans are the point of reference for our short-term and midterm planning and controlling processes. We initially identify future growth and profitability drivers at a highly aggregated level for the entire SAP Group. In a first step, the resulting financial plan is broken down into (i) product portfolio grouped into solution areas and deployment models "On Premise," "Software as a Service," "Platform as a Service," and "Infrastructure as a Service"; and (ii) functions such as development, delivery, sales, and administration. In a second step, the planned total revenues and total expenses are generally allocated to the operating segments and the areas of functional responsibility of the individual members of the Executive Board ("Board area"). If a Board area represents not only a functional department but also has a responsibility for operating segments within this Board area, the allocation is done at the lower segment level. Budget adjustments may be applied during the year to reflect changes in priorities, to achieve efficiency targets, and to reflect endogenous and exogenous factors. Such budget adjustments, as well as the assessment of the performance, are handled at the Board area level if the Board area is part of a segment, or at the segment level if the Board area comprises several segments. It is then the individual Executive Board member's responsibility to break down the allocated budget adjustments within the segment budget boundary. Based on an integrated portfolio process running in parallel to the budgeting process, we ensure aligned investment behavior across Board areas with regards to specific solution and/or subsolution areas. In a final step, customer-facing revenue targets and cost-of-sales and marketing targets are broken down into sales regions and market units.

Based on our detailed annual plans, we determine the budget for the respective fiscal year. We also have processes in place to forecast revenue and profit on a quarterly basis, to quantify whether we expect to realize our financial goals, and to identify any deviations from plan. We continuously monitor the affected operating segments and Board areas in the SAP Group to analyze their developments and define any appropriate actions. Our entire network of planning, control, and reporting processes is implemented in integrated planning and information systems, based on SAP software, across all organizational units so that we can conduct the evaluations and analyses needed to make informed decisions.

Non-IFRS Financial Measures Cited in This Report

Explanation of Non-IFRS Measures

We disclose certain financial measures that are not prepared in accordance with IFRS and are therefore considered non-IFRS financial measures. Our non-IFRS financial measures may not correspond to non-IFRS financial measures that other companies report. The non-IFRS financial measures that we report should only be considered in addition to, and not as substitutes for, or superior to, our IFRS financial measures.

We believe that the disclosed supplemental historical and prospective non-IFRS financial information provides useful information to investors because management uses this information, in addition to financial data prepared in accordance with IFRS, to attain a more transparent understanding of our past performance and our anticipated future results.

We use these non-IFRS measures consistently in our internal planning and forecasting, reporting, and compensation, as well as in our external communications, as follows:

- Our management primarily uses these non-IFRS measures rather than IFRS measures as the basis for making financial, strategic, and operating decisions.
- The variable components of our Executive Board members' and employees' remuneration are based on non-IFRS numbers such as operating profit (non-IFRS) and operating margin (non-IFRS) rather than the respective IFRS measures. An additional variable component used is current cloud backlog (CCB).
- The annual budgeting process for all management units is based on operating profit (non-IFRS) numbers rather than the respective IFRS financial measure.
- All forecast and performance reviews with all senior managers globally are based on these non-IFRS measures, rather than the respective IFRS financial measures.
- Both our internal performance targets and the guidance we provide to the capital markets are based on profit (non-IFRS) measures rather than the respective IFRS financial measures.

Our non-IFRS financial measures reflect adjustments based on the items below, as well as adjustments for the related income tax effects.

Operating Expense (Non-IFRS)

Numbers that are identified as operating expenses (non-IFRS) have been adjusted by excluding the following expenses:

- Acquisition-related charges
 - Amortization expense/impairment charges for intangibles acquired in business combinations and certain stand-alone acquisitions of intellectual property (including purchased in-process research and development) as well as sale/disposal gains and losses for these intangibles
 - Settlements of preexisting business relationships in connection with a business combination
 - Acquisition-related third-party expenses
- Share-based payment expenses
- Restructuring expenses, that is, expenses resulting from measures which comply with the definition of restructuring according to IFRS

We exclude certain acquisition-related expenses for the purpose of calculating operating profit (non-IFRS), operating margin (non-IFRS), and earnings per share (non-IFRS) when evaluating SAP's continuing operational performance because these expenses generally cannot be changed or influenced by management after the relevant acquisition other than by disposing of the acquired assets. Since management at levels below the Executive Board does not influence these expenses,

we generally do not consider these expenses for the purpose of evaluating the performance of management units. For similar reasons, we eliminate share-based payment expenses as these costs are impacted by share price developments and other factors outside our control. We also eliminate restructuring expenses because they are volatile and generally cannot be influenced by management at levels below the Executive Board.

Cloud gross profit (non-IFRS), Operating Profit (non-IFRS), Cloud Gross Margin (non-IFRS), Operating Margin (non-IFRS), Effective Tax Rate (non-IFRS), and Earnings per Share (non-IFRS)

Cloud gross profit, operating profit, cloud gross margin, operating margin, effective tax rate, and earnings per share denominated as cloud gross profit (non-IFRS), operating profit (non-IFRS), cloud gross margin (non-IFRS), operating margin (non-IFRS), effective tax rate (non-IFRS), and earnings per share (non-IFRS) have been adjusted from the respective IFRS measures by adjusting for the aforementioned operating expenses (non-IFRS) and the income tax effects thereon.

Constant Currencies Information

We believe it is important for investors to have information that provides insight into the development of our sales. Revenue measures determined under IFRS provide information that is useful in this regard. However, both sales volume and currency effects impact period-over-period changes in sales revenue. We do not sell standardized units of products and services so we cannot provide relevant information on sales volume by providing data on the changes in product and service units sold. To provide additional information that may be useful to investors in breaking down and evaluating changes in sales volume, we present information about our revenue and various values and components relating to operating profit that are adjusted for foreign currency effects. We calculate constant currencies measures by translating foreign currencies using the average exchange rates from the comparative period instead of the current period. Constant currency measures on current cloud backlog use the closing exchange rate from the previous year's corresponding key date instead of the average exchange rate.

Free Cash Flow

Among other measures, we use free cash flow to manage our overall financial performance.

€ millions	2022	2021	Δ in %
Net cash flows from operating activities	5,647	6,223	-9
Purchase of intangible assets and property, plant, and equipment (without acquisitions)	-874	-800	9
Payments of lease liabilities	-424	-374	13
Free cash flow	4,348	5,049	-14

Usefulness of Non-IFRS Measures

We believe that our non-IFRS measures are useful to investors for the following reasons:

- Our expense (non-IFRS), and profit (non-IFRS) measures, along with the current cloud backlog (CCB) measure (see above), provide investors with insight into management's decision-making because management uses these measures to run our business and make financial, strategic, and operating decisions. We exclude the expense adjustments outlined above when making decisions to allocate resources. In addition, we use these non-IFRS measures to facilitate comparisons of SAP's operating performance from period to period.
- The non-IFRS measures provide investors with additional information that enables a comparison of year-over-year operating performance by eliminating certain direct effects of acquisitions, share-based compensation plans, and restructuring plans.
- Non-IFRS and non-GAAP (Generally Accepted Accounting Principles) measures are widely used in the software industry. In many cases, inclusion of our non-IFRS measures may facilitate comparison with our competitors' corresponding non-IFRS and non-GAAP measures.

Limitations of Non-IFRS Measures

Without being analyzed in conjunction with the corresponding IFRS measures, the non-IFRS measures are not indicative of our present and future performance, foremost, but not limited, for the following reasons:

- While our profit (non-IFRS) numbers reflect the elimination of certain acquisition-related expenses, no eliminations are made for the additional revenue or other income that results from the acquisitions.
- The acquisition-related amortization expense that we eliminate in deriving our profit (non-IFRS) numbers is a recurring expense that will impact our financial performance in future years.
- The remaining acquisition-related charges that we eliminate in deriving our profit (non-IFRS) numbers are likely to recur should SAP enter into material business combinations in the future. Similarly, the restructuring expenses that we eliminate in deriving our profit (non-IFRS) numbers are likely to recur should SAP perform restructurings in the future.
- The expense adjustment for acquisition-related charges does not arise from a common conceptual basis. This is because the expense adjustment aims to improve the comparability between post-acquisition periods and pre-acquisition periods. This should particularly be considered when evaluating our operating profit (non-IFRS) and operating margin (non-IFRS) numbers, as these combine our revenue and expenses (non-IFRS) despite the absence of a common conceptual basis.
- Our restructuring charges resulted in significant cash outflows in the past and could do so in the future.
- In the past, we have issued share-based payment awards to our employees every year and we intend to continue doing so in the future. Thus, our share-based payment expenses are recurring, although the amounts usually change from period to period.

We believe that constant currencies measures have limitations, particularly as the currency effects that are eliminated constitute a significant element of our revenue and expenses and could materially impact our performance. Therefore, we limit our use of constant currencies measures to the analysis of changes in volume as one element of the full change in a financial measure. We do not evaluate our results and performance without considering both constant currencies and nominal measures of operating profit (non-IFRS) measures on the one hand, and changes in operating expenses, operating profit, or other measures of financial performance prepared in accordance with IFRS on the other. We caution the readers of our financial reports to follow a similar approach by considering actual and constant currencies non-IFRS measures only in addition to, and not as a substitute for or superior to, changes in revenue, operating expenses, operating profit, or other measures of financial performance prepared in accordance with IFRS.

Despite these limitations, we believe that the presentation of our non-IFRS measures and the corresponding IFRS measures, together with the relevant reconciliations, provide useful information to management and investors regarding present and future business trends relating to our financial condition and results of operations.

Reconciliations of IFRS to Non-IFRS Financial Measures for the Years 2022 and 2021

€ millions, unless otherwise stated

					2022		2021	
	IFRS	Adj.	Non-IFRS	Currency Impact	Non-IFRS Constant Currency	IFRS	Adj.	Non-IFRS
Revenue measures								
Cloud	12,555		12,555	-874	11,681	9,418		9,418
Software licenses	2,056		2,056	-84	1,972	3,248		3,248
Software support	11,909		11,909	-545	11,364	11,412		11,412
Software licenses and support	13,965		13,965	-629	13,336	14,660		14,660
Cloud and software	26,521		26,521	-1,503	25,018	24,078		24,078
Services	4,350		4,350	-258	4,092	3,764		3,764
Total revenue	30,871		30,871	-1,762	29,109	27,842		27,842
Operating expense measures								
Cost of cloud	-3,853	243	-3,610			-3,105	229	-2,876
Cost of software licenses and support	-1,694	104	-1,590			-1,925	103	-1,822
Cost of cloud and software	-5,547	347	-5,200			-5,030	332	-4,698
Cost of services	-3,388	303	-3,085			-2,916	286	-2,630
Total cost of revenue	-8,936	650	-8,286			-7,946	617	-7,328
Gross profit	21,935	650	22,585			19,897	617	20,514
Research and development	-6,166	635	-5,530			-5,190	524	-4,667
Sales and marketing	-8,943	1,195	-7,748			-7,505	1,025	-6,479
General and administration	-2,072	809	-1,263			-2,431	1,250	-1,181
Restructuring	-138	138	0			-157	157	0
Other operating income/expense, net	54	-65	-11			43	0	43
Total operating expenses	-26,200	3,362	-22,839	1,412	-21,427	-23,186	3,573	-19,613
Profit numbers								
Operating profit	4,670	3,362	8,032	-350	7,683	4,656	3,573	8,230
Other non-operating income/expense, net	-195	0	-195			17	0	17
Finance income	820	0	820			3,123	0	3,123
Finance costs	-2,205	0	-2,205			-949	0	-949
Financial income, net	-1,385	0	-1,385			2,174	0	2,174
Profit before tax	3,090	3,362	6,452			6,847	3,573	10,421
Income tax expense	-1,382	-525	-1,908			-1,471	-613	-2,084
Profit after tax	1,708	2,837	4,545			5,376	2,960	8,337
Attributable to owners of parent	2,284	2,489	4,773			5,256	2,687	7,943
Attributable to non-controlling interests	-576	348	-228			121	273	394
Key ratios								
Operating margin (in %)	15.1		26.0		26.4	16.7		29.6
Effective tax rate (in %)	44.7		29.6			21.5		20.0
Earnings per share, basic (in €)	1.95		4.08			4.46		6.73

Due to rounding, the sum of the numbers presented in the table above might not precisely equal the totals we provide.

Non-IFRS Adjustments by Functional Areas

€ millions	2022					2021				
	IFRS	Acqui- sition- Related	SBP ¹	Restruc- turing	Non-IFRS	IFRS	Acqui- sition- Related	SBP ¹	Restruc- turing	Non-IFRS
Cost of cloud	-3,853	175	68	0	-3,610	-3,105	169	59	0	-2,876
Cost of software licenses and support	-1,694	34	70	0	-1,590	-1,925	33	70	0	-1,822
Cost of services	-3,388	22	281	0	-3,085	-2,916	20	266	0	-2,630
Research and development	-6,166	11	625	0	-5,530	-5,190	10	513	0	-4,667
Sales and marketing	-8,943	423	773	0	-7,748	-7,505	370	655	0	-6,479
General and administration	-2,072	11	798	0	-1,263	-2,431	20	1,230	0	-1,181
Restructuring	-138	0	0	138	0	-157	0	0	157	0
Other operating income/expense, net	54	-65	0	0	-11	43	0	0	0	43
Total operating expenses	-26,200	610	2,614	138	-22,839	-23,186	622	2,794	157	-19,613

¹ Share-based payments

Financial Performance: Review and Analysis

Economy and the Market

In 2022, worldwide economic growth slowed due to geopolitical uncertainties, high inflation, and tight financing conditions, summarizes the European Central Bank (ECB) in its most recent Economic Bulletin.¹ This analysis cites Russia's war against Ukraine as a shock for the global economy that caused uncertainty about energy and food supplies, fueled inflation, weighed on consumer and business confidence, and induced cost pressures particularly in energy-intensive industries. At the end of 2022, however, global inflation remained high and broadly based, but energy-related inflation started to ease.

As for the COVID-19 pandemic, the ECB says, most governments lifted mitigating restrictions over the year, which restarted economic activity. Supply bottlenecks eased gradually, but the pent-up demand contributed to inflation.

In the EMEA region, tight financing conditions and high inflation drove up costs for firms and reduced real household incomes, reports the ECB. In the euro area, economic growth slowed in the second half of the year. Inflation peaked in October but declined slightly through to the end of 2022. Russia suffered a severe recession due to its war in Ukraine and the ensuing international sanctions.

As for the Americas region, the U.S. economy contracted moderately in the first half of the year but returned to growth in the second half, finds the ECB. Inflation eased more than expected towards the end of 2022. The Latin American economies grew more slowly than before.

Regarding the APJ region, the Japanese GDP contracted until the third quarter but regained growth in the fourth. In China, states the ECB, the strict zero-COVID policy weighed on economic activity throughout most of the year. However, the Chinese government lifted measures gradually from the third quarter on, which allowed for some economic growth. In December, it abolished most restrictions, resulting in a rapidly increasing number of infections and slower growth again.

The IT Market

"The COVID-19 pandemic demonstrated just how powerful digital technology and innovation can be in delivering resiliency, revenue, and opportunity to the enterprise in the face of crisis."² That is how International Data Corporation (IDC), a U.S.-based market research firm, sums up the outcome of the pandemic years at the end of 2022. IDC continues: "The result is the emergence of a divide between organizations that are able to scale the development and delivery of digital innovation and those that can't."²

In more detail, IDC points out that "organizations are now more clearly seeing the value from digital technology – projecting a digital-first strategy to customers, investors, and employees with a cloud-first foundation; embracing data-driven business models supported by analytics and AI; and implementing automation tools across the organization."³ However, according to IDC, "the strongest companies currently are those that began their transformation to digital business years ago, before the disruption of the past three years. Those companies are now in the process of maturing as digital businesses and moving closer to operating as digital-first organizations."³ They "are executing a shift from a technology investment strategy focused on digital transformation (DX) to one focused on running a digital business,"² concludes IDC.

Along the way, "sustainability has become a mainstream business topic that is reshaping organizations globally, across every industry,"⁴ finds IDC with respect to the consequences for the IT

industry. What is more, “instead of looking at sustainability primarily as a cost or reputational risk factor, many organizations are trying to respond to this stakeholder pressure by looking at sustainability as a competitive differentiator that can increase their operational and financial performance.”⁴

Another pivotal IT experience in 2022, according to IDC, was the emergence of “the low-code, no-code, and intelligent developer technologies market [. It] includes the products that enable [...] professional developers to work more quickly by streamlining or eliminating aspects of the development process [. And it expands ...] the developer population by providing nontechnical developers with development interfaces that abstract away some or all of the knowledge required to code in traditional development environments.”⁵

¹ European Central Bank, Economic Bulletin, Issue 8/2022, Publication Date: January 12, 2023.

² IDC FutureScape: Worldwide Future of Digital Innovation 2023 Predictions, Doc #US48598522, October 2022.

³ IDC FutureScape: Worldwide Digital Business Strategies 2023 Predictions, Doc #CA49743822, October 2022.

⁴ IDC Future Scape: Worldwide Sustainability/ESG 2023 Predictions, Doc #US48709922, October 2022.

⁵ IDC's Worldwide Low-Code, No-Code, and Intelligent Developer Technologies Taxonomy, 2022, Doc #US49779722, November 2022.

Impact on SAP

In 2022, the biggest impact on SAP's business was the war in Ukraine and SAP's decision to wind down its business operations in Russia and Belarus.

The impact on full-year IFRS operating profit was approximately €410 million and approximately €290 million on non-IFRS operating profit, mainly due to reduced revenues and bad debt provisions.

For more information about the impacts of the war in Ukraine and SAP's exit from Russia and Belarus, see also SAP's consolidated financial statements, Notes [\(A.2\)](#), [\(B.6\)](#), and [\(D.2\)](#).

Other future impacts due to this rapidly evolving situation are currently unknown and could potentially subject our business to materially adverse consequences should the situation escalate beyond its current scope.

Overall Financial Position

Executive Board's Assessment

Despite the macro-economic challenges outlined above, the course of business was again favorable for SAP in 2022.

Noteworthy is the strong momentum in our cloud business: cloud revenue was up 33%, reaching €12.6 billion. SAP's current cloud backlog exceeded €12 billion, an increase of 27%. Total revenue increased 11% to €30.9 billion, and IFRS operating profit increased slightly to €4.7 billion. Non-IFRS operating profit declined by 2% to €8.0 billion. Free cash flow decreased to €4.35 billion.

Regarding the non-financial performance, we achieved the following results: Customer Net Promoter Score decreased 7 points to 3 (initial outlook: 11 to 15, revised to 3 to 8), Employee Engagement decreased 3pp to 80% (initial outlook: 84% to 86%, revised to 80% to 84%), and our net carbon emissions continued to decrease, dropping 25kt to 85kt (initial outlook: 70kt, revised to 90kt to 95kt).

On this basis, we are confident we can deliver on our financial and non-financial outlook for 2023 and on our 2025 mid-term ambition.

Performance Against Our Outlook for 2022 (Non-IFRS)

As in previous years, our 2022 operating profit-related goals and published outlook were based on our non-IFRS financial measures at constant currencies. For this reason, in the following section we discuss performance against our outlook only in terms of non-IFRS numbers (at constant currencies) derived from IFRS measures. The subsequent section about International Financial Reporting Standards (IFRS) operating results discusses numbers only in terms of IFRS, so the numbers in that section are not expressly identified as IFRS numbers.

Outlook for 2022 (Non-IFRS)

The initial outlook for 2022 (for more information, see the table “Comparison of Outlook and Results for 2022”) expected a full-year cloud revenue to range between €11.55 billion and €11.85 billion, cloud and software revenue to range between €25.0 billion and €25.5 billion, with more predictable revenue anticipated to make up 78% of this result. Furthermore, we expected operating profit (non-IFRS) to range between €7.8 billion and €8.25 billion. We expected a full-year 2022 effective tax rate (IFRS) of 25.0% to 28.0% (2021: 21.5%) and an effective tax rate (non-IFRS) of 22.0% to 25.0% (2021: 20.0%), strongly depending on the development of Sapphire Ventures’ investments. This initial outlook reflected SAP executing on its cloud strategy, which is driving the accelerated cloud growth through both new business and cloud adoption by existing customers, scaling SAP’s cloud momentum towards its mid-term ambition.

In April 2022, we adjusted our outlook for the effective tax rate (IFRS) to between 28.0% and 32.0% and for the effective tax rate (non-IFRS) to between 23.0% and 27.0%. The increase of the effective tax rate outlook mainly reflected an updated projection of the 2022 financial income contribution of Sapphire Ventures in light of market conditions prevailing at that time.

In July 2022, to reflect the impact from the war in Ukraine and the expected market decline of software licenses revenue, SAP updated its non-IFRS operating profit outlook to a tighter range of €7.6 billion to €7.9 billion. SAP also updated its outlook for the effective tax rate (IFRS) to between 34.0% and 38.0%. The adjustment mainly resulted from an updated projection of non-deductible expenses and of the lower 2022 financial income contribution of Sapphire Ventures given the current market conditions at that time. As the updated non-deductible expenses are not included in non-IFRS, SAP continued to anticipate a full-year 2022 effective tax rate (non-IFRS) of 23.0% to 27.0% but expected to be at the upper end of this range.

In October 2022, the market environment and volatility in capital markets also led to a lower level of predictability regarding the full-year 2022 effective tax rate outlook (IFRS and non-IFRS). We now expected a full-year 2022 effective tax rate for IFRS of around 45.0% and for non-IFRS of around 30.0%, but possibly with major deviations in either direction, strongly dependent on the 2022 financial income contribution of Sapphire Ventures.

All other SAP outlook ranges such as cloud revenue, cloud and software, and share of more predictable revenue remained unchanged.

2022 Actual Revenue and Profit Performance Compared to Outlook (Non-IFRS)

Cloud revenue, cloud and software revenue, and operating profit are within the range of our revised 2022 outlook, with cloud revenue close to the midpoint of our outlook range.

Comparison of Outlook and Results for 2022

	Results for 2021	Outlook for 2022 (Integrated Report 2021)	Revised Outlook for 2022 (Q1 Quarterly Statement)	Revised Outlook for 2022 (Half-Year Report)	Revised Outlook for 2022 (Q3 Quarterly Statement)	Results for 2022
Cloud revenue (at constant currencies)	€9.59 billion	€11.55 billion to €11.85 billion	€11.55 billion to €11.85 billion	€11.55 billion to €11.85 billion	€11.55 billion to €11.85 billion	€11.68 billion
Cloud and software revenue (at constant currencies)	€24.41 billion	€25.0 billion to €25.5 billion	€25.0 billion to €25.5 billion	€25.0 billion to €25.5 billion	€25.0 billion to €25.5 billion	€25.02 billion
Operating profit (non-IFRS, at constant currencies)	€8.41 billion	€7.8 billion to €8.25 billion	€7.8 billion to €8.25 billion	€7.6 billion to €7.9 billion	€7.6 billion to €7.9 billion	€7.68 billion
Share of predictable revenue	75%	78%	78%	78%	78%	79%
Effective tax rate (IFRS)	21.5%	25.0% to 28.0%	28.0% to 32.0%	34.0% to 38.0%	~45.0%	44.7%
Effective tax rate (non-IFRS)	20.0%	22.0% to 25.0%	23.0% to 27.0%	23.0% to 27.0%	~30.0%	29.6%

In a global economic situation that keeps being shaken by the war in Ukraine, post-COVID supply shortages, high inflation rates, and increasing fears of a global recession, the demand for our solutions and services confirms our expectations, reflecting the strong business performance which is expected to continue to accelerate cloud revenue growth.

Our current cloud backlog (contractually committed cloud revenue that we expect to recognize over the upcoming 12 months) reached €11.73 billion at constant currencies (€12.03 billion at actual currencies; 2021: €9.45 billion). This was an increase of 24% (2021: 26%) on a constant currency basis despite being negatively impacted by approximately 1.5pp from the divesture of our Litmos business and the wind down of our business operations in Russia and Belarus. Also considering these negative effects, the growth rate of our current cloud backlog is in line with our guidance from last year to achieve a growth rate similar to 2021.

As of December 31, 2022, total cloud backlog – which is defined as the contractually committed cloud revenue we expect to recognize in future periods – was up 35% to €34.2 billion.

At constant currencies, the resulting cloud revenue grew from €9.42 billion in 2021 to €11.68 billion in 2022, broadly in line with the midpoint of our guidance range of €11.55 billion to €11.85 billion. That represented an increase of 24% at constant currencies.

Cloud and software revenue grew 4% at constant currencies to €25.02 billion (2021: €24.08 billion), and thus ended within our range forecasted for 2022 of €25.00 billion to €25.50 billion.

Thanks to the strong increase in cloud business, we were able to increase the share of more predictable revenue 4.4pp to 79% (2021: 75%), exceeding our revised outlook by 1pp.

Total revenue on a constant currency basis grew 5% in 2022 to €29.11 billion (2021: €27.84 billion).

Operating expenses (non-IFRS) on a constant currency basis increased 9% in 2022 to €21.43 billion (2021: €19.61 billion).

Our expense base in 2022 was impacted by our transformation to a fast-growing cloud business. The cloud gross margin (non-IFRS) for 2022 was 72%, increasing 2.1pp at constant currencies from the year before. Our cloud margin benefitted from an increase in cloud revenue, despite continued investments in the Next-Generation Cloud Delivery initiative (modernization of our cloud delivery to enable a more resilient and scalable cloud infrastructure).

Non-IFRS operating profit in 2022 was €7.68 billion on a constant currency basis (2021: €8.23 billion), reflecting a decrease of 7%. Non-IFRS operating profit included a disposal gain of €109 million related to the sale of the SAP Litmos business. The development of our operating profit was largely impacted by the withdrawal from Russia and Belarus as a result of the war in Ukraine and the effects of SAP's business transformation (Next-Generation Cloud Delivery).

Our overall headcount increased by 4,546 full-time equivalents or FTEs (4,136 thereof organically), primarily in research and development as well as in sales and marketing. Thus, non-IFRS operating profit on a constant currency basis amounting to €7.68 billion landed within the revised target range (€7.60 billion to €7.90 billion).

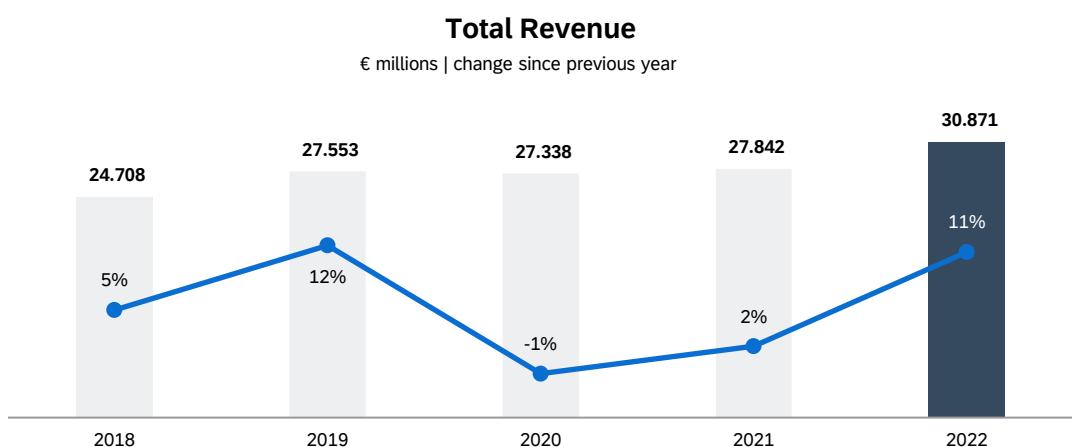
We achieved an effective tax rate (IFRS) of 44.7% and an effective tax rate (non-IFRS) of 29.6%, which is slightly below our adjusted outlook announced in October 2022 of around 45.0% (IFRS) and of around 30.0% (non-IFRS).

Operating Results (IFRS)

This section on operating results (IFRS) discusses results only in terms of IFRS measures, so the IFRS numbers are not expressly identified as such.

We break our operations down into three regions: the Europe, Middle East, and Africa (EMEA) region, the Americas region, and the Asia Pacific Japan (APJ) region. We allocate revenue amounts to each region based on where the customer is located. For more information about revenue by geographic region, see the Notes to the Consolidated Financial Statements, [Note \(A.1\)](#).

Revenue

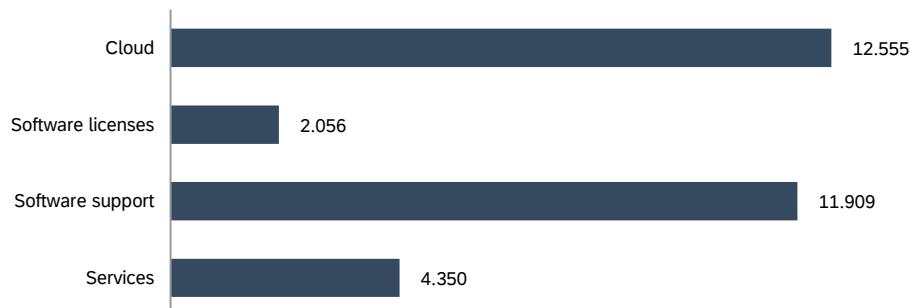


Total revenue increased from €27,842 million in 2021 to €30,871 million in 2022, representing an increase of €3,029 million, or 11%.

Cloud and software revenue represented 86% of total revenue in 2022 (2021: 86%). Service revenue increased 16% from €3,764 million in 2021 to €4,350 million in 2022, which was 14% of total revenue (2021: 14%).

Revenue by Revenue Type

€ millions

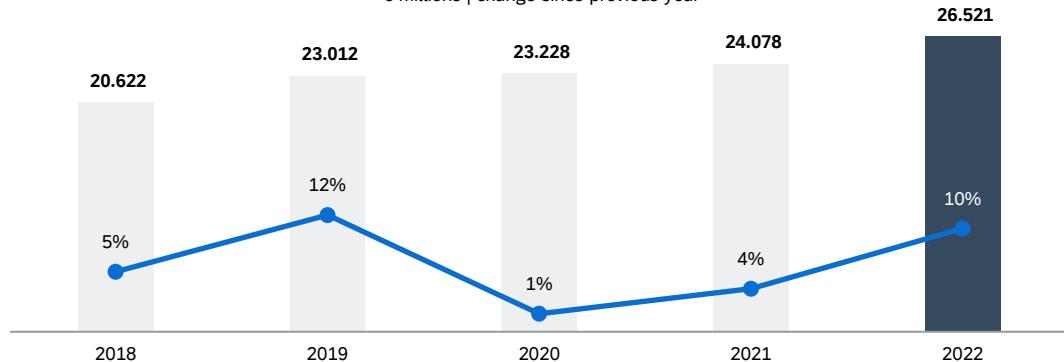


For more information about our regional performance, see the [Revenue by Region](#) section.

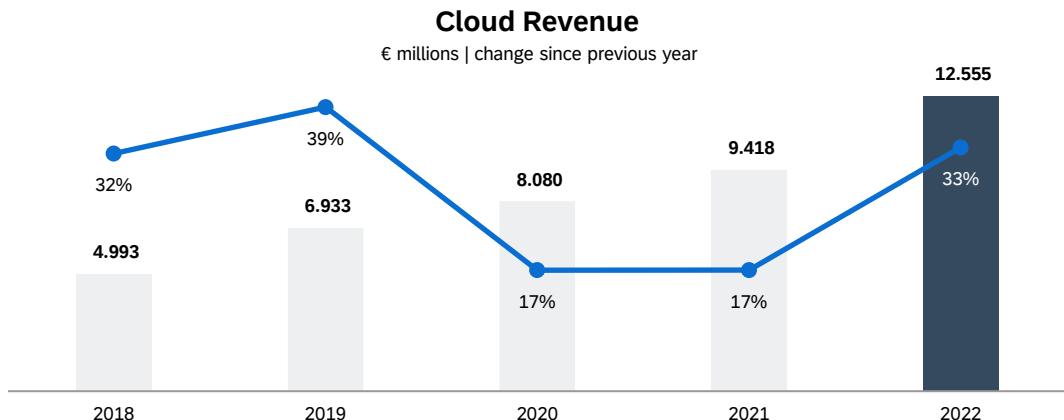
Cloud revenue refers to the income earned from contracts that permit the customer to access specific software solutions hosted by SAP or third parties engaged by SAP during the term of its contract with SAP. Software licenses revenue results from the fees earned from selling or licensing software to customers. Support revenue represents fees earned from providing customers with technical support services and unspecified software upgrades, updates, and enhancements. For more information about our revenue types, see the Notes to the Consolidated Financial Statements, [Note \(A.1\)](#).

Cloud and Software Revenue

€ millions | change since previous year



Cloud and software revenue grew from €24,078 million in 2021 to €26,521 million in 2022, an increase of 10%.



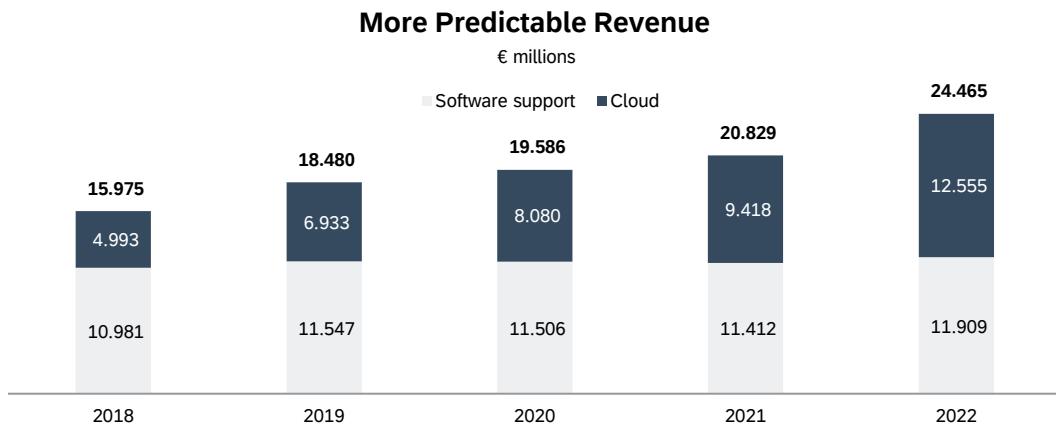
Cloud revenue increased €3,138 million, or 33%, from €9,418 million in 2021 to €12,555 million in 2022. Cloud revenue reaccelerated its growth supported by a recovery of the transactional revenue. At the same time, the cloud revenue for SAP S/4HANA increased 91% from €1,090 million in 2021 to €2,081 million in 2022.

The cloud order entry increased 41% to €14,965 million in 2022 (2021: €10,586 million). A growth driver was the high share of cloud transactions with a volume greater than €5 million (48%). In 2022, the total cloud backlog was up 35% to €34.2 billion (2021: €25.3 billion). The current cloud backlog increased 27% to €12,030 million in 2022 (2021: €9,447 million). The current cloud backlog for SAP S/4HANA increased 86%, or €1,464 million, to €3,171 million in 2022 (2021: €1,707 million).

Our software licenses revenue declined €1,192 million from €3,248 million in 2021 to €2,056 million in 2022.

The demand for SAP software helped us maintain a stable maintenance customer base for software support, resulting in software support revenue of €11,909 million in 2022 (2021: €11,412 million). The increase in revenue was driven by the favorable currency exchange rates. SAP Enterprise Support was the largest contributor to our software support revenue.

Software licenses and software support revenue decreased €695 million, or 5%, from €14,660 million in 2021 to €13,965 million in 2022.



We define more predictable revenue as the sum of our cloud revenue and our software support revenue. Our more predictable revenue increased from €20,829 million in 2021 to €24,465 million in 2022. Cloud revenue surpassed support revenue in 2022 and drove the growth of 17%. More predictable revenue accounted for 79% of our total revenue in 2022 (2021: 75%), following the upward trend from prior years.

Services revenue combines revenue from consulting services, premium support services, and other services such as training services. Consulting services primarily relate to the implementation of our cloud and on-premise software products. Our premium support offering consists of high-end support services tailored to customer requirements.

Services revenue increased €586 million, or 16%, from €3,764 million in 2021 to €4,350 million in 2022. This increase was predominantly caused by very strong growth across the entire services portfolio of offerings with accelerated growth in our training revenue and premium support revenues. At the same time, the year-over-year revenue development was positively impacted by the recovery of order entry in 2021.

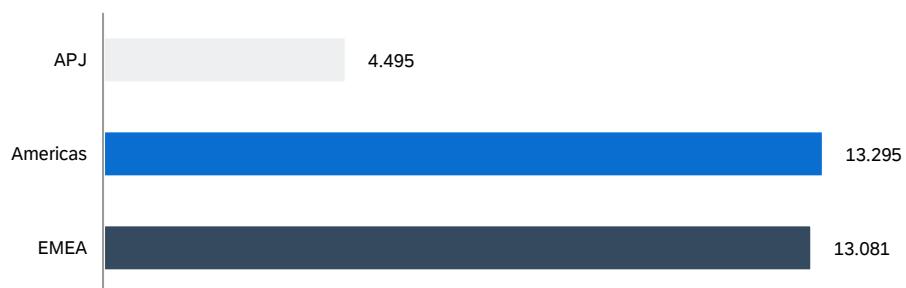
Consulting revenue and premium support revenue increased €499 million, or 15%, from €3,294 million in 2021 to €3,793 million in 2022. In 2022, consulting and premium support revenue contributed 87% of the total services revenue (2021: 87%) and 12% of total revenue (2021: 12%).

Revenue from other services increased €87 million, or 18%, to €558 million in 2022 (2021: €471 million).

Revenue by Region

Revenue by Region (Based on Customer Location)

€ millions

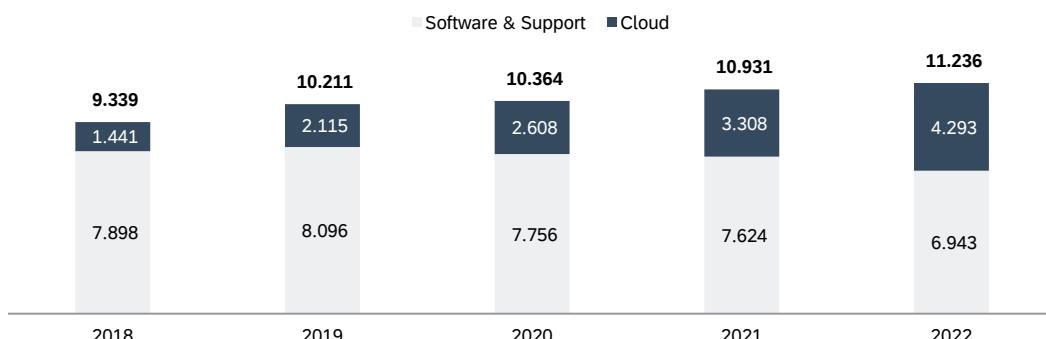


EMEA Region

In 2022, the EMEA region was negatively impacted by the war in Ukraine and SAP's decision to wind down its business operations in Russia and Belarus. The EMEA region generated €13,081 million in revenue (2021: €12,589 million), which was 42% of total revenue (2021: 45%). Revenue in Germany increased 4% to €4,504 million (2021: €4,343 million). Germany contributed 34% (2021: 34%) of all EMEA region revenue. The remaining revenue in the EMEA region was primarily generated in France, Italy, the Netherlands, Switzerland, and the United Kingdom.

Cloud and Software Revenue (EMEA)

€ millions



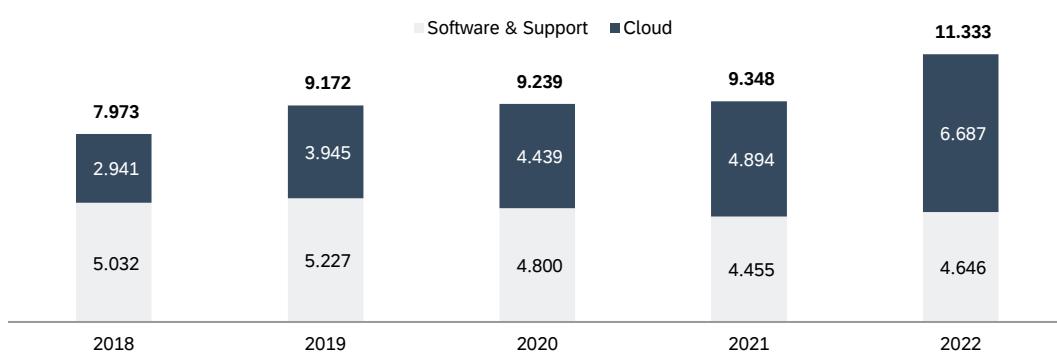
Cloud and software revenue generated in the EMEA region totaled €11,236 million (2021: €10,931 million). That was 86% of all revenue from the region (2021: 87%). Cloud revenue in the EMEA region rose 30% to €4,293 million in 2022 (2021: €3,308 million). Software licenses and software support revenue decreased 9% to €6,943 million in 2022 (2021: €7,624 million).

Americas Region

In 2022, 43% of our total revenue was generated in the Americas region (2021: 39%). Total revenue in the Americas region increased 21% to €13,295 million (2021: €10,969 million). Revenue in the United States increased to €10,811 million (2021: €8,870 million). The United States contributed 81% (2021: 81%) of all revenue generated in the Americas region. In the remaining countries of the Americas region, revenue increased 18% to €2,484 million. Revenue in the remaining countries of the Americas region was generated primarily in Brazil, Canada, and Mexico.

Cloud and Software Revenue (Americas)

€ millions

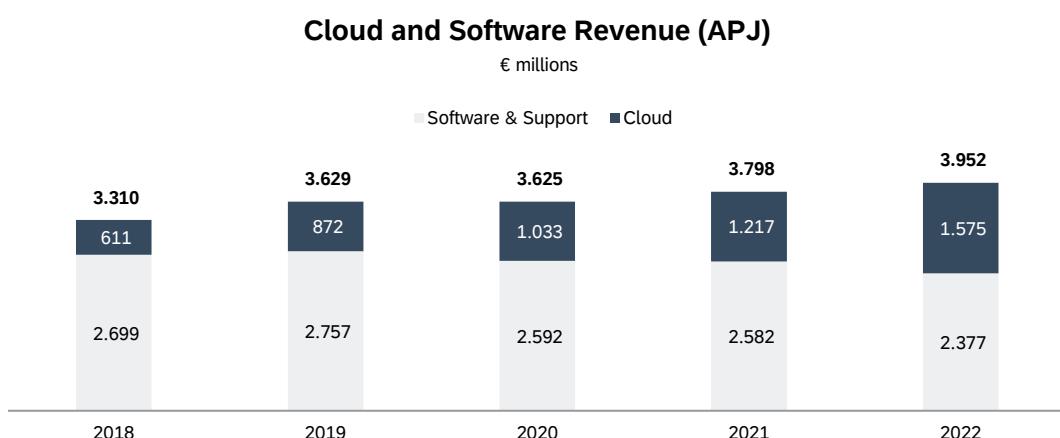


Cloud and software revenue generated in the Americas region totaled €11,333 million (2021: €9,348 million). That was 85% of all revenue from the region (2021: 85%). Cloud revenue in the Americas region rose 37% to €6,687 million in 2022 (2021: €4,894 million). The United States, SAP's largest market, contributed 83% of cloud revenue generated in the Americas region. Software licenses and software support revenue in the Americas regions amounted to €4,646 million in 2022 (2021: €4,455 million).

APJ Region

In 2022, 15% of our total revenue was generated in the APJ region (2021: 15%). Total revenue in the APJ region increased 5% to €4,495 million (2021: €4,285 million). Total revenue in Japan decreased to €1,242 million (2021: €1,301 million), primarily driven by unfavorable changes in currency exchange

rates. Revenue from Japan accounted for 28% of all revenue generated in the APJ region (2021: 30%). In the remaining countries of the APJ region, revenue increased 9%. Revenue in the remaining countries of the APJ region was generated primarily in Australia, China, and India.

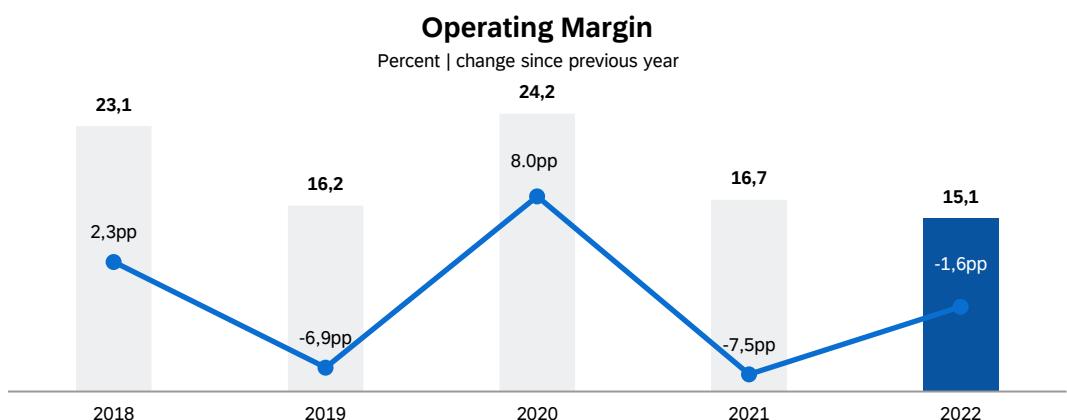
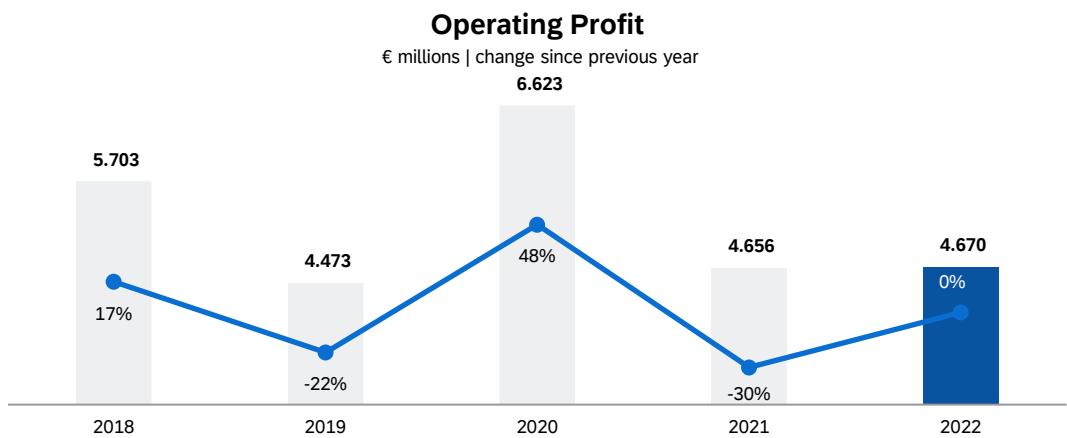


Cloud and software revenue in the APJ region totaled €3,952 million (2021: €3,798 million). That was 88% of all revenue from the region (2021: 89%). Cloud revenue in the APJ region rose 29% to €1,575 million in 2022 (2021: €1,217 million). Software licenses and software support revenue decreased from €2,582 million in 2021 to €2,377 million in 2022.

Operating Profit and Operating Margin

Operating profit remained flat at €4,670 million and operating margin decreased 1.6pp to 15.1%. Operating profit was impacted by a reduced contribution from software licenses revenue and the decision to wind down our business operations in Russia and Belarus. The wind-down's impact on full-year IFRS operating profit was approximately €410 million, including approximately €120 million from restructuring expenses. Operating profit was also impacted by accelerated investments in the next generation cloud delivery program and in other research and development and sales and marketing initiatives to capture current and future growth opportunities. Next generation cloud delivery program is the modernization of our cloud delivery to enable a more resilient and scalable cloud infrastructure.

Additionally, operating profit included a disposal gain of €175 million from the sale of the SAP Litmos business.



Changes to the individual elements in our cost of revenue were as follows:

Cost of Cloud and Software

Cost of cloud and software consists primarily of costs for deploying and operating cloud solutions, the cost of developing custom solutions that address customers' specific business requirements, and customer support costs.

In 2022, the cost of cloud and software increased 10% to €5,547 million (2021: €5,030 million) and our cloud margin increased 2.3pp from 67.0% in 2021 to 69.3% in 2022. This 2.3pp increase stems predominately from the SaaS margin, as SaaS revenue increased 35% and the SaaS margin expanded 1.8pp year over year. Cost of cloud also benefitted from a reorganization within our Customer Success organization, under which cloud delivery resources were reallocated to sales roles focused on the implementation of our LACE (land-adopt-consume-expand) strategy. This reorganization reduced the 2022 cost of cloud and, as a consequence, increased our sales and marketing expenses by approximately €40 million. Cost of cloud continued to be negatively impacted by investments in the next generation cloud delivery program, which is expected to be completed in 2023. The software licenses and software support margin was 87.9%, 1.0pp above the prior-year level (2021: 86.9%). Software licenses and software support revenue decreased 5% to €13,965 million (2021: €14,660 million), primarily arising from a 37% decline in software revenue. Software licenses

and software support costs decreased correspondingly by 12% to €1,694 million (2021: €1,925 million).

Cost of Services

Cost of services consists primarily of the cost of consulting, premium services, and training courses, and the cost of bought-in consulting and training resources. The cost of services increased 16% to €3,388 million (2021: €2,916 million), in line with increased demand for project consulting and premium engagement services as well as higher business travel costs as COVID-related travelling restrictions eased around the world. Our gross margin on services, defined as services profit as a percentage of services revenue, decreased slightly by 0.4pp to 22.1% (2021: 22.5%). As our services business trends away from traditional software licensing and consulting revenue toward more subscription revenue from cloud solutions, we continue to adjust our service delivery resources to support our cloud offerings.

Research and Development

Our research and development (R&D) expense consists primarily of the personnel cost of our R&D employees, costs incurred for independent contractors whom we retain to assist in our R&D activities, and amortization of the computer hardware and software we use for our R&D activities.

The R&D expense rose 19% to €6,166 million in 2022 from €5,190 million in 2021. This increase arises mainly from higher personnel costs driven by a 6% year-over-year growth in our R&D headcount for additional capacity demands in relation to the increased revenue. The R&D expense is also impacted by continued strategic investments in next generation cloud delivery program and several other initiatives to capture current and future growth opportunities. R&D expense as a percentage of total revenue thus increased to 20.0% in 2022 (2021: 18.6%). For more information, see the *Our Investments in Innovation* section.

Sales and Marketing Expense

Sales and marketing expense consists mainly of personnel costs, direct sales costs, and the cost of marketing our products and services.

Our sales and marketing expense grew 19% from €7,505 million in 2021 to €8,943 million in 2022. This increase is for the most part attributable to the 8% growth in headcount from expansion of the global sales force as well as from higher bonus payments prompted by strong revenue growth. In addition, travel costs for sales teams increased as COVID-related travel restrictions eased around the world. Similarly, marketing costs increased in 2022 as some of the marketing events resumed. Sales expenses were also impacted by the reorganization of our Customer Success organization to focus on the implementation of the LACE strategy.

Accordingly, the ratio of sales and marketing expense to total revenue, expressed as a percentage, increased 2.0pp in 2022 to 29.0% (2021: 27.0%).

General and Administration Expense

Our general and administration expense consists mainly of personnel costs to support our finance and administration, human resource, and corporate functions.

General and administration expense decreased 15% from €2,431 million in 2021 to €2,072 million in 2022. This decrease is primarily due to higher expenses from share-based payments in 2021, with a major effect coming from Qualtrics equity-settled shared based compensation plans. The ratio of general and administration expense to total revenue declined 2.0pp year over year to 6.7% (2021: 8.7%).

Segment Information

At the end of 2022, SAP had two reportable segments: Applications, Technology & Services and Qualtrics. The segment information for 2022 and the comparative prior periods were restated to conform with the new segment composition.

For more information about our segment reporting and the changes in the composition of our reportable segments in 2022, see the Notes to the Consolidated Financial Statements, [Notes \(C.1\)](#) and [\(C.2\)](#), and the [Performance Management System](#) section

Applications, Technology & Services

€ millions, unless otherwise stated (non-IFRS)	2022		2021		Δ in %	Δ in %
	Actual Currency	Constant Currency	Actual Currency	Actual Currency		
Cloud revenue – SaaS ¹	7,847	7,317	5,918	33	24	
Cloud revenue – PaaS ²	1,487	1,404	992	50	41	
Cloud revenue – IaaS ³	905	853	924	-2	-8	
Cloud revenue	10,239	9,573	7,835	31	22	
Cloud gross margin – SaaS ¹ (in %)	68.6	68.6	67.5	1.1pp	1.1pp	
Cloud gross margin – PaaS ² (in %)	78.6	79.9	79.3	-0.7pp	0.5pp	
Cloud gross margin – IaaS ³ (in %)	27.8	32.6	32.1	-4.3pp	0.5pp	
Cloud gross margin (in %)	66.5	67.1	64.8	1.6pp	2.2pp	
Segment revenue	28,298	26,772	26,054	9	3	
Segment gross margin (in %)	72.1	72.4	73.4	-1.3pp	-1.0pp	
Segment profit	8,806	8,456	9,284	-5	-9	
Segment margin (in %)	31.1	31.6	35.6	-4.5pp	-4.1pp	

¹ Software as a Service

² Platform as a Service

³ Infrastructure as a Service

The Applications, Technology & Services segment recorded a strong increase in cloud revenue of 31% in 2022 (22% at constant currencies), supported by SAP Business Technology Platform as well as SAP S/4HANA, whose cloud revenue increased 91% to €2,081 million. At the same time,

SAP S/4HANA current cloud backlog grew 86% and ended 2022 at €3,171 million. Cost of cloud for the Applications, Technology & Services segment increased 25% (14% at constant currencies), which overall caused the cloud gross margin to widen 1.6pp (2.2 pp at constant currencies) to 66.5%.

Thereof, PaaS and SaaS grew 0.5pp and 1.1pp at constant currencies, which resulted in a cloud gross margin of 78.6% and 68.6% respectively. Software support revenue increased 4% but remained flat at constant currency level compared to the prior year, ending 2022 at €11,906 million. Software licenses revenue decreased 37% (39% at constant currencies) mainly due to the shift toward cloud revenue as more customers are choosing our RISE with SAP offering. As such, the segment achieved a total software licenses and support revenue of €13,959 million. Total segment revenue nevertheless rose by 9% (3% at constant currencies) and ended 2022 at €28,298 million.

Overall, the share of more predictable revenue within the Applications, Technology & Services segment increased 4.4pp from 73.9% in 2021 to 78.3% in 2022.

Cost of revenue increased 14% (7% at constant currencies) compared to the prior year, ending 2022 at €7,906 million. This development was mainly driven by a strong increase in cost of cloud.

Segment profit decreased 5% (9% at constant currencies) and ended 2022 at €8,806 million. This is mainly attributable to a 16% increase in total segment cost (9% at constant currencies) including

accelerated investments in Next-Generation Cloud Delivery and into other research and development and sales and marketing initiatives to capture current and future growth opportunities. Consequently, the segment margin narrowed 4.1pp at constant currencies.

Qualtrics

€ millions, unless otherwise stated (non-IFRS)	2022		2021		Δ in %	Δ in %
	Actual Currency	Constant Currency	Actual Currency	Actual Currency	Constant Currency	
Cloud revenue – SaaS ¹	1,198	1,071	757	58	41	
Cloud gross margin (in %) – SaaS ¹	88.9	88.8	91.5	-2.6pp	-2.7pp	
Segment revenue	1,423	1,271	930	53	37	
Segment gross margin (in %)	77.9	77.6	79.6	-1.7pp	-1.9pp	
Segment profit	95	104	44	>100	>100	
Segment margin (in %)	6.7	8.2	4.8	1.9pp	3.4pp	

¹ Software as a Service

The Qualtrics segment, which comprises SAP's experience management solutions, closed 2022 with a strong cloud revenue growth of 58% (41% at constant currencies), supported by robust renewal rates and expansions. The associated cost of cloud rose 86% at constant currencies mainly due to Qualtrics' hosting strategy and the Clarabridge acquisition in 2021, which led to a narrowing of the segment's cloud gross margin of 2.6pp (2.7pp at constant currencies). Including services revenue, the total segment revenue increased 53% (37% at constant currencies) to €1,423 million. Overall, the Qualtrics segment profit increased to €95 million in 2022. The corresponding segment margin widened 1.9pp (3.4pp at constant currencies) to 6.7%.

Reconciliation of Cloud Revenues and Margins

€ millions, unless otherwise stated	Q1–Q4 2022			Q1–Q4 2021		Δ in %
	Actual Currency	Currency Impact	Constant Currency	Actual Currency	Actual Currency	
Cloud revenue – SaaS ¹	10,064	-735	9,329	7,458	35	25
Cloud revenue – PaaS ²	1,586	-87	1,499	1,035	53	45
Cloud revenue – IaaS ³	905	-52	853	924	-2	-8
Cloud revenue	12,555	-874	11,681	9,418	33	24
Cloud gross margin – SaaS ¹ (in %)	73.9		73.7	72.7	1.2pp	1.0pp
Cloud gross margin – PaaS ² (in %)	79.4		80.6	79.7	-0.3pp	0.9pp
Cloud gross margin – IaaS ³ (in %)	27.8		32.7	32.1	-4.3pp	0.5pp
Cloud gross margin (in %)	71.2		71.6	69.5	1.8pp	2.1pp

¹ Software as a Service

² Platform as a Service

³ Infrastructure as a Service

⁴ Constant currency period-over-period changes are calculated by comparing the current year's non-IFRS constant currency numbers with the non-IFRS numbers of the previous year's respective period.

Financial Income, Net

Financial income, net, decreased to €-1,385 million (2021: €2,174 million). Our finance income was €820 million (2021: €3,123 million) and our finance costs were €2,205 million (2021: €949 million).

Finance income primarily consists of gains from IFRS 9-related fair value adjustments, mainly of Sapphire Ventures investments, and the disposal of equity securities totaling €608 million (2021: €3,067 million).

Finance costs mainly consist of IFRS 9-related fair value adjustments or losses from disposal of Sapphire Ventures investments totaling €1,802 million (2021: €654 million), and interest expense on financial liabilities amounting to €208 million (2021: €160 million). For more information about financing instruments, see the Notes to the Consolidated Financial Statements, [Note \(E.3\)](#).

Income Taxes

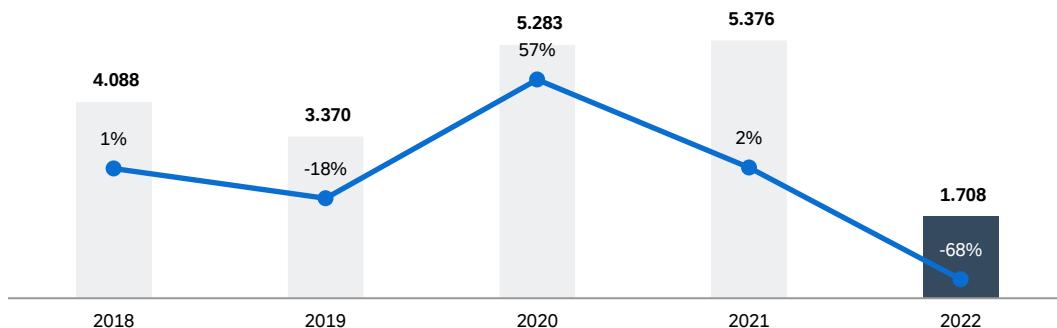
The effective tax rate in 2022 was 44.7% (2021: 21.5%). The year-over-year increase mainly resulted from changes in tax-exempt income due to the lower 2022 financial income contribution of Sapphire Ventures given prevailing market conditions. For more information about income taxes, see the Notes to the Consolidated Financial Statements, [Note \(C.5\)](#).

Profit After Tax and Earnings per Share

Profit after tax decreased to €1,708 million in 2022 (2021: €5,376 million).

Profit After Tax

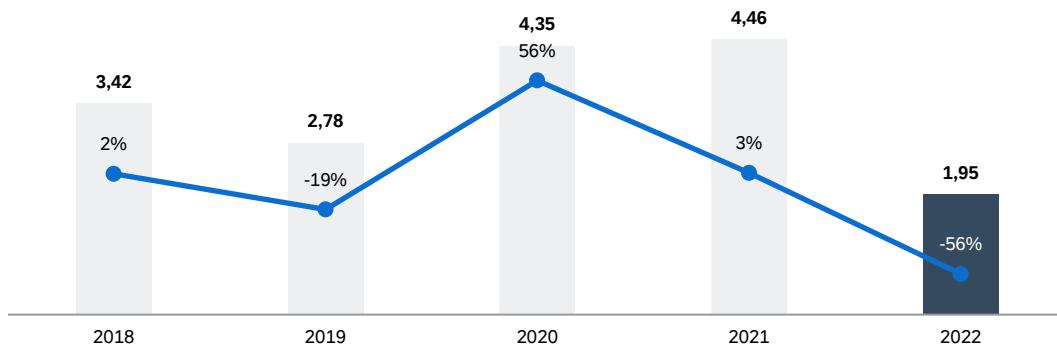
€ millions | change since previous year



Basic earnings per share decreased to €1.95 (2021: €4.46). The number of shares outstanding decreased to 1,170 million in 2022 (2021: 1,180 million).

Earnings per Share

€ | change since previous year



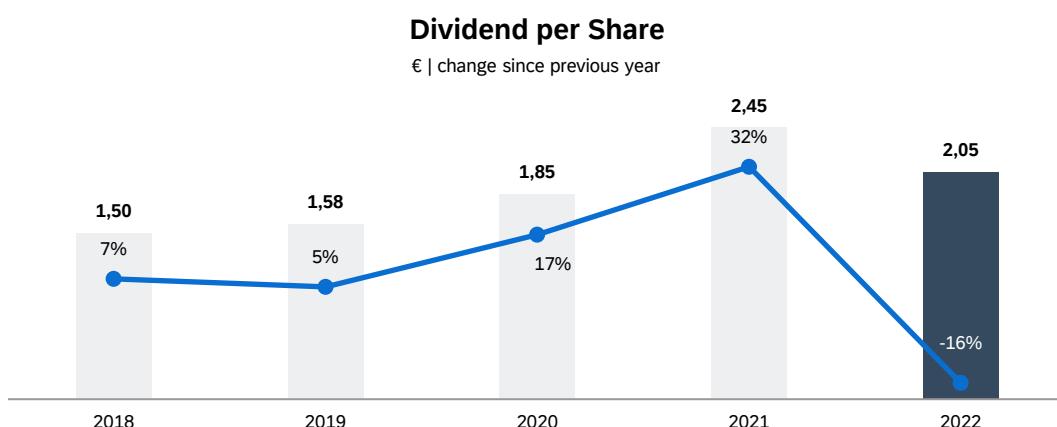
Dividend

We hold the view that our shareholders should benefit appropriately from the profit the Company made in 2022. Our dividend policy is to pay a dividend totaling 40% or more of profit after tax.

The Executive Board and the Supervisory Board of SAP SE will recommend to the Annual General Meeting of Shareholders in May 2023 a total dividend for 2022 of €2.05 per share (2021: €2.45). Based on this recommendation, the overall dividend payout ratio (which means the total distributed dividend as a percentage of profit after tax) would be 140% (2021: 53%). The payment in 2022 included a special dividend of €0.50 to celebrate SAP's 50th anniversary. Excluding the special dividend, the proposed dividend increased 5%. Compared to the total dividend in 2022 including the special payment, the proposed dividend decreased 16%.

If the shareholders approve this recommendation, and based on the number of treasury shares as at December 31, 2022, the total amount distributed in dividends will be €2,393 million. The actual amount distributed can be different from this total amount, because the number of shares held as treasury stock might change before the Annual General Meeting of Shareholders. In 2022, we distributed €2,865 million in dividends.

More information on the development of our profit after tax can be found in the sections *Financial Income, Net, Income Taxes*, and *Profit after Tax and Earnings per Share*.



Finances (IFRS)

Overview

Global Financial Management

We use global centralized financial management to control liquid assets and monitor exposure to interest rates and currencies. The primary aim of our financial management is to maintain liquidity in the Group at a level that is adequate to meet our financial obligations at all times. Most SAP entities have their liquidity managed centrally by the Group, so that liquid assets across the Group can be consolidated, monitored, and invested in accordance with Group policy. High levels of liquid assets help keep SAP flexible, sound, and independent. In addition, various credit facilities are currently available for additional liquidity, if required. For more information about these facilities, see the *Credit Facilities* section.

We manage credit, liquidity, interest rate, equity price, and foreign exchange rate risks on a Group-wide basis. We use selected derivatives exclusively for this purpose and not for speculation, which is defined as entering into a derivative instrument for which we do not have corresponding underlying transactions. The rules for the use of derivatives and other rules and processes concerning the management of financial risks are documented in our Treasury Guideline, which applies globally to all

companies in the Group. For more information about the management of each financial risk and about our risk exposure, see the Notes to the Consolidated Financial Statements, [Notes \(F.1\)](#) and [\(F.2\)](#).

Capital Structure Management

The primary objective of our capital structure management is to maintain a strong financial profile for investor, creditor, and customer confidence, and to support the growth of our business. We seek to maintain a capital structure that will enable us to cover our funding requirements through the capital markets at reasonable conditions, and in so doing, ensure a high level of independence, confidence, and financial flexibility. For more information about the capital structure and its analysis, see the [Analysis of Consolidated Statement of Financial Position](#) section and the Notes to the Consolidated Financial Statements, [Note \(E.1\)](#).

The long-term credit rating for SAP SE is "A2" by Moody's (positive outlook) and "A" by Standard & Poor's (stable outlook).

The Company repurchased shares with a volume of €1.5 billion in 2022. Repurchased shares will primarily be used to service future awards granted under the 'Move SAP' share-based compensation plan. Additional share buybacks in future years will be decided on an annual basis in line with SAP's capital allocation priorities.

Liquidity Management

Our primary source of cash, cash equivalents, and current investments is funds generated from our business operations. Over the past several years, our principal use of cash has been to support operations and our capital expenditure requirements resulting from our growth, to quickly repay financial debt, to acquire businesses, to pay dividends on our shares, and to buy back SAP shares on the open market. On December 31, 2022, our cash, cash equivalents, and current investments were primarily held in euros and U.S. dollars. We generally invest only in the financial assets of issuers or funds with a minimum credit rating of BBB, and pursue a policy of cautious investment characterized by wide portfolio diversification with a variety of counterparties, predominantly short-term investments, and standard investment instruments. Our investments in financial assets of issuers with a credit rating lower than BBB were not material in 2022.

We believe that our liquid assets combined with our undrawn credit facilities are sufficient to meet our operating financing needs in 2023 and, together with expected cash flows from operations, will support debt repayments, currently planned capital expenditure requirements, and capital returns to our shareholders over the near term and medium term. It may also be necessary to enter into financing transactions when additional funds are required that cannot be wholly sourced from free cash flow, to maintain flexibility, and/or limit repayment risk.

Therefore, we continuously monitor funding options available in the capital markets and trends in the availability of funds, as well as the cost of such funding. In recent years, we were able to repay additional debt within a short period of time due to our persistently strong free cash flow. For more information about the financial debt, see the [Cash Flows and Liquidity](#) section.

Credit Facilities

Other sources of liquidity are available to us through various credit facilities, if required.

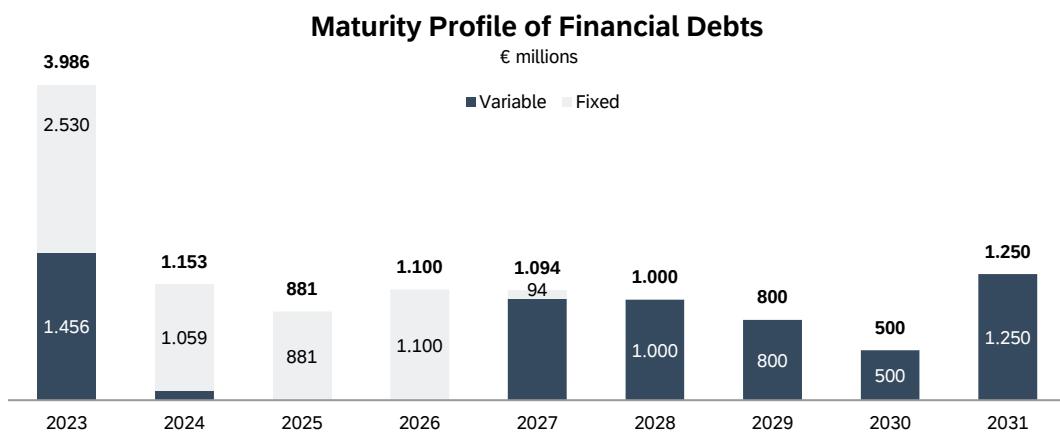
To retain high financial flexibility, we have available a €2.5 billion syndicated revolving credit facility with an end date in November 2024. A possible future utilization is not subject to any financial covenants. Borrowings under the facility bear interest of EURIBOR or LIBOR for the respective currency plus a margin of 0.17%. We are also required to pay a commitment fee of 0.0595% per annum on the unused available credit. So far, we have not used, and do not currently foresee any need to use this credit facility.

As at December 31, 2022, SAP SE had additional available credit facilities totaling €550 million. Several other SAP entities have credit facilities available that allow them to borrow funds at prevailing interest rates.

On December 31, 2022, two bilateral term loans with a total amount of €1.45 billion were outstanding. The amount can be flexibly repaid until maturity of the loan on September 30, 2023.

Financial Debts

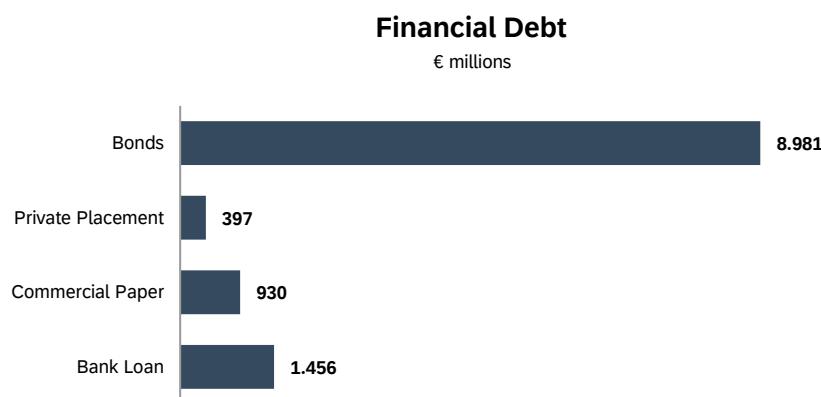
Financial debt is defined as the nominal volume of bank loans, commercial paper, private placements, and bonds.



Nominal volume of financial debt on December 31, 2022, included amounts in euros (€11,086 million) and U.S. dollars (€678 million). On December 31, 2022, approximately 52% of the financial debt was held at variable interest rates, partially swapped from fixed into variable using interest rate swaps.

For information about the intended repayments, see the goals for liquidity and finance in the [Financial Targets and Prospects](#) section.

Financial Debt by Instrument



For more information about our financial debt, see the Notes to the Consolidated Financial Statements, [Note \(E.3\)](#).

Cash Flows and Liquidity

2022 Actual Cash Flow and Liquidity Performance Compared to Outlook

We met the updated outlook for 2022.

€ billions	2021 Results	2022 Outlook ¹	2022 Results
Capital expenditure	-0.80	Similar level	-0.87
Free cash flow	5.05	Approximately 4.5	4.35

¹ The 2022 outlook was communicated in January 2022 and last updated in October 2022. The 2022 outlook numbers above reflect the updated outlook from October 2022.

Group Liquidity and Net Debt

€ millions	2022	2021	Δ
Cash and cash equivalents	9,008	8,898	109
Current time deposits and debt securities	686	2,632	-1,946
Group liquidity	9,694	11,530	-1,837
Current financial debt	-3,986	-3,755	-230
Non-current financial debt	-7,778	-9,338	1,560
Financial debt	-11,764	-13,094	1,330
Net debt (-)	-2,070	-1,563	-507
Lease liabilities	-2,140	-2,143	3
Net debt including lease liabilities	-4,210	-3,706	-503

Group liquidity consists of cash and cash equivalents (for example, cash at banks, money market funds, and time deposits with original maturity of three months or less) and current investments (for example, time deposits and debt securities with original maturities of greater than three months, and remaining maturities of less than one year included in current other financial assets). Group liquidity on December 31, 2022, primarily comprised amounts in euros and U.S. dollars.

The decrease in group liquidity compared to 2021 was mainly due to the share buyback programs that were executed in 2022 as well as the repayment of Eurobonds.

Net debt is group liquidity less financial debt. For more information about our liquidity, see the Notes to the Consolidated Financial Statements, [Note \(E.3\)](#).

For more information about the impact of cash, cash equivalents, current investments, and our financial liabilities on our income statements, see the analysis of our financial income, net, in the [Operating Results \(IFRS\)](#) section.

Development of Net Debt

		2022	2021
Net debt 12/31/2021	Free Cash Flow	-1,563	-6,503
Operating cash flow		5,647	6,223
Capital expenditure	4,348	-874	-800
Lease payments		-424	-374
Business combinations		-679	-1,145
Dividends		-2,865	-2,182
Treasury shares		-1,500	0
Other		190	3,218
Net debt 12/31/2022		-2,070	-1,563

Analysis of Consolidated Statements of Cash Flow

€ millions	2022	2021	Δ in %
Net cash flows from operating activities	5,647	6,223	-9
Net cash flows from investing activities	667	-3,063	<-100
Net cash flows from financing activities	-6,337	-56	>100

In 2022, cash inflows from operating activities decreased €576 million to €5,647 million (2021: €6,223 million). This is particularly due to lower profitability, higher advance payments to hyperscalers (€0.5 billion in 2022 compared to €0.1 billion in 2021), and higher share-based payments (€1.2 billion in 2022 compared to €1.1 billion in 2021), which were compensated by lower income tax payments (€1.7 billion in 2022 compared to €2.1 billion in 2021). In addition, the increased volume of trade receivables sold in 2022 amounting to €0.9 billion (€0.5 billion in 2021) had a positive impact on operating cash flow. Cash collected from customer contracts increased compared to 2021.

Cash inflows from investing activities were €667 million in 2022 (2021: cash outflows of €3,063 million). We reduced short-term time deposits and debt instruments by €1.9 billion. We paid, net of cash received, a total of €0.7 billion mainly for the Taulia and Askdata acquisitions in 2022, compared to €1.1 billion mainly for the Signavio and Clarabridge acquisitions in 2021. We received approximately €0.3 billion for the divestiture of the SAP Litmos business in 2022. Capital expenditure on intangible assets and property, plant, and equipment remained at a comparable level. For more information about current and planned capital expenditures, see the *Assets* section and the *Investment Goals* section.

In 2022, free cash flow decreased to €4,348 million (2021: €5,049 million). The free cash flow conversion rate, defined as free cash flow as a percentage of profit after tax, increased to 255% compared to 94% in 2021.

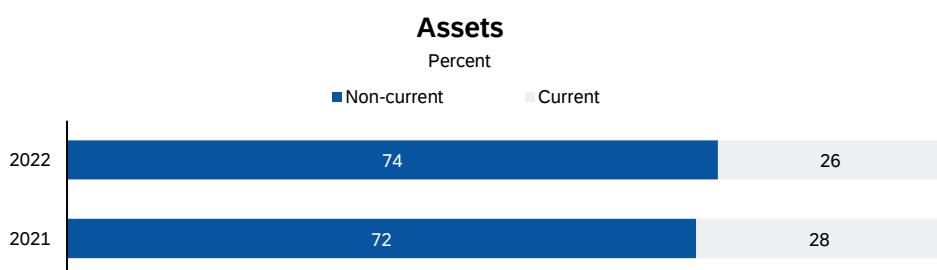
Net cash outflows from financing activities were €6,337 million in 2022, compared to €56 million in 2021. The buyback of treasury shares with a volume of €1.5 billion in 2022 is included herein. Apart from the buyback of treasury shares, cash outflows in 2022 resulted from repayments of €0.9 billion in Eurobonds as scheduled, and US\$0.445 billion in U.S. private placements when they matured. In 2021, we received €2.8 billion in proceeds from the public offerings of Qualtrics shares and repaid €1.25 billion of the acquisition term loan for Qualtrics, €0.5 billion in Eurobonds when they matured, and €0.15 billion in commercial paper. In 2021, we further drew two short-term loans of €0.95 billion and €0.5 billion respectively, which can be repaid flexibly until September 2023.

The dividend payment of €2,865 million made in 2022 exceeded the amount paid the preceding year (€2,182 million), while the dividend paid per share increased from €1.85 to €2.45 (including a special dividend of €0.50 to celebrate SAP's 50th anniversary).

Assets (IFRS)

Analysis of Consolidated Statements of Financial Position

Total assets increased 1% year over year to €72,159 million.



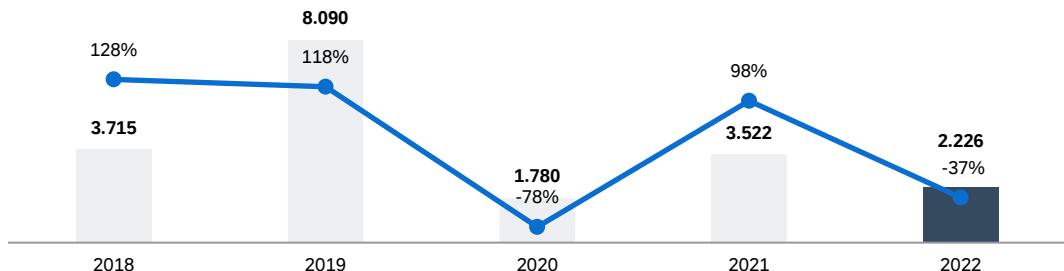
Total current assets decreased 8% in 2022 from €20,044 million to €18,522 million, mainly driven by a decrease of time deposits in other financial assets.

Total non-current assets grew 5% to €53,638 million (2021: €51,130 million). Among other effects, this change was mainly due to an increase in goodwill resulting from foreign-exchange-related revaluations as well as the Taulia acquisition.

Investment in Goodwill, Intangible Assets, and Property, Plant, and Equipment

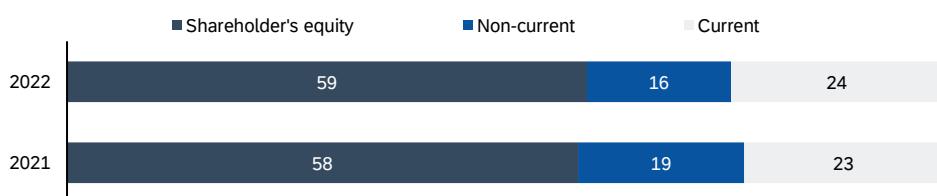
(Incl. Additions from Business Combinations)

€ millions | change since previous year



Liabilities

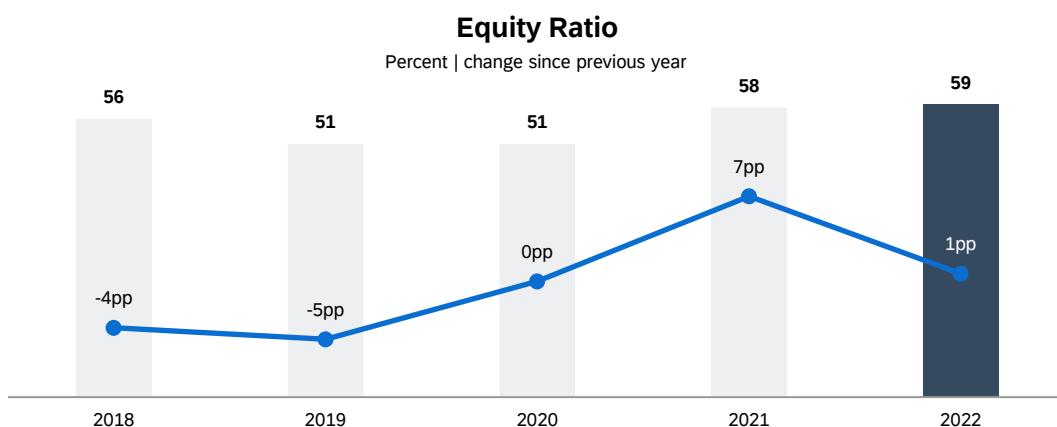
Percent



Current liabilities grew 8% to €17,453 million in 2022 (2021: €16,136 million). This was mainly due to an increase in current contract liabilities and current trade and other liabilities.

Total non-current liabilities decreased 12% to €11,858 million in 2022 compared to the previous year's figure of €13,515 million. This was mainly due to a decrease in non-current financial liabilities. For more information about our financing activities in 2022, see the [Finances \(IFRS\)](#) section.

The equity ratio (that is, the ratio of shareholders' equity to total assets) grew 1pp to 59% (2021: 58%).



Principal Investments Currently in Progress

In 2022, we finalized various construction projects and continued construction activities in several locations. We plan to finance all of these projects from operating cash flow. Our most important projects are listed below.

Construction Projects

		€ millions	Country	Location of Facility	Short Description	Estimated Total Cost	Costs Incurred as at 12/31/2022	Estimated Completion Date
Germany	Berlin	New office building for approx. 1,250 employees				42	7	November 2023
Germany	Munich	New office building for approx. 600 employees				94	44	November 2023
Germany	Walldorf	General renovation of headquarters building for approx. 1,500 employees				225	9	December 2026
Bulgaria	Sofia	New office building for approx. 1,200 employees ¹				58	49	September 2023
India	Bangalore	New office building for approx. 3,500 employees				86	1	December 2025

¹ In Sofia, we bought a building under construction and plan to complete it.

For more information about planned investment expenditures, see the [Investment Goals](#) section. There were no material divestitures of facilities within the reporting period.

Report on the Economic Position of SAP SE

SAP SE is headquartered in Walldorf, Germany, and is the parent company of the SAP Group, which comprises 288 companies. SAP SE is the Group holding company and employs most of the Group's Germany-based development and service and support personnel.

As the owner of the intellectual property in most SAP software, SAP SE derives its revenue mainly from software license fees and bears the bulk of the Group-wide research and development expenses.

The SAP SE annual financial statements are prepared in accordance with the reporting standards in the German Commercial Code and the German Stock Corporation Act. The full SAP SE annual financial report and unqualified audit report are submitted to the operator of the *Elektronischer Bundesanzeiger* (Online German Federal Gazette) for publication and inclusion in the *Unternehmensregister* (German Business Register). It is available from SAP SE on request.

Income

SAP SE's income statement is classified following the nature of expense method and presents amounts in millions of euros.

SAP SE Income Statement – German Commercial Code (Short Version)

€ millions	2022	2021
Total revenue	17,786	15,370
Other operating income	1,534	1,026
Cost of services and materials	-11,560	-9,859
Personnel expenses	-2,905	-2,765
Depreciation and amortization	-682	-719
Other operating expenses	-3,433	-2,298
Operating profit	739	756
Finance income	1,685	2,530
Income before taxes	2,424	3,286
Income taxes	-497	-582
Income after taxes	1,927	2,703
Other taxes	-14	-12
Net income	1,912	2,692

The total revenue of SAP SE in 2022 was €17,786 million (2021: €15,370 million), an increase of 16%. Product revenue increased 11% to €13,550 million (2021: €12,211 million). As in previous years, product revenue was primarily generated from license fees paid by subsidiaries of SAP SE.

Service revenue increased 13% to €958 million in 2022 (2021: €845 million), while other revenue increased 42% to €3,278 million (2021: €2,314 million).

SAP SE operating profit decreased 2% to €739 million (2021: €756 million). Other operating income increased €509 million to €1,534 million (2021: €1,026 million). The year-over-year increase is primarily due to a €550 million increase in gains from currency effects.

SAP SE cost of services and materials increased 17% to €11,560 million (2021: €9,859 million). Services received increased €1,884 million to €9,599 million (2021: €7,715 million), mainly due to increased services received in the context of intra-Group cost allocations. The costs for licenses and commissions decreased €197 million to €1,914 million (2021: €2,111 million) mainly due to lower inter-company license payments.

SAP SE personnel expenses, mainly the labor cost of software developers, service and support employees, and administration staff employed by SAP SE, increased 5% to €2,905 million (2021: €2,765 million), primarily due to an increase in headcount in the reporting year.

Other operating expenses increased €1,135 million to €3,433 million (2021: €2,298 million). This increase is mainly attributable to a €664 million increase in currency exchange losses, a €385 million increase in services purchased, and a €118 million increase in impairment of receivables. The increase in other operating expenses was partly offset by a €84 million decrease in other services expense.

Finance income was €1,685 million (2021: €2,530 million), representing a year-over-year decrease of €846 million. This decrease is primarily due to a €904 million decrease in results from profit and loss transfer agreements and a €47 million increase in write-downs on financial assets. The decrease was partly offset by a €178 million increase in income from investments.

SAP SE income before taxes decreased €862 million to €2,424 million (2021: €3,286 million). Income taxes decreased €85 million to €497 million (2021: €582 million). After deducting taxes, the resulting net income was €1,912 million (2021: €2,692 million), representing a decrease of €779 million year over year.

Assets and Financial Position

In 2022, SAP SE total assets closed at €48,996 million (2021: €47,320 million).

SAP SE Balance Sheet as at December 31 – German Commercial Code (Short Version)

€ millions	2022	2021
Assets		
Intangible assets	1,561	1,792
Property, plant, and equipment	1,393	1,350
Financial assets	37,912	36,050
Fixed assets	40,866	39,192
Inventories	1	1
Accounts receivable and other assets	5,469	5,244
Marketable securities and liquid assets	1,423	1,391
Short-term assets	6,892	6,635
Prepaid expenses and deferred charges	680	979
Deferred taxes	558	512
Surplus arising from offsetting	0	1
Total assets	48,996	47,320
Equity and liabilities		
Shareholders' equity	13,540	15,693
Provisions	2,410	2,233
Liabilities	33,036	29,372
Deferred income	11	22
Total shareholders' equity and liabilities	48,996	47,320

Intangible assets decreased €232 million year over year to €1,561 million (2021: €1,792 million). Aside scheduled depreciations on intangibles, this decrease was caused by the disposal of €88 million in goodwill due to the intra-group sale of the Signavio go-to-market business.

Financial assets increased €1,862 million year over year to €37,912 million (2021: €36,050 million), mainly due to capital contributions to subsidiaries and the acquisition of Taulia Inc.

The increase of €225 million in accounts receivable and other assets was primarily the result of a €390 million increase in receivables from affiliated companies, which was partly offset by €183 million decrease in tax assets.

Marketable securities and liquid assets increased €32 million to €1,423 million (2021: €1,391 million).

SAP SE shareholders' equity decreased 16% to €13,540 million (2021: €15,693 million). Against outflows of €472 million associated with the payment of the dividend and €1,500 million for the repurchase of stock in treasury, there was a €1,912 million increase due to net income for 2022 and €300 million from the issuance of treasury stock to serve the share-based payments of employees. The equity ratio (that is, the ratio of shareholders' equity to total assets) is 28% (2021: 33%).

Provisions increased €177 million to €2,410 million (2021: €2,233 million). Other provisions increased €125 million to €1,654 million (2021: €1,529 million), primarily as a result of an increase in other obligations toward employees. Provisions for tax increased €52 million to €741 million (2021: €689 million).

Liabilities increased €3,664 million to €33,036 million (2021: €29,372 million). This increase mainly resulted from a €4,393 million increase in liabilities to affiliated companies, primarily due to higher cash contributions by subsidiaries through SAP SE's centralized management of finance and liquidity. The increase in liabilities was partly offset by the scheduled repayment of a bond in the total amount of € 900 million.

Opportunities and Risks

SAP SE is subject to essentially the same opportunities and risks as the SAP Group. For more information, see the *Risk Management and Risks* section and the *Expected Developments and Opportunities* section.

Non-Financial Statement Including Information on Sustainable Activities

With this section and the information referenced to in this section, SAP SE fulfills its duty to produce a non-financial statement (NFS) for the holding company, pursuant to section 289b–e of the German Commercial Code (HGB), and a non-financial group statement, pursuant to section 315b–c in conjunction with section 289c–e of the German Commercial Code (HGB), in the form of a combined non-financial statement. The relevant non-financial matters are referenced in the table below and can be found in the relevant sections of our combined management report.

Additionally, following Article 8 of Regulation 2020/852 of the European Parliament and of the Council of the European Union (EU Taxonomy), we have included information on how and to what extent SAP's activities are associated with economic activities that qualify as environmentally sustainable under this regulation.

For more information, see the *EU Taxonomy Disclosures* subsection.

Reporting Framework

The social and environmental data and information included in the SAP Integrated Report have been prepared in accordance with the Global Reporting Initiative (GRI) Standards.

Business Model

SAP's business model is described in the *Strategy and Business Model* section of the combined management report. Good governance is a prerequisite for continued success and is described throughout the combined management report. Therefore, we did not include governance as an individual material topic in our materiality assessment and our non-financial statement.

To Our Stakeholders	Combined Group Management Report	Consolidated Financial Statements IFRS	Further Information on Sustainability	Additional Information
Non-Financial Disclosures in SAP's Combined Management Report				
SAP determines which non-financial information has to be disclosed based on a materiality analysis we perform using internal and external input. For more information, see <i>Materiality</i> in the <i>Further Information about Economic, Environmental, and Social Performance</i> section in our SAP Integrated Report.				
The individual non-financial aspects to be covered by the non-financial statement are addressed in the following sections of our combined management report if material. No material risks according to section 289c (3) sentence numbers 3 and 4 HGB have been identified.				
	Due Diligence; Policies and Guidelines (Concepts)	Measures and Results, Including KPIs Relevant for Steering and Compensation	References to Financial Statements and Notes	
Environmental Matters	<p><i>Energy and Emissions: Vision and Strategy; Due Diligence</i></p>	<p>KPI: Net carbon emissions</p> <p><i>Energy and Emissions: How We Measure and Manage Our Performance</i></p> <p><i>Performance Management System</i></p> <p><i>Strategy and Business Model: Measuring Our Success</i></p> <p><i>Expected Developments and Opportunities</i></p>		
Employee Matters	<p><i>Employees: Vision and Strategy; Due Diligence</i></p> <p><i>Expected Developments and Opportunities: Opportunities from Our Employees</i></p>	<p>KPI: Employee Engagement Index</p> <p><i>Employees: How We Measure and Manage Our Performance</i></p> <p><i>Performance Management System</i></p> <p><i>Strategy and Business Model: Measuring Our Success</i></p> <p><i>Financial Performance: Review and Analysis</i></p> <p><i>Expected Developments and Opportunities</i></p>		<i>Notes to the Consolidated Financial Statements, Section B – Employees</i>
Human Rights	<i>Human Rights: Vision and Strategy; Due Diligence</i>	<i>Human Rights: How We Measure and Manage Our Performance</i>		
Anti-Corruption and Bribery Matters	<i>Business Conduct: Vision and Strategy; Due Diligence</i>	<i>Business Conduct: How We Measure and Manage Our Performance</i>		<i>Notes to the Consolidated Financial Statements, Note (G.3)</i>
Customer Matters	<i>Customers: Vision and Strategy; Due Diligence</i>	<p>KPI: Customer Net Promoter Score, Revenues</p> <p><i>Customers: How We Measure and Manage Our Performance</i></p> <p><i>Performance Management System</i></p> <p><i>Strategy and Business Model: Measuring Our Success</i></p> <p><i>Financial Performance: Review and Analysis</i></p> <p><i>Expected Developments and Opportunities</i></p>		<i>Notes to the Consolidated Financial Statements, Section A – Customers</i> <i>Consolidated Income Statements – Revenue</i>
Security, Data Protection, and Privacy	<i>Security, Data Protection, and Privacy: Vision and Strategy; Due Diligence for Security Topics; Due Diligence for Data Protection Topics</i>	<i>Security, Data Protection, and Privacy: How We Measure and Manage Our Performance</i>		

Sustainable Finance: EU Taxonomy Disclosures

Assessment of Eligibility and Alignment

In 2022, as in 2021, we identified the activity "8.1 Data processing, hosting, and related activities" as turnover-relevant Taxonomy-eligible economic activity contributing to climate change mitigation.

The criteria for Taxonomy-alignment of activity 8.1 were not met in fiscal year 2022. We expect that the transition from Taxonomy-eligible to Taxonomy-aligned will progress over the next few years corresponding to the fulfillment of the technical screening criteria. For instance, according to the EU Taxonomy regulation, refrigerants used in data centers need to conform with a certain level of global warming potential. The refrigerants employed by SAP do not meet this threshold yet. An immediate exchange would lead to additional toxic waste and costs. Therefore, SAP intends to replace the refrigerants according to our regular maintenance schedule over the course of the next few years. Also, SAP's data center co-locations and hyperscalers are not yet in full alignment with the criteria set out in the Taxonomy regulation. Together with our providers, we are evaluating options to reach Taxonomy alignment over the next few years.

Furthermore, SAP assessed whether any capital and operational expenditures had been incurred related to the purchase of output from Taxonomy-eligible or Taxonomy-aligned economic activities. In 2022, SAP capitalized an amount of €151 million relating to the purchase of vehicles. While a portion of these expenses, specifically relating to the purchase of electric vehicles, may be Taxonomy-aligned, we could not obtain the necessary verification from our suppliers. Therefore, SAP classified the full amount as Taxonomy-eligible (purchases of output of the activity "3.3 Manufacture of low carbon technologies for transport" contributing to climate change mitigation) but not as Taxonomy-aligned.

In single locations, SAP operates combined heat/cool and power generation facilities using fossil gaseous fuels. However, the associated potential Taxonomy-eligible and aligned revenues, capital expenditures, and operational expenditures are negligible. No further activities for nuclear or gas are applicable.

SAP also evaluated whether activity "7.2 Renovation of existing buildings" is relevant for SAP. While SAP regularly conducts renovation measures, for 2022 renovation expenses were considered immaterial compared to SAP's total investments and were not clearly distinguishable from other related but non-eligible costs. We therefore concluded that activity 7.2 is not relevant for 2022.

Revenue

€ millions, unless otherwise stated

Economic activities	NACE codes	Substantial contribution criteria						"Does not significantly harm" criteria						Taxonomy aligned proportion of turnover 2022	Taxonomy aligned proportion of turnover 2021	Enabling	Transitional		
		Absolute turnover	Proportion of turnover	Climate change mitigation	Climate change adaptation	Water and marine resources	Circular economy	Pollution	Biodiversity and ecosystems	Climate change mitigation	Climate change adaptation	Water and marine resources	Circular economy	Pollution	Biodiversity and ecosystems	Minimum safeguards			
A. Taxonomy-eligible activities																			
A.1. Environmentally sustainable activities (Taxonomy-aligned)																			
Turnover of environmentally sustainable activities (Taxonomy-aligned) (A.1)																			
8.1 Data processing, hosting, and related activities	J63.11	12,296	40%	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Turnover of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)		12,296	40%	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Total (A.1+A.2)		12,296	40%	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
B. Taxonomy-non-eligible activities																			
Turnover of Taxonomy-non-eligible activities (B)		18,575	60%	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Total turnover (A+B)		30,871	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

As outlined above, we have identified only one activity as a relevant Taxonomy-eligible economic activity to which revenues can be attributed. We considered materiality aspects in this process. Eligible turnover consists of revenue earned from providing the following services, which comply with the description of activity 8.1:

- Software as a service (SaaS)
- Platform as a service (PaaS)
- Infrastructure as a service (IaaS)

SAP's cloud revenue mainly results from these services. Other revenues that qualify as cloud revenue but cannot be classified as Taxonomy-eligible have been excluded. Total revenue was determined according to IFRS, specifically IFRS 15, and matches total revenue presented in SAP's *Consolidated Income Statements*. For more information about how we recognize revenue and the components of revenue, see the Notes to the Consolidated Financial Statements, *Note A.1*.

For a detailed description of the development and key drivers of SAP's revenue, see the *Performance Against Our Outlook for 2022 (Non-IFRS)* and *Operating Results (IFRS)* sections in the combined management report.

Operational Expenditures

€ millions, unless otherwise stated

	Substantial contribution criteria							"Does not significantly harm" criteria							Taxo-nomy aligned proportion of OpEx 2022	Taxo-nomy aligned proportion of OpEx 2021	En-abling	Transi-tional
	NACE codes	Abs-olute OpEx	Pro-portion of OpEx	Climate change miti-gation	Climate change adap-tation	Water and marine re-sources	Cir-cular eco-nomy	Pollu-tion	Bio-diver-sity and ecosys-tems	Climate change miti-gation	Climate change adap-tation	Water and marine re-sources	Cir-cular eco-nomy	Pollu-tion	Bio-diver-sity and ecosys-tems	Minimum safe-guards		
Economic activities																		
A. Taxonomy-eligible activities																		
A.1 Environmentally sustainable activities (Taxonomy-aligned)																		
OpEx of environmentally sustainable activities (Taxonomy-aligned) (A.1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
A.2 Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)																		
8.1 Data processing, hosting, and related activities	J63.11	1,475	19%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
OpEx of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)		1,475	19%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total (A.1+A.2)	1,475	19%																
B. Taxonomy-non-eligible activities																		
OpEx of Taxonomy-non-eligible activities		6,452	81%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total OpEx (A+B)	7,927	100%																

We have designated those costs as Taxonomy-eligible that relate to assets and processes associated with the Taxonomy-eligible activity "8.1 Data processing, hosting, and related activities." We considered materiality aspects in the identification process of relevant costs and activities. The majority of costs connected to this activity are leasing expenses for hosting services provided by third parties. To a smaller extent, these costs also include expenses for maintenance and repair of SAP's cloud infrastructure.

Total operating expenses according to the EU Taxonomy mainly include the following non-capitalized cost elements: research and development, short-term lease, and maintenance and repair relating to property, plant, and equipment. Other major expense components in SAP's *Consolidated Income Statement*, such as depreciation, utilities (for example, costs for heating and electricity consumption), as well as most general and administrative cost, restructuring, and sales and marketing cost do not fall in scope of the definition of operating expenses according to the EU Taxonomy and are therefore excluded.

For a detailed description of the development and key drivers of all operating expenses, see the *Performance Against Our Outlook for 2022 (Non-IFRS)* section and the *Operating Profit and Operating Margin* section in our combined management report.

Capital Expenditures

€ millions, unless otherwise stated

Economic activities	Substantial contribution criteria							"Does not significantly harm" criteria							Taxonomy aligned proportion of CapEx 2022	Taxonomy aligned proportion of CapEx 2021	Enabling	Transitional
	NACE codes	Absolute CapEx	Proportion of CapEx	Climate change mitigation	Climate change adaptation	Water and marine resources	Circular economy	Po-lution	Bio-diver-sity and eco-sy-stems	Climate change mitigation	Climate change adap-tation	Water and marine re-sources	Circular eco-nomy	Po-lution	Bio-diver-sity and ecosys-tems			
A. Taxonomy-eligible activities																		
A.1 Environmentally sustainable activities (Taxonomy-aligned)																		
CapEx of environmentally sustainable activities (Taxonomy-aligned) (A.1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A.2 Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)																		
8.1 Data processing, hosting, and related activities	J63.11	231	14%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CapEx related to purchase of output of "3.3 Manufacture of low carbon technologies for transport"	C29.1	151	9%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CapEx of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)		382	23%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (A.1+A.2)		382	23%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B. Taxonomy-non-eligible activities																				
CapEx of Taxonomy-non-eligible activities		1,255	77%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total CapEx (A+B)		1,637	100%																	

In line with the EU Taxonomy regulation, total capital expenditures presented in this section include additions to tangible and intangible assets accounted for based on IAS 16, IAS 38, and IFRS 16, as well as additions to tangible and intangible assets (excluding additions to goodwill) resulting from business combinations.

Taxonomy-eligible capital expenditures relate to assets and processes that are associated with the economic activity "8.1 Data processing, hosting, and related activities." These expenses comprise mostly investments in SAP's cloud infrastructure (IT hardware and software).

Additionally, Taxonomy-eligible capital expenditures include capitalized costs relating to the purchases of vehicles.

We also considered materiality aspects in the identification process of relevant costs and activities.

Audit Scope

The content of the non-financial statement was not subject to the statutory audit of the combined group management report. However, our external auditor carried out an independent limited assurance engagement on the non-financial statement including the EU Taxonomy disclosures. In addition, all non-financial aspects referenced to in the table *Non-Financial Disclosures in SAP's Combined Management Report* are assured by our external auditor, however, on different audit assurance levels (reasonable or limited). The chapters with information audited with limited assurance include an  **Audit Scope** box at the end explaining the audit scope of the disclosures in the respective chapter.

Security, Data Protection, and Privacy

Vision and Strategy

Every day, organizations around the world trust SAP with their data – either on premise at their physical locations, in the cloud, or when using mobile devices while on the move. Our customers need to know that our goal is to keep their data safe, process it in a manner that complies with local legislation, and protect it from malicious use. For this reason, cybersecurity and security, as well as data protection and privacy, are of paramount importance to us.

SAP Global Security

Cloud solutions and services are increasingly important to many companies' daily operations. Organizations today are facing many risk factors and disruptions such as the COVID-19 pandemic, war, political unrest, severe weather, cyberattacks, and supply chain disruption, making digital solutions critical to business resilience. As a result, digital transformation is accelerating and cybersecurity is now even more crucial to IT security professionals and business leaders, particularly in those enterprises that have moved their core processes to the cloud.

The SAP strategy is focused on helping customers transform into intelligent, sustainable enterprises. Our **SAP Global Security** (SGS) organization supports this journey with a goal of reducing risk and promoting regulatory compliance, and by aligning people, procedures, and technology to protect business processes and data. The organization embraces and encourages a security-minded culture that embeds security in our development and deployment processes and helps secure digital transformation.

SGS supports key stakeholders in our lines of business (LoBs), IT, and the presales organization in securing solutions, and drives operational excellence for security across the enterprise. To protect our organization's data and assets and support high-quality risk management and reporting, SGS regularly reviews and adapts our security policies, standards, and frameworks.

Data Protection

With our product and services portfolio, SAP aims to protect the rights of individuals involved and meet relevant local requirements when processing personal data. In addition, we strive to strengthen SAP's reputation in the long term as a sustainable and trustworthy partner in the market. We have implemented safeguards intended to help protect the fundamental rights of everyone whose data is processed by SAP, whether they are customers, suppliers, partners, prospects, employees, or applicants.

We develop and pursue our global data protection and privacy strategy in accordance with our business strategy. Our global data protection and privacy strategy is to constantly monitor the global regulatory data protection compliance landscape, identify relevant stakeholders, and enable them to take necessary measures for their adoption. It is also designed to safeguard the processing of personal data. The strategy consists of four pillars to help comply with applicable data protection laws and regulations. These pillars comprise the global data protection and privacy policy; mandatory global data protection and privacy training for employees; our global data protection and privacy coordinator network; and the global data protection management system – and all aiming to ensure that we comply with applicable data protection laws.

Due Diligence for Security Topics

Governance

SGS is led by a chief security officer who reports directly to the SAP CEO. SGS divisions are responsible for areas such as product and application security, cyberdefense, operational security risk management, security compliance, executive protection, physical security, as well as a **Trust Office** that supports customers and partners with security-related issues.

The **SAP Security Governance Model** is designed to ensure executive engagement and facilitates shared responsibility in quarterly SAP Security Advisory Board and bi-monthly Security Council meetings, as well as in biweekly updates to the Executive Board.

Our commitment to customers is to be open and transparent about security vulnerabilities. To ensure this, we work with several external stakeholder groups including SAP user groups for the Americas and for German-speaking countries.

Guidelines and Policies

The purpose of the **SAP Global Security Policy** is to provide governance and structure for an appropriate and effective level of information security within SAP and our affiliated businesses. Aligned with the overall SAP corporate strategy and vision, it details the management intent, expectations, and strategic goals and objectives for SAP security.

This policy provides high-level requirements for numerous security domains. These include, but are not limited to, access control, physical security, network security management, incident response, and acceptable use. These requirements apply to all SAP employees, contractors, consultants, as well as external parties that are granted access to SAP information and information assets. SAP reviews the policy annually and enacts modifications as deemed appropriate and necessary to protect SAP and our own and our customers' data and assets where new threats or vulnerabilities are identified. All SAP employees are required to read and adhere to this internal policy. The **SAP Security Policy Framework** consists of several levels of security documents that support the requirements described in the policy. In addition, the different LoBs at SAP may have supporting policies, standards, procedures, and practices.

Due Diligence for Data Protection Topics

Governance

Within the scope of their responsibilities, our global data protection officer (DPO) monitors the compliance of activities involving the processing of personal data. The DPO reports to the SAP CFO. Within the Executive Board, the SAP CFO is responsible for compliance and enforcement of data protection and privacy. The DPO owns the **SAP Global Data Protection and Privacy Policy** that addresses SAP's data protection governance, and regularly informs the CFO about the status of data protection compliance in the SAP Group.

To meet and ensure consistent security and data protection compliance, SAP has implemented a formal governance model that assigns clear responsibilities across the SAP Group. Upon request, the DPO attends steering committee meetings and reports on matters relevant to data protection to the Audit and Compliance Committee of the SAP Supervisory Board. No requests from the Supervisory Board in 2022.

SAP has established a global network of data protection and privacy coordinators (DPPCs) across all SAP Group entities that process personal data. This DPPC network consists of regional and local DPPCs and is aimed to ensure data protection and privacy compliance on a local level. The DPPC network increases awareness by conducting local training and monitoring the legal landscape. Where new data protection laws evolve, the DPPC network also helps the **Data Protection and Privacy** (DPP) team acting on behalf of the DPO identify and analyze them. If this requires compliance activities, they align with the affected LoBs and help drive the relevant implementation. Supported by

the DPPC network, the DPP team regularly engages with SAP's government relations team to represent SAP's interests in the legislative process. In this regard, SAP participates in external working groups to help align industry-specific interests with respective governments.

SAP has implemented a data protection management system (DPMS) for our organization. The DPMS is set according to the generally recognized standard for data protection management systems as defined in the British Standard BS 10012, which comprises the data protection requirements of the European Union (EU) General Data Protection Regulation (GDPR) since version 10012:2017. The DPMS covers almost all LoBs (excluding Qualtrics) and is planned to be implemented in all acquired companies as well. It is designed as a framework covering all aspects of data protection compliance of SAP organizations and employees. The DPMS is used as SAP's standard methodology to ensure compliance with data protection legislation. The maintenance of the framework is subject to certification from the British Standards Institution that confirms data protection compliance annually.

Guidelines and Policies

The SAP Global Data Protection and Privacy Policy outlines a group-wide minimum standard for data protection-compliant processing of personal data. It defines requirements for business processes that involve personal data and assigns clear responsibilities. The principles established by this policy take into account the requirements of the EU GDPR. They apply generally and globally to SAP Group affiliates. Additional data protection and privacy requirements, if applicable, are adopted on a local level as necessary. We actively monitor changes to applicable laws and regulations so that we can update our standards on an ongoing basis as necessary to meet data protection compliance. The policy was last updated in 2021.

How We Measure and Manage Our Performance

Security

Compliance processes at SAP adhere to trust-service criteria established by the American Institute of Certified Public Accountants (AICPA). Our security, availability, privacy, confidentiality, and processing integrity controls are designed to achieve the appropriate control objectives. In addition, independent, external auditing partners regularly conduct security compliance audits.

SAP discloses vulnerabilities on the second Tuesday of every month ("Patch Day"). This disclosure mechanism provides customers with authoritative, public information about SAP software vulnerabilities from SAP that can be integrated with their existing risk management processes and tools.

SAP strives to reduce risk by continuously improving our processes for detecting and remediating attacks and vulnerabilities. To that end, we:

- Engage in internal and external audits across SAP globally
- Monitor and support our cloud and IT units with over 2,800 controls that are audited and tested for design and operating effectiveness
- Offer service organization control (SOC) reports – such as SOC 1 Type II/ISAE 3402 and SOC 2 Type II/ISAE 3000 – to provide insights into the design and operating effectiveness of internal control systems implemented within cloud delivery units
- Let external internationally accredited auditors assess and certify our cloud services according to various reporting standards and ISO certifications, such as ISO 9001, ISO 27001, ISO 27017, ISO 27018, and ISO 22301, in addition to BS 10012

Data Protection

To help ensure necessary knowledge about data protection, global data protection and privacy training is mandatory for SAP employees. The training is conducted every two years, with the latest rolled out in 2021. This training helps our workforce handle personal data with due care and in accordance with the law and to maintain compliance with data protection requirements in their work.

We monitor compliance of data protection-relevant procedures across SAP. We maintain a record of processing activities (“procedure enrollment tool”), in which procedures that process personal data must be documented. The record entries contain general information about the procedure according to defined criteria necessary to meet proper documentation. The record entries are reportable and regularly reviewed.

We also track the quality of our data protection compliance level based on the annual recertification of our DPMS by the British Standards Institution (BSI). SAP has been audited by the BSI annually and awarded certifications according to BS 10012 since 2011. The most recent certification is valid until year-end 2025.

SAP's own quality standards and international regulations require careful selection and monitoring of subprocessors processing personal data on behalf of SAP and SAP customers. With the goal that all subprocessors meet protection and security requirements for the processing of personal data, SAP has implemented a subprocessor verification process. All of SAP's subprocessors (for example, suppliers, vendors, and partners) are subject to this process. The process comprises three main compliance criteria for data protection-relevant subprocessors: (i) contractual compliance; (ii) self-assessments based on a questionnaire including transfer impact assessments on international data transfers to third countries; and (iii) remote and/or on-site audits.

SAP respects the rights of the data subjects to obtain information as to whether or not personal data concerning them is being processed. All necessary information is made available to the data subjects within the framework of the privacy statements on the respective SAP Web sites.

In 2022, SAP experienced three significant incidents in processing personal data – on our own behalf – that were subject to GDPR only and were reported to the supervisory authorities.

Related Risks for SAP

For related financial risks, see the *Risk Management and Risks* section, specifically the *Cybersecurity and Security* and *Data Protection and Privacy* subsections.

Audit Scope

The content of the section *Security, Data Protection, and Privacy* was not subject to the statutory audit of our combined group management report. However, our external auditor performed an independent limited assurance engagement for the content of this section.

Employees

Vision and Strategy

People are at the heart of our organization. Aiming for a highly engaged, diverse, future-fit workforce equipped with the right skills helps SAP attract the best talent.

Our People & Operations Strategy connects with our product and go-to-market strategies to utilize the combined power of our people, processes, and technology. Since 2020, we have been evolving our annual execution of our **People Strategy Pillars** that contribute to our business strategy and value generation. They can be summarized across three themes, powered by operational excellence and showcasing SAP solutions for human experience management (HXM):

- **Building Skills for the Future** by attracting the best and most diverse talent and continuously up-/reskilling our people
- **Driving SAP's Winning Culture** by fostering a culture that enables and rewards impact and business outcomes
- **Changing the Way We Lead** by driving for accountability and empowerment, in a healthy, inclusive, and diverse environment

Due Diligence

Governance

Since January 1, 2021, **Sabine Bendiek** has served as Chief People & Operating Officer and Labor Relations Director. The People & Operations organization set up remains unchanged from 2021 to best support our People Strategy, including the following functional areas: Future of Work (including Global Health & Well-Being), Global Diversity & Inclusion, SAP Learning, Talent Attraction, Total Rewards, and our Global People Success Services team combining the HR Business Partner organization with Global HR Service Delivery.

Guidelines and Policies

SAP is committed to ensuring the fair and equal treatment of all employees in a sustainable manner. For that reason, we established comprehensive policies that guide us in our daily business. Examples are our *SAP Global Antidiscrimination Statement* and *SAP Health, Safety & Well-Being Commitment Statement*.^{12,13}

How We Measure and Manage Our Performance

The impact of our people strategy is measured by seven KPIs (see table “Our Key People-Related KPIs at a Glance”). Five out of the seven KPIs are based on the results of our engagement survey program **#Unfiltered**.¹⁴ With #Unfiltered, we strengthen our commitment to listen regularly to our employees and act together on their feedback. In 2022, we defined excitement for the future of SAP and health and well-being as focus areas. We gauged the sentiment on employee engagement (which includes excitement for the future of SAP), leadership trust, and health and well-being along

¹² The Commitment Statement will replace the currently valid SAP Global Health and Safety Policy in February 2023.

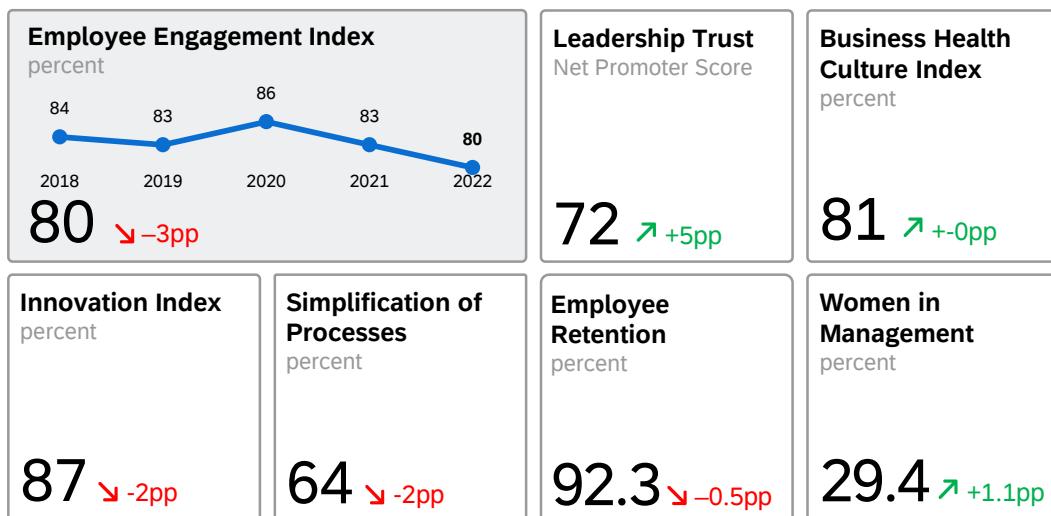
¹³ Both links lead to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor.

¹⁴ In the #Unfiltered survey in April, 80,117 employees participated (response rate: 73%), and in the #Unfiltered survey in October, 78,226 participated (response rate: 70%). All headcount (HC)-relevant employees and, in addition, in Germany, the non-HC relevant employees on parental leave, on long-term sick leave, with a tenure of more than six months, PhD students, and vocational training students were invited to take part in the 2022 #Unfiltered survey cycle.

with other topics twice over the year. The average scores from both data collections were used as the full-year Employee Engagement Index and Leadership Trust Net Promoter Score (NPS).

Additional people-related KPIs can be found in *Finance and ESG Data*.¹⁵

Our Key People-Related KPIs at a Glance¹⁶



Below is an overview of how we put the three themes of our people strategy and KPIs into practice.

¹⁵ Link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor.

¹⁶ Employee Engagement Index: Calculated based on the average of the scores retrieved in each of the surveys we run for our engagement survey program "#Unfiltered." For more information, see the *Performance Management System* section. The initial target for 2022 was between 84% and 86% and was adjusted half year to 80%. For 2023 through 2025, our ambition of 84%-86% remains.

Leadership Trust Score: Measures the extent to which our work environment is based on trust and trust in our leadership. It is calculated based on the average of the scores retrieved in each of the surveys we run for our engagement survey program "#Unfiltered". We measure leadership trust by an NPS methodology, so it is calculated as % Promoters (9 and 10) minus % Detractors (1 – 6) on a 10-pt scale.

Business Health Culture Index (BHCI): Indicates the extent to which SAP successfully offers employees a working environment that promotes health supporting their long-term employability and their active engagement in reaching our corporate goals. The index covers questions concerning how employees rate their personal well-being and the working conditions at SAP, including our leadership culture. The BHCI is calculated based on the results of our #Unfiltered program (April 2022 survey). For 2023 through 2025, our ambition remains to keep the BHCI between 78% and 80%.

Innovation Index: Indicates to what extent we foster an innovation culture. The index is measured by three questions in our #Unfiltered program (April 2022 survey).

Simplification of Processes: Shows the impact of our continued efforts to simplify our processes. The index is measured by nine questions in our #Unfiltered program (April 2022 survey).

Employee Retention: Ratio of the average number of employees minus the employees who voluntarily departed, to the average number of employees, taking into account the past 12 months (in full-time equivalents, or FTEs). This ratio puts emphasis on employee-initiated turnover. In other words, we seek to measure how many employees choose to stay with SAP. As opposed to keeping a low turnover rate, we aim to keep our retention rate high. The number of voluntarily departed employees excludes the voluntary part of restructuring-related departures for more transparency and precise headcount management purposes.

Women in Management: We define "women in management" as the share of women in management positions as compared to the total number of managers, expressed by the number of individuals and not FTEs. It includes three categories: 1) Managers managing teams: Refers to managing teams of at least one employee or vacant positions; 2) Managers managing managers: Refers to managing managers who manage teams; and 3) Executive Board members. For 2023, we will keep our ambition to increase the rate of women in management to 30%. Our aspiration is to reach gender parity in our workforce at all levels and to retain women leaders.

Building the Skills for the Future

Attracting, hiring, onboarding, developing, and retaining a diverse talent pool is key for the future success of SAP. In 2022, SAP slowed hiring. Competition for talent remains a key concern, so we continue to work on continual talent community building. We have made changes to our employer value proposition to focus on our culture of togetherness, and working to strengthen our brand perception in terms of innovation and sustainability. Our focus on building an inclusive workforce across various demographic aspects, such as generations, gender, and nationalities is key to our efforts to attract people who build SAP's future.

As part of our strategic pillar "Building the Skills for the Future," we focus on our skills transformation. SAP expects a shift in current skills that will cease to exist and new capabilities that will be needed in the future. In some cases, this shift is predictable, while in others it requires an adaptive workforce management approach focusing on continuous skill transformation to ensure our people are equipped to support future work requirements.

Talent Attraction, Development, and Retention

External hires	14,307 (FTE) (2021: 13,854) employees of which 38.1% were women (2021: 38.1%)
Early Talent¹⁷ hires and pipeline programs	<ul style="list-style-type: none"> - Early Talent hires: Out of 14,307 hired employees, 24.5% (FTE) (2021: 33.1%) are Early Talents. - SAP Student Training and Rotation (SAP STAR) program: More than 1,300 students (from Australia, Brazil, China, Germany, Hungary, India, Indonesia, Ireland, Japan, New Zealand, Singapore, South Korea, Switzerland, and the United States). Conversion rate¹⁸ of 78% (2021: 75%) - Cooperation with academic institutions: More than 2,800 (events, executive lectures, office visits, competitions) - SAP Internship Experience Program: 1,662 (2021: 1,461) global participants in 22 countries
Global onboarding	<ul style="list-style-type: none"> - New global onboarding program introduced to help new hires understand SAP's culture, strategy, and transformation story. - Twelve-hour long immersive live experience and companion learning journey; more than 3,500 new hires attended the sessions in Q3 and Q4 2022; customer satisfaction (CSAT) score of 4.4/5.
Continuous learning and upskilling	<ul style="list-style-type: none"> - Self-paced online programs and live interactive training, including courses for technical, functional, and professional skills, as well as a broad peer-to-peer learning portfolio, are open to all employees. - Role-based skills program for customer-facing functions¹⁹ to close solution-related skills gaps (completion rate across all levels: 86%)²⁰ - We aim to keep a high level of employee learning participation: In 2022 the participation rate was at 98%; trackable learning at >3 million hours (2021: more than 3 million); SAP cloud journey upskilling program with 34,233 employees (2021: 22,574)
Succession management process	We continue to work on clearly defining our succession pipeline, supporting targeted development, and facilitating Executive Board exposure for identifying incumbents and successors of critical and highest value-generating roles.
SAP Alumni Network	20,054 former employees (2021: 14,909); 5,444 current employees (2021: 4,379)
Candidate and hiring manager experience	<ul style="list-style-type: none"> - It is our goal to create a great experience in every interaction to differentiate SAP. With Qualtrics feedback surveys, we aim to provide transparency on candidate and hiring manager feedback to continuously improve our hiring practices. - Candidate Experience²¹: 4.24; Hiring Manager Experience²²: 4.62; Quality of Hire: 1. 96%, 2. 69%²³
Average tenure	8.3 years (2021: 8.0 years)
Earned employer recognitions	154 (2021: 160); List of Workplace Culture Awards²⁴

¹⁷ "Early Talents" (defined as hires with 0–3 years of experience in a professional setting hired into professional roles)

¹⁸ Unlimited contracts after SAP STAR program

¹⁹ The role-based skill program is mandatory for all SAP employees within the area of Customer Success (CS) – excluding contract employees in Germany within CS roles, where the program is considered "highly recommended".

²⁰ The role based skill program consists of three levels: L100 completion rate 87.61%, L200 completion rate 83.16%, and VoS completion rate 87.93%.

²¹ The score is based on three questions (scale: 1 being the lowest, 5 the highest answer) about the experience with the recruiter, their ability to represent the company and opportunities within, as well as their ability to serve as strategic advisor to find the best fit within the company for the candidate.

²² This is a weighted average of the candidate touchpoint survey: Career Site, Post-Application, Post-Interview, and Post-Decision.

²³ Score 1 is based on the question: "Would you hire this employee again?"; Score 2 is based on the question: "Has this employee 'raised the bar' for your team?"

²⁴ Link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor.

Driving SAP's Winning Culture

With our next-generation performance management approach, we aim to establish a high-performance focus by linking business goals to the impact of individuals and teams with development opportunities and meaningful reward packages. It is critical that our employees see the link between their individual contribution and SAP's future success.

Goal Setting and Reward Structure

Smart and transparent goal-setting approaches and continuous dialogue

- SAP's top leadership set goals for their organization and made them visible to all employees on our internal corporate strategy site, kicking off a goal cascade through all required leadership levels down to team and employee goal setting January through March. Ninety percent of our workforce documented their performance goals in 2022 (2021: 92%).²⁵
- Annual "People Day" in early March: All employees were given time to reflect on SAP's strategy and connect their goals and development to SAP's strategy.
- The goal of SAP Talk sessions and check-ins throughout the year is to create manager and employee dialogue, discuss goals defined after the SMART²⁶ Framework, and agree upon and document those goals.

Holistic Total Rewards value proposition

- Key highlights of our rewards experiences, which we aim to deliver through the evolution of short-term incentive and recognition landscapes, strengthening focus on pay for performance, transforming equity programs, and repositioning benefit offerings included:
- Share-based compensation program, Move SAP, to drive ownership and enable a "true cloud" compensation through share-settled awards in most of the countries, quarterly vesting events
- Approximately 79% (2021: 78%) of employees overall participated in Own SAP, our global share purchase plan, with an investment of 9,183,599 shares (2021: 5,655,937) SAP's contribution to the investment made by plan participants was doubled from 40% to 80% from January to March in light of SAP's 50-year anniversary.
- SAP's short-term incentive landscape focused on cloud transformation and growth by using growth in current cloud backlog (CCB) as a unified KPI.²⁷
- First annual global pay equity analysis,²⁸ with adjustments made for individuals who fell below acceptable range of salary differences among peers.
- "Pay for performance" so that everyone's unique contribution can be fairly and clearly reflected. We strategically allocated a portion of the overall global rewards investment to targeted employee groups, in addition to the allocation to the broad-based population, in order to drive balanced outcomes and differentiate performance.

For more information, see the Notes to the Consolidated Financial Statements, [Note \(B.3\)](#).

Changing the Way We Lead

Strong, future-oriented leadership is key for successfully executing our strategy and becoming more agile, ethical, inclusive, and accountable.

Leadership Culture

Empowering and guiding our leaders

- Rollout of leadership expectations in 2022 as a blueprint of what great leadership at SAP looks like while exemplifying and embracing our leadership credo: "Do what's right. Make SAP better for generations to come."
- Creation of a consistent approach to leadership engagement across all levels

Reinforcing leadership culture

- Traditional, peer, and experiential learning journeys focused on building management, leadership, and cloud skills
- Built accountability into critical processes and provide transparency to the Executive Board on leadership KPIs

Consistent enablement of leaders

- Scaled delivery of our leadership programs such as the SAP Leadership Summit, Cloud Business Simulations, Leadership Culture Workshop, and Psychological Safety for Teams, among others.
- Percentage of leaders²⁹ who have completed at least one relevant learning asset: 31%
- Percentage of global senior executives who have completed relevant development offerings: 94%

In addition to our leadership culture, one further strategic pillar is to pursue an agile, entrepreneurial, healthy, and innovative organization – which is even more required considering the volatile, quickly changing environment of today's world.

²⁵ M&A teams that are not yet using Success Map are excluded.

²⁶ SMART is an acronym that stands for Specific, Measurable, Achievable, Realistic, and Timely.

²⁷ Used in our sales leadership plans as a primary KPI, in non-quota carrying sales plans as a secondary KPI, and in our revenue enabling plans as the core basis of evaluating our company success. For a definition of CCB, see the [Performance Management System](#) section.

²⁸ Executives and non-headcount relevant employees were not within the scope of the global pay equity analysis.

²⁹ The term "leaders" is inclusive of all SAP colleagues who are in a formal executive or people manager role – either managing a team or managing managers.

A Future-Ready, Agile, Healthy, and Innovative Organization

Future of Work	<ul style="list-style-type: none"> - Pledge to Flex: Company-wide flex work commitment empowers SAP's employees to choose when and where to work best as roles and tasks permit and considering local legal requirements. - Leveraging advanced technology and new facility concepts in frontrunner locations (London, Montréal, and Zurich) further supports SAP in attracting and retaining the best talent in the tech industry. - With the pandemic-related "work from home" guidance ending in July 2022, the transition to a post-pandemic hybrid working environment was initiated. Latest feedback (Future of Work Pulse #2 in Q3/2022 – a global pulse survey across all countries and all employees) indicates successful adoption in all countries as 77% feel empowered to decide where and when they are doing their job. A holistic enablement framework (for example, flex team workshops or "Moments Together Onsite (MOTO)") helps employees and leaders to manage a smooth transition back to the office as part of a well-balanced hybrid working model at SAP.
Health, safety and well-being	<ul style="list-style-type: none"> - Health, safety, and well-being of our people are cornerstones of a sustainable future of work. A caring culture and compliance with international and local health and safety regulations is an integral part of our business conduct, our duty of care, and our commitment to ethical leadership. SAP's offerings to support a healthy workplace and work culture were recognized by awards such as the EU-OSHA Good Practice Award and the Corporate Health Award. - COVID-19 response: The SAP Global Pandemic Taskforce continued to coordinate pandemic countermeasures such as free of charge vaccination programs to SAP employees, their dependents, and, in some instances, to the general public. - Flagship programs: <ul style="list-style-type: none"> - As part of the commitment to a no-stigma, psychologically safe working culture, the "Are you OK?" mental health well-being initiative continued to offer enablement and awareness for employees and leaders. - Mental Health Day on May 31, 2022: Company-sponsored global vacation day for all employees - SAP participated in the Healthy Workplaces Lighten the Load campaign by the European Agency for Safety and Health at Work, helping leaders and employees to discover new ways to lighten the load of life's stressors.
Innovation	<ul style="list-style-type: none"> - SAP.iO accelerates, incubates, and scales startup innovation and explores new business models for SAP. The SAP.iO intrapreneurship program continued to help identify high-potential entrepreneurial employees at SAP and was able to jump-start 232 venture ideas, seeking investment by the SAP.iO Venture Studio. - Hasso Plattner Founders' Award: Provides the highest internal employee recognition at SAP. <p>At SAP, we are always striving for inclusion and aiming to reflect the diversity of society in our workforce to innovate in alignment with the needs of the community. As a global organization with employees from 163 nationalities, when we talk about inclusivity and diversity in the workforce, we are talking about a host of different topics, including gender, race, LGBTQ+, and disability. Our new Diversity & Inclusion Strategy is built on three pillars:</p> <ul style="list-style-type: none"> - Workforce Diversity: We believe in leveraging the widest spectrum of human differences that represent a diversity of identities, thoughts, and perspectives to create business outcomes that help the world run better every day. - Workplace Inclusion: Creating a positive work environment where colleagues can thrive and engage to their fullest potential in driving SAP's purpose. Inclusion involves active co-creation of the culture where all experiences lead to a feeling of acceptance and belonging. - Marketplace Leadership: We realize the responsibility that comes with being one of the largest tech companies in the world and extend what we do to our entire ecosystem.

Equality and Inclusion in the Workplace

Gender inclusion, advancement, and equality	<ul style="list-style-type: none"> - Women in the overall workforce: 35% (2021: 34.3%); women in management roles: 29.4% (2021: 28.3%) - Promoting inclusive policies on flexible work arrangements through pledge to flex, enhanced parental leave benefits, and a focus on fair pay - SAP Business Women's Network focuses on driving impact with intention and engagement with over 3,300 participants for International Women's Day and more than 150 chapter events across the globe.
Autism inclusion	<ul style="list-style-type: none"> - Autism at Work program: Supports a workforce that includes 215 (FTE) (2021: 217) colleagues on the autism spectrum in 15 (2021: 16) countries - Autism Inclusion Network: Employee-led network group focused on spreading autism acceptance - SAP Autism Inclusion Pledge: Extends SAP's autism inclusion endeavors by sharing what we have learned with our customer and partner ecosystem
Race and ethnicity	<ul style="list-style-type: none"> - Reporting creation (SAP Diversity & Inclusion Report³⁰) for better tracking in accordance with required regulations in different countries and in line with our diversity and inclusion objectives.

³⁰ Link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor.

	<ul style="list-style-type: none"> - Built on the "Equality for All" initiative by the Human Rights Campaign, SAP supported the Spotlight Black Businesses program to showcase and promote small Black-owned businesses and introduce them to new audiences. - SAP is a new member of the Equal@Work platform of ENAR, the European Network Against Racism.
LGBTQ+ inclusion	<ul style="list-style-type: none"> - SAP was among the first supporters of the United Nations Global LGBTI Standards of Conduct for Business and has been partnering with the employee-driven Pride@SAP LGBTQ+ network for more than 20 years. - Recognitions received 2022: Corporate Equality Index of the Human Rights Campaign in Argentina, Chile, and the United States; Swiss LGBTI Label; Australian LGBTQ Inclusion Award by the Australian Workplace Equality Index; and Gold Award at the Pride Index by WorkWithPride in Japan - SAP was also a silver sponsor of Out & Equal 2022 Workplace Summit.
Workplace accessibility	<ul style="list-style-type: none"> - Removing barriers for differently-abled persons through new technologies (for example, eye tracking) - Recognized as one of the Best Places to Work for Disability Inclusion (United States): Disability Equality Index
Global Employee Network Groups (ENGs)	<ul style="list-style-type: none"> - SAP supports numerous ENGs that offer activities and events in 2022. - Board members were nominated as executive sponsors for ENGs with SAP leadership committed to advance ENG agendas to drive inclusion.

Pushing Operational Excellence and Showcasing Human Experience Management

Delivering engaging experiences for SAP's customers starts with our own workforce. A continued emphasis on operational excellence and experience management is key to delivering our human experience management (HXM) solutions and services efficiently, with both empathy and compliance. Examples include the following:

- SAP runs SAP SuccessFactors solutions to manage global SAP people data and the SAP Analytics Cloud solution to provide analytics and insights.
- Qualtrics solutions are integrated with SAP SuccessFactors solutions, including event-triggered Qualtrics surveys along the employee journey.
- We significantly simplified our external SAP Careers Web site using career site builder capabilities in the SAP SuccessFactors Recruiting solution and streamlined the hiring process using the SAP Build Process Automation solution (for example, for candidate background verification).

Related Risks for SAP

'Human rights and employee matters' is a risk factor that is assessed as part of SAP's corporate financial risk management system. No financial material risks were identified through our risk framework as described in the [Risk Management and Risks](#) section.

Headcount and Personnel Expense

Numbers disclosed in the [Employees](#) section³¹ are based on headcount (exceptions in FTE are indicated). We define headcount in FTE³² as the number of people on permanent employment contracts, taking into account their staffing percentage. Students, individuals employed by SAP but currently not working for reasons such as maternity/parental leave, and temporary employees on limited contracts of less than six months, are excluded from our figures. The number of temporary employees is not material (temporary FTE: 1,941).

³¹ These are Employee Engagement Index Leadership Trust NPS, Business Health Culture Index, Innovation Index, Simplification of Processes (all measures through #Unfiltered), Employee Retention, and Women in Management. The metrics Employee Retention and Women in Management, as well as further metrics like External Hires, Female External Hires, Headcount, and Women in Workforce include Qualtrics employees. All other metrics are reported excluding Qualtrics employees.

³² Thereof acquisitions: 410

Full-time equivalents FTE year end	Average number of employees FTE year end	Average personnel expense/employee in Euro	Restructuring- related terminations in percent
111,961 <small>↗ +4,546 2021: 107,415</small>	111,015 <small>↗ +6,651 2021: 104,364</small>	155,000 <small>↗ +6,000 2021: 149,000</small>	539 <small>↗ +4,111 2021: 128</small>

The personnel expense for each employee is defined as the overall personnel expense divided by the average number of employees.

For 2023, we plan a targeted restructuring program in close alignment with social partners, which is expected to affect about 2.5% of SAP's global workforce. For further information see the *Financial Targets and Prospects* section.

For more information about employee compensation and a breakdown of the components of personnel expense, see the Notes to the Consolidated Financial Statements, *Note (B.1)* and *Note (B.2)*.

Audit Scope

Except for the quantitative indicators Headcount, Personnel Expense, and Employee Engagement Index the content of the *Employees* section was not subject to the statutory audit of our combined group management report. However, our external auditor performed an independent limited assurance engagement for the content of this section. Under this engagement, the quantitative indicators Business Health Culture Index, Employee Engagement Index, Employee Retention and Women in Management were audited at a reasonable assurance level.

Energy and Emissions

Vision and Strategy

For over a decade now, climate action has been at the top of SAP's corporate sustainability agenda in light of the increasing impacts of climate change and escalating global challenges such as ecosystem decay and biodiversity loss. As outlined in the *Sustainability Management*³³ section, we aim to take climate action through our dual approach as **enabler** and **exemplar** to help pave the way toward a low-carbon future for our customers, partners, and SAP.

Due Diligence

Governance

As outlined in the *Sustainability Management* section, the Executive Board sponsorship for sustainability and climate action moved from SAP's CFO to the CEO in June 2022. A newly formed operating segment ('sustainability') is now responsible for driving SAP's holistic, cross-company sustainability agenda. The Office of the Chief Sustainability Officer (oCSO) is part of this new unit and continues to shape, among others, SAP's response to climate change in close cooperation with other departments. Among other things, this new unit is responsible for:

- Defining the Environmental Policy and determining a global environmental portfolio to help steer SAP's impact
- Setting reduction and impact targets and embedding sustainability-related initiatives across SAP
- Measuring and monitoring carbon emissions on a quarterly basis
- Assessing and managing climate-related risks through a quarterly risk review
- Managing nature-based investment decisions
- Rolling in business requirements to our development units to develop the right solutions

Sustainability is a company-wide effort and initiatives are also driven outside the new unit. For example, the global procurement organization aims to ensure that SAP purchases energy-efficient, sustainable products and services. The global real estate and facilities management team designs and operates many SAP facilities based on robust environmental standards such as ISO 14001:2015 and the Leadership in Energy and Environmental Design (LEED) certification program. Our global cloud services organization attends to the optimization of the energy consumption in our data centers, while our SAP IT department encourages employees to use IT equipment and business software responsibly. In addition, to be able to innovate and evolve sustainability further, we regularly engage externally with various stakeholder groups such as non-governmental organizations (NGOs), investors, customers, and academia. For more information, see the *Stakeholder Engagement*³⁴ section.

Guidelines and Policies

Our *Global Environmental Policy*³⁵ provides the core framework for how we manage our environmental impact – in our own operations and with our customers. Updated in May 2022 and approved by the CFO, this policy guides our efforts to improve our ecological footprint, provide environmental performance transparency, and demonstrate sustainable leadership through

³³ Link leads to information that was not part of the statutory audit but included in the independent limited assurance engagement performed by our external auditor.

³⁴ Link leads to information that was not part of the statutory audit but included in the independent limited assurance engagement performed by our external auditor.

³⁵ Link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor.

transformational strategies. In addition, it helps us comply with internationally recognized sustainability standards as well as stakeholder expectations, primarily those of customers, investors, and employees.

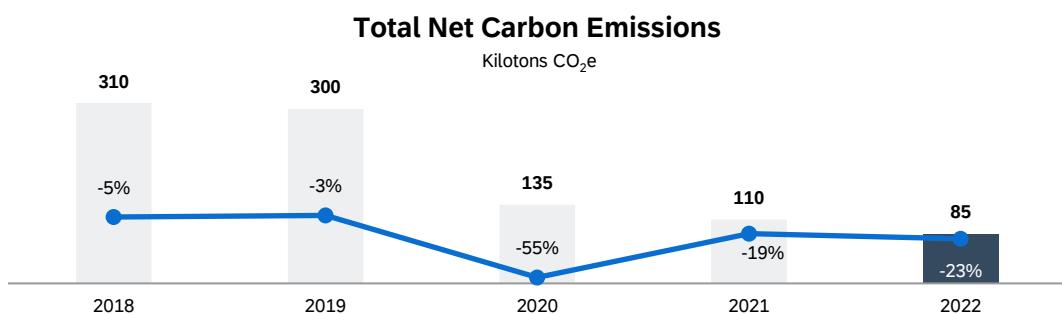
How We Measure and Manage Our Performance

Our Targets

Target	Base Year	Target Year	Target Description and Details
Carbon neutrality in our own operations by 2023	2017: 327 kilotons (kt) net carbon emissions ³⁶	2023: 0 net carbon emissions	<ul style="list-style-type: none"> Net carbon emissions = Gross carbon emissions (Scope 1, 2, and selected Scope 3)³⁷ minus purchased renewable energy certificates (EACs), self-generated renewable energy, and carbon offsets. To track progress on our target, we derived annual targets for our internal operational steering. Since the beginning of 2020, these annual targets have been integrated in the Executive Board's <i>short-term performance-based compensation</i>.³⁸ Leading environmental target and key in reducing SAP's own environmental footprint and making a contribution toward limiting adverse consequences of climate change.
Science-Based Target based on the Science-Based Target Initiative (SBTi)	2016: 9,188 kt gross carbon emissions	Long-term target: Reduction by 85% by 2050 Near-term target: Reduction by 40% by 2025	<ul style="list-style-type: none"> Target includes Scope 1, 2, and all relevant Scope 3 value chain emissions such as our products-in-use emissions at our customers. First approved by the SBTi in 2017; reassessed and confirmed by the SBTi in 2019. Target reflects the level of decarbonization required to keep the global temperature increase below 1.5 degrees Celsius compared to preindustrial temperature. In January 2022, we committed to achieve net zero across our entire value chain by 2030 in alignment with the SBTi Net-Zero Standard, 20 years earlier than originally planned. For this purpose, we started to re-evaluate the baseline, emissions scope, and methodology of our current target with the aim to get a SBTi approved net-zero target.

Performance and Measures to Progress³⁹

Even though our total number of employees (full-time equivalents) increased 4.2%, our net carbon emissions in 2022 dropped to 85 kilotons (kt), representing a year-over-year decrease of 22.7% (2021: 110 kt). That remains 6% below the lower end of our carbon emissions target of 90 kt to 95 kt which was updated in October 2022 to reflect the catch-up effects in business travel after the COVID-19 pandemic began to subside (original target for 2022: 70 kt). To ensure we reach our carbon neutrality commitment by 2023, SAP will continue and expand existing initiatives and programs to drive efficiency and innovation, following our strategic approach to first avoid, secondly reduce, and thirdly – if no other option is feasible – compensate our residual emissions by investing in high-quality offset projects certified by international standards.



³⁶ We report all our carbon emissions in CO₂ equivalents (CO₂e).

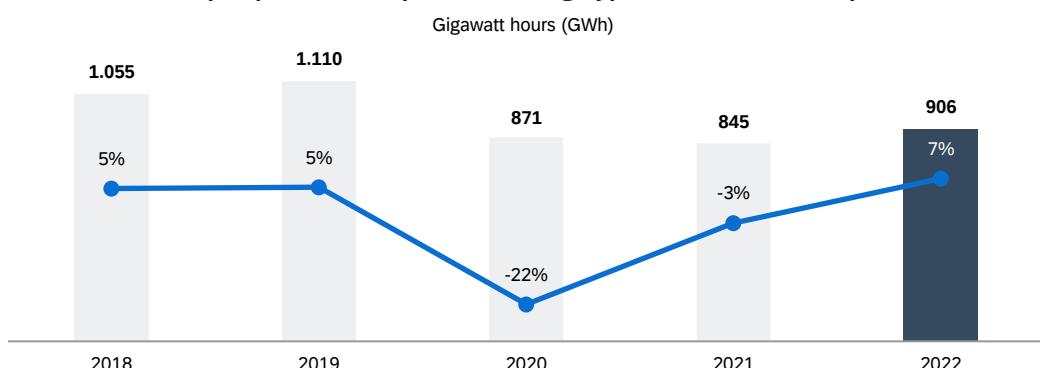
³⁷ To see which emission categories are considered in our carbon neutral target, see section *Non-Financial Information: Environmental Performance* (link leads to information that was not part of the statutory audit but included in the independent limited assurance engagement performed by our external auditor).

³⁸ Link leads to information that was part of the compensation report audit of our external auditor (reasonable assurance level).

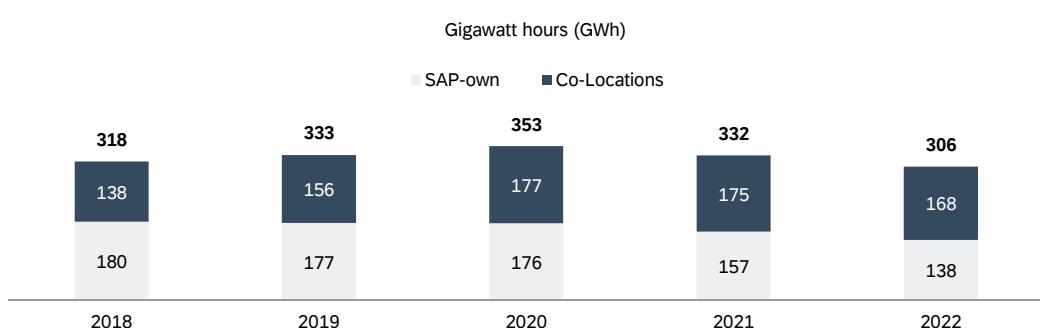
³⁹ In *Finance and ESG Data*, we provide more details about our environmental data (link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor).

As COVID-19 restrictions receded in 2022, we experienced an increase in total energy consumption.⁴⁰ This is a result of catch-up effects in business travel and a return to the offices. In addition, in 2022, we introduced two new KPIs: First, with “e-mobility” we recognize the transformation of SAP’s car fleet to emission-free company cars; and second, we began to determine the electricity consumption of our employees working from home, to reflect the changed working habits due to the COVID-19 pandemic and SAP’s pledge to flexible, trust-based working models. We also continued to compensate caused emissions by purchasing high-quality Energy Attribute Certificates (EACs). Looking at the data center electricity⁴¹, we see a decrease attributable to a shift toward hyperscale services and the implemented energy efficiency measures now taking effect.

Total Energy Consumption (Scope 1 and Scope 2, excluding hyperscale data centers)



Total Data Center Electricity (Scope 2, excluding hyperscale data centers)



Our focus on climate action has contributed to a cumulative cost avoidance of €1,018 million in the past three years. We achieved 28% of this cost avoidance in 2022.⁴² SAP’s environmental performance has been recognized by sustainability ratings and ranking organizations such as CDP, where we received an A– rating in the climate change assessment released in December 2022, reflecting continuous leadership in this area according to CDP’s methodology.⁴³

⁴⁰ Due to the (still) very limited control over the energy / electricity procurement of our value chain partners, we excluded the electricity consumption of hyperscale services (upstream value chain, Scope 3) in the graphs “Total Energy Consumption” and “Total Data Center Electricity” for all five years shown. In 2022, hyperscaler electricity was about the same level as the electricity consumption of our co-locations. For more information, see section [Non-Financial Notes: Environmental Performance](#) (link leads to information that was not part of the statutory audit but included in the independent limited assurance engagement performed by our external auditor).

⁴¹ In 2022, we moved electricity consumption of co-location data centers from Scope 3 to Scope 2 due to the underlying leasing model and SAP’s operational control over the IT infrastructure. In addition, we excluded the electricity consumption of hyperscale services as explained in the footnote above. These changes are applied to all five years shown in the graphs “Total Energy Consumption” and “Total Data Center Electricity”.

⁴² Cost avoidance is a financial key figure that indicates the financial benefits of SAP’s engagement in sustainability measures compared to a business-as-usual scenario where no sustainability measures have been implemented (base year: 2016).

⁴³ Further recognitions are listed on SAP’s [Web site](#) (link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor).

Key Initiatives to Avoid and Reduce Emissions

Implemented Measures and Initiatives

SAP's sustainability software portfolio	SAP delivers sustainability management solutions for sustainability reporting, climate action, circular economy, and social responsibility to enable our customers to run sustainable and resilient operations as described in the <i>Product Strategy</i> section. ⁴⁴ As co-innovation customer for the Sustainability Control Tower, the Corporate Sustainability team provides input and feedback to the development teams with the aim of leveraging a solution that enables companies to record, report, and act on their sustainability goals.
Carbon-neutral cloud solutions and product-in-use emissions	<p>The vast majority of our overall carbon emissions result from the use of our software. To address this, we aim to help our customers, hardware providers, and others to run more energy-efficient operations.</p> <ul style="list-style-type: none"> • By powering all data centers with 100% renewable electricity,⁴⁵ we offer our customers carbon-neutral cloud software solutions and help them reduce their overall carbon emissions (upstream Scope 3). • In 2021, we started to develop a carbon footprint sizing approach with the aim of enabling our customers to gain transparency on the carbon impact of their SAP applications that run in SAP's internal and external data centers, answering the question of how much our customers can reduce their environmental footprint by running SAP solutions on SAP's cloud infrastructure compared to a cloud that is not powered by 100% renewable electricity. • We collaborate with customers to optimize their on-premise landscapes so that they consume less energy (for example, we decommission legacy systems, archive unused data, consolidate business applications, and virtualize their system landscapes).
ISO 14001	<ul style="list-style-type: none"> • SAP's environmental management system (EMS) is implemented in over 50 sites in 29 countries worldwide and certified by the renowned ISO 14001:2015 standard. In 2022, we successfully maintained this certification. • Target: Increase EMS scope to 100% of SAP's major company-owned sites by 2025 (2022: 85%).
ISO 50001	<ul style="list-style-type: none"> • SAP's headquarters in Germany operates an ISO 50001:2018-certified energy management system. • 100% of SAP's own major data centers are ISO 50001-certified (Walldorf, St. Leon-Rot, Newtown Square, Colorado Springs). • Efficient power usage effectiveness (PUE)⁴⁶ at SAP headquarters in Germany and North America: 1.38 • At SAP's headquarters, we are in the process of implementing an on-site Power Purchase Agreement (PPA) solar project with the aim of increasing the share of renewable electricity produced on-site and achieving price stability.
Running SAP facilities with 100% renewable electricity	<p>Since 2014, SAP has been running all its offices and data centers⁴⁷ with 100% renewable electricity in alignment with our commitment towards the RE100 initiative. For this, we use two strategic levers:</p> <ul style="list-style-type: none"> • Investing in high-quality, EKOenergy-certified EACs to foster renewable energy generation • Producing renewable electricity in selective SAP locations worldwide through solar panels (such as Palo Alto, CA, in the United States, and Bangalore, India). <p>This approach allows us to compensate our entire electricity-consumption-related emissions (2022: 257 kt).</p>
Business flights	<ul style="list-style-type: none"> • Avoidance of business flights by investing in virtual collaboration and communication technologies. • Since 2016, we charge an internal carbon price for business flights in the majority of the countries we travel from, to counterbalance the carbon emissions caused by investing in high-quality carbon offset projects. By annually increasing the carbon price per flight ticket that is charged to the organizational cost center, we seek to incentivize the organizational units and employees to fly less or to choose an alternative, sustainable mode of travel.
Global car fleet: Transition to electric or zero-emission vehicles	<p>From 2025 onwards, all new vehicles ordered as company cars are planned to be emission-free.⁴⁸ SAP also promotes various incentives to accelerate this change, such as:</p> <ul style="list-style-type: none"> • We power all SAP-owned charging stations at SAP locations with 100% renewable electricity. • In Germany and the Netherlands, we offer employees a subsidy to install a charging point at home, and reimburse the employees for the electricity consumed. We plan to offer this subsidy to employees in Italy, Portugal, Spain, and Switzerland soon as well. • In Germany, we offer employees a subsidy to offset the higher costs of a full electric vehicle. • We continually expand SAP's global charging infrastructure (2022: 1,125 charging stations; 2021: around 970 charging stations).

⁴⁴ For more insight into our sustainability software portfolio, see SAP's [Web site](#) (link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor).

⁴⁵ We achieve this by leveraging 1) investments in high-quality, EKOenergy-certified EACs and 2) on-site produced renewables. The term "data center" refers to both SAP-owned and external data centers (co-location data centers and hyperscalers).

⁴⁶ The PUE is a ratio that describes the efficiency of a data center, with 1.0 being the ideal.

⁴⁷ The term "data center" refers to both SAP-owned and external data centers (co-location data centers and hyperscalers).

⁴⁸ Emission-free refers to vehicles that do not emit exhaust gas or other pollutants from the onboard source of power, leading to an outphasing of plug-in hybrid electric vehicles (PHEV) and vehicles with internal combustion engines (ICEV) as corporate cars.

Alternative commuting	To generate a shift in alternative commuting habits and foster inter-/multimodal mobility, we continue to offer various programs, such as: <ul style="list-style-type: none"> • Company bike programs: Employees can lease bicycles with the option of purchasing them after contract end. Such programs have already been established in Germany, Belgium, and Luxembourg. • After successful pilot phases, we will roll out the flexible mobility budget in spring 2023 as a regular mobility alternative in Germany. Participants receive a monthly fixed mobility budget to use any mode of transport to commute to work or in their leisure time (bike, e-scooter, rental car, train, bus, and so on).
Fostering biodiversity and nature-based solutions to climate change	<ul style="list-style-type: none"> • Since 2012, SAP has helped to plant over 14.1 million trees to restore ecosystems and foster sustainable development. SAP will continue to finance nature-based solutions and is committed to plant 21 million trees by the end of 2025. Restored and protected in the right places, trees and forests are invaluable in maintaining planetary stability, slowing climate change, safeguarding biodiversity, and providing critical ecosystem services to people around the world. • SAP defined important quality criteria for small and large planting projects which SAP expects its implementation partners to meet. These include specific requirements to create positive impact on climate, community, and biodiversity and to provide transparency. • Since 2021, SAP has been part of the 1t.org Corporate Alliance, which mobilizes business leaders to responsibly conserve, restore, and grow trees worldwide while pursuing the 1.5 degrees Celsius science-based target.

Using Carbon Offsets To Compensate for Our Residual Emissions

To offset a share of our Scope 1 and Scope 3 emissions that cannot yet be avoided, we invest⁴⁹ in different offset schemes with a strategic focus on nature-based solutions to compensate⁵⁰ for these emissions (2022: 97 kt):

Initiative	Committed Investments	Description and Details
Livelihoods Carbon Funds (LCF)	Between the years 2013 and 2021, SAP committed to invest up until 2045 approx. €10 million (accumulated) in LCF1-3 (total investment done by year end 2022: approx. 38%)	<ul style="list-style-type: none"> • The long-term investments finance much-needed climate action and sustainable development in developing countries through ecosystem restoration, agroforestry, biodiversity preservation, and clean energy projects. • LCF generates high-quality carbon offsets certified by internationally recognized standards (such as the Gold Standard). • In 2022, the carbon credits we received for our financial contribution to the LCF helped us offset 17 kt of our emissions, the majority of which was used to compensate for our business flights.
LEAF (Lowering Emissions by Accelerating Forest finance) Coalition	2021: SAP plans to invest US\$2 million (€1.86 million) ⁵¹	<ul style="list-style-type: none"> • A voluntary coalition including corporations and governments seeking to halt deforestation by financing large-scale tropical forest protection. • Under LEAF, jurisdictions commit to preserving their tropical forests. LEAF coalition members commit to purchasing emission reduction credits from reforestation and avoided deforestation, which are validated and verified against the ART's TREES standard.

Related Risks for SAP

In 2022, we performed a climate risk and vulnerability assessment to identify physical climate risks (acute and chronic) that are material to the SAP-relevant activity 'data processing and hosting', as follows:

- Risk screening for all our own and co-location data centers based on a multitude of climate hazards (acute and chronic),⁵² using global climate models (representative concentration paths (RCPs) 2.6, 4.5, and 8.5).
- Deep-dive exposure analysis for a selected range of climate hazards based on 2°C and 4°C scenarios: heatwaves and extreme precipitation (time horizon: 2021–2050)⁵³ as well as river

⁴⁹ To finance our investments in high-quality carbon offset projects (for example, certified by the Gold Standard) and EACs, we leverage the collected internal air travel fees charged on business flights.

⁵⁰ Investments in sustainable projects and the corresponding carbon offsets represent a unit of reduced, avoided, or removed greenhouse gas emissions.

⁵¹ Exchange rate date: December 31, 2022.

⁵² Examples of chronic hazards: changing temperature, heat stress, changing wind patterns, rise in sea level, and soil erosion. Examples of acute hazards: wildfires, water stress, droughts, floods, avalanches, and landslides.

⁵³ Usage of Intergovernmental Panel on Climate Change (IPCC) RCP 2.6 and RCP 8.5.

flooding and water stress (time horizon: 2030 and 2050).⁵⁴ The hazards were selected based on the risk screening outcome and impact on data centers combined with expert discussions.

- Vulnerability analysis of our own data centers with high exposures helped us identify the impact and risk of a hazard by considering current and past hazard experiences and implemented mitigation actions.

'Climate change and air quality' is a risk factor that is assessed as part of SAP's Corporate Financial Risk Management System. No financial material risks were identified through our risk framework as described in the *Risk Management and Risks* section.

Audit Scope

Except for the quantitative indicator Net Carbon Emissions the content of the *Energy and Emissions* section was not subject to the statutory audit of our combined group management report. However, our external auditor performed an independent limited assurance engagement for the content of this section. Under this engagement, the quantitative indicators Carbon Emissions (Scope 1 and 2 as well as selected Scope 3 emissions including business flights and employee commuting), Renewable Electricity, and Total Energy Consumed were audited at a reasonable assurance level.

⁵⁴ Usage of IPCC RCP 4.5 and RCP 8.5.

Corporate Governance Fundamentals

Corporate Governance Statement

The German Commercial Code, section 315d in connection with section 289f, requires that, as a listed company, SAP SE publish a corporate governance statement either as part of our management report or on our Web site. The Executive Board and the Supervisory Board of SAP SE issued the Corporate Governance Statement on February 21, 2023, and published it on our Web site at www.sap.com/corporate-en/investors/governance.

Changes in Management

On March 18, 2022, the Supervisory Board of SAP SE mutually agreed with Luka Mucic, Chief Financial Officer and member of the Executive Board, that he will depart the Company on March 31, 2023.

On August 31, 2022, SAP announced that the Supervisory Board had appointed Dominik Asam as Chief Financial Officer and member of the Executive Board. He will start in this capacity on March 7, 2023.

Information Concerning Takeovers

Information required under the German Commercial Code, sections 289a (1) and 315a (1), with an explanatory report:

Composition of share capital: For information about the composition of SAP SE's share capital as at December 31, 2022, see the Notes to the Consolidated Financial Statements, [Note \(E.2\)](#). Each share entitles the bearer to one vote. American depositary receipts (ADRs) representing our shares are listed on the New York Stock Exchange (NYSE) in the United States. ADRs are certificates representing non-U.S. shares and are traded on U.S. stock exchanges instead of the underlying shares. One SAP ADR corresponds to one SAP share.

Restrictions applying to share voting rights or transfers: SAP shares are not subject to transfer restrictions. SAP held 61,386,685 treasury shares as at December 31, 2022 (see the Notes to the Consolidated Financial Statements, [Note \(E.2\)](#)). Treasury shares do not carry voting rights or dividend rights or other rights. We are not aware of any other restrictions applying to share voting rights or to share transfers.

Shareholdings that exceed 10% of the voting rights: We are not aware of any direct or indirect SAP SE shareholdings that exceed 10% of the voting rights.

Shares with special rights conferring powers of control: No SAP shareholder has special rights conferring powers of control.

Type of control over voting rights applying to employee shareholders who do not directly exercise their control rights: As with other shareholders, employee holders of SAP shares exercise their control rights in accordance with the law and the Articles of Incorporation. In votes on the formal approval of their acts at the Annual General Meeting of Shareholders, employee representatives on the Supervisory Board, as all other members of the Supervisory Board, are prohibited from exercising the voting rights associated with their shares.

Requirements concerning appointments and dismissals of members of the Executive Board and amendments to the Articles of Incorporation: Conditions for the appointment and dismissal

of members of the Executive Board and amendments to the Articles of Incorporation reflect the relevant provisions of applicable European and German law, including Council Regulation (EC) No. 2157/2001 on the Statute for a European Company (“SE Regulation”) and the German Stock Corporation Act. Under the Articles of Incorporation, the Executive Board consists of at least two members, who are appointed for a period of not more than five years by the Supervisory Board in accordance with the SE Regulation, articles 39 and 46. The number of members of the Executive Board is decided by the Supervisory Board. Executive Board members may be reappointed for, or their term of office extended by, a maximum of five years. A simple majority of the Supervisory Board members is required for Executive Board appointments. In the event of a tie, the chairperson of the Supervisory Board has the deciding vote. The Supervisory Board can appoint a chairperson of the Executive Board and one or more deputy chairpersons from among the members of the Executive Board. The Supervisory Board can revoke appointments to the Executive Board in accordance with the SE Regulation, article 9, and the German Stock Corporation Act, section 84, if compelling reasons exist, such as gross negligence on the part of the Executive Board member. If the Executive Board is short of a required member, one may be appointed in urgent cases by a court in accordance with the SE Regulation, article 9, and the German Stock Corporation Act, section 85. In accordance with the SE Regulation, article 59, and the German Stock Corporation Act, section 179, an amendment of the Articles of Incorporation requires a resolution of the General Meeting of Shareholders with a majority of at least three-quarters of the valid votes cast. For any amendments of the Articles of Incorporation that require a simple majority for stock corporations established under German law, however, the simple majority of the valid votes cast is sufficient if at least half of the subscribed capital is represented or, in the absence of such quorum, the majority prescribed by law (that is, two-thirds of the votes cast, pursuant to article 59 of the SE Regulation) is sufficient. Section 11 (2) of the Articles of Incorporation authorizes the Supervisory Board to amend the Articles of Incorporation where such amendments only concern the wording.

Power to issue and repurchase shares: The Annual General Meeting of Shareholders on May 12, 2021, granted powers to the Executive Board, subject to the consent of the Supervisory Board, to issue convertible and/or warrant-linked bonds, profit-sharing rights and/or income bonds (or combinations of these instruments), and to grant conversion or option rights in respect of SAP SE shares representing a total attributable portion of the share capital of not more than €100 million secured by a corresponding amount of contingent capital. These powers will expire on May 11, 2026. The Executive Board is also authorized until May 19, 2025, to increase the share capital by not more than €250 million by issuing new shares against contributions in cash and to increase the share capital by not more than €250 million by issuing new shares against contributions in cash or in kind. For more information about the different tranches of authorized capital and the aforementioned contingent capital, see the Articles of Incorporation, section 4.

The Annual General Meeting of Shareholders on May 17, 2018, granted a power to the Executive Board in accordance with the German Stock Corporation Act, section 71 (1)(8), to buy back for treasury on or before May 16, 2023, SAP SE shares attributable in total to not more than €120 million of the share capital. This power is subject to the proviso that the shares repurchased, together with any shares that were previously acquired and are still held by SAP in treasury and any other shares controlled by SAP, must not in total exceed 10% of SAP's share capital. Executive Board powers, such as those described to issue and repurchase stock and to grant rights of conversion and subscription to shares of SAP, are widely followed common practice among German companies such as SAP. These powers give the Executive Board the flexibility it needs, in particular, the option to use SAP shares as consideration in equity investments, raise funds on the financial markets at short notice on favorable terms, or return value to shareholders during the course of the year.

Material agreements with change-of-control provisions: SAP SE has concluded the following material agreements with provisions that take effect in the event of a change of control, whether following a takeover bid or otherwise:

The terms of SAP's syndicated €2.5 billion revolving credit facility include a change-of-control clause. For more information about this syndicated credit facility, see the Notes to the Consolidated Financial

Statements, [Note \(F.1\)](#). This clause obliges SAP SE to notify the banks in case of a change of control. If, on receiving the notification, banks that represent at least two-thirds of the credit volume so require, the banks have the right to cancel the credit facility and demand complete repayment of the outstanding debt. If no continuation agreement is reached, the credit facility would end and the obligation to repay would become effective at an ascertainable time.

SAP had bonds totaling €8.7 billion and US\$0.3 billion outstanding as at December 31, 2022. For more information about SAP's bonds, see the Notes to the Consolidated Financial Statements, [Note \(E.3\)](#). Under the terms agreed with the buyers, we are required to notify the buyers, without delay, of any change of control. If there is a change of control and SAP is consequently assigned a lower credit rating within a defined period, buyers are entitled to demand repayment.

Under the terms of our U.S. private placements totaling approximately US\$0.42 billion as at December 31, 2022, we are required to offer lenders repayment of outstanding debt if there is a change of control and SAP is consequently assigned a lower credit rating within a defined period. For more information about these private placements, see the Notes to the Consolidated Financial Statements, [Note \(E.3\)](#). Lenders would have up to 30 days to accept the offer.

Furthermore, in March 2021, SAP took out two bilateral bank loans amounting to €0.95 billion and €0.5 billion, both of which were fully outstanding as at December 31, 2022. Both loan agreements contain a change-of-control clause which obliges SAP SE to notify the bank in case of a change of control. On receiving the notification, the bank has the right to cancel the loan agreement and demand complete repayment of the outstanding debt. If no continuation agreement is reached, the loan agreement would end and the obligation to repay would become effective at an ascertainable time.

We have entered into relationships with other companies to jointly develop and market new software products and cloud solutions. These relationships are governed by development and marketing agreements with the respective companies. Some of the agreements include provisions that, in the event of a change of control over one of the parties, give the other party a right to consent to the assignment of the agreement or to terminate it.

Change-of-control provisions in Executive Board compensation agreements: Agreements have been concluded with the members of the Executive Board of SAP SE concerning compensation in the event of a change of control. These agreements, which are customary internationally, are described in the Compensation Report. We have no analogous compensation agreements with our other employees.

Business Conduct

Vision and Strategy

In an increasingly complex business environment, making the right decisions and abiding by ethical choices has never been more important. As a company operating in numerous countries across the globe, SAP is required to adhere to strict international legislation that defines acceptable business conduct and practices.

At SAP, we also expect our business practices to not only meet international rules and legal requirements, but to adhere to our internal high standards of ethics and integrity. We understand that our customers expect this as well. SAP's reputation for doing business the right way is one of our most important assets. By striving to make ethical choices and acting with integrity, we aim to continue to grow SAP in a way that meets both our own and our customers' high ethical expectations.

Due Diligence

Governance

The **Office of Ethics and Compliance** (OEC) contributes to SAP's success by providing trusted advice to SAP managers, leaders, and employees across the entire business. The OEC strives to advance SAP's business goals by promoting a strong culture of integrity and helping SAP to "Win the Right Way."

In 2022, our aim to maintain a robust compliance program, based on our corporate values and voluntary commitments, as well as international standards, continued. The OEC team grew for the fifth consecutive year, from 142 employees in 2021 to 154 employees in 2022. The group chief compliance officer (GCCO) continues to report directly to the group CEO.

At SAP, ethical behavior is an integral part of our cultural values that can influence our daily decision-making at every level of the business and in every market. To help nurture this environment, the OEC's various teams continually address compliance challenges and improve policies, guidelines, systems, and measures related to their implementation.

The OEC has field compliance officers across the globe, in both high- and low-risk jurisdictions. Field compliance officers are often the first point of contact for the business when compliance matters arise. In those high-risk countries in which the OEC is not physically represented and where there might be local language needs, the OEC operates a network of compliance stewards drawn largely from either our legal, finance, or human resources (HR) departments. Compliance stewards support the OEC's field compliance officers by offering advice on specific and straightforward compliance questions; they work alongside our global network of compliance ambassadors (drawn from all areas of the Company) to amplify compliance messages and provide a further link for local employees to the relevant field compliance officer.

Compliance matters are regularly discussed with Executive and Supervisory Board members at quarterly Audit and Compliance Committee meetings as well as during regular touchpoints with Executive Board and Supervisory Board members. Compliance matters are also discussed by the GCCO in quarterly Global Compliance Governance Committee meetings. Participants at these meetings include members of Global Finance, Customer Success, Global Communications, Global Security, and Global Risks & Assurance Services (GR&AS).

Where appropriate, and in response to identified compliance concerns, the OEC engages external counsel and forensic consulting resources to perform corruption risk assessments of high-risk market units or other related supporting tasks. This may include, for example, device collections or comprehensive root cause analyses for identified risks.

Outside SAP, the OEC regularly exchanges ideas and best practices for compliance processes with relevant peers in the software industry and beyond. In Germany, the OEC participates in the annual DAX Chief Compliance Officer Round Table. SAP is also a Corporate Member of the Association of Certified Fraud Examiners (ACFE), and the GCCO is also a member of the European Chief Compliance Officers Forum (ECCIOF) and the UN Global Compact's Think Lab focused on transformational governance.

Guidelines and Policies

In 2022, a revised and updated version of the *Code of Ethics and Business Conduct (CoEBC)*⁵⁵ was rolled out throughout the Company and made available outside of SAP. It replaced multiple existing local Codes of Business Conduct and provides, in a single document, the primary ethical and legal framework within which SAP conducts business and remains on course for success. The revised CoEBC is available in 22 languages.

SAP also expects all partners and suppliers to commit to meeting our high standards of integrity and sustainability. For this reason, we have the SAP Partner Code of Conduct and the SAP Supplier Code of Conduct in place so that partners and suppliers understand what is expected of them.

How We Measure and Manage Our Performance

Enforcing Policies and Guidelines

All employees are bound by the CoEBC; they are required to acknowledge its contents and confirm their commitment to it on an annual basis. In 2022, we continued to monitor employee certification of the CoEBC for employees worldwide, recording a 99.9% certification rate for permanent SAP employees (excluding those from acquired companies).

Communication

The OEC's dedicated communications team consistently distributes integrity-related communications, at all levels of the Company – including to senior leaders, managers, and employees, as well as topic-related content for SAP partners. Executive Board members and senior leaders regularly host all-hands meetings as well as leadership team meetings and smaller gatherings, which include integrity-focused topics, demonstrating their dedication to ethical business.

Quarterly OEC newsletters provide all SAP employees with information on a range of compliance-related topics. Additionally, a quarterly newsletter with a focus on leadership and management topics is sent specifically to executive and senior management.

Employees can use the SAP One employee portal at any time to access all global policies, guidelines, and additional information. The SAP Compliance mobile app⁵⁶ also provides convenient, ongoing access to compliance-related information. Externally, our Web site sap.com features information and guidance for our external stakeholders.

All Board areas have re-committed their support for OEC's Compliance Ambassador Program and have nominated employees to participate in it. In 2022, a fifth cohort was introduced, bringing the number of participants from over 500 in 2021 to over 1,100 in 2022. The program is designed to give employees a further point of contact in the business when compliance matters arise. Ambassadors participate in an extensive curriculum of monthly on-boarding sessions over an 18-month period. They are expected to cascade and transfer information on the importance of compliance and ethics throughout their teams and lines of business.

⁵⁵ Link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor.

⁵⁶ The SAP Compliance Mobile App is only available on Company-issued Apple devices; Apple devices represent 90% of devices issued.

Training Offerings

Our training programs cover topics such as anticorruption and antibribery, conflicts of interest, governance for customer commitments, working with public sector customers, and compliant partner engagement.

In addition to four mandatory online training courses for all SAP employees,⁵⁷ a further two mandatory online training courses were launched in 2022 for all employees in the Customer Success Board area. The completion rate for these exceeded 99.9%. A new Ethical Leadership workshop was also delivered live to all People Managers across the Company. The global completion rate for this workshop was 99%.

Despite continuing restrictions caused as a result of the COVID-19 pandemic, field compliance officers continued to hold training sessions – largely virtually – for employees across the organization, from customer-facing staff to individuals in supporting roles, such as corporate affairs and marketing.

Compliance Processes

The OEC also evaluates SAP's third-party service providers to assess whether SAP's compliance standards are met. New suppliers and third parties seeking a partnership with SAP are scrutinized according to a risk-based compliance due diligence process, which is repeated every two to five years thereafter. Supplier and partner relationships are formally defined in contracts that outline their obligation to abide by SAP's compliance requirements. In almost all cases, these include a "right to audit" clause. The OEC also has a team dedicated to conducting compliance audits of partners and suppliers to assess adherence to SAP's requirements and to identify and address compliance risks.

The OEC's Compliance Monitoring & Analysis (CMA) team monitors the effectiveness of SAP's compliance processes and controls through regular testing of high-risk transactions, identified using a data analytics tool developed with PricewaterhouseCoopers GmbH (PwC) and through manual sampling. The CMA team also analyzes findings from investigations and partner audit reports to identify potential enterprise-wide process deficiencies and patterns of misconduct that indicate a compliance risk. The team then conducts root cause analyses on the highest-risk topics and recommends remediation actions to mitigate the risks.

Speak Out at SAP

Speak Out at SAP is SAP's independently managed whistleblower reporting tool, through which any matters or concerns can be reported easily, and, if desired, anonymously. The tool is available 24 hours a day, seven days a week, both internally to SAP employees and externally to concerned parties, including customers, suppliers, and partners.

Reports may be submitted either directly by the reporter through the Internet-based portal, or by phone, with local language support across the globe in order to maximize accessibility for reporters. In all cases, SAP continues to maintain a strict non-retaliation policy.

Compared with the previous whistleblower reporting tool, we observed a substantial increase in the number of concerns reported through Speak Out at SAP since the tool's launch in 2021. Within this increase, a number of the concerns raised came from external parties, such as partners, customers, and suppliers.

Beyond Speak Out at SAP, we provide further reporting channels, including an internal ticketing system, a postal address for written submissions, as well as local contact persons worldwide.

Investigating Misconduct

The OEC's investigations team is comprised of dedicated investigators who probe allegations of misconduct within the OEC's area of responsibility. Where appropriate, the OEC engages the assistance of an external law firm when examining conduct that may violate SAP's policies and

⁵⁷ Excludes employees on parental leave, long-term sick leave, sabbaticals, and on early retirement. Training last assigned in 2021 with biennial frequency.

procedures or applicable laws. When misconduct is substantiated, SAP takes proportionate disciplinary action.

For more information about the material allegations currently being investigated by the OEC, see the Notes to the Consolidated Financial Statements, [Note \(G.3\)](#).

Related Risks for SAP

The actions and processes to address risks in business conduct are described above. No material risks were identified regarding the non-financial risk assessment. For financial risks, see also [Ethical Behavior](#) in the [Risk Management and Risks](#) section.

Audit Scope

The content of the [Business Conduct](#) section was not subject to the statutory audit of the combined group management report. However, our external auditor performed an independent limited assurance engagement for the content of this section.

Human Rights

Vision and Strategy

SAP is committed to respecting and promoting human rights across our operations, extended supply chain, and product lifecycle, and we are guided by the United Nations (UN) Guiding Principles on Business and Human Rights in doing so. We also expect our business partners to respect human rights and avoid complicity in any abuse.

Due Diligence

Governance

Our cross-company agenda on human rights is driven by SAP's Human Rights Office that is part of the chief sustainability officer's organization. At least once a year, the Human Rights Office reports to the Executive Board sponsor for human rights; this role was held by the CFO until mid-2022, then by the CEO who now has overall responsibility for sustainability topics. Recent reports focused on the status of compliance with the German Supply Chain Due Diligence Act (Lieferkettensorgfaltspflichtengesetz, LkSG).

The Human Rights Office works with executives and employees from various Executive Board areas who embed human rights due diligence in their areas of responsibility, for example, enterprise risk management, people management, or procurement. We regularly consult experts from academia, civil society, and industry in our external **Sustainability Panel** on the ways SAP can generate the greatest positive social impact.

Grounded in our commitment to respecting human rights, the **Artificial Intelligence (AI) Ethics Steering Committee** guides our internal efforts to implement and enforce AI ethics in our operations, solutions, and policies. It comprises SAP executives from relevant Executive Board areas with supervision of topics relevant to guiding and implementing AI ethics. Made up of experts from academia, industry, and public policy, our external **AI Ethics Advisory Panel** advises us on how to further develop and operationalize SAP's **Guiding Principles for Artificial Intelligence**.

Policy Commitment

We support the International Bill of Human Rights; the Organization for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises; and the International Labor Organization Declaration on Fundamental Principles and Rights at Work. The **SAP Global Code of Ethics and Business Conduct for Employees**, and – in a more detailed way – the **SAP Global Human Rights Commitment Statement** are our public commitment to respecting and promoting human rights across our value chain. Approved by our Executive Board, the current version of the Human Rights Commitment Statement is available on our public Web site at www.sap.com/human-rights.⁵⁸ We are working on an update to the Commitment Statement to better reflect recent legal requirements and will publish a new version in 2023.

The **Global AI Ethics Policy** helps ensure that our AI systems are developed, deployed, and sold in line with the ethical standards laid out in our guiding principles. This policy and guiding principles are available at <https://www.sap.com/sustainability/our-approach/reporting-and-policies.html#reporting>.⁵⁹

⁵⁸ Link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor.

⁵⁹ Link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor.

How We Measure and Manage Our Performance

Identifying Salient Human Rights Issues

In 2022, we piloted new concepts for identifying human rights risks across our own operations and our direct supply chain globally to be compliant with increasing legal requirements such as the German Supply Chain Due Diligence Act (LkSG). We have also started to complement this exercise with an analysis of salient issues related to our solutions and customers and with a concept to identify human rights risks among indirect suppliers. Taking into consideration our business activities as described in the *Strategy and Business Model* section, we assessed potential risks based on their severity (scale, scope, remediability) and probability of occurrence as well as our ability to trigger change. While we have not yet finalized our assessment of salient issues across our value chain, we have decided to further explore some topics including non-discrimination or health and safety at our own operations.

Employees

Our employees⁶⁰ receive voluntary and mandatory training on human rights issues most relevant to SAP. For example, they are trained on our policies on non-discrimination, health and safety management, and data protection and privacy. In 2023, we plan to introduce new training modules for all employees and for specific roles, for example to increase the awareness of our grievance mechanism.

We consulted employee representatives in Germany and Europe to specifically understand their concerns and interests related to the rights protected by the LkSG. Feedback concerned, for example, the accessibility and awareness of the Speak Out at SAP tool as our channel to raise concerns related to human or labor rights.

Suppliers and Partners

We expect suppliers and partners to respect human rights, and our codes of conduct require them to uphold labor rights and provide a safe and healthy work environment for all employees. We also expect our suppliers to promote these standards across their supply chain.

For more information, see the *Sustainable Procurement* subsection.

Product Development

We seek to respect human rights throughout the product lifecycle – from design through development to use. Protection of personal information and accessibility are key areas of focus.

For more information on the protection of personal information, see the *Security and Privacy* section.

Accessibility refers to the possibility for everyone, including people who are differently-abled, to access and use technology and information products. Making our software work for more people has been and continues to be a priority.

Our innovative solutions help customers embed human rights standards into their own business. For example, they can use the **SAP Ariba Supplier Risk** solution to gain the intelligence and transparency to understand human rights risks within their supply chains.

Assessing Human Rights Measures

To assess our human rights measures, we consider legal requirements, performance ratings, audit results, employee surveys, and other stakeholder feedback. For example, since 2012, we have conducted regular internal audits to help us verify that subsidiaries adhere to human rights standards, and check whether employees feel empowered to raise concerns. In 2022, we completed a labor audit at SAP China, whereby we reviewed labor conditions, wages and hours, health and safety, environmental management system, and business practices. We did not encounter any major issues

⁶⁰ Training was not available to employees of recently acquired Taulia.

in these areas. We plan to adapt our global internal audit program based on recent legal requirements.

For the first time in 2022, we also used impact measurement and valuation to assess our performance on selected human rights. This way, we identified six employees at SAP Brazil whose compensation had to be adjusted to meet our ambition of ensuring a decent living as measured through the Value Balancing Alliance methodology.

For more information, see the *Why Impact Measurement and Valuation Matters*⁶¹ subsection.

Receiving Complaints or Concerns

In 2022, we strengthened our globally available **Speak Out at SAP** tool and process for human rights related complaints. Through this tool, we encourage all employees and external groups, including groups at heightened risk of becoming disadvantaged or marginalized (also called “vulnerable groups”) such as temporary external staff, to report conduct that violates our policies. Employees can also reach out to their managers, HR officers, or compliance officers, and to our Global Ombuds Office which offers confidential, independent, neutral, and informal conflict clarification services and mediation for all employees worldwide.

Related Risks for SAP

“Human rights and employee matters” is a risk factor that is assessed as part of SAP’s corporate risk management system. No financial material risks were identified through our risk framework which is detailed in the *Risk Management and Risks* section.

Audit Scope

The content of the *Human Rights* section was not subject to the statutory audit of the combined group management report. However, our external auditor performed an independent limited assurance engagement for the content of this section.

⁶¹ Link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor.

Risk Management and Risks

Our Risk Management

Internal Control and Risk Management Systems

As a global company, SAP is exposed to a broad range of risks across our business operations. Consequently, our Executive Board has established comprehensive internal control and risk management structures that enable us to identify and analyze risks early and take appropriate action. Our internal control and risk management systems are designed to identify potential events that could negatively impact the Company and to provide reasonable assurance regarding the operating effectiveness of our internal controls over our financial reporting.

These systems comprise numerous control mechanisms and are an essential element of our corporate decision-making process; they are therefore implemented across the entire Group as an integral part of SAP's business processes. We have adopted an integrated internal control and risk management approach to help maintain appropriate and effective global risk management while also enabling us to aggregate risks and report on them transparently.

Appropriateness and Effectiveness of SAP's Entire Internal Control and Risk Management System⁶²

We have a governance model in place across the internal control and risk management systems, as well as a central software solution to store, maintain, and report all risk-relevant information. In the *Business Conduct* section of our combined management report, we describe in more detail the governance structure as well as the measures and guidelines SAP has implemented to ensure compliance not only with international rules and legal requirements but also with our internal standards of ethics and integrity. Furthermore, SAP monitors risks relating to material sustainability matters. Material non-financial topics are listed in the section *Non-Financial Statement Including Information on Sustainable Activities*. The governance model, policies, and guidelines as well as the control measures we have implemented relative to these topics are described in the respective chapters in this combined management report. SAP constantly reviews and adjusts its entire internal control and risk management system as well as the policies and guidelines we have implemented regarding the material sustainability topics. We considered the results from external audits, such as the audit of our internal control system for financial reporting and early risk detection system conducted by our auditor KPMG, as well as internal sources, such as audit reports from our Global Risk & Assurance Services (GR&AS) team, to evaluate the effectiveness of our internal control and risk management systems. If issues are identified, SAP takes remedial action. While the non-financial internal control system has not yet reached the same maturity level as the financial internal control system, no material indication has come to our attention that SAP's entire internal control and risk management system is not appropriate or effective.

Legal and Regulatory Requirements

Due to our public listings in both Germany and the United States, we are subject to both German and U.S. regulatory requirements that relate to internal controls and risk management over financial reporting, such as provisions in the German Stock Corporation Act, section 91 (2), the U.S. Sarbanes-Oxley Act (SOX) of 2002, specifically sections 302 and 404, and the German Corporate Governance Code. Hence, our Executive Board has established an early warning system (risk management system) to enable compliance with applicable regulations.

⁶² The appropriateness and effectiveness of SAP's entire internal control and risk management system, except for the internal control system for financial reporting and early risk detection system, was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor.

Risk Management Policy and Framework

The risk management policy issued by our Executive Board governs how we manage risk in line with the Company's risk appetite and defines a methodology that is applied uniformly across all parts of the Group.

Risk Management Pillars

Our risk management system is based on the framework published by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) entitled "Enterprise Risk Management – Integrating with Strategy and Performance." Updated in 2017, this framework is built on four pillars, namely: a global risk management governance framework, a dedicated risk management policy, a global risk management organization, and a standardized risk management methodology.

In accordance with the COSO framework, SAP's enterprise risk management covers risks in the areas of strategy, operations, finance, and compliance (the latter also covering ethical behavior, corporate governance, and sustainability).

Our Global Risk Management Governance Framework

The risk management governance framework at SAP represents a comprehensive system of approaches and processes to ensure control through a clearly structured risk management system and a supporting risk culture. The risk culture is considered the basis of SAP's risk management system. Risk culture at SAP comprises a system of values, beliefs, knowledge, attitudes, and understanding concerning risks and risk management as part of our corporate culture. To support and continuously foster SAP's risk culture, we conduct risk activities for the entire SAP organization such as mandatory training in ethical behavior, code of conduct, and risk management.

Our Executive Board is responsible for ensuring the effectiveness of the internal control system and our risk management system. The effectiveness of both systems and their implementation in the different Board areas is monitored by each Executive Board member. The Audit and Compliance Committee of the Supervisory Board regularly monitors the effectiveness of SAP's internal control and risk management systems. Our GR&AS organization regularly provides a status update on the internal control and the risk management systems to the Audit and Compliance Committee of the Supervisory Board. Every year, SAP's external auditors assess whether the SAP Group early-warning system for risk detection is adequate to identify risks that might endanger our ability to continue as a going concern. Additional assurance is obtained through the external audit of the effectiveness of our system of internal controls over financial reporting.

Our Global Risk Management Policy

The risk management policy is reviewed annually and stipulates responsibilities for conducting risk management activities and defines reporting and monitoring structures. Our global SAP risk management policy clearly states that each employee is responsible for active engagement in the risk management process as well as for the continuous identification of risks, based upon clear rules of engagement in adherence to the policy. The risk management system primarily analyzes risks. Opportunities are assessed or analyzed where it is deemed appropriate.

Our Global Risk Management Organization

Our global risk management organization is responsible for the implementation of a Group-wide effective risk management system. Furthermore, GR&AS is responsible for the regular maintenance and implementation of our risk management policy, as well as the standardized internal and external risk reporting.

All GR&AS risk managers, working with assigned risk contacts in the relevant business units, identify and assess risks associated with material business operations and monitor the implementation and effectiveness of the measures chosen to mitigate risks.

Further financial risk management activities are performed for example by our Global Treasury and Global Tax departments. General legal risks are managed by the Global Legal department. Sanction and embargo-related risks are managed by the Export Control department, harassment and other HR-related issues by our Global Labor & Employee Relations Office, security-related risks by our SAP Global Security Office, and IP risks by our Global IP Office. Non-financial risks are reported jointly by GR&AS and SAP's Sustainability organization. All risks are tracked, maintained, and reported within SAP's risk management system.

During the merger and acquisition and post-merger integration phase, newly acquired companies are subject to risk management performed by our Corporate Development Mergers and Acquisitions (M&A) function. Furthermore, for as long as the newly acquired companies are not integrated, existing risk management structures are maintained or enhanced within the acquired companies for the purposes of compliance with legal requirements.

SAP reviews the exposure of its business units to potential compliance risks on a regular basis. Quantitative and qualitative internal data as well as external information, such as Transparency International's Corruption Perceptions Index, are considered in our wider compliance risk analysis. Based on this information, we perform a detailed assessment for all SAP-relevant high-risk countries and derive local and global mitigations.

The GR&AS unit, led by the Chief Risk Officer (who also acts as Chief Audit Executive), combines internal audit, SOX, internal controls, and global governance, risk, and compliance activities. The Chief Risk Officer reports to our Group CFO and is responsible for SAP's internal control and risk management programs. Additionally, the Office of Ethics & Compliance (OEC) continually addresses compliance challenges and improves policies, guidelines, systems, and measures related to their implementation. For more information about SAP's governance structure in the area of compliance, see section *Business Conduct*.

Internal Control and Risk Management System for Financial Reporting

The purpose of our system of internal control over financial reporting is to provide reasonable assurance that our financial reporting is reliable and compliant with generally accepted accounting principles. Because of the inherent limitations of internal controls over financial reporting, this system might not prevent or bring to light all potential misstatements in our financial statements.

Our internal control system consists of the internal control and risk management system for financial reporting (ICRMSFR), which also covers the broader business environment and is part of the overall risk management system of SAP. Using the current COSO Internal Control – Integrated Framework of 2013, we have defined and implemented internal controls along the value chain on a process and subprocess level to ensure that sound business objectives are set in line with the organization's strategic, operational, financial, and compliance goals.

SAP's ICRMSFR is based on our Group-wide risk management methodology. It includes organizational, control, and monitoring structures designed to ensure that data and information concerning our business is collected, compiled, and analyzed in accordance with applicable laws and properly reflected in our IFRS Consolidated Financial Statements.

Our ICRMSFR also includes policies, procedures, and measures designed to ensure compliance of SAP's financial reports with applicable laws and standards. We analyze new statutes, standards, and other pronouncements concerning IFRS accounting and its impact on our financial statements and the ICRMSFR. Failure to adhere to these would present a substantial risk to the compliance of our financial reporting. In addition, the ICRMSFR has both preventive and detective controls, including, for example, automated and non-automated reconciliations, segregated duties with two-person responsibility, authorization concepts in our software systems, and corresponding monitoring measures.

Our Corporate Financial Reporting (CFR) department codifies all accounting and reporting policies in our Group accounting and global revenue recognition guidelines. These policies and the corporate

closing schedule, together with our process descriptions, define the closing process. Under this closing process, we prepare, predominately through centralized or external services, the financial statements of all SAP entities for consolidation by CFR. CFR and other corporate departments are responsible for ensuring compliance with Group accounting policies and monitor the accounting work. CFR reviews accounting standards and processes to ensure applicable updates are made to SAP's financial reporting.

We have outsourced some tasks, such as the valuation of projected benefit obligations and share-based payouts, quarterly tax calculations for most entities, purchase price allocations in the context of asset acquisitions and business combinations, and the local statutory financial statements for a few of our subsidiaries. These outsourced tasks are subject to the same stringent requirements that are mandated for all our internally generated financially relevant information.

Based on an analysis of the design and operating effectiveness of our respective internal controls over financial reporting, a committee with leadership representation from Finance, Compliance, Legal, and IT presents the results of the assessment of the ICRMSFR effectiveness with respect to our IFRS consolidated financial statements as at December 31 each year to our Group CFO. The committee meets regularly to set the annual scope for the test of effectiveness, to assess and evaluate any weaknesses in the controls, and to determine measures to address them in good time and adequately. The Audit and Compliance Committee of the Supervisory Board regularly scrutinizes the resulting assessments of the effectiveness of the internal controls over financial reporting with respect to the IFRS consolidated financial statements.

The assessment, conducted by SAP and external audit, of the effectiveness of the ICRMSFR related to our IFRS consolidated financial statements concluded that, on December 31, 2022, the Group had an effective internal control system over financial reporting in place.

Additionally, and in compliance with German commercial law requirements, SAP maintains an internal control system beyond financial reporting. This is supported through automated controls (continuous control monitoring) as part of our business processes.

Supporting Software Solution

We use our own risk management software, namely SAP governance, risk, and compliance (GRC) solutions powered by SAP HANA, to support the governance process. GR&AS risk managers record and track identified risks using our risk management software online and in real time to help create transparency across all known risks that exist in the Group, as well as to facilitate risk management and the associated risk reporting. These GRC solutions also support the risk-based approach of the ICRMSFR. Our continuous control monitoring activities are performed utilizing our GRC software as well. This information is available to managers through direct access to our SAP Fiori application for enterprise risk reporting, and in regularly issued reports, and is consolidated and aggregated for the quarterly risk reports to the Executive Board.

Risk Factors

The following sections outline our risk categories and risk factors that we have identified and continuously track. To determine which risk factors pose the greatest threat to the viability of the SAP Group, we classify them as high, medium, or low based on 1) the likelihood that a risk factor will occur within the assessment horizon and 2) the impact the risk factor would likely have on SAP's business objectives were it to occur.

The scales for measuring these indicators are given in the following tables.

Probability/Likelihood of Occurrence	Description	Impact Level	Impact Definition	Impact
1% to 19%	Remote	Insignificant	Negligible negative impact on business, financial position, profit, and/or cash flows	From €0 to €25 million
20% to 39%	Unlikely	Minor	Limited negative impact on business, financial position, profit, and/or cash flows	From €25 million to €50 million
40% to 59%	Likely	Moderate	Some potential negative impact on business, financial position, profit, and/or cash flows	From €50 million to €100 million
60% to 79%	Highly Likely	Major	Considerable negative impact on business, financial position, profit, and/or cash flows	From €100 million to €500 million
80% to 99%	Near Certainty	Business-Critical	Detrimental negative impact on business, financial position, profit, and/or cash flows	From €500 million

The combination of the likelihood of a risk factor and its impact on SAP's reputation, business, financial position, profit, and/or cash flows leads to a subsequent classification as either "high," "medium," or "low."

	Insignificant (€0 to €25 million)	Minor (€25 million to €50 million)	Moderate (€50 million to €100 million)	Major (€100 million to €500 million)	Business-Critical (from €500 million)
Probability	L	M	H	H	H
80% to 99%	L	M	M	H	H
60% to 79%	L	M	M	H	H
40% to 59%	L	L	M	M	H
20% to 39%	L	L	L	M	M
1% to 19%	L	L	L	L	M

L = Low Risk

M = Medium Risk

H = High Risk

To further streamline our integrated report, we disclose material and relevant risk factors and focus on "major" and "business-critical" risk factors as per our assessment, and we changed the format and consolidated the content of the disclosed risk factors. Thus, the following risk factors are not included

in the Integrated Report 2022 as they do not currently fall into either the “major” or “business-critical” category: Corporate Governance; Environment and Sustainability; Sales and Revenue Conditions; Liquidity; Use of Accounting Policies and Judgment; Currency, Interest Rate, and Share Price Fluctuation; Insurance and Venture Capital; Unauthorized Disclosure of Information; Investor Relations; Corporate Affairs; Marketing; Portfolio; SAP Strategy; Human Workforce; and COVID-19 Pandemic.

The following table provides an overview of major and business-critical risk categories (together with the respective risk factors). Therein, risk factors are categorized with their net value (after the implementation of mitigations).

Overview of Risk Factors (Aggregated Statement for 2022)

	Probability	Impact	Risk Level
Economic, Political, Social, and Regulatory Risks			
Global Economic and Political Environment	Likely	Major	Medium
International Laws and Regulations	Unlikely	Business-Critical	Medium
Legal and IP	Likely	Major	Medium
Data Protection and Privacy	Likely	Major	Medium
Corporate Governance and Compliance Risks			
Ethical Behavior	Likely	Major	Medium
Operational Business Risks			
Sales and Services	Unlikely	Major	Medium
Partner Ecosystem	Unlikely	Major	Medium
Cloud Operations	Unlikely	Major	Medium
Cybersecurity and Security	Likely	Business-Critical	High
Technology and Products	Likely	Business-Critical	High
Strategic Risks			
Market Share and Profit	Unlikely	Business-Critical	Medium
Mergers and Acquisitions	Unlikely	Major	Medium
Innovation	Unlikely	Major	Medium

Economic, Political, Social, and Regulatory Risks

Global Economic and Political Environment: Uncertainty in the global economy, financial markets, and social and political instability caused by state-based conflicts, terrorist attacks, civil unrest, war, or international hostilities could lead to disruptions in our business.

As a global company, we are influenced by multiple external factors that are difficult to predict, may develop quickly, and are beyond our influence and control. These include, among others: crises affecting credit or liquidity markets; regional or global recessions; sharp fluctuations in commodity prices, currency exchange rates or interest rates; inflation or deflation; sovereign debt and bank debt rating downgrades; restructurings or defaults, or adverse geopolitical events (such as Russia's invasion of Ukraine; rising military tensions around the world (such as the China-Taiwan tensions) and in particular within Europe's borders; and global policy including in the United States, the European Union (EU), Russia, and China); or global pandemic diseases such as COVID-19.

Any of these events could limit our ability to reach our targets, as they could have a material adverse effect on our business operations, our business in general, our financial position, profit, and cash flows.

SAP has established measures intended to address and mitigate the described risks and adverse effects. For example, we: continue to shift to a higher share of more predictable revenue streams from cloud subscriptions and software support revenue streams, providing increased stability against financial volatility; and, supported by our global government affairs unit, continuously monitor and evaluate global and political developments, to share insights and provide guidance to allow for proactive preparation and timely mitigation.

We cannot exclude the possibility that if any one or more of the risks associated with this risk factor were to occur, the impact could be major. We estimate the probability of occurrence to be likely, and classify this risk factor as medium.

International Laws and Regulations: Laws, regulatory requirements and standards in Germany, the United States, and elsewhere continue to be very stringent. Our international business activities and processes expose us to numerous and often conflicting laws and regulations, policies, standards, or other requirements, and sometimes even conflicting regulatory requirements.

The SAP Group has a global presence and operates in most countries of the world. As a European company domiciled in Germany with securities listed in Germany and the United States, we are subject to European, German, U.S., and other governance-related regulatory requirements of the countries we operate in.

Our business is subject to numerous risks inherent to international business operations and associated consequences, such as changes in tax laws, changes in external reporting standards, and the interpretation of the complex tax rules in certain countries, including but not limited to conflict and overlap among tax regimes as well as the introduction of new tax concepts that harm digitalized business models; discriminatory, protectionist, or conflicting fiscal policies and tax laws; import and export regulations and trade sanctions; counter or even conflicting sanctions; embargoes, including but not limited to country-specific software certification requirements; and newly emerging and potentially conflicting environmental, social, and governance (ESG) compliance and disclosure laws.

As we expand into new countries and markets or extend our business activities in these markets, including emerging and high-risk markets, these risks could intensify. The application of the respective local laws and regulations to our business is sometimes unclear, subject to change over time, and often conflicting among jurisdictions. Additionally, these laws and government approaches to enforcement continue to change and evolve, just as our products and services continually evolve. Compliance with these varying laws and regulations could involve significant costs or require changes in our products or business practices. Non-compliance could result in the imposition of penalties or cessation of orders due to alleged non-compliant activity. Governmental authorities could use considerable discretion in applying these statutes and any imposition of sanctions against us could be material.

Any of these events could have a material adverse effect on our operations globally or in one or more countries or regions, which could have a material adverse effect on our business, financial position, profit, and cash flows.

SAP has established measures intended to address and mitigate the described risks and adverse effects. For example, we: monitor new and increased regulatory requirements; continuously invest in, improve, and standardize our global processes, procedures, and solutions; proactively assess newly emerging regulatory initiatives; consult external economic and tax advisors, law firms, and authorities in the concerned countries; and take legal action when necessary.

We cannot exclude the possibility that if any one or more of the risks associated with this risk factor were to occur, the impact could be business-critical. We estimate the probability of occurrence to be unlikely, and classify this risk factor as medium.

Legal and IP: Claims and lawsuits against us, such as for IP infringements, or our inability to obtain or maintain adequate licenses for third-party technology, or if we are unable to protect or enforce our own intellectual property, may result in adverse outcomes.

We have in the past, and believe that we will continue to be subject to, claims and lawsuits, including intellectual property infringement claims either as our solution portfolio grows; as we acquire companies with increased use of third-party code including open source code; as we expand into new industries with our offerings, resulting in greater overlap in the functional scope of offerings; and as non-practicing entities that do not design, manufacture, or distribute products assert intellectual property infringement claims.

Moreover, protecting and defending our intellectual property is crucial to our success. The outcome of litigation and other claims or lawsuits is intrinsically uncertain.

We are subject to risks and associated consequences in the following areas, among others: dependency in the aggregate on third-party technology, including cloud and Web services, that we embed in our products or that we resell to our customers; integration of open source software components from third parties into our software and the implications derived from it; inability to prevent third parties from obtaining, using, or selling without authorization what we regard as our proprietary technology and information; and the possibility that third parties might reverse-engineer or otherwise obtain and use technology and information that we regard as proprietary. Moreover, the laws and courts of certain countries might not offer effective means to enforce our legal or intellectual property rights. Finally, SAP may not be able to collect all judgments awarded to it in legal proceedings. The outcome of litigation and other claims or lawsuits is intrinsically uncertain.

Management's view of the litigation might also change in the future. Actual outcomes of litigation and other claims or lawsuits could differ from the assessments made by management in prior periods, which are the basis for our accounting for these litigations and claims under IFRS.

SAP has established measures intended to address and mitigate the described risks and adverse effects. For example, we: have various internal programs, such as internal policies, processes, and monitoring in place to assess and manage the risks associated with open source and third-party intellectual property; endeavor to protect ourselves in the respective third-party software agreements by obtaining certain rights in case such agreements are terminated; and are a party to certain patent cross-license agreements with third parties.

We cannot exclude the possibility that if any one or more of the risks associated with this risk factor were to occur, the impact could be major. We estimate the probability of occurrence to be likely, and classify this risk factor as medium.

Data Protection and Privacy: Non-compliance with increasingly complex and stringent, sometimes even conflicting, applicable data protection and privacy laws, or failure to meet the contractual requirements of SAP's customers with respect to our products and services, could lead to civil liabilities and fines, as well as loss of customers.

As a global software and service provider, SAP is required to comply with local laws wherever it does business. One of the relevant European data protection laws is the General Data Protection Regulation. International data transfers to third countries that do not provide for an adequate level of data protection require additional safeguards, including transfer risk assessments, to justify a transfer from the EU to a third country under the new EU standard contractual clauses.

Furthermore, evolving data protection and privacy laws, regulations, and other standards around the world (such as the California Consumer Privacy Act, the Chinese Personal Information Protection Law including data localization requirements, the EU Digital Services Act, and the EU's proposed e-Privacy Regulation) are increasingly aimed at protecting individuals' personal information when it comes to

marketing and tracking their online activities. This may impose additional burdens for SAP due to increasing compliance standards that could restrict the use and adoption of SAP's products and services (in particular cloud services) and make it more challenging and complex to meet customer expectations. These changing criteria also impact the compliant use of new technology, such as machine learning and Artificial Intelligence for product development and deployment of intelligent applications.

Non-compliance with applicable data protection and privacy laws by SAP or any of the subprocessors engaged by SAP within the processing of personal data could lead to risks. These include, among others: mandatory disclosure of breaches to affected individuals, customers, and data protection supervisory authorities; investigations and administrative measures by data protection supervisory authorities, such as the instruction to alter or stop non-compliant data processing activities, including the instruction to stop using non-compliant subprocessors; or the possibility of damage claims by customers and individuals, contract terminations, and potential fines.

In addition, the German Federal Office for the Protection of the Constitution and security industry experts continue to warn of risks related to a globally growing number of cybersecurity attacks aimed at obtaining or violating company data including personal data.

Any of these events could have a material adverse effect on our reputation, business, financial performance, competitive or financial position, profit, and cash flows.

SAP has established measures intended to address and mitigate the described risks and adverse effects. For example, we: have implemented internal processes and measures to enable SAP to comply successfully and sufficiently with applicable data protection requirements; anchor data protection requirements in the mandatory product standards of SAP's product development lifecycle; continuously review SAP's existing standards and policies to address changes to applicable laws and regulations; continuously enhance our data center operations worldwide; actively monitor legal developments; engage with political stakeholders and government authorities; and provide clear governance and guidance on data handling, processing standards, and external communication as part of our data management framework, specifically incorporating aspects of new technologies such as those represented in embedded intelligence applications.

We cannot exclude the possibility that if any one or more of the risks associated with this risk factor were to occur, the impact could be major. We estimate the probability of occurrence to be likely, and classify this risk factor as medium.

Corporate Governance and Compliance Risks

Ethical Behavior: Our global business exposes us to risks related to unethical behavior and non-compliance with policies by employees, other individuals, partners, third parties, or entities associated with SAP.

SAP's leadership position in the global market is founded on the long-term and sustainable trust of our stakeholders worldwide. Our overarching approach is one of corporate transparency, open communication with financial markets, regulators, and authorities, and adherence to recognized standards of business integrity. This commitment to recognized standards of business integrity is formalized in SAP's CoEBC and supporting guidelines.

We are subject to risks and associated consequences in the following areas, among others: non-compliance with our policies and violation of compliance related rules, regulations, and legal requirements including, but not limited to, anti-corruption and anti-bribery legislation in Germany, the U.S. Foreign Corrupt Practices Act, the UK Bribery Act, and other local laws prohibiting corrupt conduct; unethical and fraudulent behavior leading to criminal charges, fines, and claims by affected parties; collusion with external third parties; fraud and corruption; public sector transactions in territories exposed to a high risk of corruption; or increased exposure and impact on business activities in highly regulated industries.

Any of these events could have a material adverse effect on our business, reputation, brand, competitive or financial position, share price, profit, and cash flows.

SAP has encountered situations that required clear messaging and strong action on non-compliance in the context of corrupt behavior that has the potential to harm our business and reputation. SAP is continuing to investigate its dealings with the public sector.

SAP has established measures intended to address and mitigate the described risks and adverse effects. For example, we: continuously evolve our comprehensive compliance program based on the three pillars of prevention, detection, and response; improve associated business processes, to prevent further and future violations; review partner business models, to mitigate risks of corruption while meeting agility requirements; conduct internal audits of our compliance programs related to bribery, corruption, and substantial fraud; annually reconfirm commitment to the CoEBC by SAP's workforce (except where disallowed by local legal regulations); implement compliance policies and processes aimed at managing third parties and preventing misuse of third-party payments for illegal purposes, including the performance of compliance due diligence activities prior to the engagement of third parties; and launched a Partner Integrity Initiative aimed at examining the compliance programs of partners in SAP's ecosystem and reviewing the SAP-related deals closed by them. We also introduced a platform called "Speak Out at SAP" for anyone within and outside of SAP to raise confidentially and, if desired, anonymously their concerns on ethics and compliance related to our CoEBC and any law or regulation.

Despite our comprehensive and continuously evolving compliance programs and internal controls, intentional efforts of individuals to circumvent controls or engage in corruption, especially by way of collusion with other involved parties, cannot always be prevented.

We cannot exclude the possibility that if any one or more of the risks associated with this risk factor were to occur, the impact could be major. We estimate the probability of occurrence to be likely, and classify this risk factor as medium.

Operational Business Risks

Sales and Services: Sales and implementation of SAP software and services, including cloud, are subject to several significant risks sometimes beyond our direct control.

A core element of our business is the successful implementation of software and service solutions. The implementation of SAP software and cloud-based service deliveries is led by SAP, by partners, by customers, or by a combination thereof.

We are subject to risks and associated consequences in the following areas, among others: implementation risks caused by insufficient or incorrect information provided by customers, insufficient customer expectation management, including scope, integration capabilities and aspects, and a lack of purposeful selection, implementation, or utilization of SAP solutions; a lack of customer commitments and respective engagements; challenges to achieve a seamlessly integrated, sufficiently automated and aligned service delivery; unrenderable services committed during the sales stage; inadequate contracting and consumption models based on subscription models for services, support, and application management; deviations from standard terms and conditions; or statements concerning solution developments that might be misperceived by customers as commitments on future software functionalities.

Any of these events could have an adverse effect on our business, financial position, profit, and cash flows.

SAP has established measures intended to address and mitigate the described risks and adverse effects. For example, we: integrate risk management processes into SAP's project management methods that are intended to safeguard implementations through coordinated risk and quality management programs; conduct ethical scope reviews and monitoring that are adapted as required as part of a clearly defined change request process together with respective project governance, steering, monitoring and controlling activities; and put in place a policy that clearly outlines

communication rules on future functionalities as well as legal requirements for commitments to customers.

We cannot exclude the possibility that if any one or more of the risks associated with this risk factor were to occur, the impact could be major. We estimate the probability of occurrence to be unlikely, and classify this risk factor as medium.

Partner Ecosystem: If we are unable to scale, maintain, and enhance an effective partner ecosystem, revenue might not increase as expected.

An open and vibrant partner ecosystem is a fundamental pillar of our success and growth strategy. We have entered into partnership agreements that drive co-innovation on our platforms, profitably expand our routes to market to optimize market coverage, optimize cloud delivery, and provide high-quality services capacity in all market segments. Partners play a key role in driving market adoption of our entire solutions portfolio, by co-innovating on our platforms, embedding our technology, and reselling or implementing our software.

We are subject to risks and associated consequences in the following areas, among others: failure to establish and enable a network of qualified and fully committed partners; failure of partners to develop sufficient innovative solutions and content on our platforms or to provide high-quality products or services to meet customer expectations; failure of partners to embed our solutions sufficiently enough to profitably drive product adoption; failure of partners to adhere to applicable legal and compliance regulations; failure of partners to transform their business model in accordance with the transformation of SAP's business model in a timely manner; and the failure of partners to comply with contract terms in embargoed or high-risk countries.

If any of these risks materialize, this might have an adverse effect on the demand for our products and services as well as the partner's loyalty and ability to deliver. As a result, we might not be able to scale our business to compete successfully with other vendors, which could have an adverse effect on our reputation, business, financial position, profit, and cash flows.

SAP has established measures intended to address and mitigate the described risks and adverse effects. For example, we: develop and enhance a wide range of partner programs to retain existing and attract new partners; offer training opportunities for our partners; provide safeguarding services to customers and partners; introduced a partner delivery quality framework; and implemented a certification process for third-party solutions to ensure consistent high-quality and seamless integration.

We cannot exclude the possibility that if any one or more of the risks associated with this risk factor were to occur, the impact could be major. We estimate the probability of occurrence to be unlikely, and classify this risk factor as medium.

Cloud Operations: We may not be able to properly protect and safeguard our critical information and assets, business operations, cloud offerings and portfolio presentation, and related infrastructure against disruption or deficient performance.

SAP is highly dependent on the availability, integrity, and reliability of our infrastructure and the software used in our cloud portfolio is inherently complex. We are subject to risks and associated consequences in the following areas, among others: the cloud portfolio or strategic direction of cloud operations may not fully meet customer demands; customers' cloud service demands may not match our data center capacity or control investments; capacity shortages could affect SAP's ability to deliver and operate cloud services as expected by or committed to our customers; scalability demands on infrastructure and operation could lead to cost increases and margin impacts; hyperscaler or infrastructure instabilities and the lack of availability or comprehensive contractual agreements could lead to challenges in meeting service level agreement (SLA) commitments; we might lack sufficient "future skills" for delivering and operating hybrid environments; we might lack the automation, standardization, and tools to manage and optimize operations and infrastructure; local legal requirements or changes to data sovereignty may lead to customers relocating their landscapes to a

different data center; the loss of the right to use hardware purchased or leased from third parties could affect our ability to provide our cloud applications; disruptions to SAP's cloud applications portfolio (such as system outages or downtimes, SAP network failure due to human or other errors, security breaches, or variability in user traffic for cloud applications) could affect customer SLAs; hardware failures or system errors might result in data loss or corruption; partner co-location of data centers might not adhere to our quality standards; or we might not comply with applicable certification requirements, such as the Payment Card Industry Data Security Standard (PCI DSS).

Any of these events could have a material adverse effect on our reputation, business, competitive or financial position, profit, and cash flows.

SAP has established measures intended to address and mitigate the described risks and adverse effects. For example, we: consolidated and harmonized our data centers and our data protection measures, which included implementing security information and event management solutions as well as enforcing network access control; invest significantly in infrastructure and processes to ensure consistently secure operations of our cloud solutions while continuously improving resistance, resilience, reusability, and scalability towards a standardized and harmonized portfolio; continuously enhance our infrastructure landscape capabilities and deployment options, including harmonized, efficient, and highly repetitive migration services; adhere to stringent SLAs with hyperscalers to ensure a high-quality customer experience; increase transparency through our continuously enhanced and expanded SAP Trust Center, ensuring an appropriate level of information, for example, regarding planned patching activities and associated downtimes; monitor and invest in the continuous enhancement of our disaster recovery and business continuity capabilities; continuously aim for a homogeneous landscape that supports the complex infrastructure, application, and security requirements so that we can deliver the required service level for cloud services in a cost-effective manner; set up physical access control systems at facilities, multilevel access controls, closed-circuit television surveillance, security personnel in all critical areas, and recurring social engineering tests for SAP premises and data centers; control the access to information and information systems using authorization concepts that include managers and employees being regularly sensitized to the issues and given mandatory security and compliance trainings; adapt our cloud service delivery to local or specific market requirements (such as local or regional data centers) and comply with all local legal regulations regarding data protection and privacy as well as data security; establish contracts and SLAs with our public cloud partners to ensure that data security and privacy measures meet local regulatory and compliance standards and SAP's own standards for data security and privacy; maintain strict internal policies and controls concerning utilization of our partner's cloud infrastructure, including people, process, and technology standards required to ensure compliance and cyber resilience; closely monitor data center utilization, capacity, and pipeline for subsequent investment planning; regularly conduct risks reviews, disclosure requests, and audits to ensure public cloud providers meet SAP's data privacy and security standards; ensure PCI-validated compliance through successful PCI DSS audits; invest in training and certifications concerning hyperscaler and related next-generation technologies; and implement best-of-breed tools for IT operations management and automation.

We cannot exclude the possibility that if any one or more of the risks associated with this risk factor were to occur, the impact could be major. We estimate the probability of occurrence to be unlikely, and classify this risk factor as medium.

Cybersecurity and Security: Cybersecurity attacks or breaches, and security vulnerabilities in our infrastructure or services or those of our third-party partners could materially impact our business operations, products, and service delivery.

SAP delivers a full portfolio of solutions, hosts or manages elements of our customers' businesses in the cloud, processes large amounts of data, and provides mobile solutions to users. While SAP executes each of these areas either directly or through partners and other third parties, our industry continues to experience a complex and threatening cybersecurity landscape. The severity of these cybersecurity threats is amplified due to the increasingly sophisticated and malicious global

landscape in which we operate. This includes third-party data, products, and services that we incorporate into SAP products and services, and the increasingly advanced obfuscation, control-circumvention, and related techniques employed by threat actors targeting IT products and businesses. Should we become aware of unauthorized access to our systems or those of our third-party partners, we have action plans in place intended to identify and remediate the source and impact of such events. Like many companies, we and certain of our third-party partners have experienced and expect to continue to experience cyberattacks and other security incidents that affect our business. While we experience cybersecurity incidents of various kinds in the ordinary course of our business, we are not aware of any such incidents that have had a business critical impact on our business.

We are subject to risks and associated consequences in many areas including, but not limited to, an increasing number of global threat actor attacks using ransomware as their preferred method of attack as well as unknown bugs, errors and vulnerabilities in our software and systems. We could experience material exposure to our business operations and service delivery due to disruptions to backups, disaster recovery or business-continuity management processes, or as the result of malicious or inadvertent actions by threat actors, employees, contractors, or a host of other parties. Security threats may also exist due to delayed or insufficient responses to identified issues or other interdependencies such as cloud service providers and those beyond SAP's cybersecurity infrastructure and protocols. Cloud4C, a third-party provider of data centers and related services supporting SAP's cloud customers in certain jurisdictions, recently experienced a ransomware attack that temporarily disrupted Cloud4C's operations. While Cloud4C identified no unauthorized access to customer data, for a brief period of time certain customers were unable to access data that was maintained in Cloud4C's data centers. SAP initiated its incident response protocols and worked with Cloud4C to promptly investigate, contain and remediate the incident. As part of those efforts, SAP issued credits to impacted customers pursuant to existing service-level agreements for which SAP received reimbursement from Cloud4C. While the overall fees and costs incurred by SAP to address the incident were not material, there can be no assurances that similar or more serious attacks impacting SAP or any third-party providers will not occur in future and that the consequences of such attacks would not result in a material adverse effect on SAP. Lack of compliance with security controls and governance to industry standards and regulations by us or third-party partners can impact adherence to external regulatory and customer requirements. Third parties could unknowingly introduce security threats and vulnerabilities without established security evaluation processes. Additionally, failure to integrate or maintain SAP's cybersecurity infrastructure and protocols with network systems obtained through acquisitions could result in loss of data confidentiality and integrity, and system availability.

The foregoing types of events could result in a loss of customers or customer opportunities, a diminished reputation in the marketplace, government investigations or enforcement actions, internal investigations, litigation including class actions, fines, or penalties, increased costs associated with remediation or compliance requirements, required changes to our business model or operations, and a host of other costs and losses, any or all of which could have a material adverse effect on our reputation, business, financial performance, competitive or financial position, profit, and cash flows. In response to the cybersecurity risk environment it is experiencing, SAP is continuously enhancing its cybersecurity program, for example by implementing the National Institute of Standards and Technology Cybersecurity Framework (NIST CSF) and establishing a Cyber Fusion Center (CFC). In addition, the Executive Board and Supervisory Board continue to increase their governance of and involvement in cybersecurity matters, for example by focusing on cybersecurity audit and risk management topics. SAP has established measures intended to address the described risks and adverse effects, such as the continuous adaptation, standardization, and modification of our security procedures. This includes, among others: security risk identification, threat modeling, advanced threat defense, application patches and container security enhancements, and security validation of our critical components and services before shipment. We increased our investments and resources, including various internal initiatives to achieve SAP's objective of ensuring over time that our cybersecurity infrastructure meets or exceeds evolving industry standards. In addition, we enhanced the security capabilities in our hosting environment, cloud platforms, and cloud deployment tools,

including improved monitoring to our infrastructure. Disaster recovery and business continuity plans are in place to protect our key IT infrastructure including implementation of data redundancies and backup strategies. In addition, we have set up local and regional crisis management teams to respond and minimize losses in case of crisis situations. Furthermore, we conduct security certifications and attestations (such as ISO/IEC 27001, ISO/IEC 22301, SOC, and PCI) and provide our customers with security white papers, product documentation, and reports from independent auditors and certification bodies. All employees are required to follow the SAP Global Security Policy, security standards, procedures, and good practices reinforced by completion of mandatory security and compliance training. SAP's third-party risk management process aims to control and achieve governance in SAP's third-party ecosystem. Besides conducting risk assessments to gauge a third party's risk level, we increase employee and contractor awareness through cybersecurity campaigns and awareness training. Formalized third-party and partner data privacy and security agreements require adherence to SAP standards. We also engage experts to advise on appropriate cybersecurity protocols to further increase attention and understanding of cybersecurity procedures and protection options. SAP also established the CFC to bring functional teams together and strengthen detection capability. Additionally, the software security development lifecycle with integrated security features and functionalities has been applied to increase coordination across our various lines of business, which in turn improves our ability to detect, identify, and respond to threats in a timely manner.

Despite the foregoing measures, we cannot exclude the possibility that if any one or more of the risks associated with this risk factor were to occur, the impact could be business-critical and materially impact our business and results. We estimate the probability of occurrence to be likely, and classify this risk factor as high.

Technology and Products: Our technology and products may experience undetected defects, coding or configuration errors, may not integrate as expected, or may not meet customer expectations.

We are subject to risks and associated consequences in the following areas, among others: failure of software products and services to fully meet market needs or customer expectations; failure of software products and services from acquired companies to fully comply with SAP quality standards; failure of new products, services, and cloud offerings, including third-party technologies, to comply with local standards and requirements; the possibility that new products, services, and cloud offerings might contain defects or might not be mature enough from the customer's point of view for business-critical solutions after shipment despite all the due diligence SAP puts into quality; inability of algorithms to correctly adapt to evolving circumstances, which may lead to adverse decision-making processes in the context of AI-related technologies; and the inability to fulfil expectations of customers regarding time and quality in the defect resolution process.

Any of these events could have a material adverse effect on our business, brand, competitive or financial position, profit, and cash flows.

SAP has established measures to address and mitigate the described risks and adverse effects, such as: a broad range of techniques, including project management, project monitoring, product standards and governance, and rigid and regular quality assurance measures certified to ISO 9001:2015; a holistic testing strategy to validate the state of quality and security for every product before market introduction; the consideration of regular and direct customer feedback; and a comprehensive certification program designed to ensure that relevant third-party solutions are of consistently high quality.

We cannot exclude the possibility that if any one or more of the risks associated with this risk factor were to occur, the impact could be business-critical. We estimate the probability of occurrence to be likely, and classify this risk factor as high.

Strategic Risks

Market Share and Profit: Our market share and profit could decline due to increased competition, market consolidation, technological innovation, and new business models in the software industry.

The market for cloud computing is increasingly competitive and is exhibiting strong growth relative to the market for on-premise solutions. To maintain or improve our operating results in the cloud business, it is important that we not only attract new customers but also that our existing customers renew their agreements with us when the initial contract term expires and purchase additional modules or additional capacity. Additionally, we need to bring innovations to the market in line with the demands of our ecosystem and ahead of our competitors, such as solutions to support new data-driven applications and the extension of our suite of intelligent technologies based on SAP Business Technology Platform (SAP BTP).

We are subject to risks and associated consequences in the following areas, among others: inability to deliver fully suitable solution and transformation services to our customers on the cloud transformation journey, both in cloud-only and hybrid scenarios; inability to successfully execute on our hyperscaler strategy; adverse, near-term revenue effects due to increasing cloud business and conversions from on-premise licenses to cloud subscriptions from existing SAP customers, which could have an adverse effect on related maintenance and services revenue; insufficient solution and service adoption together with increased complexity, as well as failures during the execution of our Intelligent Enterprise strategy in the context of our portfolio for solutions and services, which could lead to a loss of SAP's position as a leading cloud company and subsequently to reduced customer adoption; customers and partners being reluctant or unwilling to migrate and adapt to the cloud; customers considering cloud offerings from our competitors; strategic alliances among competitors; price pressure, cost increases, and loss of market share through traditional, new, and cooperating competitors and hyperscalers; and the inability to achieve the planned margin increase in time as planned.

Any of these events could have a material adverse effect on our business, brand, competitive or financial position, profit, and cash flows.

SAP has established measures intended to address and mitigate the described risks and adverse effects. For example, we: share our overall long-term cloud strategy and our integration road map with our customers; continuously implement improvements to enhance our cloud solutions through our Intelligent Enterprise strategy; demonstrate the benefits of our solution and services portfolio; enable and support our customers as they transition from on-premise to the cloud; balance the allocation of our strategic investments by evolving and protecting our core businesses and simultaneously developing new solutions, technologies, and business models; offer broader range of services to support and drive the digital transformation for our customers; continuously drive the solution integration and harmonization of data models to support integrated business processes, applications, and technology while focusing on resilience, profitability, and sustainability; enable our portfolio for hyperscalers to extend customer reach and further meet customer expectations; continue to move SAP HANA Enterprise Cloud towards a full-stack offering; and increase the share of high-value cloud application services to further improve the margin.

We cannot exclude the possibility that if any one or more of the risks associated with this risk factor were to occur, the impact could be business-critical. We estimate the probability of occurrence to be unlikely, and classify this risk factor as medium.

Mergers and Acquisitions: We might not acquire, integrate, or divest companies or their components effectively or successfully.

To expand and consolidate our business, we acquire and divest businesses, products, and technologies, and we expect to continue doing so in the future. Over time, some of these acquisitions have increased in size and in strategic importance for SAP. Management negotiation of potential acquisitions and divestitures and the integration and carve-out of acquired businesses, products, or

technologies demands time, focus, and resources of both management and the workforce, and exposes us to unpredictable operational difficulties.

We are subject to risks and associated consequences in the following areas, among others: incorrect information or assumptions during the due diligence process for acquisitions, divestitures, and other transactions; failure to integrate acquired technologies or solutions successfully and profitably into SAP's solution portfolio and strategy; failure to successfully integrate acquired entities and their operations; failure to fulfill the needs of the acquired company's customers or partners; failure to implement, restore, or maintain internal controls, disclosure controls, and procedures and policies within acquired companies; debt incurrence or significant unexpected cash expenditures; impairment of goodwill and other intangible assets acquired in business combinations; and failure of acquired companies to comply with regulatory requirements..

We have in the past, and may in the future, choose to divest certain entities, businesses, or product lines. We may have difficulty obtaining terms acceptable to us. Additionally, we may experience difficulty carving out portions of or entire businesses, we may incur a loss of revenue or experience a negative impact on margins, or we may not achieve the desired strategic and financial benefits. Such potential transactions may also delay achievement of our strategic objectives, cause us to incur additional expenses, disrupt customer, partner, and employee relationships, and may expose us to unanticipated or ongoing obligations and liabilities, including as a result of indemnification obligations. Further, during the pendency of a divestiture, we may be subject to risks such as a decline in the business to be divested, a loss of employees, customers, or suppliers, and the risk that the transaction may not close, any of which could have a material adverse effect on the business to be divested as well as our retained business. If a divestiture is not completed for any reason, we may not be able to find another buyer on the same terms, and we may have incurred significant costs without the corresponding benefit.

Any of these events could have a material adverse effect on our business, brand, competitive or financial position, profit, and cash flows.

SAP has established measures intended to address and mitigate risks and adverse effects. For example, we: perform technical, operational, financial, and legal due diligence on the company or assets to be acquired or divested; identify, implement, and track risk mitigation measures for material transactions or integration risks; and conduct process, risk, and control analyses that are subsequently integrated into SAP's processes and control framework and supported by mitigations as required by any specific circumstances to subsequently increase adherence to SAP's standards and policies.

We cannot exclude the possibility that if any one or more of the risks associated with this risk factor were to occur, the impact could be major. We estimate the probability of occurrence to be unlikely, and classify this risk factor as medium.

Innovation: We might not be able to compete effectively if we strategize our solution portfolio ineffectively or if we are unable to keep up with rapid technological and product innovations, enhancements, new business models, and changing market expectations.

Our future success depends on our ability to keep pace with technological and process innovations and new business models, as well as on our ability to develop new products and services, enhance and expand our existing products and services portfolio, and integrate products and services we obtain through acquisitions. To be successful, we are required to adapt our products and our go-to-market approach to a cloud-based delivery and consumption model so as to satisfy increasing customer demand and to ensure an appropriate level of adoption, customer satisfaction, and retention.

We are subject to risks and associated consequences in the following areas, among others: inability to develop and sell new cloud products spanning various organizations on time and in line with market demands due to complexity in heterogeneous technical environments; inability to anticipate and develop technological improvements or succeed in adapting SAP products, services, processes, and business models to technological change, changing regulatory requirements, or emerging industry

standards; a change in requirements of our customers and partners to strengthen the Intelligent Enterprise strategy; the possibility that our product and technology strategy might not be successful, or that our customers and partners might not adopt our technology platforms, applications, or cloud services quickly enough, or that they might consider other competing solutions in the market, or that our strategy might not match customers' expectations and needs, specifically in the context of expanding the product portfolio into additional markets.

Any of these events could have a material adverse effect on our business, financial position, profit, and cash flows.

SAP has established measures intended to address and mitigate the described risks and adverse effects. For example, we: continuously align our organization, processes, products, delivery, commercial and consumption models, and services to changing markets and customer and partner demands; continuously benchmark, match, and challenge the entire portfolio; focus all investment decisions related to innovative technologies and solutions on portfolio compatibility and readiness as well as high customer value; explore future trends as well as the latest technologies; conduct wide-ranging market and technology analyses and research or co-innovation projects; and make strategic acquisitions in white spots of our portfolio.

We cannot exclude the possibility that if any one or more of the risks associated with this risk factor were to occur, the impact could be major. We estimate the probability of occurrence to be unlikely, and classify this risk factor as medium.

Consolidated Risk Profile

In our view, considering their impact level and likelihood of occurrence, the risks described in our aggregated risk report do not individually or cumulatively threaten our ability to continue as a going concern. While individual risks and assessments may have changed during fiscal 2022, our overall risk profile did not change materially compared to the prior year. Management remains confident that the Group's earnings strength forms a solid basis for our future business development and provides the necessary resources to pursue the opportunities available to the Group. Based on our structured processes for early risk identification, we are confident that, in 2023, we can continue to counter the challenges arising from the risks in our current risk profile.

Expected Developments and Opportunities

Future Trends in the Global Economy

According to the European Central Bank (ECB) in its most recent Economic Bulletin, the global economy is expected to grow more slowly and below its long-term average in 2023 but recover gradually in 2024 and 2025¹. It also finds that the global outlook deteriorated over the past months due to geopolitical uncertainty, high inflation, and tight financial conditions. According to the ECB, fiscal policy measures might mitigate economic repercussions and dampen inflation in 2023. However, the global economy could suffer again once the measures were withdrawn. Nevertheless, the ECB finds significant heterogeneity among economies. Some emerging markets might even withstand the current headwinds better than developed economies, thanks to lower macro-financial vulnerabilities and inflation.

For the EMEA region, the ECB expects the recession in the euro area to be relatively short-lived and shallow. Over the medium term, as the energy market rebalances, economic growth might rebound due to declining uncertainty, rising real incomes, and resolved supply bottlenecks. Inflation could decline in 2023 and decrease further in the following years. However, according to the ECB, the recession in Russia will deepen in 2023. The analysts expect sanctions to have an increasingly negative impact on the country's production capacity, international trade, and domestic demand.

As for the Americas region, inflation in the United States will remain persistent in 2023, the ECB projects. Together with tight financial conditions, this could cause domestic demand to remain subdued. Growth in Latin America will probably become slower as well, the ECB says.

Regarding the APJ region, the ECB expects the Japanese economy to grow in 2023 because of the continued reopening, increasing spending on services, and ongoing policy support. However, economic growth in Japan could moderate slightly in 2024 and 2025. In China, the new COVID-19 policy might cause a rapid increase in the number of infections and therefore affect economic activity. Thus, the ECB projects economic activity in China to remain subdued.

Economic Trends – GDP Growth Year Over Year

Percent	2022	2023p	2024p
World	3.4	2.9	3.1
Advanced Economies	2.7	1.2	1.4
Emerging Markets and Developing Economies	3.9	4.0	4.2
Regions (according to IMF taxonomy)			
Euro Area	3.5	0.7	1.6
Germany	1.9	0.1	1.4
Emerging and Developing Europe	0.7	1.5	2.6
Middle East and Central Asia	5.3	3.2	3.7
Sub-Saharan Africa	3.8	3.8	4.1
United States	2.0	1.4	1.0
Canada	3.5	1.5	1.5
Latin America and the Caribbean	3.9	1.8	2.1
Japan	1.4	1.8	0.9
Emerging and Developing Asia	4.3	5.3	5.2
China	3.0	5.2	4.5

p = projection

Source: International Monetary Fund (IMF), World Economic Outlook Update January 2023, Inflation Peaking amid Low Growth (<https://www.imf.org/-/media/Files/Publications/WEO/2023/Update/January/English/text.ashx>), p. 6.

The IT Market: Outlook for 2023 and Beyond

"We are entering a new phase of digital business that focuses on enhancing enterprise agility, resilience, security, and sustainability. Determining the right architectural model for an enterprise's future-ready digital business demands a more nuanced and considered approach than a simple cloud-first philosophy."³ This is what International Data Corporation (IDC), a U.S.-based market research firm, says when looking ahead at 2023 and beyond. "Spending on digital technology by organizations will grow at eight times the economy in 2023, establishing a foundation for operational excellence, competitive differentiation, and long-term growth,"³ projects IDC.

"By 2026, 40% of total revenue for G2000 organizations will be generated by digital products, services, and experiences,"³ the researchers summarize. "Business-to-consumer industries such as media and entertainment, retail, and finance are leading the pack on digital revenue generation, with expectations to generate beyond 50% of their revenues from digital products and services in 2027. Industries where physical products and value chains are driving revenue generation, such as manufacturing and utilities, are showing below average values for digital revenues. Nonetheless, their expectations for the coming years are aligned to the positive trend."³

"IT will need to ensure that the design principles of standardization, openness, resilience, and security are built into the digital business platform if it is to provide the performance, scale, and agility that the business needs,"³ IDC points out for the coming years, adding that "increasingly, [...] data and data analytics will play an important role in creating innovation. [...] Companies that acquire the right data set and apply the right analytics to derive key insights and build desirable capabilities will achieve notable business outcomes."²

According to IDC, sustainability will remain in focus: "By 2024, a quarter of organizations worldwide will demonstrate responsible leadership by increasing their sustainability-related digital tech spend by more than 25% from 2022 levels."³ When looking at tech spending approaches to sustainability, IDC sees a relatively even split between hardware, software, and services spending growth as well as spend on new sustainability solution suites versus added features to existing solutions.³

On all accounts, “operationalizing ESG constitutes the next maturity step for organizations’ sustainability journey and requires a technology-enabled infusion of ESG into every part of the organization.”⁴ reports IDC: “By 2024, 30% of organizations will leverage ESG data management platforms to steer ESG KPIs via a centralized system of record for reporting purposes and real-time operational decision-making support.”⁴ For example, “active carbon management will require real-time intelligence of carbon performance rather than static point-in-time reporting. Integration of carbon accounting tools in broader ESG management platforms will enable performance monitoring and risk workflow capabilities.”⁴

¹ European Central Bank, Economic Bulletin, Issue 8/2022, Publication Date: January 12, 2023.

² IDC FutureScape: Worldwide Future of Digital Innovation 2023 Predictions, Doc #US48598522, October 2022.

³ IDC FutureScape: Worldwide Digital Business Strategies 2023 Predictions, Doc #CA49743822, October 2022.

⁴ IDC FutureScape: Worldwide Sustainability/ESG 2023 Predictions, Doc #US48709922, October 2022.

Impact on SAP

Despite the inflation, ongoing uncertainties in the global economy, and supply chain disruptions as well as the impact of the war in Ukraine, the resurgence of global demand is noticeable. SAP expects more companies will choose SAP to help them transform their businesses, build resilient supply chains, and become intelligent, sustainable enterprises. Many of our customers are focused on environmental, social, and governance issues when evaluating our portfolio of offerings. Therefore, SAP’s sustainability program is a key element of our purpose and is embedded throughout our global strategy. This is manifested in our sustainability management, our solutions for ESG reporting, climate action and SAP’s social responsibility.

Financial Targets and Prospects

Revenue and Operating Profit Targets and Prospects (Non-IFRS)

Outlook 2023

For the full year 2023, SAP expects:

- €15.3 billion to €15.7 billion in cloud revenue at constant currencies (2022: €12.56 billion), up 22% to 25% at constant currencies.
- €28.2 billion to €28.7 billion in cloud and software revenue at constant currencies (2022: €26.52 billion), up 6% to 8% at constant currencies.
- €8.8 billion to €9.1 billion non-IFRS operating profit at constant currencies (2022: €8.03 billion), up 10% to 13% at constant currencies.
- The share of more predictable revenue (defined as the total of cloud revenue and software support revenue) is expected to reach approximately 83% (2022: 79%).
- A full-year effective tax rate (IFRS) of 28.0% to 32.0% (2022: 44.7%) and an effective tax rate (non-IFRS) of 26.0% to 28.0% (2022: 29.6%), strongly depending on the development of Sapphire Ventures' investments.

Furthermore, SAP provides the following additional forward-looking information on selected metrics:

- CCB: A year-end growth rate similar to 2022, while at a larger scale.
- S/4HANA cloud revenue: continued high growth in 2023.
- Cloud gross margin: an increase towards a percentage in the mid-seventies by the end of 2023, depending on the sales success of S/4HANA private cloud in the first half of the year.

While SAP's full-year 2023 business outlook is at constant currencies, actual currency reported figures are expected to be impacted by currency exchange rate fluctuations as the Company progresses through the year. See the table below for the full-year 2023 expected currency impacts. These currency expectations for the full-year 2023 are based on the December 2022 level.

In percentage points (pp)	FY/2023
Cloud revenue growth	0pp to -2pp
Cloud and software revenue growth	0pp to -2pp
Operating profit growth (non-IFRS)	-1pp to -3pp

The following table shows the estimates of the items that represent the differences between our non-IFRS financial measures and our IFRS financial measures.

€ millions	Estimated Amounts for 2023	Actual Amounts for 2022
Acquisition-related charges	580–660	610
Share-based payment expenses	2,550–2,850	2,614
Restructuring	250–300	138

In 2023, SAP will conduct a targeted restructuring program in selected areas of the company. The purpose is to further focus on strategic growth areas by aligning our operating models and go-to-market approach with our accelerated cloud transformation. SAP will reinvest the savings from the restructuring program in strategic growth areas. Furthermore, SAP intends to strengthen its core business and improve overall process efficiency. The program is expected to affect approximately 2.5% of SAP's employees. The vast majority of the €250 million to €300 million restructuring costs associated with the program is expected to be recognized in the first quarter 2023, impacting IFRS operating profit.

Factors Impacting Our Cost of Cloud

Starting January 1, 2023, all activities related to changes in the code of our cloud and on-premise solutions will be considered development-related activities. Some of those activities, specifically code corrections, were previously considered support-related activities. This change implies an update to our cost allocation policy, resulting in an increase in the cloud gross margin by 0.5pp to 1.0pp and an increase in the software license and support gross margin by approximately 2pp. It also implies an increase in our R&D ratio, defined as R&D expenses divided by total revenue, by approximately 1pp.

Proposed Dividend

In 2023, we intend to pay a dividend of €2.05 per share (subject to shareholder approval at the **Annual General Shareholders Meeting** in May 2023). For more information, see the *Financial Performance: Review and Analysis* section.

Medium-Term Prospects

In this section, all numbers (except cloud revenue and total revenue) are based exclusively on non-IFRS measures.

Total revenue growth is expected to further reaccelerate beyond 2023 toward double digit growth.

By 2025, SAP continues to expect:

- More than €22 billion in cloud revenue
- More than €36 billion in total revenue
- More than €11.5 billion in non-IFRS operating profit
- A non-IFRS cloud gross margin of approximately 80%
- A significant expansion of the Company's more predictable revenue share to approximately 85%
- Free cash flow of approximately €8 billion

SAP expects to update its mid-term ambition in the first half of 2023.

Investment Goals

Our planned investment expenditures for 2023 and 2024, other than for business combinations, consist primarily of the purchase of IT infrastructure and the construction activities described in the *Assets (IFRS)* section. We expect investments in IT infrastructure of approximately €500 million and in construction activities of approximately €300 million in 2023. In 2023, we expect total capital

expenditures of approximately €950 million. In 2024, capital expenditures are expected to stay at a similar level as in 2023.

Goals for Liquidity and Finance

As at December 31, 2022, we had net debt of €2.1 billion. We believe that our liquid assets combined with our undrawn credit facilities are sufficient to meet our operating financing needs in 2023 as well, and, together with expected cash flows from operations, will support debt repayments and our currently planned capital expenditure requirements over the near and medium term.

In 2023, we expect a free cash flow of approximately €5.0 billion (compared to €4.35 billion in 2022) and we continue to expect a free cash flow of around €8.0 billion in 2025. The increase in free cash flow is predominantly driven by our expectation of improving operating profit and a gradual shift of stock-based compensation payments to equity-settled plans. The development of SAP's free cash flow also depends on our prepayment policy with regards to hyperscalers. In addition, compared to 2022 we are assuming a steady level of sales of receivables of an upper triple-digit million € figure. Furthermore, we expect cash outflows tied to our targeted restructuring program for 2023 of around €300 million.

In 2023, we intend to repay €1.6 billion in Eurobonds and €1.45 billion in bank loans. The ratio of net debt as at December 31, 2022, divided by the total of operating profit (IFRS) plus depreciation and amortization was 0.32x, therefore, already below our 2023 target of 0.5x.

Non-Financial Goals 2023 and Ambitions for 2025

In addition to our financial goals, we also focus on three non-financial targets: customer loyalty, employee engagement, and carbon impact.

For 2023, SAP expects the employee engagement, measured by the Employee Engagement Index to be in a range of 76% and 80% (2022: 80%). Through 2025, we aim to achieve an Employee Engagement Index between 84% and 86%.

SAP measures customer loyalty using the Customer Net Promoter Score (Customer NPS). We are targeting to increase the Customer NPS to a score of 8 to 12 in 2023⁶³. SAP expects to steadily increase the Customer NPS through 2025.

We aim to reach 0 kt net greenhouse gas emissions in our operations in 2023 (2022: 85 kt). Further, SAP has also committed to achieve net-zero along our value chain in line with a 1.5 degrees Celsius future in 2030.

Premises on Which Our Outlook and Prospects Are Based

In preparing our outlook and prospects, we have taken into account all events known to us at the time we prepared this report that could influence SAP's business going forward. SAP has decided to explore a sale of its stake in Qualtrics. Any effects resulting from a potential sale of Qualtrics are not reflected in our financial targets and prospects.

⁶³ The guidance is based on an adjusted methodology for 2023 to better reflect the business priorities of the company. The baseline for 2022 calculated using the new methodology is 7.

Outlook for SAP SE

The primary source of revenue for SAP SE is the license fees we charge subsidiaries for the right to market and maintain SAP software solutions. Consequently, the performance of SAP SE in operating terms is closely tied to the cloud and the software revenue of the SAP Group.

Based on the outlook for cloud and software revenue for the SAP Group at constant currency in non-IFRS in 2023, we expect product revenue for SAP SE in 2023 to increase slightly compared to 2022.

Assuming there are no significant effects from acquisitions or other unforeseeable occurrences in 2023, we expect the operating profit of SAP SE to decrease slightly compared to 2022.

The financial ambitions of the SAP Group for the years 2024 to 2026 provide for future growth of revenue and profit. We expect that such growth will also result in revenue and profit growth for SAP SE to the same degree.

We expect that SAP SE will continue to receive investment income in the form of profit transfers and dividends from its subsidiaries. The growth we expect for the SAP Group should have a positive effect on this investment income.

The outlook for the SAP Group in respect to liquidity, finance, investment, and dividend are equally applicable to SAP SE.

Among the assumptions underlying this outlook are those presented above concerning the economy and our expectations for the performance of the SAP Group.

Opportunities

Our customers choose SAP as a trusted partner for their digital business transformation. We have established a framework for opportunity management by evaluating and analyzing key areas such as current markets, external scenarios, economic conditions, and technological trends. We have also researched customer and product segmentation, growth drivers, and industry-specific factors for success. These combined insights play a key role for the Executive Board in the development of our market strategies. Our shareholder value relies heavily upon a fine balance of risk mitigation and value-driven opportunities. Therefore, our governance model helps ensure that decisions are based on return, investment required, and risk mitigation.

As far as opportunities are likely to occur, we have incorporated them into our business plans, our outlook for 2023, and our medium-term prospects outlined in this report. Therefore, the following section focuses on future trends or events that might result in an uplift of our outlook and medium-term prospects should they develop more positively than anticipated in our forecasts.

SAP SE is the parent company of the SAP Group and earns most of our revenue from subscription fees, software license fees, and dividends paid by affiliates. Consequently, the opportunities described below also apply – directly or indirectly – to SAP SE.

Opportunities from Economic Conditions

Economic conditions clearly influence our business, financial position, profit, and cash flows. Should the global economy recover faster than is reflected in our plans today, our revenue and profit may surpass our current outlook and medium-term prospects. Our medium-term planning considers changes in market conditions as a result of the ongoing geopolitical and macroeconomic environments. Although we continue to be mindful of the negative aspects of this global situation, we take opportunities to further invest into our strategic growth areas.

For more information about future trends in the global economy and the IT market outlook, as well as their potential influence on SAP, see the beginning of the *Expected Developments and Opportunities* section.

Opportunities Through Innovation

Our continued growth through innovation is based on our ability to leverage research and development (R&D) resources effectively. We continue to improve our products through design thinking and lean methodologies. We are accelerating innovation cycles, especially in our cloud solutions, and engaging even more closely with our customers to enable success. Specifically, we focus on ease of adoption and consumption so customers can receive the benefits from our software solutions, technologies, and platforms at reduced time to value.

In addition, we continue to expand start-up engagement in strategic opportunity areas, focusing on startups as customers as well as partners.

Based on our innovation capabilities, we see opportunities to enhance business processes across our portfolio, driving customer value by enabling modern ways of work, collaboration, and productivity through the use of the latest intelligent technologies. If these enhancements are appreciated by customers, it could lead to increased demand across our cloud portfolio. For example, the accelerated adoption of technology that helps companies transform into more sustainable businesses could result in additional upsell opportunities for customers migrating to **SAP S/4HANA Cloud**.

In particular, we see **three innovation areas** that have the potential to grow beyond our expectations.

First, with its open APIs and value services, **SAP Business Technology Platform (SAP BTP)** may be adopted faster than internally planned. Second, **SAP Signavio solutions** may garner increased demand for intelligent automation realized through services such as application lifecycle management (ALM) and robotic process automation (RPA), for example. Third, we see high-growth potential in the

areas of **sustainability management, working capital management, and business networks**. Our vision to reinvent how the world runs as a network of intelligent, sustainable enterprises is based on our commitment to helping customers pursue key milestones such as zero emissions, zero waste, and zero inequality, as well as our conviction that business processes need to become networked to be more resilient. If this conviction is shared by increasing numbers of customers, this may lead to an increased demand for our business processes and logic.

For more information about future opportunities in research and development for SAP, see the *Strategy and Business Model* section.

Opportunities from Our Strategy for Profitable Growth

SAP strives to generate profitable growth across our portfolio of products, solutions, and services to keep or improve our market position. Our aim is to continue to expand our addressable market through the adjustment of our portfolio and our new technologies and innovations. The challenges of the recent macroeconomic environment has strengthened the readiness in the market to consume software in the cloud, including core business process platforms. This could result in an even faster adoption of our core ERP offering in the cloud than anticipated, translating into higher cloud and total revenue growth from 2023 onwards than currently provided for in our midterm ambition. Greater efficiency in our cloud operations may also positively affect the profitability of our cloud business.

SAP seeks to establish new business models and leverage our expanding ecosystem of partners to achieve scale and maximize opportunities. We see additional opportunities in potential future strategic partnerships, such as those for the migration of critical business systems to the cloud linked to our **RISE with SAP** offering.

Our extensive experience in applications and analytics, as well as database and technology, continue to offer solid multiyear growth opportunities as we bring innovative technologies with simplified consumption to our installed base and continue to acquire new customers.

The stronger focus on customer success enabled through our shift to a new operating model that aligns sales, services, and customer engagement activities may positively impact our revenue, profit, and cash flows. This potential may result in our stated medium-term prospects being exceeded.

Opportunities from Our Ecosystem

SAP's ecosystem is defined by the interdependent relationships of our customers, our employees, our suppliers, our partners, and our complementary technology partners. Our ecosystem, which includes more than 20,000 partners with different areas of expertise, carries the SAP brand into global markets and expands our portfolio with their expertise, services, and solutions. Our ecosystem includes partners in four different tracks: partners in the "**Build**" track develop solutions on top of, or integrate with, SAP technology and platforms; extending the scope and functionality of SAP solutions to address customer requirements; partners in the "**Sell**" track, advise, resell, implement, and support customers of all types and sizes; partners in the "**Service**" track (systems integrators) provide strategic business consulting, system design, solution integration, and project implementation of SAP solutions; partners in the "**Run**" track are outsourcing or hosting companies that offer SAP solutions to customers through a private or public cloud.

SAP and our partner ecosystem offer solutions to help customers grow their businesses and accelerate their move to the cloud. SAP partners build innovative extensions for SAP applications based on SAP BTP, and in doing so, enhance the **customer value** with SAP. By providing innovations that extend SAP applications, partners can influence the adoption of SAP technologies to support customers' unique business needs. Thus, customers maximize their SAP investment through partner offerings such as solution extensions, industry-specific solutions, line-of-business (LoB) solutions, added functionality, and sustainability offerings.

Partners constantly respond to the market needs while raising awareness around strategic offerings, such as RISE with SAP, SAP BTP, and our **industry cloud solutions**, which help drive the transformation in the cloud for our customers. Partners offer customers a vast array of SAP

technologies and services specific to their LoB or industry, making it easy for customers to purchase the right combination of products, solutions, and services (such as consulting, implementation, and development) to meet their business needs.

Partners contribute to SAP's growth by expanding market reach in sales and services, specifically by retaining and increasing sales to existing customers, attracting new customers, accessing new markets, and addressing our joint customers' requirements through their expertise and solution innovations. Together with all of the aforementioned measures, this may positively impact our revenue, profit, and cash flows, customer satisfaction and retention, and enable SAP to exceed our stated medium-term prospects.

Opportunities from Our Employees

Our employees drive innovation, provide value to our customers, and consistently enable our growth and profitability. We continuously invest in our people with the aim of retaining their high level of engagement, further strengthening their skills, fostering an agile and innovative organization, and ensuring a healthy, diverse, and inclusive workforce. By doing so, we anticipate improvements in our employee productivity and innovation capabilities.

Our outlook and medium-term prospects are based on certain assumptions regarding employee retention and our **Business Health Culture Index**. Should these develop at a rate that is better than expected, employee productivity and engagement may increase. A stronger-than-expected increase in the **Employee Engagement Index** can therefore be an opportunity that could positively impact our revenue, profit, and cash flows, enabling SAP to exceed our stated medium-term prospects.

For more information about future opportunities relating to our employees, see the [Employees](#) section.

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III Consolidated Income Statements of SAP Group for the Years Ended December 31

€ millions, unless otherwise stated	Notes	2022	2021	2020
Cloud		12,555	9,418	8,080
Software licenses		2,056	3,248	3,642
Software support		11,909	11,412	11,506
Software licenses and support		13,965	14,660	15,148
Cloud and software		26,521	24,078	23,228
Services		4,350	3,764	4,110
Total revenue	(A.1), (C.2)	30,871	27,842	27,338
Cost of cloud		-3,853	-3,105	-2,699
Cost of software licenses and support		-1,694	-1,925	-2,008
Cost of cloud and software		-5,547	-5,030	-4,707
Cost of services		-3,388	-2,916	-3,178
Total cost of revenue		-8,936	-7,946	-7,886
Gross profit		21,935	19,897	19,453
Research and development		-6,166	-5,190	-4,454
Sales and marketing		-8,943	-7,505	-7,106
General and administration		-2,072	-2,431	-1,356
Restructuring	(B.6)	-138	-157	3
Other operating income/expense, net		54	43	84
Total operating expenses		-26,200	-23,186	-20,715
Operating profit		4,670	4,656	6,623
Other non-operating income/expense, net	(C.3)	-195	17	-179
Finance income		820	3,123	1,473
Finance costs		-2,205	-949	-697
Financial income, net	(C.4)	-1,385	2,174	776
Profit before tax	(C.2)	3,090	6,847	7,220
Income tax expense	(C.5)	-1,382	-1,471	-1,938
Profit after tax		1,708	5,376	5,283
Attributable to owners of parent		2,284	5,256	5,145
Attributable to non-controlling interests		-576	121	138
Earnings per share, basic (in €)	(C.6)	1.95	4.46	4.35
Earnings per share, diluted (in €)	(C.6)	1.94	4.46	4.35

The accompanying Notes are an integral part of these Consolidated Financial Statements.

Consolidated Statements of Comprehensive Income of SAP Group for the Years Ended December 31

€ millions	Notes	2022	2021	2020
■ Profit after tax		1,708	5,376	5,283
Items that will not be reclassified to profit or loss				
Remeasurements on defined benefit pension plans, before tax	71	43	39	
Income taxes relating to remeasurements on defined benefit pension plans	-15	-9	-9	
Remeasurements on defined benefit pension plans, net of tax	56	34	30	
Other comprehensive income for items that will not be reclassified to profit or loss, net of tax	56	34	30	
Items that will be reclassified subsequently to profit or loss				
Gains (losses) on exchange differences on translation, before tax	2,190	2,825	-2,793	
Reclassification adjustments on exchange differences on translation, before tax	6	30	0	
Exchange differences, before tax	2,195	2,855	-2,793	
Income taxes relating to exchange differences on translation	-10	-9	1	
Exchange differences, net of tax	(E.2)	2,186	2,846	-2,792
Gains (losses) on cash flow hedges/cost of hedging, before tax	53	-39	20	
Reclassification adjustments on cash flow hedges/cost of hedging, before tax	0	4	-6	
Cash flow hedges/cost of hedging, before tax	(F.1)	53	-35	14
Income taxes relating to cash flow hedges/cost of hedging	-14	9	-4	
Cash flow hedges/cost of hedging, net of tax	(E.2)	39	-26	10
Other comprehensive income for items that will be reclassified to profit or loss, net of tax	2,224	2,819	-2,782	
Other comprehensive income, net of tax	2,280	2,853	-2,752	
Total comprehensive income		3,988	8,230	2,531
Attributable to owners of parent		4,385	8,058	2,393
Attributable to non-controlling interests		-396	172	138

The accompanying Notes are an integral part of these Consolidated Financial Statements.

Consolidated Statements of Financial Position of SAP Group as at December 31

€ millions	Notes	2022	2021
Cash and cash equivalents	(E.3)	9,008	8,898
Other financial assets	(D.6), (E.3)	853	2,758
Trade and other receivables	(A.2)	6,236	6,352
Other non-financial assets	(A.3), (G.1)	2,139	1,633
Tax assets		287	403
Total current assets		18,522	20,044
Goodwill	(D.2)	33,106	31,089
Intangible assets	(D.3)	3,835	3,965
Property, plant, and equipment	(D.4), (D.8)	4,934	4,977
Other financial assets	(D.6), (E.3)	5,626	6,275
Trade and other receivables	(A.2)	169	147
Other non-financial assets	(A.3), (G.1)	3,580	2,628
Tax assets		323	263
Deferred tax assets	(C.5)	2,065	1,786
Total non-current assets		53,638	51,130
Total assets		72,159	71,174
Trade and other payables		2,146	1,580
Tax liabilities		283	304
Financial liabilities	(E.3), (D.5)	4,808	4,528
Other non-financial liabilities	(B.3), (B.5), (G.2)	4,818	5,203
Provisions	(A.4), (B.4), (B.5), (B.6)	90	89
Contract liabilities	(A.1)	5,309	4,431
Total current liabilities		17,453	16,136
Trade and other payables		79	122
Tax liabilities		893	827
Financial liabilities	(E.3), (D.5)	9,547	11,042
Other non-financial liabilities	(B.3), (B.5), (G.2)	705	860
Provisions	(A.4), (B.4), (B.5), (B.6)	359	355
Deferred tax liabilities	(C.5)	241	296
Contract liabilities	(A.1)	33	13
Total non-current liabilities		11,858	13,515
Total liabilities		29,311	29,651
Issued capital		1,229	1,229
Share premium		3,081	1,918
Retained earnings		36,418	37,022
Other components of equity		3,801	1,756
Treasury shares		-4,341	-3,072
Equity attributable to owners of parent		40,186	38,853
Non-controlling interests	(E.2)	2,662	2,670
Total equity	(E.2)	42,848	41,523
Total equity and liabilities		72,159	71,174

The accompanying Notes are an integral part of these Consolidated Financial Statements.

Consolidated Statements of Changes in Equity of SAP Group for the Years Ended December 31

€ millions	Equity Attributable to Owners of Parent						Non-Controlling Interests	Total Equity
	Issued Capital	Share Premium	Retained Earnings	Other Components of Equity	Treasury Shares	Total		
Notes	(E.2)	(E.2)		(E.2)	(E.2)			
1/1/2020	1,229	545	28,783	1,770	-1,580	30,746	76	30,822
■ Profit after tax			5,145			5,145	138	5,283
Other comprehensive income			30	-2,782		-2,752		-2,752
Comprehensive income	5,175		-2,782			2,393	138	2,531
Share-based payments		1				1		1
Dividends			-1,864			-1,864	-2	-1,866
Purchase of treasury shares					-1,492	-1,492		-1,492
Changes in non-controlling interests			-64			-64		-64
Other changes			-4			-4	0	-5
12/31/2020	1,229	545	32,026	-1,012	-3,072	29,716	211	29,927
■ Profit after tax			5,256			5,256	121	5,376
Other comprehensive income			34	2,768		2,802	51	2,853
Comprehensive income	5,290		2,768			8,058	172	8,230
Share-based payments		1,373				1,373	311	1,684
Dividends			-2,182			-2,182	-88	-2,271
Transactions with non-controlling interests			1,933			1,933	2,050	3,983
Other changes			-44			-44	14	-30
12/31/2021	1,229	1,918	37,022	1,757	-3,072	38,853	2,670	41,523
■ Profit after tax			2,284			2,284	-576	1,708
Other comprehensive income			56	2,044		2,100	180	2,280
Comprehensive income	2,340		2,044			4,385	-396	3,988
Share-based payments		1,163				1,163	325	1,488
Dividends			-2,865			-2,865	-29	-2,895
Purchase of treasury shares					-1,500	-1,500		-1,500
Reissuance of treasury shares under share-based payments					230	230		230
Changes in non-controlling interests			-92			-92	90	-3
Other changes			13			13	2	15
12/31/2022	1,229	3,081	36,418	3,801	-4,341	40,186	2,662	42,848

The accompanying Notes are an integral part of these Consolidated Financial Statements.

Consolidated Statements of Cash Flows of SAP Group for the Years Ended December 31

€ millions	Notes	2022	2021	2020
■ Profit after tax		1,708	5,376	5,283
Adjustments to reconcile profit after tax to net cash flow from operating activities:				
Depreciation and amortization	(D.2)–(D.4)	1,896	1,775	1,831
Share-based payment expenses	(B.3)	2,614	2,794	1,084
■ Income tax expense	(C.5)	1,382	1,471	1,938
■ Financial income, net	(C.4)	1,385	-2,174	-776
Decrease/increase in allowances on trade receivables		90	-11	68
Other adjustments for non-cash items		-173	39	-198
Decrease/increase in trade and other receivables		149	414	821
Decrease/increase in other assets		-1,312	-706	-651
Increase/decrease in trade payables, provisions, and other liabilities		163	475	293
Increase/decrease in contract liabilities		685	100	128
Share-based payments	(B.3)	-1,182	-1,120	-1,310
Interest paid		-248	-202	-244
Interest received		166	56	122
Income taxes paid, net of refunds		-1,675	-2,063	-1,194
Net cash flows from operating activities		5,647	6,223	7,194
Cash flows for business combinations, net of cash and cash equivalents acquired		-679	-1,142	-662
Cash flows from sale of subsidiaries or businesses		289	-72	203
Purchase of intangible assets and property, plant, and equipment		-874	-800	-816
Proceeds from sales of intangible assets or property, plant, and equipment		60	91	88
Purchase of equity or debt instruments of other entities		-2,320	-4,368	-2,535
Proceeds from sales of equity or debt instruments of other entities		4,190	3,229	735
Net cash flows from investing activities		667	-3,063	-2,986
Dividends paid	(E.2)	-2,865	-2,182	-1,864
Dividends paid on non-controlling interests		-12	-54	-2
Purchase of treasury shares	(E.2)	-1,500	0	-1,492
Proceeds from changes in ownership interests in subsidiaries that do not result in the loss of control		33	2,828	95
Payments for taxes related to net share settlement of equity awards	(B.3)	-282	0	0
Proceeds from borrowings	(E.3)	158	1,680	2,132
Repayments of borrowings	(E.3)	-1,445	-1,952	-2,430
Payments of lease liabilities		-424	-374	-378
Transactions with non-controlling interests	(E.2)	0	-2	-59
Net cash flows from financing activities		-6,337	-56	-3,997
Effect of foreign currency rates on cash and cash equivalents		134	484	-214
Net decrease/increase in cash and cash equivalents		109	3,587	-4
▲ Cash and cash equivalents at the beginning of the period	(E.3)	8,898	5,311	5,314
▲ Cash and cash equivalents at the end of the period	(E.3)	9,008	8,898	5,311

The accompanying Notes are an integral part of these Consolidated Financial Statements.

Notes

(IN.1) Basis for Preparation

General Information

The registered domicile of SAP SE is in Walldorf, Germany (Commercial Register of the Lower Court of Mannheim HRB 719915). The Consolidated Financial Statements for 2022 of SAP SE and its subsidiaries (collectively, "we," "us," "our," "SAP," "Group," and "Company") have been prepared in accordance with International Financial Reporting Standards (IFRS).

We have applied all IFRS standards and interpretations that were effective on and endorsed by the European Union (EU) as at December 31, 2022. There were no standards or interpretations as at December 31, 2022, impacting our Consolidated Financial Statements for the years ended December 31, 2022, 2021, and 2020, that were effective but not yet endorsed. Therefore, our Consolidated Financial Statements comply with both, IFRS as issued by the International Accounting Standards Board (IASB) and IFRS as endorsed by the EU.

Our Executive Board approved the Consolidated Financial Statements on February 22, 2023, for submission to our Supervisory Board which approved the Consolidated Financial Statements on the same day.

All amounts included in the Consolidated Financial Statements are reported in millions of euros (€ millions) except where otherwise stated. As figures are rounded, numbers presented throughout this document may not add up precisely to the totals we provide and percentages may not precisely reflect the absolute figures.

Amounts disclosed in the Notes that are taken directly from our  Consolidated Income Statements or our  Consolidated Statements of Financial Position are marked with the symbols  and  respectively.

Accounting Policies, Management Judgments, and Sources of Estimation Uncertainty

How We Present Our Accounting Policies, Judgments, and Estimates

To ease the understanding of our financial statements, we present the accounting policies, management judgments, and sources of estimation uncertainty (hereafter: accounting policies, judgments, and estimates) on a given subject together with other disclosures related to the same subject in the Note that deals with this subject. Accounting policies, judgments, and estimates that do not relate to a specific subject are presented in the following section.

For easier identification of our accounting policies, judgments, and estimates, the respective disclosures are marked with the symbol  and highlighted with a light gray box. They focus on the accounting choices made within the framework of the prevailing IFRS and refrain from repeating the underlying promulgated IFRS guidance, unless we consider it particularly important to the understanding of a Note's content.

The following table provides an overview of where our accounting policies, management judgments, and estimates are disclosed:

Note	⌚ Accounting Policies, Judgments, and Estimates
(IN.1)	Basis for Preparation
(IN.2)	Impact of the War in Ukraine
(A.1)	Revenue
(A.2)	Trade and Other Receivables
(A.3)	Capitalized Cost from Contracts with Customers
(A.4)	Customer-Related Provisions
(B.3)	Share-Based Payments
(B.4)	Pension Plans and Similar Obligations
(B.5)	Other Employee-Related Obligations
(B.6)	Restructuring
(C.1)	Results of Segments
(C.5)	Income Taxes
(D.1)	Business Combinations and Divestitures
(D.2)	Goodwill
(D.3)	Intangible Assets
(D.4)	Property, Plant, and Equipment
(D.5)	Leases
(D.6)	Equity Investments
(E.2)	Total Equity
(E.3)	Liquidity
(F.1)	Financial Risk Factors and Risk Management
(F.2)	Fair Value Disclosures on Financial Instruments
(G.3)	Other Litigation, Claims, and Legal Contingencies
(G.5)	Executive and Supervisory Board Compensation

⌚ General Accounting Policies

Bases of Measurement

The Consolidated Financial Statements have been prepared on the historical cost basis except for the following:

- Derivative financial instruments, liabilities for cash-settled share-based payments, and financial assets with cash flows that are not solely payments of principal or interest are measured at fair value.
- Post-employment benefits are measured at the present value of the defined benefit obligations less the fair value of the plan assets.
- Monetary assets and liabilities denominated in foreign currencies are translated at period-end exchange rates.
- The financial statements of our subsidiaries to which hyperinflation accounting applies are restated.

Foreign Currencies

Income and expenses and operating cash flows of our foreign subsidiaries that use a functional currency other than the Euro are translated at average rates of foreign exchange (FX) computed on a monthly basis. Exchange differences resulting from foreign currency transactions are recognized in other non-operating income/expense, net.

The exchange rates of key currencies affecting the Company were as follows:

Exchange Rates

Equivalent to €1		Middle Rate as at 12/31		Annual Average Exchange Rate		
		2022	2021	2022	2021	2020
Australian dollar	AUD	1.5693	1.5615	1.5174	1.5747	1.6554
Canadian dollar	CAD	1.4440	1.4393	1.3703	1.4835	1.5294
Swiss franc	CHF	0.9847	1.0331	1.0052	1.0814	1.0703
Pound sterling	GBP	0.8869	0.8403	0.8526	0.8600	0.8892
Japanese yen	JPY	140.66	130.38	138.01	129.86	121.78
U.S. dollar	USD	1.0666	1.1326	1.0539	1.1835	1.1413

Cost Classification

Cost of Cloud and Software

Cost of cloud and software includes the costs incurred in providing the services and producing the goods that generate cloud and software revenue. Consequently, this line item primarily includes employee expenses relating to these services, amortization of acquired intangibles, fees for third-party licenses, depreciation of our property, plant, and equipment (for example, of our data centers in which we host our cloud solutions), and costs for third-party hosting services. For more information about the capitalization of costs from contracts with customers, see [Note \(A.3\)](#).

Cost of Services

Cost of services includes the costs incurred in providing the services that generate service revenue. Consequently, this line item primarily includes employee expenses and related training, system and system administration costs, and costs for third-party resources.

Research and Development

Research and development includes the costs incurred by activities related to the development of cloud and software solutions including resource and hardware costs for the development systems. For more information about the recognition of internally generated intangible assets from development, see [Note \(D.3\)](#).

Sales and Marketing

Sales and marketing includes the costs incurred for the selling activities (such as sales commissions and amortization of capitalized sales commissions) and marketing activities related to our software and cloud solutions and our service portfolio. For more information about the capitalization of costs from contracts with customers, see [Note \(A.3\)](#).

General and Administration

General and administration includes the costs related to finance and administrative functions, human resources, and general management as long as they are not directly attributable to one of the other operating expense line items.

⌚ Management Judgments and Sources of Estimation Uncertainty

The preparation of the Consolidated Financial Statements requires our management to make judgments, estimates, and assumptions that affect the application of accounting policies and the reported amounts of assets, liabilities, revenues, and expenses, as well as disclosure of contingent liabilities.

We base our judgments, estimates, and assumptions on historical and forecast information, and on regional and industry economic conditions in which we or our customers operate. Changes to these conditions could adversely affect our estimates. Although we believe we have made reasonable estimates about the ultimate resolution of the underlying uncertainties, no assurance can be given that the final outcome of these matters will be consistent with what is reflected in our recognized assets, liabilities, revenues, and expenses and disclosed contingent liabilities. Actual results could differ significantly from original estimates.

The accounting policies that most frequently or significantly require us to make judgments, estimates, and assumptions, and therefore are critical to understanding our results of operations, include the following:

Note	⌚ Significant Accounting Policies
(A.1)	Revenue recognition
(A.2)	Valuation of trade receivables
(A.4), (G.3)	Accounting for legal contingencies
(B.3)	Accounting for share-based payments
(C.5)	Accounting for income taxes
(D.1)	Accounting for business combinations
(D.2)	Accounting for goodwill
(D.3)	Accounting for intangible assets (including recognition of internally generated intangible assets from development)
(D.6)	Accounting for equity investments

Our management periodically discusses these significant accounting policies with the Audit and Compliance Committee of our Supervisory Board.

⌚ New Accounting Standards Not Yet Adopted

The IASB has issued various amendments to IFRS standards (such as IAS 1 (Presentation of Financial Statements)) that are relevant for SAP but not yet effective. We are currently assessing the impact on SAP, but do not expect material effects on our financial position or results of operations.

(IN.2) Impact of the War in Ukraine

⌚ Management Judgments and Estimates Due to the Impact of the War in Ukraine

Management judgments and estimates can affect the amounts and reporting of assets and liabilities as at the reporting date, and the amounts of income and expense reported for the period. Due to the global consequences of the ongoing war in Ukraine, these management judgments and estimates continue to be subject to uncertainty. Actual amounts may differ from the management judgments and estimates; changes could have a material impact on the Consolidated Financial Statements. All available information on the expected economic developments was included when updating the management judgments and estimates. This information was also included in the analysis of the recoverability and collectability of assets and receivables.

We will continue to analyze possible future effects of the war in Ukraine on the measurement of individual assets and liabilities.

In 2022, SAP's business was impacted by the war in Ukraine and SAP's decision to wind down its business operations in Russia and Belarus. We evaluated the resulting impact on the Consolidated Financial Statements. In the course of our analysis, which was based on quantitative and qualitative aspects, we considered, for example, the impact on individual bad debt provisions on our trade receivables and restructuring expenses including severance payments to employees, and impairments of our current and non-current assets (sales commissions and property, plant, and equipment). Furthermore, we assessed the impact on goodwill and the need to record further liabilities resulting from the wind-down.

For more information about the impacts of the war in Ukraine and SAP's exit from Russia and Belarus, see [Note \(A.1\)](#) concerning our revenues, [Note \(A.2\)](#) concerning trade and other receivables, [Note \(B.6\)](#) concerning restructuring, [Note \(D.2\)](#) concerning goodwill, and [Note \(D.4\)](#) concerning property, plant, and equipment.

Other future impacts due to this rapidly evolving situation are currently unknown and could potentially subject our business to materially adverse consequences should the situation escalate beyond its current scope.

Section A – Customers

This section discusses disclosures related to contracts with our customers. These include but are not limited to explanations of how we recognize revenue, revenue disaggregation, and information about our trade receivables and customer-related obligations.

(A.1) Revenue

⌚ Accounting for Revenue from Contracts with Customers

Classes of Revenue

We derive our revenue from fees charged to our customers for the use of our cloud offerings, for licenses to our on-premise software products, and for standardized and premium support services, consulting, customer-specific software developments, training, and other services.

Cloud and software revenue, as presented in our Consolidated Income Statements, is the sum of our **cloud revenue**, our **software license revenue**, and our **software support revenue**.

Cloud revenue represents fees earned from providing customers with any of the following:

Software as a service (SaaS), that is, a right to use software functionality (including standard functionalities and custom cloud applications and extensions) in a cloud-based infrastructure hosted by SAP or third parties engaged by SAP, where the customer does not have the right to terminate the hosting contract and take possession of the software to either run it on its own IT infrastructure or to engage a third-party provider unrelated to SAP to host and manage the software; SaaS also includes transaction and agent fees for transactions that customers of our network business execute on our cloud-based transaction platforms.

Platform as a service (PaaS), that is, access to a cloud-based platform to develop, deploy, integrate, and manage applications.

Infrastructure as a service (IaaS), that is, hosting and related application management services for software hosted by SAP or third parties engaged by SAP.

Premium cloud support, that is, support beyond the regular support embedded in the underlying cloud subscription services.

Software license revenue represents fees earned from the sale or license of software to customers for use on the premises owned or fully controlled by the customer, in other words, where the customer has the right to take possession of the software for installation on the customer's premises or on hardware of third-party hosting providers unrelated to SAP (on-premise software). Software license revenue includes revenue from both the sale of our standard software products and customer-specific on-premise-software development agreements.

Software support revenue represents fees earned from providing customers with standardized support services that comprise unspecified future software updates, upgrades, and enhancements as well as technical product support services for on-premise software products.

Services revenue primarily represents fees earned from professional consulting services, premium support services, and training services.

Identification of Contract

We frequently enter into multiple contracts with the same customer. For accounting purposes, we treat these contracts as a single contract if they are entered into at or near the same time and are economically interrelated. We do not combine contracts with closing days more than three months

apart because we do not consider them being entered into near the same time. Judgment is required in evaluating whether various contracts are interrelated, which includes considerations as to whether they were negotiated as a package with a single commercial objective, whether the amount of consideration on one contract is dependent on the performance of the other contract, or if some or all goods in the contracts are a single performance obligation.

New arrangements with existing customers can be either a new contract or the modification of prior contracts with the customer. Our judgment in making this determination considers whether there is a connection between the new arrangement and the pre-existing contracts, whether the goods and services under the new arrangement are highly interrelated with the goods and services sold under prior contracts, and how the goods and services under the new arrangement are priced. In determining whether a change in transaction price represents a contract modification or a change in variable consideration, we examine whether the change in price results from changing the contract or from applying unchanged existing contract provisions.

Identification of Performance Obligations

Our customer contracts often include various products and services. Typically, the products and services outlined in the *Classes of Revenue* section qualify as separate performance obligations and the portion of the contractual fee allocated to them is recognized separately. Judgment is required, however, in determining whether a good or service is considered a separate performance obligation. In particular for our professional services and implementation activities, judgment is required to evaluate whether such services significantly integrate, customize, or modify the on-premise software or cloud service to which they relate. In this context, we consider the nature of the services and their volume relative to the volume of the on-premise software or cloud service to which they relate. In general, the implementation services for our cloud services go beyond pure setup activities and qualify as separate performance obligations. Similarly, our on-premise implementation services and our custom development services typically qualify as separate performance obligations. Non-distinct goods and services are combined into one distinct bundle of goods and services (combined performance obligation).

When selling goods or services, we frequently grant customers options to acquire additional goods or services (for example, renewals of cloud or support arrangements, or additional volumes of purchased cloud solutions or software). We apply judgment in determining whether such options provide a material right to the customer that the customer would not receive without entering into that contract. In this judgment, we consider, for example, whether the options entitle the customer to a discount that exceeds the discount granted for the respective goods or services sold together with the option.

Determination of Transaction Price

We apply judgment in determining the amount to which we expect to be entitled in exchange for transferring promised goods or services to a customer. Generally, variable consideration is estimated based on the most likely amount and is included in the transaction price to the extent that the constraint does not apply. This includes estimates as to whether and to what extent subsequent concessions may be granted to customers and whether the customer is expected to pay the contractual fees. In this judgment, we consider our history with the respective customer or on a portfolio basis.

The recognition constraint is applied to on-premise software transactions that include usage-based or sales-based contingent fees. In contrast, our typical cloud services do not provide the customer with a software license because the customer does not have the right to terminate the hosting contract and take possession of the software. Consequently, variable cloud fees are considered in the transaction price based on estimates, rather than being accounted for as usage-based or sales-based license royalties.

Only very rarely do our contracts include significant financing components. We do not account for financing components if the period between when SAP transfers the promised goods or services to the customer and when the customer pays for those goods or services is one year or less.

Allocation of Transaction Price

We have established a hierarchy to identify the standalone selling prices (SSPs) that we use to allocate the transaction price of a customer contract to the performance obligations in the contract.

- Where standalone selling prices for an offering are observable and reasonably consistent across customers (that is, not highly variable), our SSP estimates are derived from our respective pricing history. Typically, our standardized support offerings and our professional service offerings follow this approach.
- Where sales prices for an offering are not directly observable or highly variable across customers, we use estimation techniques. For renewable offerings with highly variable pricing across customers, these techniques consider the individual contract's expected renewal price as far as this price is substantive. Typically, our cloud offerings follow this approach. For non-renewable offerings, these estimations follow a cost-plus-margin approach.
- For offerings that lack renewals, have highly variable pricing, and lack substantial direct costs to estimate based on a cost-plus-margin approach, we allocate the transaction price by applying a residual approach. We use this technique in particular for our standard on-premise software offerings.

Judgment is required when estimating SSPs. To judge whether the historical pricing of our goods and services is highly variable, we have established thresholds of pricing variability. For judging whether contractual renewal prices are substantive, we have established floor prices which include a minimum margin that we use as SSPs whenever the contractual renewal prices are below these floor prices. In judging whether contracts are expected to renew at their contractual renewal prices, we rely on our respective renewal history. The SSPs of material right options depend on the probability of option exercise. In estimating these probabilities, we apply judgment considering historical exercise patterns.

We review the SSPs periodically or whenever facts and circumstances change to ensure the most objective input parameters available are used.

Recognition of Revenue

Cloud revenue is recognized over time as the services are performed. For cloud business models where we grant rights to continuously access and use one or more cloud offerings for a certain term, revenue is recognized based on time elapsed and thus ratably over this term. For cloud business models provisioned on a consumption basis where a customer commits to a fixed value of spend on cloud services throughout the contract term, but with the discretion to call off cloud services during the contract term, we recognize revenue based on consumption as it best reflects our measure towards satisfaction of that performance obligation. In limited scenarios where the transaction price is entirely variable and determined by the customer's consumption, we recognize revenue based on usage in the period in which it was earned.

Software license revenue is recognized at a point in time or over time depending on whether we deliver standard software, customer-specific software, or software subscription contracts that combine the delivery of software and the obligation to deliver, in the future, unspecified software products:

- Licenses for our standard on-premise software products are typically delivered by providing the customer with access to download the software. We recognize revenue for these on-premise licenses at the point in time when we grant the license rights to the customer and the customer has access to and thus control over the software. In judging whether our on-premise software offerings grant customers a right to use, rather than a right to access, our intellectual property, we have considered the usefulness of our software without subsequent updates to it.
- Typically, our customer-specific on-premise software development agreements:
 - Represent software developed for specific needs of individual customers and therefore do not have any use for us
 - Provide us with an enforceable right to payment for performance completed to date

For such development agreements, we recognize revenue over time as the software development progresses. Judgment is required in identifying an appropriate method to measure the progress toward complete satisfaction of such performance obligations. We typically measure progress of our development agreements based on the direct costs incurred to date in developing the software as a percentage of the total reasonably estimated direct costs to fully complete the development work (percentage-of-completion method). This method of measuring progress faithfully depicts the transfer of the development services to the customer, as substantially all of these costs are cost of the staff or third parties performing the development work. In estimating the total cost to fully complete the development work, we consider our history with similar projects.

- For agreements that combine the delivery of software and the obligation to deliver, in the future, unspecific software products, we recognize revenue at a point in time for licenses that are made immediately accessible to the customer. We recognize revenue ratably over the term of the software subscription contract for the unspecified software products, as our performance obligation is to stand ready to deliver such products on a when-and-if-available basis.

Software support revenue is typically recognized based on time elapsed and thus ratably over the term of the support arrangement. Under our standardized support services, our performance obligation is to stand ready to provide technical product support and unspecified updates, upgrades, and enhancements on a when-and-if-available basis. Our customers simultaneously receive and consume the benefits of these support services as we perform.

Service revenue is typically recognized over time. Where we stand ready to provide the service (such as access to learning content), we recognize revenue based on time elapsed and thus ratably over the service period. Consumption-based services (such as separately identifiable consulting services and premium support services and classroom training services) are recognized over time as the services are utilized, typically following the percentage-of-completion method or ratably. When using the percentage-of-completion method, we typically measure the progress toward complete satisfaction of the performance obligation in the same way and with the same reasoning and judgment as we do for customer-specific on-premise software development agreements. We apply judgment in determining whether a service qualifies as a stand-ready service or as a consumption-based service.

Revenue for combined performance obligations is recognized over the longest period of all promises in the combined performance obligation.

Judgment is also required to determine whether revenue is to be recognized at a point in time or over time. For performance obligations satisfied over time, we need to measure progress using the method that best reflects SAP's performance. When using cost incurred as a measure of progress for recognizing revenue over time, we apply judgment in estimating the total cost to satisfy the performance obligation.

All of the judgments and estimates mentioned above can significantly impact the timing and amount of revenue to be recognized.

Contract Balances

We recognize trade receivables for performance obligations satisfied over time gradually as the performance obligation is satisfied and in full once the invoice is due. Judgment is required in determining whether a right to consideration is unconditional and thus qualifies as a receivable.

Contract liabilities primarily reflect invoices due or payments received in advance of revenue recognition.

Typically, we invoice fees for on-premise standard software on contract closure and software delivery. Periodic fixed fees for cloud subscription services, software support services, and other multi-period agreements are typically invoiced yearly or quarterly in advance. Such fee prepayments account for the majority of our contract liability balance. Fees based on actual transaction volumes for cloud subscriptions and fees charged for non-periodical services are invoiced as the services are delivered.

While payment terms and conditions vary by contract type and region, our terms typically require payment within 30 to 60 days.

Geographic Information

The amounts for revenue by region in the following tables are based on the location of customers. The regions in the following table are EMEA (Europe, Middle East, and Africa), Americas (North America and Latin America), and APJ (Asia Pacific Japan).

Total Revenue by Region

€ millions	2022	2021	2020
Germany	4,504	4,343	4,015
Rest of EMEA	8,577	8,246	8,052
EMEA	13,081	12,589	12,067
United States	10,811	8,870	9,110
Rest of Americas	2,484	2,099	1,996
Americas	13,295	10,969	11,106
Japan	1,242	1,301	1,305
Rest of APJ	3,253	2,984	2,859
APJ	4,495	4,285	4,165
SAP Group	30,871	27,842	27,338

Major Revenue Classes by Region

€ millions	Cloud Revenue			Cloud and Software Revenue		
	2022	2021	2020	2022	2021	2020
EMEA	4,293	3,308	2,608	11,236	10,931	10,364
Americas	6,687	4,894	4,439	11,333	9,348	9,239
APJ	1,575	1,217	1,033	3,952	3,798	3,625
SAP Group	12,555	9,418	8,080	26,521	24,078	23,228

For information about the breakdown of revenue by segment and segment revenue by region, see [Note \(C.1\)](#).

In 2022, SAP's business was impacted by the war in Ukraine and SAP's decision to wind down its business operations in Russia and Belarus. Compared to the previous year, revenue was approximately €220 million lower.

Remaining Performance Obligations

Amounts of a customer contract's transaction price that are allocated to the remaining performance obligations represent contracted revenue that has not yet been recognized. They include amounts recognized as contract liabilities and amounts that are contracted but not yet due.

The transaction price allocated to performance obligations that were unsatisfied or partially unsatisfied as at December 31, 2022, was €48.9 billion (December 31, 2021: €39.9 billion). The transaction price thereof allocated to cloud performance obligations that were unsatisfied or partially unsatisfied as at December 31, 2022, was €34.2 billion (December 31, 2021: €25.3 billion). The remaining amount mostly comprises obligations to provide software support services. The vast majority of software support contracts are contracts in the renewal phase that typically have a one-year contract term, while cloud subscription contracts typically are multiple-year contracts. The portion

of remaining performance obligations related to services consists of non-cancelable revenue from contracts for projects with a predefined output.

Overall, about half of the remaining performance obligations is expected to be recognized over the next 12 months following the respective balance sheet date. This estimate is based on our best judgment, as it, for example, needs to consider estimates of possible future contract modifications or customers' deployment of the solutions. The amount of transaction price allocated to the remaining performance obligations, and changes in this amount over time, are impacted by, among others:

- Currency fluctuations
- The contract period of our cloud and software support contracts remaining at the balance sheet date and thus by the timing of contract renewals

Contract Balances

The following table presents the activities impacting contract liabilities balances during the year ended December 31, 2022:

Contract Liabilities

€ billions	2022
↗ 1/1/2022	4.4
Increases resulting from billing and invoices becoming due	10.9
Decreases resulting from satisfaction of performance obligations	-10.1
Other ¹	0.1
↗ 12/31/2022	5.3

¹ Other includes, for example, the impact of foreign currency translation and business combinations.

The amount of revenue recognized in the reporting period that was included in the contract liability balance at the beginning of the reporting period was €4.1 billion (December 31, 2021: €3.6 billion).

(A.2) Trade and Other Receivables

⌚ Accounting for Trade and Other Receivables

We measure trade receivables and contract assets from contracts with customers at amortized cost less expected credit losses. We account for expected credit losses by recording an allowance on a portfolio basis. We apply the simplified impairment approach. On initial measurement of the receivables, we consider all credit losses that are expected to occur during the lifetime of the receivables. We use a provision matrix to estimate these losses.

Additionally, we recognize allowances for individual receivables if there is objective evidence of credit impairment.

Account balances are written off either partially or in full if we judge that the likelihood of recovery is remote.

For information about how the default risk for trade receivables is analyzed and managed, how the loss rates for the provision matrix are determined, how credit impairment is determined and what our criteria for write-offs are, see the section on credit risk in [Note \(F.1\)](#).

In our Consolidated Income Statements, net gains/losses from expected credit loss allowances are included in Other operating income/expense, net. Gains/losses from foreign currency exchange rate fluctuations are included in Other non-operating income/expense, net.

Determining our expected credit loss allowance involves significant judgment. In this judgment, we primarily consider our historical experience with credit losses in the respective provision matrix risk class and current data on overdue receivables. We expect that our historical default rates represent a reasonable approximation for future expected customer defaults. Besides historical data, our judgment used in developing the provision matrix considers reasonable and supportable forward-looking information (for example, changes in country risk ratings, and fluctuations in credit default swaps of the countries in which our customers are located).

The assessment of whether a receivable is collectible involves the use of judgment and requires us to make assumptions about customer defaults that could change significantly.

By applying this judgment, we record an allowance for a specific customer when it is probable that a credit loss has occurred and the amount of the loss is reasonably estimable. Basing the expected credit loss allowance for the remaining receivables primarily on our historical loss experience likewise requires judgment, as history may not be indicative of future development. Also, including reasonable and supportable forward-looking information in the loss rates of the expected credit loss allowance requires judgment, as they may not provide a reliable prediction for future development.

Trade and Other Receivables

€ millions	2022			2021		
	Current	Non- Current	Total	Current	Non- Current	Total
Trade receivables, net	5,782	0	5,782	5,887	1	5,888
Other receivables	454	169	623	465	146	611
Total	6,236	169	6,405	6,352	147	6,499

The impact of the war in Ukraine has significantly increased the credit risk on our trade receivables in Russia and Belarus. The expected credit loss in Russia and Belarus in 2022 was €62 million (2021: €5 million).

Contract assets as at December 31, 2022, were €343 million (December 31, 2021: €360 million).

For more information about financial risk, how we manage credit risk, and details of our trade receivables and contract assets allowances, see [Note \(F.1\)](#).

(A.3) Capitalized Cost from Contracts with Customers

⌚ Costs of Obtaining Customer Contracts

Capitalized costs from customer contracts are classified as Other non-financial assets in our statement of financial position.

The capitalized assets for the incremental costs of obtaining a customer contract consist of sales commissions earned by our sales force and partners as well as amounts paid to employees with non-sales roles when the payments meet the definition of being an incremental cost to obtain a contract with a customer. Judgment is required in determining the amounts to be capitalized, particularly where the commissions are based on cumulative targets and where commissions relate to multiple performance obligations in one customer contract. We capitalize such cumulative target commissions for all customer contracts that count towards the cumulative target but only if nothing other than obtaining customer contracts can contribute to achieving the cumulative target. Commissions for contracts with multiple performance obligations or for probable renewals thereof are allocated to these performance obligations and probable renewals relative to the respective standalone selling price.

Our sales commission payments for customer contract renewals are typically not commensurate with the commissions paid for new contracts. Thus, the commissions paid for renewable new contracts

also relate to expected renewals of these contracts. Consequently, we amortize sales commissions paid for new customer contracts on a straight-line basis over the expected contract life including probable contract renewals. Judgment is required in estimating these contract lives. In exercising this judgment, we consider our expectation about future contract renewals which we evaluate periodically to confirm that the resulting amortization period properly reflects the expected contract life or if there are potential indicators of impairment. Commensurate payments are amortized over the contract term to which they relate. The amortization periods range from 18 months to nine years depending on the type of offering. Amortization of the capitalized costs of obtaining customer contracts is classified mainly as sales and marketing expense.

We expense incremental costs of obtaining a customer contract as incurred if we expect an amortization period of one year or less.

Costs to Fulfill Customer Contracts

Capitalized costs incurred to fulfill customer contracts mainly consist of direct costs for set-up and implementation of cloud products and custom cloud development contracts as far as these costs are not in scope of other accounting standards than IFRS 15. These costs are amortized after completion of the setup and implementation or the development, respectively, on a straight-line basis over the expected life of the cloud subscription contract including expected renewals. For the life of the contract, we consider our expectation about future contract renewals which we evaluate periodically to confirm that the resulting amortization period properly reflects the expected contract life. The amortization periods range from six to eight years depending on the type of offering. In addition, the capitalized costs include third-party license fees which are amortized over the term of the third-party license contract. Judgment is required in evaluating whether costs are directly related to customer contracts and in estimating contract lives.

Amortization of capitalized costs to fulfill contracts for custom cloud applications and extensions is included in the cost of cloud.

Capitalized Cost from Contracts with Customers

€ millions	2022			2021		
	Current	Non-Current	Total	Current	Non-Current	Total
Capitalized cost of obtaining customer contracts	871	2,812	3,684	667	2,158	2,826
Capitalized cost to fulfill customer contracts	164	206	370	126	175	301
Capitalized contract cost	1,036	3,019	4,054	793	2,333	3,127
¶ Other non-financial assets	2,139	3,580	5,719	1,633	2,628	4,261
Capitalized contract cost as % of ¶ Other non-financial assets	48	84	71	49	89	73

Amortization Expense

€ millions	2022	2021
Capitalized cost of obtaining customer contracts	762	523
Capitalized cost to fulfill customer contracts	243	171

(A.4) Customer-Related Provisions

⌚ Expected Contract Losses

Customer-related provisions mainly include expected contract losses. We adjust these provisions as further information becomes available and as circumstances change. Non-current provisions are measured at the present value of their expected settlement amounts as at the reporting date.

The unit of account for the identification of potential onerous customer contracts is based on the contract definition of IFRS 15 including the contract combination guidance. The economic benefits considered in the assessment comprise the future benefits we are directly entitled to under the contract as well as the anticipated future benefits that are the economic consequence of the contract if these benefits can be reliably determined.

⌚ Customer-Related Litigation and Claims

Customer-related provisions also include obligations resulting from customer-related litigation and claims. We are currently confronted with various claims and legal proceedings, including claims that relate to customers demanding indemnification for proceedings initiated against them based on their use of SAP software, and occasionally claims that relate to customers being dissatisfied with the products and services that we have delivered to them. The obligations arising from customer-related litigation and claims comprise cases in which we indemnify our customers against liabilities arising from a claim that our products infringe a third party's patent, copyright, trade secret, or other proprietary rights.

Due to uncertainties relating to these matters, provisions are based on the best information available. Significant judgment is required in the determination of whether and when a provision is to be recorded and what the appropriate amount for such provision should be. Notably, judgment is required in the following areas:

- Determining whether an obligation exists
- Determining the probability of outflow of economic benefits
- Determining whether the amount of an obligation is reliably estimable
- Estimating the amount of the expenditure required to settle the present obligation

At the end of each reporting period, we reassess the potential obligations related to our pending claims and litigation and adjust our respective provisions to reflect the current best estimate. In addition, we monitor and evaluate new information that we receive after the end of the respective reporting period, but before the Consolidated Financial Statements are authorized for issue, to determine whether this provides additional information regarding conditions that existed at the end of the reporting period. Changes to the estimates and assumptions underlying our accounting for legal contingencies, and outcomes that differ from these estimates and assumptions, could require material adjustments to the carrying amounts of the respective provisions recorded and additional provisions. The expected timing or amounts of any outflows of economic benefits resulting from these lawsuits and claims are uncertain and not estimable, as they generally depend on the duration of the legal proceedings and settlement negotiations required to resolve the litigation and claims and the unpredictability of the outcomes of legal disputes in several jurisdictions.

Contingent liabilities exist in respect of customer-related litigation and claims for which no provision has been recognized. It is not practicable to estimate the financial impact of these contingent liabilities due to the uncertainties around these lawsuits and claims as outlined above.

Section B – Employees

This section provides financial insights into our employee benefit arrangements. It should be read in conjunction with the compensation disclosures for key management personnel in [Note \(G.5\)](#).

(B.1) Employee Headcount

The following table provides an overview of employee headcount, broken down by function and by the regions EMEA (Europe, Middle East, and Africa), Americas (North America and Latin America), and APJ (Asia Pacific Japan).

Employee Headcount by Region and Function

Full-time equivalents	12/31/2022				12/31/2021				12/31/2020			
	EMEA	Americas	APJ	Total	EMEA	Americas	APJ	Total	EMEA	Americas	APJ	Total
Cloud and software	5,672	4,617	5,247	15,536	5,947	4,586	5,113	15,646	6,278	4,589	5,525	16,392
Services	8,247	5,580	5,841	19,669	8,229	5,491	5,924	19,644	8,175	5,934	5,733	19,842
Research and development	16,606	6,416	11,100	34,122	15,347	6,326	10,571	32,244	13,705	6,094	9,781	29,580
Sales and marketing	12,207	12,511	5,831	30,548	11,136	11,598	5,481	28,215	10,348	10,485	5,000	25,834
General and administration	3,466	2,186	1,280	6,932	3,374	2,306	1,199	6,879	3,285	2,161	1,243	6,689
Infrastructure	2,800	1,440	914	5,154	2,609	1,353	824	4,786	2,291	1,107	696	4,094
SAP Group (December 31)	48,999	32,749	30,213	111,961	46,641	31,660	29,113	107,415	44,082	30,369	27,979	102,430
Thereof acquisitions	188	214	8	410	462	407	45	914	609	97	75	781
SAP Group (months' end average)	48,408	32,668	29,939	111,015	45,359	30,651	28,354	104,364	43,340	30,306	27,830	101,476

(B.2) Employee Benefits Expenses

€ millions	2022	2021	2020
Salaries	12,140	10,635	10,413
Social security expenses	1,894	1,589	1,439
Share-based payment expenses	2,614	2,794	1,084
Pension expenses	479	408	419
Employee-related restructuring expenses	85	25	-7
Termination benefits outside of restructuring plans	44	101	72
Employee benefits expenses	17,256	15,552	13,420

(B.3) Share-Based Payments

⌚ Accounting for Share-Based Payments

Classification in the Income Statement

Share-based payments cover cash-settled and equity-settled awards issued to our employees. The respective expenses are recognized as employee benefits and classified in our Consolidated Income Statements according to the activities that the receiving employees perform.

Valuation, Judgment, and Sources of Estimation Uncertainty

We use certain assumptions in estimating the fair values for our share-based payments, including expected share price volatility and expected dividend yields. In addition, the final number of Performance Share Units (PSUs) vesting also depends on the achievement of performance indicators. Furthermore, the payout for cash-settled share units depends on our share price on the respective vesting dates. Changes to these assumptions and outcomes that differ from these assumptions could require material adjustments to the carrying amount of the liabilities we have recognized for these share-based payments. The fair value of the share units granted under the LTI 2016 Plan is dependent on our performance against a group of peer companies (Peer Group Index), the volatility, and the expected correlation between the price of the index and our share price. The fair value of the share units granted under the LTI 2020 are dependent on our performance against the total shareholder return (TSR) for NASDAQ-100 companies, the volatility, and the expected correlation between the TSR of the NASDAQ-100 companies and our TSR.

Regarding future payout under our cash-settled plans, the SAP share price is the most relevant factor. With respect to our LTI 2016 Plan, we believe that future payout will be significantly impacted not only by our share price but also by the relative performance against the Peer Group Index. With respect to our LTI 2020, we believe that future payout will be significantly impacted not only by our share price but also by the relative TSR performance against the NASDAQ-100 companies. Future payouts under our LTI 2020 will also be dependent on meeting non-market-based performance conditions based on SAP's long-term strategy. The latter, however, is not incorporated into our fair value calculation but leads to adjustments of the quantity of awards granted. Changes in these factors could significantly affect the estimated fair values as calculated by the valuation model, and the future payout.

Under certain programs, we grant our employees discounts on share purchases. If those discounts are not dependent on future services to be provided by our employees, the discount is recognized as an expense when the discounts are granted.

Presentation in the Statements of Cash Flows

We present the payments of our cash-settled share-based payment plans separately in our Statements of Cash Flows under Cash flows from operating activities. As a result, the changes in other assets and in other liabilities presented in the reconciliation of operating cash flow do not consider share-based payment-related assets or liabilities.

Payments for taxes related to the net share settlement for our equity-settled share-based payment plans are presented separately in our Statement of Cash Flows under Cash flows from financing activities.

The operating expense line items in our income statement include the following share-based payment expenses:

Share-Based Payment Expenses by Functional Area

€ millions	2022	2021	2020
Cost of cloud	68	59	40
Cost of software licenses and support	70	70	55
Cost of services	281	266	175
Research and development	625	513	296
Sales and marketing	773	655	360
General and administration	798	1,230	157
Share-based payment expenses	2,614	2,794	1,084
Thereof cash-settled share-based payments	355	1,147	893
Thereof equity-settled share-based payments	2,258	1,647	191

Our major share-based payment plans are described below.

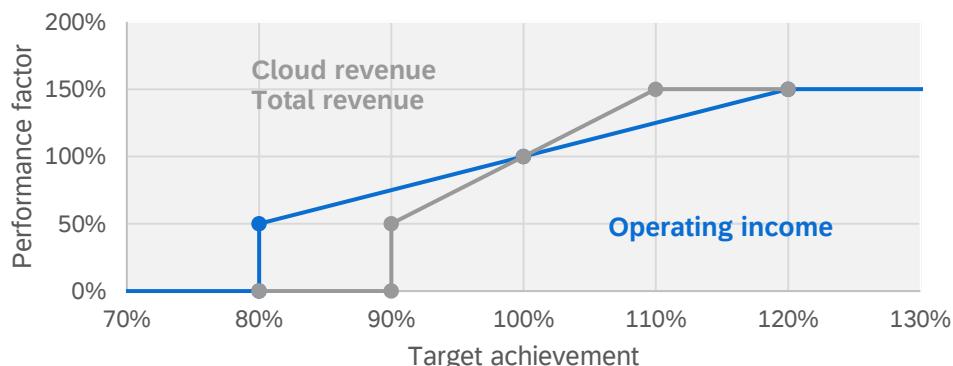
a) Cash-Settled Share-Based Payments

SAP Long-Term Incentive Program 2020 (LTI 2020)

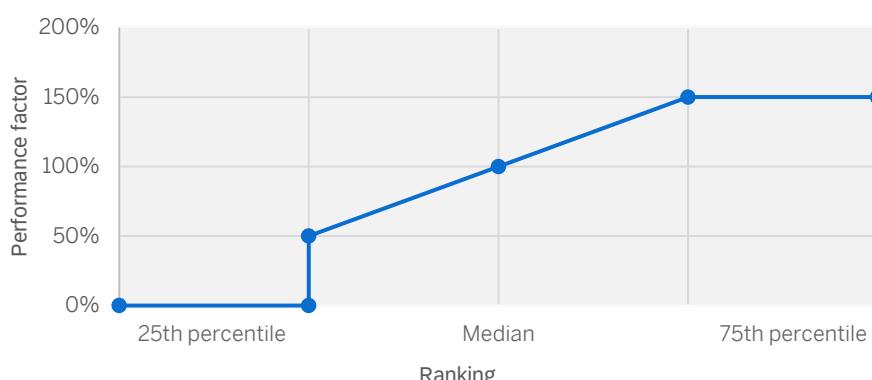
The LTI 2020 is a long-term, multiyear performance-based element of Executive Board compensation that is granted in annual tranches. The LTI 2020 reflects SAP's long-term strategy and thus sets uniform incentives to achieve key targets from the long-term strategic plans. The LTI 2020 also serves to reward the Executive Board members for long-term SAP share price performance as compared to the market, thus ensuring that shareholders' interests are also honored. In addition, the LTI 2020 includes a component to ensure long-term retention of our Executive Board members.

The LTI 2020 is a virtual share program under which annual tranches with a term of approximately four years each are granted. When the individual tranches are granted, a certain grant amount specified in the Executive Board member's service contract is converted into virtual shares (share units). For this purpose, the grant amount is divided by the price of the SAP share which corresponds to the arithmetic mean of the SAP share price on the 20 trading days after scheduled publication of the preliminary results for the fourth quarter and the year as a whole (grant price). The share units allocated are composed of 1/3 Financial Performance Share Units (FSUs), 1/3 Market Performance Share Units (MSUs), and 1/3 Retention Share Units. All three types of share units have a vesting period of approximately four years. In contrast to Retention Share Units, FSUs and MSUs are subject to changes in quantity. In this context, the following applies:

The number of FSUs initially awarded is multiplied by a performance factor. The performance factor consists of three equally weighted individual performance indicators relating to the three non-IFRS KPIs at constant currencies, derived from SAP's long-term strategy: total revenue, cloud revenue, and operating income. The performance period throughout which the target achievement for these three KPIs is measured starts at the beginning of the financial year in which the FSUs are awarded and concludes upon the end of the second year following the year in which the share units were awarded. A numerical target value equaling 100% target achievement is set for each KPI. This constitutes, in each case, a cumulative value for the three years of the performance period.



The number of MSUs initially awarded is likewise multiplied by a performance factor. The performance factor depends on the amount of the TSR on the SAP share, measured for an entire performance period of approximately three years, compared to the TSR for NASDAQ-100 companies. If the TSR on the SAP share equals the median, the performance factor will be 100%. If the TSR on the SAP share over the performance period is negative, the maximum performance factor will, however, in deviation from the summary above, be 100%.



The performance of the share units is linked to the performance of the SAP share price, including dividend payments. Accordingly, an amount is paid out for each share unit which equals the SAP share price plus those dividends disbursed in respect of an SAP share in the period from the beginning of the year in which the share units were awarded until the end of the third year following the year in which the share units were awarded. The arithmetic mean of the SAP share price on the 20 trading days after scheduled publication of the preliminary results for the fourth quarter and the year as a whole will be used as the SAP share price. The payout amount per share unit, including the dividend amounts due on the share units, is capped at 200% of the grant price. The tranche is cash-settled and paid in euros after the Annual General Meeting of Shareholders of the corresponding year.

If an Executive Board member's service contract is terminated before the end of the third year following the year in which the share units were granted, the Retention Share Units and PSUs are forfeited in whole or in part, depending on the circumstances of the relevant resignation from office or termination of the service contract.

Long-Term Incentive 2016 Plan (LTI 2016 Plan)

The purpose of the LTI 2016 Plan was to reward our Executive Board members for the annual achievement of SAP's operating profit (non-IFRS at constant currencies) targets, to ensure long-term retention of our Executive Board members, and to reward them for the long-term SAP share price performance as compared to its main peer group (Peer Group).

An LTI tranche was granted annually and has a term of four years (2016–2019 tranches). Each grant started with determining a grant amount in euros. The grant amount was based on the Executive Board members' contractual LTI target amount and the operating profit target achievement for the previous year. The Supervisory Board set the grant amount at a level between 80% and 120% of the contractual LTI target amount, taking into account the operating profit target achievement. This grant amount was converted into virtual shares, referred to as share units, by dividing the grant amount by the grant price. The grant price was the arithmetic mean of the XETRA closing prices of the SAP share on the 20 trading days following the publication of SAP's fourth-quarter results.

All share units granted in this way, comprising 60% PSUs and 40% Retention Share Units, have a vesting period of approximately four years. At the end of the vesting period, the corresponding share units are non-forfeitable. The payout price used for the settlement is the arithmetic mean of the XETRA closing prices of the SAP share on the 20 trading days following the publication of SAP's fourth-quarter results subsequent to the end of the vesting period. The payout price is capped at 300% of the grant price. The LTI tranche is cash-settled and paid in euros after the Annual General Shareholders' Meeting of the corresponding year.

The number of PSUs ultimately paid out depends on the performance of the SAP share – absolute and relative to the Peer Group Index. In contrast, the final number of Retention Share Units is fixed. SAP's absolute share price performance is measured by comparing the grant price against the payout price. If the SAP share price performance equals the Peer Group Index performance over the same period, the performance factor is set at 100%. If the SAP share price performs better than the Peer Group Index (measured as difference between SAP share price performance and Peer Group Index performance), the performance factor is increased by the percentage point of the outperformance of the SAP share price. The percentage point is doubled if, additionally, the payout price is higher than the grant price. The performance factor is capped at 150%. If the Peer Group Index performs better than the SAP share price, the performance factor is decreased by the percentage point of the outperformance of the Peer Group Index. All PSUs lapse if the performance factor is below 50%.

Cash-Settled Move SAP Plan (Move) Including Grow SAP Plan

To retain and engage executives and certain employees, we granted virtual shares under Move representing a contingent right to receive a cash payment determined by the SAP share price and the number of share units that ultimately vest. Under our previous policy, we serviced obligations arising from the plan with cash payments, but starting in 2022, we intend to settle share units granted from then on predominantly in shares. For more information about the terms and conditions of the equity-settled Move SAP Plan, see section b) Equity-Settled Share-Based Payments in this [Note \(B.3\)](#). Obligations from outstanding share units granted before 2022 will continue to be settled in cash.

In June 2020, 2021, and 2022 respectively, we granted share units under the Grow SAP Plan that we intend to settle in cash. This fixed term plan has broadly the same terms and conditions as the Move SAP Plan, recognizes all employees' commitment to SAP's success, and deepens their participation in our future company performance. In previous years, grants under the COVID-19 Recognition Plan and the Restricted Stock Unit Plan were also included.

Different vesting schedules apply to specific share units. Granted share units under the respective plans will vest in different tranches, as follows:

- Restricted Stock Units (RSUs) with service condition only
 - Over a half-year period,

- Over a three-year period on annual basis,
- Over a three-year period on a quarterly basis after a waiting period of six months, or
- Performance Share Units (PSUs) with service condition and upon achieving certain key performance indicators (KPIs)
- Over a three-year period, or
- Over a three-year period on a quarterly basis after a waiting period of 12 months.

From 2021 onwards, the number of PSUs that will vest under the different tranches is mainly contingent upon achievement of two equally weighted KPIs in the year of grant: operating profit (non-IFRS at constant currencies) and cloud revenue (at constant currencies). Until 2021, operating profit (non-IFRS at constant currencies) was the only KPI. Depending on the weighted average performance, the number of PSUs vesting ranges between 0% and 200% of the number initially granted. Performance against the KPI target was 84.3% in 2022 (2021: 130.9%, 2020: 100.4%). The share units granted as cash-settled PSUs are paid out in cash upon vesting.

The valuation of our outstanding cash-settled plans was based on the following parameters and assumptions:

Fair Value and Parameters Used at Year End 2022

€, unless otherwise stated	LTI 2016 Plan (2019 Tranche)	LTI 2020 (2020–2022 Tranches)	Move (2019–2022 Tranches)
Weighted average fair value as at 12/31/2022	67.81	94.83	94.78
Information how fair value was measured at measurement date			
Valuation model used	Monte Carlo	Monte Carlo	Other ¹
Share price	96.39	96.39	96.39
Risk-free interest rate, depending on maturity (in %)	0.37	NA	NA
Expected volatility (in %)	27	24 to 31	NA
Expected dividend yield (in %)	2.03	NA	2.03
Weighted average remaining life of awards outstanding as at 12/31/2022 (in years)	0.2	2.3	0.8

¹ For these awards, the fair value is calculated by subtracting expected future dividends, if any, until maturity of the respective award from the prevailing share price as at the measurement date.

Fair Value and Parameters Used at Year End 2021

€, unless otherwise stated	LTI 2016 Plan (2018–2019 Tranches)	LTI 2020 (2020–2021 Tranches)	Move (2018–2021 Tranches)
Weighted average fair value as at 12/31/2021	64.16	118.73	122.88
Information how fair value was measured at measurement date			
Valuation model used	Monte Carlo	Monte Carlo	Other ¹
Share price	124.90	124.90	124.90
Risk-free interest rate, depending on maturity (in %)	–0.72 to –0.12	NA	–0.72 to –0.32
Expected volatility (in %)	21	30 to 32	NA
Expected dividend yield (in %)	1.52	NA	1.52
Weighted average remaining life of awards outstanding as at 12/31/2021 (in years)	0.7	2.8	1.1

¹ For these awards, the fair value is calculated by subtracting expected future dividends, if any, until maturity of the respective award from the prevailing share price as at the measurement date.

For the LTI 2016 Plan valuation, the Peer Group Index price on December 31, 2022, was US\$432.27 (2021: US\$593.37); the expected dividend yield of the index of 1.16% (2021: 1.00%), the expected volatility of the index of 32% (2021: 17% to 18%), and the expected correlation of the SAP share price

and the index price of 39% (2021: 35% to 36%) are based on historical data for the SAP share price and index price.

For the LTI 2020 valuation, the NASDAQ-100 Total Return Index on December 31, 2022, was US\$12,994.57 (2021: US\$19,217.94). The expected volatility of the NASDAQ-100 companies of 36% to 41% (2021: 36% to 38%), and the expected correlation of SAP and the NASDAQ-100 companies of 26% to 32% (2021: 31% to 34%) are based on historical TSR data for SAP and the NASDAQ-100 companies.

The risk-free interest rate is derived from German government bonds with a similar duration. The SAP dividend yield is based on expected future dividends.

Changes in Outstanding Awards

Thousands, unless otherwise stated	LTI 2016 Plan (2018–2019 Tranches)	LTI 2020 (2020–2022 Tranches)	Move (2018–2022 Tranches)
12/31/2020	767	172	16,993
Granted	0	238	12,204
Adjustment based upon KPI target achievement	-150	NA	153
Exercised	-92	0	-8,092
Exchanged	NA	NA	-1,309
Forfeited	-57	-70	-1,165
12/31/2021	469	340	18,783
Granted ²	0	206	2,997
Adjustment based upon KPI target achievement	-122	NA	-36
Exercised	-77	0	-8,869
Forfeited	0	0	-1,016
12/31/2022	270	546	11,859
<hr/>			
Total carrying amount (in € millions) of liabilities as at			
12/31/2021	28	15	1,260
12/31/2022	18	23	752
<hr/>			
Total intrinsic value of vested awards (in € millions) as at			
12/31/2021	38	4	0
12/31/2022	22	3	0
<hr/>			
Weighted average share price (in €) for awards exercised in			
2021	106.68	NA	107.69
2022	106.59	NA	97.35
<hr/>			
Total expense (in € millions) recognized in			
2020	-9	6	760
2021	-11	9	1,139
2022	-2	8	346

² We have changed the classification of some share units granted under the Move plan with the initial intention to settle in shares from equity-settled to cash-settled because a cash outflow became probable. Share units with switched classification are considered in the number of granted share units.

Share-Based Payment Balances

€ millions	2022			2021		
	Current	Non-Current	Total	Current	Non-Current	Total
Share-based payment liabilities	524	279	803	839	462	1,302
Other non-financial liabilities	4,818	705	5,523	5,203	860	6,063
Share-based payment liabilities as % of Other non-financial liabilities	11	40	15	16	54	21

b) Equity-Settled Share-Based Payments

Equity-Settled Move SAP Plan (Move)

Starting in 2022, we decided to grant share units under Move that we intend to settle in shares instead of cash. Most of the share units vest quarterly over three years after a six-month waiting period. In addition, PSUs are subject to the achievement of two equally weighted KPIs in the year of grant: operating profit (non-IFRS at constant currencies) and cloud revenue (at constant currencies).

Different vesting schedules apply to specific share units. Granted share units will vest in different tranches as follows:

- RSUs with service condition only
 - Over a half-year period,
 - Over a three-year period on a quarterly basis after a waiting period of six months, or
- PSUs with service condition and upon achieving certain key performance indicators (KPIs)
 - Over a one-year period,
 - Over a three-year period on a quarterly basis after a waiting period of 12 months.

We intend to settle the share units classified as equity-settled by reissuing treasury shares upon vesting (for more information, see [Note \(E.2\)](#)).

Own SAP Plan (Own)

Under Own, employees have the opportunity to purchase, on a monthly basis, SAP shares without any required holding period. The investment per each eligible employee is limited to a percentage of the respective employee's monthly base salary. SAP matches the employee investment by 40% and adds a subsidy of €20 per month for non-executives. As part of SAP's 50th anniversary celebration, SAP's contribution was temporarily doubled from 40% to 80% from January to March 2022, contributing to the peak in 2022. This plan is not open to members of the Executive Board.

Numbers of Shares Purchased

Millions	2022	2021	2020
Own	9.2	5.7	5.5

As a result of our Own SAP Plan, we have commitments to grant SAP shares to employees. We have fulfilled and intend to continue to meet these commitments through an agent who administers the equity-settled programs and purchases shares on the open market.

Qualtrics Equity Awards

Qualtrics Omnibus Plan (Qualtrics Plan)

Qualtrics grants equity awards settled with Qualtrics shares to eligible employees and the executive officers of Qualtrics. Qualtrics intends to meet these commitments by issuing shares. Granted units

are either RSU awards subject to a time-based vesting, or PSUs subject to the achievement of certain performance conditions, as established by Qualtrics' board of directors and measured annually (Qualtrics RSUs).

Granted share units will vest in different tranches as follows:

- RSUs with service condition only
 - Over a four-year period on a quarterly basis,
 - Over a four-year period on a quarterly basis after a waiting period of six or 12 months, or
- PSUs with service condition and upon achieving certain non-market-based Qualtrics performance conditions
 - Over a four-year period on an annual basis.

Pre-Acquisition Qualtrics Awards and Exchange Offer

In conjunction with the acquisition of Qualtrics in 2019, under the terms of the acquisition agreement, SAP exchanged unvested Restricted Share Awards (RSAs), Restricted Share Units (RSUs), Performance Share Units (PSUs), and options held by employees of Qualtrics into cash-settled share-based payment awards of SAP (Qualtrics Rights). After completion of a voluntary exchange offer for eligible Qualtrics employees in conjunction with the IPO on January 28, 2021, 5.4 million cash-settled Qualtrics Rights and 1.3 million SAP RSU awards were exchanged into 12.8 million equity-settled Qualtrics RSU awards. The terms and conditions of the voluntary exchange offer, including the exchange ratio, were designed to preserve the intrinsic value of the Qualtrics Rights and SAP RSUs that were tendered. The modification date fair value of the Qualtrics RSU awards was US\$30.00, which is equivalent to the Qualtrics IPO price. Furthermore, a subsequent exchange offer for certain Qualtrics employees in Australia took place in September 2021.

Recognized Expense

€ millions	2022	2021	2020
Own	307	200	191
Qualtrics Plan	1,164	1,426	NA
Move (2022 Tranches)	768	NA	NA
Others	19	21	0
Total	2,258	1,647	191

The valuation of our outstanding equity-settled plans at grant date was based on the following parameters and assumptions:

Fair Value and Parameters Used at Grant Date in 2022

€, unless otherwise stated	Move (2022 Tranches)	Qualtrics Plan
Weighted average fair value as at grant date	93.80	US\$ 20.69
Information how fair value was measured at grant date		
Valuation model used	Other ³	Other ³
Weighted average share price	97.61	US\$20.69
Weighted average expected dividend yield (in %)	2.43	0
Weighted average initial life at grant date (in years)	1.6	2.1
Weighted average remaining life of awards outstanding as at 12/31/2022 (in years)	1.2	2.4

³ For these awards, the fair value is calculated by subtracting expected future dividends, if any, until maturity of the respective award from the prevailing share price as at the measurement date.

The weighted average remaining life of Qualtrics Plan awards outstanding as at December 31, 2021 (in years) was 3.0 years and the weighted average grant date fair value was US\$44.27. The fair value of the equity-settled share unit rights at grant date was estimated by taking the share price of the

underlying shares on that date less expected dividends. The fair values of our equity-settled Qualtrics Plan equal the Qualtrics share price at grant date, as the expected dividend yield is 0%.

Changes in Outstanding Awards

Thousands, unless otherwise stated	Move (2022 Tranches)	Qualtrics Plan
12/31/2020	NA	0
Exchanged	NA	12,872
Granted	NA	80,856
Exercised	NA	-7,467
Forfeited	NA	-2,241
12/31/2021	NA	84,018
Granted ⁴	15,371	35,490
Adjustment based upon KPI target achievement	-139	0
Exercised	-3,258	-34,320
Forfeited	-470	-7,048
12/31/2022	11,504	78,140

⁴ We have changed the classification of some share units granted under the Move plan with the initial intention to settle in shares from equity-settled to cash-settled because a cash outflow became probable. Share units with switched classification are considered in the number of granted share units.

(B.4) Pension Plans and Similar Obligations

Defined Contribution Plans

Amounts for domestic and foreign defined contribution plans are based on a percentage of the employees' salaries or on the amount of contributions made by employees. In Germany and some other countries, we make contributions to public pension schemes that are operated by national or local government or similar institutions. Expenses for such local state pension plans are recognized as short-term employee benefits, that is, social security expenses.

Defined Benefit Pension Plans

The discount rates used in measuring our post-employment benefit assets and liabilities are derived from rates available on high-quality corporate bonds and government bonds for which the timing and amounts of payments match the timing and the amounts of our projected pension payments. Net interest expense and other expenses related to defined benefit plans are recognized as employee benefits expenses and classified in our Consolidated Income Statements according to the activities that the employees owning the awards perform. Since our domestic defined benefit pension plans primarily consist of an employee-financed post-retirement plan that is fully financed with qualifying insurance policies, current service cost may become a credit as a result of adjusting the defined benefit liability's carrying amount to the fair value of the qualifying plan assets. Such adjustments are recorded in service cost. Total expenses on defined benefit pension plans comprise related current and past service costs as well as interest income and expense.

Total Expense of Pension Plans

€ millions	2022	2021	2020
Defined contribution plans	457	346	326
Defined benefit pension plans	22	62	93
Pension expenses	479	408	419

Defined Benefit Plans

Present Value of the Defined Benefit Obligations (DBO) and the Fair Value of the Plan Assets

€ millions	Domestic Plans		Foreign Plans		Other Foreign Post-Employment Plans		Total	
	2022	2021	2022	2021	2022	2021		
Present value of the DBO	949	1,194	577	667	211	217	1,737	2,078
Fair value of the plan assets	953	1,183	579	578	91	91	1,623	1,852
Net defined benefit liability (asset)¹	0	11	57	89	120	126	177	226

Net defined benefit liability (asset) as % of:								
Non-current other financial assets	0	0	0	0	0	0	0	0
Non-current provisions	0	3	20	27	33	35	54	65

¹ After the effects of the asset ceiling

Of the present value of the DBO of our domestic plans, €899 million (2021: €1,125 million) relate to plans that provide for lump-sum payments not based on final salary; of the present value of the DBO of our foreign plans, €448 million (2021: €524 million) relate to plans that provide for annuity payments not based on final salary.

The following significant weighted average assumptions were used for the actuarial valuation of our domestic and foreign pension liabilities as well as other post-employment benefit obligations as at the respective measurement date:

Significant Actuarial Assumptions

Percent	Domestic Plans				Foreign Plans				Other Foreign Post-Employment Plans			
	2022	2021	2020	2022	2021	2020	2022	2021	2020	2022	2021	2020
Discount rate	4.2	1.2	0.9	2.6	0.5	0.4	5.5	3.1	3.0			

The sensitivity analysis table below shows how the present value of all defined benefit obligations would have been influenced by reasonably possible changes to significant actuarial assumptions. The sensitivity analysis considers change in discount rate assumptions, holding all other actuarial assumptions constant.

Sensitivity Analysis

€ millions	Domestic Plans				Foreign Plans				Other Foreign Post-Employment Plans				Total
	2022	2021	2020	2022	2021	2020	2022	2021	2020	2022	2021	2020	
Present value of all defined benefit obligations if:													
Discount rate was 50 basis points higher	908	1,134	1,066	505	626	573	203	203	185	1,616	1,964	1,824	
Discount rate was 50 basis points lower	993	1,260	1,195	562	714	663	219	223	204	1,774	2,196	2,062	

Investments in Plan Assets

Our investment strategy on domestic benefit plans is to invest all contributions in stable insurance policies.

Our investment strategies for foreign benefit plans vary according to the conditions in the country in which the respective benefit plans are situated. We have adopted a long-term investment horizon for all major foreign benefit plans. Although our policy is to invest in a risk-diversified portfolio consisting of a mix of assets, both the defined benefit obligation and plan assets can fluctuate over time, which exposes the Group to actuarial and market (investment) risks. Depending on the statutory requirements in each country, it might be necessary to reduce any underfunding by addition of liquid assets.

Plan Asset Allocation

€ millions	2022		2021	
	Quoted in an Active Market	Not Quoted in an Active Market	Quoted in an Active Market	Not Quoted in an Active Market
Total plan assets	611	1,012	597	1,254
Thereof: Asset category				
Equity investments	170	0	182	0
Corporate bonds	190	0	202	0
Insurance policies	41	1,012	39	1,254

Our expected contribution in 2023 to our domestic and foreign defined benefit pension plans is immaterial. The weighted duration of our defined benefit plans amounted to 10 years as at December 31, 2022, and 11 years as at December 31, 2021.

Total future benefit payments from our defined benefit plans as at December 31, 2022, are expected to be €2,404 million (2021: €2,289 million). Of this amount, 76% (2021: 77%) have maturities of over five years, and 61% (2021: 62%) relate to domestic plans.

(B.5) Other Employee-Related Obligations

⌚ Accounting Policy

As far as the obligation for long-term employee benefits is secured by pledged reinsurance coverage, it is offset with the relating plan asset.

Other Employee-Related Liabilities

€ millions	2022			2021		
	Current	Non-Current	Total	Current	Non-Current	Total
Other employee-related liabilities	3,632	426	4,058	3,717	398	4,115
⌚ Other non-financial liabilities	4,818	705	5,523	5,203	860	6,063
Other employee-related liabilities as % of ⌚ Other non-financial liabilities	75	60	73	71	46	68

Other employee-related liabilities mainly relate to obligations from bonuses and sales commissions, outstanding vacation, time credits accumulated in the working time account, employee-related social security expenses, severance payments outside restructuring programs, and jubilee expenses.

(B.6) Restructuring

Recognition of Restructuring Provisions

We only recognize provisions for restructuring if and when the following occurs:

- SAP has designed a program that materially changes the scope of one of our businesses or the manner in which the business is conducted, and
- A detailed and documented restructuring plan has been approved by our Executive Board, a member thereof, or a direct report of an Executive Board member, and
- The program established is planned to start shortly after the program plan is approved and is expected to be completed in a timeframe that makes significant changes to the plan unlikely, and
- The program has been announced to the parties affected or has commenced.

We consider whether a change in business is material based on the business affected rather than for SAP as a whole. In judging whether a unit qualifies as a business for restructuring purposes, we consider if the unit has its own management team, has access to all inputs and processes necessary to provide outputs, and generates or could generate revenues. The materiality of a change to a business is assessed based on both the size and the nature of the change and therefore does not necessarily involve a material quantitative impact on our financial statements.

Restructuring Expenses

€ millions	2022	2021	2020
Employee-related restructuring expenses	–85	–25	7
Onerous contract-related restructuring expenses and restructuring-related impairment losses	–52	–132	–4
Restructuring expenses	–138	–157	3

Most of the restructuring expenses presented in 2022 relate to the wind-down of business in Russia and Belarus. Restructuring costs are mainly comprised of severance payments to employees, impairments of right-of-use assets for office buildings, impairments of data center equipment, and write-offs of capitalized sales commissions. The restructuring costs presented in 2021 mainly include expenses related to the accelerated harmonization of SAP's cloud infrastructure and platforms.

If not presented separately in our income statement, restructuring expenses would have been classified in the different expense items in our income statement as follows:

Restructuring Expenses by Functional Area

€ millions	2022	2021	2020
Cost of cloud	20	–127	0
Cost of software licenses and support	–9	–5	1
Cost of services	–70	–13	–3
Research and development	–16	–12	1
Sales and marketing	–58	3	3
General and administration	–4	–2	2
Restructuring expenses	–138	–157	3

Section C – Financial Results

This section provides insight into the financial results of SAP's reportable segments and of SAP overall as far as not already covered by previous sections. This includes but is not limited to segment results, income taxes, and earnings per share.

(C.1) Results of Segments

General Information

At year end 2022, SAP had seven operating segments that are regularly reviewed by the Executive Board, which is responsible for assessing the performance of the Company and for making resource allocation decisions as our chief operating decision-maker (CODM). The operating segments are largely organized and managed separately according to their product and service offerings. The Applications, Technology & Services segment and the Qualtrics segment are reportable segments.

The Services segment was dissolved and integrated into the former Applications, Technology & Support segment which was therefore re-named to Applications, Technology & Services. The Applications, Technology & Services segment derives its revenues primarily from the sale of software licenses, support offerings, and cloud subscriptions. Marketing costs that we primarily incur for product and solution-specific activities in the Applications, Technology & Services segment were included in the results of this segment and are no longer allocated to SAP's corporate functions.

The Qualtrics segment derives its revenues mainly from the sale of experience management cloud solutions that run front-office functions across experience data, and from the sale of related services. The figures of the Qualtrics segment of SAP and the financial results of Qualtrics International Inc. cannot be compared, notably due to different accounting standards.

Due to their size, the following segments are non-reportable:

- The Business Process Intelligence segment was renamed to SAP Signavio without changing the composition of this segment. The segment derives its revenues from the sale of business process transformation offerings from SAP and Signavio, a company acquired by SAP in 2021.
- The Emarsys segment derives its revenues mainly from the sale of cloud-based customer experience offerings and from the sale of related services.
- In the first quarter of 2022, the acquisition of Taulia, a leading provider of working capital management solutions, led to a new operating segment. For more information about this acquisition, see [Note \(D.1\)](#).
- Following organizational changes, we established two new operating segments, the Business Network segment and the Sustainability segment, in the third quarter of 2022:
 - The Business Network segment combines SAP's network offerings, covering procurement, logistics, asset management, and industry-specific solutions spanning end-to-end value chains. The segment generates revenues from cloud application subscriptions, transactional fees, and services.
 - The Sustainability segment bundles a portfolio of sustainability-related solutions that enables SAP's customers to record and report financial and non-financial metrics and act on improving their sustainability footprint across all ESG (Environmental, Social, and Governance) dimensions.

The segment information for 2022 and the comparative prior periods were restated to conform with the new segment composition.

Segment Reporting Policies

Our management reporting system, and hence our segment reporting system, reports our intersegment services as cost reductions and does not track them as internal revenue. Intersegment services mainly represent utilization of human resources of one segment by another segment on a project basis. Intersegment services are charged based on internal cost rates including certain indirect overhead costs but excluding a profit margin.

Most of our depreciation and amortization expense affecting segment profits is allocated to the segments as part of broader infrastructure allocations and is thus not tracked separately on the operating segment level. Depreciation and amortization expense that is directly allocated to the operating segments is immaterial in all segments presented.

Our management reporting system produces a variety of reports that differ by the currency exchange rates used in the accounting for foreign-currency transactions and operations, where both actual and constant currency numbers are reported to and used by our CODM. Reports based on actual currencies use the same currency rates as are used in our financial statements. Reports based on constant currencies report revenues and expenses using the average exchange rates from the previous year's corresponding period.

We use an operating profit indicator to measure the performance of our operating segments. The accounting policies applied in the measurement of operating segment expenses and profit differ as follows from the IFRS accounting principles used to determine the operating profit measure in our income statement:

The expense measures exclude:

- Acquisition-related charges such as amortization expense and impairment charges for intangibles acquired in business combinations and certain stand-alone acquisitions of intellectual property (including purchased in-process research and development) as well as sale/disposal gains and losses for these intangibles, settlements of pre-existing business relationships in connection with a business combination, and acquisition-related third-party expenses
- Share-based payment expenses
- Restructuring expenses

SAP headquarter functions which are exclusively managed on corporate level, such as finance, accounting, legal, human resources, global business operations, and corporate marketing, are not included in the results of our reportable segments.

Revenues and expenses of our operating but non-reportable segments, and the certain activities managed on corporate level, as outlined above, are presented under the Other revenue and Other expenses items in the reconciliation in [Note \(C.2\)](#).

Information about assets and liabilities and additions to non-current assets by segment are not regularly provided to our Executive Board. Goodwill by segment is disclosed in [Note \(D.2\)](#).

Applications, Technology & Services

€ millions	2022		2021		2020
	Actual Currency	Constant Currency ¹	Actual Currency	Constant Currency ¹	Actual Currency
Cloud	10,239	9,573	7,835	7,970	6,940
Software licenses	2,053	1,969	3,244	3,236	3,637
Software support	11,906	11,361	11,410	11,575	11,506
Software licenses and support	13,959	13,330	14,654	14,812	15,143
Cloud and software	24,198	22,904	22,488	22,782	22,083
Services	4,100	3,868	3,565	3,618	3,659
Total segment revenue	28,298	26,772	26,054	26,400	25,742
Cost of cloud	-3,434	-3,153	-2,754	-2,807	-2,367
Cost of software licenses and support	-1,623	-1,540	-1,736	-1,754	-1,795
Cost of cloud and software	-5,057	-4,693	-4,490	-4,561	-4,162
Cost of services	-2,849	-2,702	-2,449	-2,482	-2,616
Total cost of revenue	-7,906	-7,395	-6,939	-7,043	-6,778
Segment gross profit	20,391	19,376	19,114	19,357	18,963
Other segment expenses	-11,585	-10,921	-9,830	-9,924	-9,551
Segment profit	8,806	8,456	9,284	9,434	9,412

¹ The 2022 constant currency amounts are only comparable to 2021 actual currency amounts; 2021 constant currency amounts are only comparable to 2020 actual currency amounts.

Qualtrics

€ millions	2022		2021		2020
	Actual Currency	Constant Currency ¹	Actual Currency	Constant Currency ¹	Actual Currency
Cloud	1,198	1,071	757	780	518
Cloud and software	1,198	1,071	757	780	518
Services	225	200	173	178	162
Total segment revenue	1,423	1,271	930	957	681
Cost of cloud	-133	-120	-65	-66	-43
Cost of software licenses and support	0	0	0	0	0
Cost of cloud and software	-133	-120	-65	-66	-43
Cost of services	-182	-164	-125	-128	-110
Total cost of revenue	-315	-284	-190	-194	-152
Segment gross profit	1,108	986	740	764	528
Other segment expenses	-1,013	-882	-696	-719	-533
Segment profit	95	104	44	44	-4

¹ The 2022 constant currency amounts are only comparable to 2021 actual currency amounts; 2021 constant currency amounts are only comparable to 2020 actual currency amounts.

Segment Revenue by Region

€ millions	EMEA				Americas				APJ		Total Segment Revenue			
	2022		2021		2022		2021		2022		2021		2022	2021
	Actual Currency	Constant Currency	Actual Currency	Actual Currency	Constant Currency	Actual Currency	Actual Currency	Constant Currency	Actual Currency	Actual Currency	Constant Currency	Actual Currency		
Applications, Technology & Services	12,507	12,280	12,209	11,531	10,319	9,780	4,259	4,173	4,064	28,298	26,772	26,054		
Qualtrics	218	198	153	1,087	967	690	117	105	87	1,423	1,271	930		
Total reportable segments	12,725	12,478	12,362	12,619	11,286	10,471	4,376	4,278	4,151	29,720	28,042	26,984		

€ millions	EMEA				Americas				APJ		Total Segment Revenue			
	2021		2020		2021		2020		2021		2020		2021	2020
	Actual Currency	Constant Currency	Actual Currency	Actual Currency	Constant Currency	Actual Currency	Actual Currency	Constant Currency	Actual Currency	Actual Currency	Constant Currency	Actual Currency		
Applications, Technology & Services	12,209	12,206	11,800	9,780	10,062	9,986	4,064	4,132	3,956	26,054	26,400	25,742		
Qualtrics	153	157	97	690	711	528	87	89	55	930	957	681		
Total reportable segments	12,362	12,363	11,898	10,471	10,773	10,514	4,151	4,221	4,011	26,984	27,357	26,422		

For a breakdown of revenue by region for the SAP Group, see [Note \(A.1\)](#).

(C.2) Reconciliation of Segment Measures to the Consolidated Income Statements

€ millions	2022		2021		2020
	Actual Currency	Constant Currency ¹	Actual Currency	Constant Currency ¹	Actual Currency
Applications, Technology & Services	28,298	26,772	26,054	26,400	25,742
Qualtrics	1,423	1,271	930	957	681
Total segment revenue for reportable segments	29,720	28,042	26,984	27,357	26,422
Other revenue	1,150	1,067	859	875	921
Adjustment for currency impact	0	1,762	0	-390	0
Adjustment of revenue under fair value accounting	0	0	0	0	-5
■ Total revenue	30,871	30,871	27,842	27,842	27,338
Applications, Technology & Services	8,806	8,456	9,284	9,434	9,412
Qualtrics	95	104	44	44	-4
Total segment profit for reportable segments	8,902	8,560	9,329	9,478	9,408
Other revenue	1,150	1,067	859	875	921
Other expenses	-2,020	-1,944	-1,958	-1,945	-2,041
Adjustment for currency impact	0	350	0	-178	0
Adjustment for					
Revenue under fair value accounting	0	0	0	0	-5
Acquisition-related charges	-610	-610	-622	-622	-577
Share-based payment expenses	-2,614	-2,614	-2,794	-2,794	-1,084
■ Restructuring	-138	-138	-157	-157	3
■ Operating profit	4,670	4,670	4,656	4,656	6,623
■ Other non-operating income/expense, net	-195	-195	17	17	-179
■ Financial income, net	-1,385	-1,385	2,174	2,174	776
■ Profit before tax	3,090	3,090	6,847	6,847	7,220

¹ The 2022 constant currency amounts are only comparable to 2021 actual currency amounts; 2021 constant currency amounts are only comparable to 2020 actual currency amounts.

(C.3) Other Non-Operating Income/Expense, Net

€ millions	2022	2021	2020
Foreign currency exchange gain/loss, net	-151	49	-154
Thereof from financial assets at fair value through profit or loss	515	316	601
Thereof from financial assets at amortized cost	218	111	-134
Thereof from financial liabilities at fair value through profit or loss	-766	-382	-487
Thereof from financial liabilities at amortized cost	-95	-70	-34
Miscellaneous income/expense, net	-44	-33	-25
■ Other non-operating income/expense, net	-195	17	-179

(C.4) Financial Income, Net

€ millions	2022	2021	2020
Finance income	820	3,123	1,473
Thereof gains from financial assets at fair value through profit or loss	608	3,067	1,360
Finance costs	-2,205	-949	-697
Thereof losses from financial assets at fair value through profit or loss	-1,802	-654	-342
Thereof interest expense from financial liabilities at amortized cost	-208	-160	-179
Thereof interest expense from financial liabilities at fair value through profit or loss	-69	-50	-76
Financial income, net	-1,385	2,174	776

(C.5) Income Taxes

⌚ Judgments and Estimates

We are subject to changing tax laws in multiple jurisdictions within the countries in which we operate. Our ordinary business activities also include transactions where the ultimate tax outcome is uncertain due to different interpretations of tax laws, such as those involving transfer pricing and intercompany transactions between SAP Group entities. In addition, the amount of income taxes we pay is generally subject to ongoing audits by domestic and foreign tax authorities. In determining our worldwide income tax provisions, judgment is involved in assessing whether to consider each uncertain tax treatment separately or together with one or more other uncertain tax treatments and whether to reflect the respective effect of uncertainty based on the most likely amount or the expected value. In applying these judgments, we consider the nature and the individual facts and circumstances of each uncertain tax treatment as well as the specifics of the respective jurisdiction, including applicable tax laws and our interpretation thereof.

The assessment whether a deferred tax asset is impaired requires judgment, as we need to estimate future taxable profits to determine whether the utilization of the deferred tax asset is probable. In evaluating our ability to utilize our deferred tax assets, we consider all available positive and negative evidence, including the level of historical taxable income and projections for future taxable income over the periods in which the deferred tax assets are recoverable. Our judgment regarding future taxable income is based on assumptions about future market conditions and future profits of SAP.

Judgment is also required in evaluating whether interest or penalties related to income taxes meet the definition of income taxes, and, if not, whether it is of financial nature. In this judgment, we particularly consider applicable local tax laws and interpretations on IFRS by national standard setters in the area of group financial reporting.

Tax Expense by Geographic Location

€ millions	2022	2021	2020
Current tax expense			
Germany	539	608	895
Foreign	1,195	1,360	1,001
Total current tax expense	1,734	1,968	1,896
Deferred tax expense/income			
Germany	89	109	-38
Foreign	-441	-606	80
Total deferred tax expense/income	-352	-497	42
Total income tax expense	1,382	1,471	1,938

Major Components of Tax Expense

€ millions	2022	2021	2020
Current tax expense/income			
Tax expense for current year	1,746	1,707	1,653
Taxes for prior years	-12	261	243
Total current tax expense	1,734	1,968	1,896
Deferred tax expense/income			
Origination and reversal of temporary differences	-313	-526	47
Unused tax losses, research and development tax credits, and foreign tax credits	-39	29	-5
Total deferred tax expense/income	-352	-497	42
Total income tax expense	1,382	1,471	1,938

Total deferred tax expense/income includes a benefit of €124 million (2021: €15 million; 2020: €4 million) arising from previously unrecognized tax losses and temporary differences.

Profit Before Tax by Geographic Location

€ millions	2022	2021	2020
Germany	1,785	2,040	2,481
Foreign	1,305	4,807	4,739
Total	3,090	6,847	7,220

The following table reconciles the expected income tax expense, computed by applying our combined German tax rate of 26.4% (2021: 26.4%; 2020: 26.3%), to the actual income tax expense. Our 2022 combined German tax rate includes a corporate income tax rate of 15.0% (2021: 15.0%; 2020: 15.0%), plus a solidarity surcharge of 5.5% (2021: 5.5%; 2020: 5.5%) thereon, and trade taxes of 10.6% (2021: 10.6%; 2020: 10.5%).

Relationship Between Tax Expense and Profit Before Tax

€ millions, unless otherwise stated	2022	2021	2020
Profit before tax	3,090	6,847	7,220
Tax expense at applicable tax rate of 26.4% (2021: 26.4%; 2020: 26.3%)	817	1,808	1,901
Tax effect of:			
Foreign tax rates	-117	-126	-166
Non-deductible expenses	431	420	254
Tax-exempt income	297	-630	-282
Withholding taxes	179	204	105
Research and development and foreign tax credits	-95	-75	-100
Prior-year taxes	4	9	128
Reassessment of deferred tax assets, research and development tax credits, and foreign tax credits	-124	-34	41
Other	-10	-105	57
Total income tax expense	1,382	1,471	1,938
Effective tax rate (in %)	44.7	21.5	26.8

Components of Recognized Deferred Tax Assets and Liabilities

€ millions	2022	2021
Deferred tax assets		
Intangible assets	1,069	759
Property, plant, and equipment	27	19
Leases	503	472
Other financial assets	23	14
Trade and other receivables	81	58
Pension provisions	203	196
Share-based payments	226	278
Other provisions and obligations	753	625
Contract liabilities	994	781
Carryforwards of unused tax losses	150	148
Research and development and foreign tax credits	110	77
Other	134	139
Total deferred tax assets (gross)	4,273	3,566
Netting	-2,208	-1,780
¶ Total deferred tax assets (net)	2,065	1,786
Deferred tax liabilities		
Intangible assets	835	903
Property, plant, and equipment	108	120
Leases	437	405
Other financial assets	170	169
Trade and other receivables	269	206
Pension provisions	35	29
Other provisions and obligations	269	50
Contract liabilities	5	7
Other	321	187
Total deferred tax liabilities (gross)	2,449	2,076
Netting	-2,208	-1,780
¶ Total deferred tax liabilities (net)	241	296

The increase in deferred tax assets for intangible assets mainly results from the capitalization of research and development expenses for tax purposes. Furthermore, the deferred tax assets for contract liabilities increased mainly because of deferred revenue.

The increase in deferred tax liabilities for other provisions and obligations mainly results from financial debt.

Items Not Resulting in a Deferred Tax Asset

€ millions	2022	2021	2020
Unused tax losses			
Not expiring	345	430	570
Expiring in the following year	14	26	25
Expiring after the following year	453	309	338
Total unused tax losses	812	765	933
Deductible temporary differences			
Not expiring	9	28	26
Expiring after the following year	20	20	17
Total unused tax credits	29	48	43

Of the unused tax losses, €294 million (2021: €183 million; 2020: €179 million) relate to U.S. state tax loss carryforwards.

We have not recognized a deferred tax liability on approximately €28.91 billion (2021: €24.04 billion) for undistributed profits of our subsidiaries, because we are in a position to control the timing of the reversal of the temporary difference and it is probable that such differences will not reverse in the foreseeable future.

Income Tax-Related Litigation

We are subject to ongoing tax audits by domestic and foreign tax authorities. Currently, we are in dispute mainly with the German and only a few foreign tax authorities. The German dispute is in respect of certain secured capital investments, while the few foreign disputes are in respect of the deductibility of intercompany royalty payments and intercompany services. In all cases, we expect that a favorable outcome can only be achieved through litigation. For all of these matters, we have not recorded a provision as we believe that the tax authorities' claims have no merit and that no adjustment is warranted. If, contrary to our view, the tax authorities were to prevail in their arguments before the court, we would expect to have an additional expense of approximately €1,571 million (2021: €1,283 million) in total (including related interest expenses and penalties of €857 million (2021: €677 million)).

Reform of International Taxation Rules

In October 2021, over 135 jurisdictions agreed on a new framework for the international tax system covering the re-allocation of taxing rights and the introduction of a global minimum corporate tax rate. In December 2021, the Organization for Economic Co-operation and Development (OECD) released model rules, which shall ensure that multinational enterprises with revenue above €750 million will be subject to a 15% minimum corporate tax rate. In December 2022, the Member States of the European Union (EU) adopted a directive on a global minimum level of taxation for multinational enterprise groups and large-scale domestic groups in the EU. By the end of 2023, this directive needs to be transposed into national law by the EU member states to be applicable for fiscal years beginning from December 31, 2023. Therefore, we cannot yet assess possible impacts for SAP, though we expect to be subject to such rules.

(C.6) Earnings per Share

€ millions, unless otherwise stated	2022	2021	2020
Profit attributable to equity holders of SAP SE	2,284	5,256	5,145
Issued ordinary shares ¹	1,229	1,229	1,229
Effect of treasury shares ¹	-58	-49	-46
Weighted average shares outstanding, basic ¹	1,170	1,180	1,182
Dilutive effect of share-based payments ¹	5	0	0
Weighted average shares outstanding, diluted ¹	1,175	1,180	1,182
Earnings per share, basic, attributable to equity holders of SAP SE (in €)	1.95	4.46	4.35
Earnings per share, diluted, attributable to equity holders of SAP SE (in €)	1.94	4.46	4.35

¹ Number of shares in millions

Section D – Invested Capital

This section highlights our non-current assets including investments that form the basis of our operating activities. Additions to invested capital include separate asset acquisitions or business combinations. Further, we disclose information about purchase obligations and capital contributions.

(D.1) Business Combinations and Divestitures

Measuring Non-Controlling Interests and Allocation of Consideration Transferred

We decide for each business combination whether to measure the non-controlling interest in the acquiree at fair value or at the proportionate share of the acquiree's identifiable net assets.

We classify costs related to executing business combinations as general and administration expense.

In our accounting for business combinations, judgment is required in determining whether an intangible asset is identifiable and whether it should be recorded separately from goodwill. Additionally, estimating the acquisition-date fair values of the identifiable assets acquired and liabilities assumed involves considerable judgment. The necessary measurements are based on information available on the acquisition date and are based on expectations and assumptions that have been deemed reasonable by management. These judgments, estimates, and assumptions can materially affect our financial position and profit for several reasons, including the following:

- Fair values assigned to assets subject to depreciation and amortization affect the amounts of depreciation and amortization to be recorded in operating profit in the periods following the acquisition.
- Subsequent negative changes in the estimated fair values of assets may result in additional expense from impairment charges.
- Subsequent changes in the estimated fair values of liabilities and provisions may result in additional expense (if increasing the estimated fair value) or additional income (if decreasing the estimated fair value).

We acquire businesses in specific areas of strategic interest to us, particularly to broaden our product and service portfolio.

2022 Acquisitions

In 2022, we closed the acquisition of Taulia Inc., San Francisco, California (USA) ("Taulia") and of INNAAS srl, Rome (Italy).

Taulia Acquisition

On January 27, 2022, SAP announced its intent to acquire a majority stake of Taulia (see [Note \(G.9\)](#) for SAP's current shareholding percentage), a leading provider of cloud-based working capital management solutions. The acquisition closed on March 9, 2022, following satisfaction of customary closing conditions and regulatory approvals; the operating results and the assets and liabilities are reflected in our consolidated financial statements starting on that date.

The acquisition is expected to further expand SAP's business network capabilities and strengthen SAP's solutions for the CFO office.

Consideration transferred amounted to €705 million.

The following table summarizes the values of identifiable assets acquired and liabilities assumed in connection with the acquisition of Taulia, as at the acquisition date:

Taulia Acquisition: Recognized Assets and Liabilities

€ millions	
Intangible assets	157
Other identifiable assets	59
Total identifiable assets	216
Other identifiable liabilities	88
Total identifiable liabilities	88
Total identifiable net assets	128
Goodwill	577
Total consideration transferred	705

Prior to December 31, 2022, we completed our accounting assessment relating to the supply chain financing (SCF) transactions offered by Taulia. Based on the setup of the compartments and series in which the SCF receivables and liabilities are siloed and based on the related contractual and founding agreements, we concluded we do not control the receivables and liabilities resulting from the SCF activities under IFRS 10. Thus, we do not include the respective items in our balance sheet and do not show cash flows linked to the SCF transactions in investing/financing cash flow.

As we are still obtaining the information necessary to identify and measure mainly tax-related assets and liabilities, the initial accounting for the Taulia business combination is still incomplete in that regard.

In general, the goodwill arising from our acquisitions consists largely of the synergies and the know-how and skills of the acquired businesses' workforces.

Taulia goodwill was attributed to expected synergies from the acquisition, particularly in the following areas:

- Cross-selling to existing SAP customers across all regions, using SAP's sales organization
- Further expanding SAP's business network capabilities and strengthening SAP's solutions for the CFO office
- Creating new offerings by combining Taulia products and SAP products
- Improving profitability in Taulia sales and operations

The allocation of the goodwill resulting from the Taulia acquisition to our operating segments depends on how our operating segments actually benefit from the synergies of the Taulia business combination. For more information, see [Note \(D.2\)](#).

Impact of the Business Combination on Our Financial Statements

The amounts of revenue and profit or loss of the Taulia business acquired in 2022 since the acquisition date were included in our Consolidated Income Statement for 2022 as follows:

Taulia Acquisition: Impact on SAP's Financials

€ millions	2022 as Reported	Contribution of Taulia
Revenue	30,871	59
Profit after tax	1,708	-38

Had Taulia been consolidated as at January 1, 2022, our revenue and profit after tax for 2022 would not have been materially different.

2022 Divestitures

On August 17, 2022, SAP and Francisco Partners (FP) announced that FP had signed a definitive agreement with SAP America, Inc. under which FP would acquire SAP Litmos from SAP. The transaction closed on December 1, 2022, following satisfaction of applicable regulatory and other approvals.

The disposal gain of €175 million is included in Other operating income/expense, net.

2021 Acquisitions

In 2021, we closed the acquisition of Signavio GmbH, Berlin (Germany) ("Signavio") and of Clarabridge, Inc., Reston, Virginia (USA) ("Clarabridge"). Measurement period adjustments relating to our 2021 acquisitions have resulted in changes to our 2021 figures (mainly goodwill and tax assets/liabilities).

Signavio Acquisition

In January 2021, SAP announced it had entered into an agreement to acquire Signavio, a leader in the enterprise business process intelligence and process management space that enables companies to understand, improve, transform, and manage all their business processes quickly and at scale.

The purchase price was €949 million. The transaction closed on March 5, 2021, following satisfaction of regulatory and other approvals. The Signavio operating results and assets and liabilities are reflected in our consolidated financial statements starting on that date.

The following table summarizes the values of identifiable assets acquired and liabilities assumed in connection with the acquisition of Signavio, as at the acquisition date:

Signavio Acquisition: Recognized Assets and Liabilities

€ millions	
Intangible assets	255
Other identifiable assets	73
Total identifiable assets	328
Other identifiable liabilities	108
Total identifiable liabilities	108
Total identifiable net assets	220
Goodwill	729
Total consideration transferred	949

In general, the goodwill arising from our acquisitions consists largely of the synergies and the know-how and skills of the acquired businesses' workforces.

Signavio goodwill was attributed to expected synergies from the acquisition, particularly in the following areas:

- Cross-selling opportunities to existing SAP customers across all regions, using SAP's sales organization
- The acquisition of Signavio complements SAP's business process intelligence offerings and will help create new offerings by combining Signavio products and SAP products, but is also expected to result, for example, in increased SAP S/4HANA and RISE with SAP sales.
- Improved profitability in Signavio sales and operations

The allocation of the goodwill resulting from the Signavio acquisition to our operating segments depends on how our operating segments actually benefit from the synergies of the Signavio business combination.

Clarabridge Acquisition

On October 1, 2021 (after receipt of required regulatory approvals and satisfaction or waiver of other customary closing conditions), Qualtrics completed its previously announced acquisition of Clarabridge, a customer experience management software company headquartered in Reston, Virginia, USA, pursuant to an Agreement and Plan of Reorganization and Merger. The number of Qualtrics class A common stock issued to the sellers was fixed based on a valuation of US\$1,125 million (subject to certain adjustments) – the assumed Qualtrics share price was US\$37.33. The actual consideration transferred (mainly in shares valued at the acquisition date fair value of the common stock) amounted to US\$1,298 million (€1,116 million). This includes €910 million of issued shares, €115 million of assumed awards, and €91 million of cash paid.

Qualtrics has (1) assumed, amended, and restated Clarabridge stock plans, and (2) converted the assumed options to purchase shares of Clarabridge stock outstanding into corresponding Qualtrics options. Qualtrics has granted equity incentive awards to certain continuing employees of Clarabridge and its subsidiaries under its own Qualtrics equity plan at Qualtrics' sole discretion.

The following table summarizes the values of identifiable assets acquired and liabilities assumed in connection with the acquisition of Clarabridge, as at the acquisition date:

Clarabridge Acquisition: Recognized Assets and Liabilities

€ millions	
Intangible assets	218
Other identifiable assets	84
Total identifiable assets	302
Other identifiable liabilities	107
Total identifiable liabilities	107
Total identifiable net assets	195
Goodwill	921
Total consideration transferred	1,116

In general, the goodwill arising from our acquisitions consists largely of the synergies and the know-how and skills of the acquired businesses' workforces.

The Clarabridge goodwill consists largely of the synergies that SAP expects to achieve from combining the acquired assets and operations with its existing operations, especially in its Qualtrics subsidiary.

Impact of Business Combinations on Our Financial Statements

The amounts of revenue and profit or loss of the Signavio and Clarabridge businesses acquired in 2021 since the acquisition date are included in the 2021 consolidated income statements as follows:

2021 Acquisitions: Impact on SAP's Financials (Signavio and Clarabridge)

€ millions	2021 as Reported	Contribution of 2021 Acquisitions
Revenue	27,842	70
Profit after tax	5,376	-89

Had the acquired entities been consolidated as at January 1, 2021, our 2021 revenue and profit after tax would not have been materially different.

2021 Divestitures

On April 13, 2021, SAP and investment company Dediq GmbH, Munich (Germany) ("Dediq") announced that they had agreed to enter into a partnership in the area of financial services. Following the close of the transaction in September 2021 (after satisfaction of all closing conditions including regulatory approvals), SAP and Dediq jointly own the new SAP Pioneer entity (with SAP owning a minority share).

SAP and SAP Pioneer have executed transition service and go-to-market agreements, among others.

The disposal gain relating to the transfer of the business (predominantly IP and employees) was included in Other operating income/expense, net (€77 million).

2020 Acquisitions

On November 4, 2020, we concluded the acquisition of 100% of the shares of Emarsys eMarketing Systems AG, Vienna (Austria) ("Emarsys"), following satisfaction of applicable regulatory and other approvals.

The operating results and assets and liabilities of Emarsys are reflected in our consolidated financial statements from November 4, 2020, onwards.

In general, the goodwill arising from our acquisitions consists largely of the synergies and the know-how and skills of the acquired businesses' workforces.

Emarsys goodwill is attributed to expected synergies from the acquisition, particularly in the following areas:

- Cross-selling opportunities to existing SAP customers across all regions, using SAP's sales organization
- Emarsys offerings complementing the existing SAP Customer Experience solutions
- Improved profitability in Emarsys sales and operations

2020 Divestitures

On May 5, 2020, SAP and Sinch AB, Stockholm (Sweden) ("Sinch") announced that they had entered into a definitive agreement for Sinch to acquire the SAP Digital Interconnect business. The business sold (which was a non-reportable segment to SAP) consisted of several SAP subsidiaries as well as assets transferred from certain SAP entities. The initial cash purchase price was €225 million (on a

cash-free, debt-free basis). The disposal gain of €194 million was included in Other operating income/expense, net.

The transaction closed on November 1, 2020, following satisfaction of applicable regulatory and other approvals.

(D.2) Goodwill

Goodwill and Intangible Asset Impairment Testing

The annual goodwill impairment test is performed at the level of our operating segments, since there are no lower levels in SAP at which goodwill is monitored for internal management purposes.

In general, the test is performed at the same time (at the beginning of the fourth quarter) for all operating segments.

In making impairment assessments for our goodwill and intangible assets, the outcome of these tests is highly dependent on management's assumptions regarding future cash flow projections and economic risks, which require significant judgment and assumptions about future developments. They can be affected by a variety of factors, including:

- Changes in business strategy
- Internal forecasts
- Estimation of weighted-average cost of capital

Changes to the assumptions underlying our goodwill and intangible assets impairment assessments could require material adjustments to the carrying amount of our recognized goodwill and intangible assets as well as the amounts of impairment charges recognized in profit or loss.

The outcome of goodwill impairment tests may also depend on the allocation of goodwill to our operating segments. This allocation involves judgment as it is based on our estimates regarding which operating segments are expected to benefit from the synergies of business combinations.

Changes in our segment structure result in the reallocation of goodwill with the reallocated goodwill being calculated based on relative values (if a direct allocation is not possible).

Goodwill

€ millions

Historical cost

1/1/2021	27,636
Foreign currency exchange differences	1,838
Additions from business combinations	1,736
Retirements/disposals	-20
12/31/2021	31,190
Foreign currency exchange differences	1,526
Additions from business combinations	589
Retirements/disposals	-95
12/31/2022	33,210

Accumulated amortization

1/1/2021	99
Foreign currency exchange differences	3
12/31/2021	102

Foreign currency exchange differences	2
12/31/2022	104
Carrying amount	
12/31/2021	31,088
12/31/2022	33,106

For more information about our segments and the changes in 2022, see [Note \(C.1\)](#).

Throughout 2022, we have – through a qualitative and quantitative analysis – been continuously monitoring whether triggering events exist.

The negative revenue impact and additional expenses due to the exit of operations in Russia and Belarus mainly affects our Applications, Technology & Services segment. We believe that no reasonably possible effect of the exit of operations in Russia and Belarus on revenue and expenses would cause the carrying amount of our Applications, Technology & Services segment to exceed the recoverable amount.

Throughout 2022, the stock price of Qualtrics International Inc. declined compared to 2021. We closely monitor the impairment risks and potential triggering events for the Qualtrics segment. While we note the decline of the stock price as one aspect in our holistic assessment, we did not evaluate it to be the sole indicator that could imply a triggering event.

For impairment testing purposes, the carrying amount of goodwill is allocated to the operating segments expected to benefit from goodwill as follows:

Goodwill by Operating Segment

€ millions	Applications, Technology & Services	Qualtrics	Emarsys	SAP Signavio ¹	Taulia	Business Network	Sustainability	Total
12/31/2021	26,441	3,844	395	408	NA	NA	NA	31,088
12/31/2022	26,812	4,083	395	410	322	1,052	32	33,106

¹ Previously known as "Business Process Intelligence"

Based on the expected synergies, the goodwill added through the acquisition of Taulia (€577 million) was provisionally allocated to the Applications, Technology & Services segment (€246 million), the Taulia segment (€307 million), and the newly formed Business Network segment (€24 million). As the initial accounting for the Taulia business combination is incomplete (for more information, see [Note \(D.1\)](#)), the allocation of goodwill is provisional. Portions of the goodwill in the Applications, Technology & Services segment were moved to the newly formed Business Network segment (€1,135 million) and Sustainability segment (€34 million).

Due to the dissolution of the Services segment at the beginning of 2022 (for more information, see [Note \(C.1\)](#)), the Services goodwill (€367 million) was moved to the Applications, Technology & Services segment. Given the close proximity to the 2021 annual goodwill impairment test and the significant headroom, no formal impairment test was performed on the reallocation date of the Services segment.

Goodwill Impairment Test

The key assumptions on which management based its cash flow projections for the period covered by the underlying business plans are as follows:

Key Assumption	Basis for Determining Values Assigned to Key Assumption
Budgeted revenue growth	Revenue growth rate achieved in the current year, adjusted for an expected increase in SAP's addressable cloud and database markets; expected growth in the established software applications and analytics markets. Values assigned reflect our past experience and our expectations regarding an increase in the addressable markets.
Budgeted operating margin	Operating margin budgeted for a given budget period equals the operating margin achieved in the current year, increased by expected efficiency gains. Values assigned reflect past experience, except for efficiency gains.
Discount rates	Our estimated cash flow projections are discounted to present value using discount rates (after-tax rates). Discount rates are based on the weighted average cost of capital (WACC) approach.
Terminal growth rate	Our estimated cash flow projections for periods beyond the business plan were extrapolated using segment-specific terminal growth rates. These growth rates do not exceed the long-term average growth rates for the markets in which our segments operate.

Key Assumptions and Detailed Planning Period¹

Percent, unless otherwise stated	Applications, Technology & Services		Emarsys		SAP Signavio ²		Taulia		Business Network		Sustainability	
	2022	2021 ³	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021
Budgeted revenue growth (average of the budgeted period)	11.4	8.4	13.9	15.3	20.7	31.7	24.8	NA	14.0	NA	34.6	NA
After-tax discount rate	11.1	8.8	11.7	10.0	11.7	11.5	11.3	NA	11.9	NA	10.9	NA
Terminal growth rate	3.0	3.0	3.0	3.0	3.0	3.0	3.0	NA	3.0	NA	3.0	NA
Detailed planning period (in years)	5	5	12	12	14	14	13	NA	10	NA	12	NA

¹ As we are using Level 1 inputs for Qualtrics in 2022 (similar to 2021), no information on assumptions and the detailed planning period is presented.

² Previously known as "Business Process Intelligence"

³ The 2021 figures relate to the Applications, Technology & Support segment without the reallocation of the Services segment.

On October 1, 2022, we performed a goodwill impairment test for the operating segments.

Applications, Technology & Services Segment

For more information about our 2022 segment changes, see [Note \(C.1\)](#).

The recoverable amount was determined based on a fair value less costs of disposal calculation. The fair value measurement was categorized as a Level 3 fair value based on the inputs used in the valuation. The cash flow projections were based on actual operating results and specific estimates covering a detailed planning period and the terminal growth rate thereafter. The projected results were determined based on management's estimates and are consistent with the assumptions a market participant would make (a target operating margin of 27.8% (2021: 33.1%) was used in the valuation).

We believe that no reasonably possible change in any of the above key assumptions would cause the carrying amount of our Applications, Technology & Services segment to exceed the recoverable amount.

Qualtrics Segment

The recoverable amount was determined based on a fair value less costs of disposal calculation. The fair value measurement was categorized as a Level 1 fair value based on the market capitalization derived from publicly listed shares of Qualtrics. We utilized the share price as at October 3, 2022, as October 1, 2022, was not a trading day. The share price was €10.90 as at October 3, 2022 (€37.85 as at October 1, 2021). Utilizing the share price as at September 30, 2022, would not have changed our conclusion.

The recoverable amount exceeded the carrying amount by €957 million (2021: €15,396 million).

The following table shows the amounts by which the share price of Qualtrics would need to change individually (that is, without changing the other inputs) for the recoverable amount to be equal to the carrying amount:

Sensitivity to Change in Assumptions

	Qualtrics	
	2022	2021
Share price (change in %)	-15	-76

Emarsys Segment

The recoverable amount was determined based on a fair value less costs of disposal calculation. The fair value measurement was categorized as a Level 3 fair value based on the inputs used in the valuation. The cash flow projections were based on actual operating results and specific estimates covering a detailed planning period and the terminal growth rate thereafter. The projected results were determined based on management's estimates and are consistent with the assumptions a market participant would make (a target operating margin of 29.4% (2021: 24.6%) was used in the valuation).

Given the fact that the Emarsys segment is expected to show disproportionate growth in the coming years and has not yet reached a steady state, we have used a longer detailed planning period than one would apply in a more mature segment.

The recoverable amount exceeded the carrying amount by €513 million (2021: €547 million).

The following table shows the amounts by which the key assumptions would need to change individually (that is, without changing the other key assumptions) for the recoverable amount to be equal to the carrying amount. For budgeted revenue growth sensitivity, the cost structure was not adjusted, hence leading to a modified terminal operating margin:

Sensitivity to Change in Assumptions

	Emarsys	
	2022	2021
Budgeted revenue growth (change in pp)	-2.0	-1.7
Target operating margin at the end of the budgeted period (change in pp)	-16	-14

SAP Signavio Segment

The recoverable amount was determined based on a fair value less costs of disposal calculation. The fair value measurement was categorized as a Level 3 fair value based on the inputs used in the valuation. The cash flow projections were based on actual operating results and specific estimates covering a detailed planning period and the terminal growth rate thereafter. The projected results were

determined based on management's estimates and are consistent with the assumptions a market participant would make (a target operating margin of 22.5% (2021: 24.8%) was used in the valuation).

Given the fact that the SAP Signavio segment is expected to show disproportionate growth in the coming years and has not yet reached a steady state, we have used a longer detailed planning period than one would apply in a more mature segment.

The recoverable amount exceeded the carrying amount by €845 million (2021: €1,225 million).

The following table shows the amounts by which the key assumptions would need to change individually (that is, without changing the other key assumptions) for the recoverable amount to be equal to the carrying amount. For budgeted revenue growth sensitivity, the cost structure was not adjusted, hence leading to a modified terminal operating margin:

Sensitivity to Change in Assumptions

	2022	2021
Budgeted revenue growth (change in pp)	-1.9	-2.5
Target operating margin at the end of the budgeted period (change in pp)	-18	-20

Taulia Segment

The recoverable amount was determined based on a fair value less costs of disposal calculation. The fair value measurement was categorized as a Level 3 fair value based on the inputs used in the valuation. The cash flow projections were based on actual operating results and specific estimates covering a detailed planning period and the terminal growth rate thereafter. The projected results were determined based on management's estimates and are consistent with the assumptions a market participant would make (a target operating margin of 24.9% was used in the valuation).

Given the fact that the Taulia segment is expected to show disproportionate growth in the coming years and has not yet reached a steady state, we have used a longer detailed planning period than one would apply in a more mature segment.

The recoverable amount exceeded the carrying amount by €366 million.

The following table shows the amounts by which the key assumptions would need to change individually (that is, without changing the other key assumptions) for the recoverable amount to be equal to the carrying amount. For budgeted revenue growth sensitivity, the cost structure was not adjusted, hence leading to a modified terminal operating margin:

Sensitivity to Change in Assumptions

	2022
Budgeted revenue growth (change in pp)	-1.1
Target operating margin at the end of the budgeted period (change in pp)	-11
After-tax discount rate	3.4

Business Network Segment

The recoverable amount was determined based on a fair value less costs of disposal calculation. The fair value measurement was categorized as a Level 3 fair value based on the inputs used in the

valuation. The cash flow projections were based on actual operating results and specific estimates covering a detailed planning period and the terminal growth rate thereafter. The projected results were determined based on management's estimates and are consistent with the assumptions a market participant would make (a target operating margin of 24.2% was used in the valuation).

Given the fact that the Business Network segment is expected to show disproportionate growth in the coming years and has not yet reached a steady state, we have used a longer detailed planning period than one would apply in a more mature segment.

The recoverable amount exceeded the carrying amount by €2,821 million.

The following table shows the amounts by which the key assumptions would need to change individually (that is, without changing the other key assumptions) for the recoverable amount to be equal to the carrying amount. For budgeted revenue growth sensitivity, the cost structure was not adjusted, hence leading to a modified terminal operating margin:

Sensitivity to Change in Assumptions

	Business Network
	2022
Budgeted revenue growth (change in pp)	-2.8
Target operating margin at the end of the budgeted period (change in pp)	-19

Sustainability Segment

The recoverable amount was determined based on a fair value less costs of disposal calculation. The fair value measurement was categorized as a Level 3 fair value based on the inputs used in the valuation. The cash flow projections were based on actual operating results and specific estimates covering a detailed planning period and the terminal growth rate thereafter. The projected results were determined based on management's estimates and are consistent with the assumptions a market participant would make (a target operating margin of 26.2% was used in the valuation).

Given the fact that the Sustainability segment is expected to show disproportionate growth in the coming years and has not yet reached a steady state, we have used a longer detailed planning period than one would apply in a more mature segment.

The recoverable amount exceeded the carrying amount by €112 million.

The following table shows the amounts by which the key assumptions would need to change individually (that is, without changing the other key assumptions) for the recoverable amount to be equal to the carrying amount. For budgeted revenue growth sensitivity, the cost structure was not adjusted, hence leading to a modified terminal operating margin:

Sensitivity to Change in Assumptions

	Sustainability
	2022
Budgeted revenue growth (change in pp)	-1.4
Target operating margin at the end of the budgeted period (change in pp)	-13
After-tax discount rate	3.9

(D.3) Intangible Assets

⌚ Recognition of Intangibles

Whereas in general, expenses for internally generated intangibles are expensed as incurred, development expenses incurred on standard-related customer development projects (for which the IAS 38 criteria are met cumulatively) are capitalized on a limited scale with those amounts being amortized over the estimated useful life for the majority of the projects of eight years.

Determining whether internally generated intangible assets from development qualify for recognition requires significant judgment, particularly in the following areas:

- Determining whether activities should be considered research activities or development activities
- Determining whether the conditions for recognizing an intangible asset are met requires assumptions about future market conditions, customer demand, and other developments.
- The term “technical feasibility” is not defined in IFRS, and therefore determining whether the completion of an asset is technically feasible requires judgment and a company-specific approach.
- Determining the future ability to use or sell the intangible asset arising from the development and the determination of the probability of future benefits from sale or use
- Determining whether a cost is directly or indirectly attributable to an intangible asset and whether a cost is necessary for completing a development

These judgments impact the total amount of intangible assets that we present in our balance sheet as well as the timing of recognizing development expenses in profit or loss.

⌚ Measurement of Intangibles

All our purchased intangible assets other than goodwill have finite useful lives. They are initially measured at acquisition cost and subsequently amortized based on the expected consumption of economic benefits over their estimated useful lives ranging from two to 20 years.

Judgment is required in determining the following:

- The useful life of an intangible asset, as this is based on our estimates regarding the period over which the intangible asset is expected to generate economic benefits to us
- The amortization method, as IFRS requires the straight-line method to be used unless we can reliably determine the pattern in which the asset's future economic benefits are expected to be consumed by us

Both the amortization period and the amortization method have an impact on the amortization expense that is recorded in each period.

⌚ Classification of Intangibles

We classify intangible assets according to their nature and use in our operations. Software and database licenses consist primarily of technology for internal use, whereas acquired technology consists primarily of purchased software to be incorporated into our product offerings. Customer relationships and other intangibles consist primarily of customer relationships and acquired trademark licenses.

Amortization expenses of intangible assets are classified as cost of cloud, cost of services, research and development, sales and marketing, and general and administration, depending on the use of the respective intangible assets.

Intangible Assets

€ millions	Software and Database Licenses	Acquired Technology	Customer Relationships and Other Intangibles	Total
Historical cost				
1/1/2021	793	2,565	6,038	9,396
Foreign currency exchange differences	12	205	427	644
Additions from business combinations	0	233	303	536
Other additions	19	0	66	85
Retirements/disposals	-84	-7	-11	-102
Transfers	93	0	-89	4
12/31/2021	833	2,996	6,734	10,563
Foreign currency exchange differences	8	170	337	515
Additions from business combinations	0	65	98	163
Other additions	244	0	65	309
Retirements/disposals	-115	-703	-92	-910
Transfers	87	-1	-85	1
12/31/2022	1,057	2,527	7,057	10,641
Accumulated amortization				
1/1/2021	523	2,043	3,046	5,612
Foreign currency exchange differences	11	171	211	393
Additions amortization	77	195	406	678
Retirements/disposals	-64	-11	-10	-85
12/31/2021	547	2,398	3,653	6,598
Foreign currency exchange differences	7	137	171	315
Additions amortization	99	209	458	766
Retirements/disposals	-109	-703	-61	-873
12/31/2022	544	2,041	4,221	6,806
Carrying amount				
12/31/2021	286	598	3,081	3,965
12/31/2022	513	486	2,836	3,835

Significant Intangible Assets

€ millions, unless otherwise stated	Carrying Amount		Remaining Useful Life (in years)
	2022	2021	
Ariba – Customer relationships	140	174	3 to 5
Concur – Customer relationships	704	755	8 to 12
Callidus – Customer relationships	181	241	6 to 10
Qualtrics – Acquired technologies	195	286	3
Qualtrics – Customer relationships	937	983	10 to 15
Emarsys – Customer relationships	145	163	5 to 12
Signavio – Customer relationships	183	184	14
Total significant intangible assets	2,485	2,786	

(D.4) Property, Plant, and Equipment

Depreciation of Property, Plant and Equipment

Property, plant, and equipment are typically depreciated using the straight-line method. Judgment is required in estimating the useful life of the assets. In this assessment we consider, among others, our history with similar assets and current and future changes in technology.

Useful Lives of Property, Plant, and Equipment

Buildings	Predominantly 25 to 50 years
Leased assets and leasehold improvements	Based on the term of the lease contract
Information technology equipment	2 to 6 years
Office furniture	4 to 20 years
Automobiles	2 to 5 years

Property, Plant, and Equipment

€ millions	Land and Buildings	Land and Buildings Leased	Other Property, Plant, and Equipment	Other Property, Plant, and Equipment Leased	Advance Payments and Construction in Progress	Total
12/31/2021	1,609	1,801	1,450	40	77	4,977
12/31/2022	1,585	1,758	1,406	43	142	4,934
Additions						
2021	144	313	518	23	69	1,067
2022	46	399	567	30	87	1,129

The additions (other than from business combinations) relate primarily to the replacement and purchase of information technology equipment and the construction and leasing of buildings and data centers. For more information about the impairment of leased buildings and data center equipment in Russia, see [Note \(B.6\)](#). For more information about leases, see [Note \(D.5\)](#).

(D.5) Leases

Accounting Policies, Judgments, and Estimates

Under IFRS 16, a contract is or contains a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration. As a lessee, SAP recognizes a right-of-use asset representing its right to use the underlying asset and a lease liability representing its obligation to make lease payments. The right-of-use assets are depreciated on a straight-line basis and interest expense is recognized on the lease liabilities. The vast majority of our leases consist of facility and data center leases. Payments for short-term and low-value leases are expensed over the lease term. Extension options are included in the lease term if their exercise is reasonably certain.

Leases in the Balance Sheet

€ millions	12/31/2022	12/31/2021
Right-of-use assets		
Right-of-use assets – land and buildings	1,758	1,800
Right-of-use assets – other property, plant, and equipment	43	40
Total right-of-use assets	1,801	1,840
Property, plant, and equipment	4,934	4,977
Right-of-use assets as % of Property, plant, and equipment	37	37
Lease liabilities		
Current lease liabilities	349	407
Current financial liabilities	4,808	4,528
Current lease liabilities as % of Current financial liabilities	7	9
Non-current lease liabilities	1,791	1,736
Non-current financial liabilities	9,547	11,042
Non-current lease liabilities as % of Non-current financial liabilities	19	16

SAP is committed to future minimum lease payments in the amount of €49 million (2021: €172 million) for facility leases that had not yet commenced as at December 31, 2022. For data centers, we have future commitments to spend €5 million (2021: €226 million) on services and IFRS 16-related assets. Because this agreement does not specify the required split, the entire amount has been included in the purchase obligations reported in [Note \(D.8\)](#).

Leases in the Income Statement

€ millions	2022	2021
Lease expenses within operating profit		
Depreciation of right-of-use assets	419	398

For more information about right-of-use asset additions, see [Note \(D.4\)](#), and for a maturity analysis of lease liabilities, see [Note \(F.1\)](#). For more information about the cash flow related to lease liabilities, see the "Reconciliation of Liabilities Arising from Financing Activities" table within [Note \(E.3\)](#).

(D.6) Equity Investments

Accounting Policies, Judgments, and Estimates

As we do not designate financial assets as "at fair value through profit or loss," we generally classify financial assets into the following categories: at amortized cost (AC), at fair value through other comprehensive income (FVOCI), and at fair value through profit or loss (FVTPL), depending on the contractual cash flows of and our business model for holding the respective asset.

For equity securities, as the cash flow characteristics are typically other than solely principal and interest, we take an investment-by-investment decision whether to classify as FVTPL or FVOCI.

The valuation of equity securities of private companies requires judgment because it is typically based on significant unobservable inputs, as no market prices are available and there is inherent lack of liquidity.

We take the most recent qualitative and quantitative information aspects into consideration to determine the fair value estimates of these equity securities.

Considerable judgment and assumptions are involved with regard to the selection of appropriate comparable company data, the assessment of cash requirements of the business, the acceptance of the technology or products in the addressable markets, the actual and forecasted performance, the milestone achievements, the adequacy of price points from financing rounds, the transaction of similar securities of the same company, the rights and preferences of the underlying securities, the selection of adequate equity allocation parameters, the possible exit scenarios and associated weightings. Because all of these assumptions could change significantly, and because valuation is inherently uncertain, our estimated fair values may differ significantly from the values that would have been used had market prices for the investments existed and that will ultimately be realized, and those differences could be material.

Gains/losses on equity securities at FVTPL include gains/losses from fair value fluctuations, from disposals as well as dividends, while gains/losses on equity securities at FVOCI only include dividends, all of which are shown in Financial income, net. Regular way purchases and sales are recorded as at the trade date.

Equity Investments

€ millions	2022			2021		
	Current	Non-Current	Total	Current	Non-Current	Total
Equity securities	0	5,138	5,138	0	5,799	5,799
Investments in associates	0	151	151	0	155	155
Equity investments	0	5,289	5,289	0	5,954	5,954
Other financial assets	853	5,626	6,479	2,758	6,275	9,033
Equity investments as % of Other financial assets	0	94	82	0	95	66

Investments in Associates

SAP has interests in a number of individually immaterial associates. We own more than 20% of the equity interests or have at least 20% of the voting rights. Based on these facts and the nature of the relationships, SAP has determined that it has significant influence.

The following table shows, in aggregate, the carrying amount and share of profit of these associates.

€ millions	2022	2021
Carrying amount of interest in associates	151	155
Share of profit and losses from continuing operations	-4	-9

The vast majority of the carrying amount of interest in associates relates to SAP Pioneer GmbH, which results out of a divestiture in return for a minority stake in 2021.

The proportionate share of earnings of SAP Pioneer is included in SAP's Consolidated Financial Statements with a time lag of one month.

For a list of the names of other equity investments, see [Note \(G.9\)](#).

Financial Commitments in Venture Capital Funds

€ millions	2022	2021
Committed investments in venture capital funds	303	255

SAP invests and holds interests in unrelated parties that manage investments in venture capital. On December 31, 2022, total commitments to make such investments amounted to €957 million (2021: €757 million), of which €654 million had been drawn (2021: €502 million). By investing in such venture capital funds, we are exposed to the risks inherent in the business areas in which the entities operate. Our maximum exposure to loss is the amount invested plus contractually committed future capital contributions.

Maturities

€ millions	12/31/2022
Investments in Venture Capital Funds	
Due 2023	303
Total	303

(D.7) Non-Current Assets by Region

The table below shows non-current assets excluding financial instruments, deferred tax assets, post-employment benefit assets, and rights arising under insurance contracts.

Non-Current Assets by Region

€ millions	2022	2021
Germany	5,897	5,305
Rest of EMEA	5,897	5,927
EMEA	11,794	11,232
United States	32,414	30,141
Rest of Americas	510	441
Americas	32,923	30,582
India	333	279
APJ	1,210	1,263
SAP Group	45,928	43,077

For a breakdown of our employee headcount by region, see [Note \(B.1\)](#), and for a breakdown of revenue by region, see [Note \(A.1\)](#).

(D.8) Purchase Obligations

€ millions	2022	2021
Contractual obligations for acquisition of property, plant, and equipment and intangible assets	144	99
Other purchase obligations	7,491	4,680
Purchase obligations	7,635	4,779

The contractual obligations for acquisition of property, plant, and equipment and intangible assets relate primarily to the purchase of hardware, software, patents, office equipment, and vehicles. The remaining obligations relate mainly to cloud services, marketing, consulting, maintenance, license agreements, and other third-party agreements. The increase is mainly due to new purchase obligations related to cloud infrastructure services. Historically, the majority of such purchase obligations have been realized.

Maturities

€ millions	12/31/2022
	Purchase Obligations
Due 2023	1,682
Due 2024 to 2027	4,441
Due thereafter	1,512
Total	7,635

Section E – Capital Structure, Financing, and Liquidity

This section describes how SAP manages its capital structure. Our capital management is based on a high equity ratio, modest financial leverage, a well-balanced maturity profile, and deep debt capacity.

(E.1) Capital Structure Management

The primary objective of our capital structure management is to maintain a strong financial profile for investor, creditor, and customer confidence, and to support the growth of our business. We seek to maintain a capital structure that will allow us to continuously cover our funding requirements through the capital markets on reasonable terms and, in so doing, ensure a high level of independence, confidence, and financial flexibility.

SAP SE's long-term credit rating is "A2" by Moody's (positive outlook) and "A" by Standard & Poor's (stable outlook).

	12/31/2022		12/31/2021		Δ in %
	€ millions	% of Total Equity and Liabilities	€ millions	% of Total Equity and Liabilities	
Equity	42,848	59	41,523	58	3
Current liabilities	17,453	24	16,136	23	8
Non-current liabilities	11,858	16	13,515	19	-12
Liabilities	29,311	41	29,651	42	-1
Thereof financial debt	11,764	16	13,094	18	-10
Thereof lease liabilities	2,140	3	2,143	3	0
Total equity and liabilities	72,159	100	71,174	100	1

At maturity, we repaid €900 million in Eurobonds and US\$445 million in private placements in 2022. The ratio of total nominal volume of financial debt to total equity and liabilities decreased 2 pp.

(E.2) Total Equity

Accounting for Interests in Subsidiaries

Changes in SAP's interest in a subsidiary that do not result in a loss of control are accounted for as equity transactions. When SAP loses control over the subsidiary, it derecognizes the assets and liabilities of the subsidiary, and any related non-controlling interests (NCI) and other components of equity. Any resulting gain or loss is recognized in profit or loss.

Issued Capital

SAP SE has issued no-par value bearer shares with a calculated nominal value of €1 per share. All of the shares issued are fully paid.

Number of Shares

Millions	Issued Capital	Treasury Shares
1/1/2020	1,228.5	-34.9
Purchase of treasury shares	0	-14.1
12/31/2020	1,228.5	-48.9
12/31/2021	1,228.5	-48.9
Purchase of treasury shares	0	-15.7
Reissuance of treasury shares under share-based payments	0	3.3
12/31/2022	1,228.5	-61.4

In 2022, SAP completed two new share repurchase programs. The repurchased shares will primarily be used to service future share-based compensation awards. The programs with a total volume of €1,500 million were executed in the period between February 1, 2022, and September 6, 2022. In September and December 2022, we reissued 3.3 million treasury shares to service share-based payment awards under our Move SAP Plan.

Authorized Shares

The Articles of Incorporation authorize the Executive Board to increase the issued capital as follows:

- By up to a total amount of €250 million by issuing new no-par value bearer shares against contributions in cash until May 19, 2025 (Authorized Capital I). The issuance is subject to the statutory subscription rights of existing shareholders.
- By up to a total amount of €250 million by issuing new no-par value bearer shares against contributions in cash or in kind until May 19, 2025 (Authorized Capital II). Subject to the consent of the Supervisory Board, the Executive Board is authorized to exclude the shareholders' statutory subscription rights in certain cases.

Contingent Shares

SAP SE's share capital is subject to a contingent capital increase, which may be effected only to the extent that the holders or creditors of convertible bonds or stock options issued or guaranteed by SAP SE or any of its directly or indirectly controlled subsidiaries under certain share-based payments exercise their conversion or subscription rights, and no other methods for servicing these rights are used. As at December 31, 2022, €100 million, representing 100 million shares, was still available for issuance (2021: €100 million).

Other Components of Equity

€ millions	Exchange Differences	Cash Flow Hedges/Cost of Hedging	Total
1/1/2020	1,776	-6	1,770
Other comprehensive income for items that will be reclassified to profit or loss, net of tax	-2,792	10	-2,782
12/31/2020	-1,016	4	-1,012
Other comprehensive income for items that will be reclassified to profit or loss, net of tax	2,846	-26	2,819
12/31/2021	1,830	-22	1,808
Other comprehensive income for items that will be reclassified to profit or loss, net of tax	2,186	39	2,224
12/31/2022	4,015	16	4,031

Treasury Shares

By resolution of SAP SE's Annual General Meeting of Shareholders held on May 17, 2018, the authorization granted by the Annual General Meeting of Shareholders on June 4, 2013, regarding the acquisition of treasury shares was revoked to the extent it had not been exercised at that time, and replaced by a new authorization of the Executive Board of SAP SE to acquire, on or before May 16, 2023, shares of SAP SE representing a pro rata amount of capital stock of up to €120 million in aggregate, provided that the shares purchased under the authorization, together with any other shares in the Company previously acquired and held by, or attributable to, SAP SE do not account for more than 10% of SAP SE's issued share capital. Although treasury shares are legally considered outstanding, there are no dividend or voting rights associated with them. We may redeem or resell shares held in treasury, or we may use treasury shares for the purpose of servicing option or conversion rights under the Company's share-based payment plans. Also, we may use shares held in treasury as consideration in connection with mergers with, or acquisitions of, other companies.

Distribution Policy and Dividends

Our general intention is to remain in a position to return liquidity to our shareholders by distributing annual dividends totaling 40% or more of our profit after tax and by potentially repurchasing treasury shares in future.

In 2022, we distributed €2,865 million (€2.45 per share, including a special dividend of €0.50 to celebrate SAP's 50th anniversary) in dividends for 2021 compared to €2,182 million (€1.85 per share) paid in 2021 for 2020 and €1,864 million (€1.58 per share) paid in 2020 for 2019.

The total dividend available for distribution to SAP SE shareholders is based on the profits of SAP SE as reported in its statutory financial statements prepared under the accounting rules in the German Commercial Code (*Handelsgesetzbuch*). For the year ended December 31, 2022, the Executive Board intends to propose that a dividend of €2.05 per share (that is, an estimated total dividend of €2,393 million), be paid from the profits of SAP SE.

Non-Controlling Interests

In 2022, Qualtrics issued new shares to serve share-based payment awards under the Qualtrics Omnibus plan, which further reduced SAP's ownership in Qualtrics to 71% (2021: 74%). In 2021, offerings-related cash inflow amounted to €2,828 million and the corresponding value of non-controlling interests in net assets was €1,159 million. In 2022, a loss of €366 million (2021: €274 million) was attributed to non-controlling interests.

(E.3) Liquidity

⌚ Accounting for Non-Derivative Financial Instruments

Classification and Measurement of Non-Derivative Financial Debt Investments

Our non-derivative financial debt investments comprise cash at banks and cash equivalents (highly liquid investments with original maturities of three months or less, such as time deposits and money-market funds), loans and other financial receivables, and acquired debt securities.

As we do not designate financial assets as "at fair value through profit or loss," we generally classify financial assets as: at amortized cost (AC), at fair value through other comprehensive income (FVOCI), or at fair value through profit or loss (FVTPL), depending on the contractual cash flows of, and our business model for, holding the respective asset. Financial assets having cash flow characteristics other than solely principal and interest such as money market and similar funds are generally classified as FVTPL. Generally, all other financial assets with cash flows consisting solely of principal and interest are classified as AC because we follow a conservative investment approach, safeguarding our liquidity by ensuring the safety of principal investment amounts.

Gains/losses on non-derivative financial debt investments at FVTPL are reported in Financial income, net and show interest income/expenses separately from other gains/losses which include gains/losses from fair value fluctuations and disposals. Gains/losses on non-derivative financial debt investments at AC are reported in Financial income, net and show interest income/expenses separately from other gains/losses which include gains/losses on disposals and changes in expected and incurred credit losses. Gains/losses from foreign currency exchange rate fluctuations are included in Other non-operating income/expense, net. Regular way purchases and sales are recorded as at the trade date.

Impairment of Non-Derivative Financial Debt Investments

For these financial assets, we apply considerable judgment by employing the general impairment approach as follows:

- For cash at banks, time deposits, and debt securities such as acquired bonds and acquired commercial papers, we apply the low credit risk exception, as it is our policy to invest only in high-quality assets of issuers with a minimum rating of at least investment grade to minimize the risk of credit losses. Thus, these assets are always allocated to stage 1 of the three-stage credit loss model, and we record a loss allowance at an amount equal to 12-month expected credit losses. This loss allowance is calculated based on our exposure at the respective reporting date, the loss given default for this exposure, and the credit default swap spread as a measure for the probability of default. Even though we invest only in assets of at least investment-grade, we also closely observe the development of credit default swap spreads as a measure of market participants' assessments of the creditworthiness of a debtor to evaluate probable significant increases in credit risk to timely react to changes should these manifest. Among others, we consider cash at banks, time deposits, and debt securities to be in default when the counterparty is unlikely to pay its obligations in full, when there is information about a counterparty's financial difficulties or if there is a drastic increase in a counterparty's credit default swap spread for a prolonged time period while the overall market environment remains generally stable. Such financial assets are written off either partially or in full if the likelihood of recovery is considered remote, which might be evidenced, for example, by the bankruptcy of a counterparty of such financial assets.
- Loans and other financial receivables are monitored based on borrower-specific internal and external information to determine whether there has been a significant increase in credit risk since initial recognition. We consider such assets to be in default if they are significantly beyond their due date or if the borrower is unlikely to pay its obligation. A write-off occurs when the likelihood of recovery is considered remote, for example when bankruptcy proceedings have been finalized or when all enforcement efforts have been exhausted.

Non-Derivative Financial Liabilities

Non-derivative financial liabilities include bank loans, issued bonds, private placements, and other financial liabilities. Other financial liabilities also include customer funding liabilities which are funds we draw from and make payments on behalf of our customers for customers' employee expense reimbursements, related credit card payments, and vendor payments. We present these funds in cash and cash equivalents and record our obligation to make these expense reimbursements and payments on behalf of our customers as customer funding liabilities.

As we do not designate financial liabilities as FVTPL, we generally classify non-derivative financial liabilities as AC.

Expenses and gains or losses on financial liabilities at AC mainly consist of interest expense which is shown in Financial income, net. Gains/losses from foreign currency exchange rate fluctuations are included in Other non-operating income/expense, net.

Group Liquidity, Financial Debt, and Net Debt

Group liquidity consists of cash at banks, money market and other funds, as well as time deposits and debt securities (both with remaining maturities of less than one year). Financial debt is defined as the nominal volume of bank loans, issued commercial papers, private placements, and bonds. Net debt is group liquidity less financial debt.

Group Liquidity and Net Debt

€ millions	2022	2021	Δ
Cash and cash equivalents	9,008	8,898	109
Current time deposits and debt securities	686	2,632	-1,946
Group liquidity	9,694	11,530	-1,837
Current financial debt	-3,986	-3,755	-230
Non-current financial debt	-7,778	-9,338	1,560
Financial debt	-11,764	-13,094	1,330
Net debt (-)	-2,070	-1,563	-507

While we continuously monitor the ratios presented in the capital structure table, we actively manage our liquidity and structure of our financial indebtedness based on the ratios group liquidity and net debt.

Cash and Cash Equivalents

€ millions	2022			2021		
	Current	Non-Current	Total	Current	Non-Current	Total
Cash at banks	3,176	0	3,176	3,149	0	3,149
Time deposits	2,932	0	2,932	1,420	0	1,420
Money market and other funds	2,855	0	2,855	4,281	0	4,281
Debt securities	47	0	47	50	0	50
Expected credit loss allowance	-3	0	-3	-3	0	-3
A Cash and cash equivalents	9,008	0	9,008	8,898	0	8,898

Non-Derivative Financial Debt Investments

€ millions	2022			2021		
	Current	Non-Current	Total	Current	Non-Current	Total
Time deposits	657	0	657	2,605	0	2,605
Debt securities	32	0	32	30	0	30
Financial instruments related to employee benefit plans	0	203	203	0	201	201
Loans and other financial receivables	104	129	233	79	107	186
Expected credit loss allowance	-3	0	-3	-3	0	-3
Non-derivative financial debt investments	790	332	1,122	2,711	308	3,019
¶ Other financial assets	853	5,626	6,479	2,758	6,275	9,033
Non-derivative financial debt investments as % of ¶ Other financial assets	93	6	17	98	5	33

Time deposits with original maturity of three months or less are presented as cash and cash equivalents, and those with original maturities of greater than three months (investments considered in group liquidity) are presented as other financial assets. Debt securities consist of acquired commercial papers and acquired bonds of mainly financial and non-financial corporations and municipalities.

For more information about financial risk and the nature of risk, see [Note \(F.1\)](#).

Financial Debt

€ millions	2022					2021				
	Nominal Volume			Carrying Amount		Nominal Volume			Carrying Amount	
	Current	Non-Current	Current	Non-Current	Total	Current	Non-Current	Current	Non-Current	Total
Bonds	1,600	7,381	1,600	6,556	8,155	900	8,965	900	8,851	9,751
Private placement transactions	0	397	0	405	405	393	373	396	393	790
Commercial paper	930	0	928	0	928	930	0	931	0	931
Bank loans	1,456	0	1,456	0	1,456	1,533	0	1,533	0	1,533
Financial debt	3,986	7,778	3,983	6,960	10,943	3,756	9,338	3,760	9,245	13,005
¶ Financial liabilities			4,808	9,547	14,354			4,528	11,042	15,570
Financial debt as % of ¶ Financial liabilities			83	73	76			83	84	84

Financial liabilities are unsecured, except for the retention of title and similar rights customary in our industry. Effective interest rates on our financial debt (including the effects from interest rate swaps) were 1.23% in 2022, 0.83% in 2021, and 0.87% in 2020.

For more information about the risk associated with our financial liabilities, see [Note \(F.1\)](#). For more information about fair values, see [Note \(F.2\)](#).

Bonds

						2022	2021
	Maturity	Issue Price	Coupon Rate	Effective Interest Rate	Nominal Volume (in respective currency in millions)	Carrying Amount (in € millions)	Carrying Amount (in € millions)
Eurobond 8 – 2014	2023	99.478%	1.125% (fix)	1.24%	€1,000	1,000	999
Eurobond 9 – 2014	2027	99.284%	1.750% (fix)	1.87%	€1,000	869	985
Eurobond 12 – 2015	2025	99.264%	1.000% (fix)	1.13%	€600	598	597
Eurobond 15 – 2018	2026	99.576%	1.000% (fix)	1.06%	€500	499	499
Eurobond 16 – 2018	2030	98.687%	1.375% (fix)	1.50%	€500	401	491
Eurobond 18 – 2018	2022	99.654%	0.250% (fix)	0.36%	€900	0	900
Eurobond 19 – 2018	2024	99.227%	0.750% (fix)	0.89%	€850	848	847
Eurobond 20 – 2018	2028	98.871%	1.250% (fix)	1.38%	€1,000	843	982
Eurobond 21 – 2018	2031	98.382%	1.625% (fix)	1.78%	€1,250	976	1,223
Eurobond 22 – 2020	2023	99.794%	0.000% (fix)	0.07%	€600	600	599
Eurobond 23 – 2020	2026	99.200%	0.125% (fix)	0.26%	€600	597	596
Eurobond 24 – 2020	2029	98.787%	0.375% (fix)	0.51%	€800	643	769
Eurobonds						7,874	9,487
USD bond – 2018	2025	100.000%	4.69% (fix)	4.74%	US\$300	281	264
Bonds						8,155	9,751

All of our Eurobonds are listed for trading on the Luxembourg Stock Exchange.

Private Placements

					2022	2021
	Maturity	Coupon Rate	Effective Interest Rate	Nominal Volume (in respective currency in millions)	Carrying Amount (in € millions)	Carrying Amount (in € millions)
U.S. private placements						
Tranche 7 – 2012	2022	3.18% (fix)	3.22%	US\$444.5	0	396
Tranche 8 – 2012	2024	3.33% (fix)	3.37%	US\$323	306	300
Tranche 9 – 2012	2027	3.53% (fix)	3.57%	US\$100	99	94
Private placements					405	790

The U.S. private placement notes were issued by one of our subsidiaries that has the U.S. dollar as its functional currency.

Commercial Paper Program

The net proceeds from our commercial paper (Commercial Paper, or CP) program are being used for general corporate purposes, including dividends and share repurchases. As at December 31, 2022, we had €930 million of issued commercial papers outstanding with maturities generally less than six months and the carrying amount was €928 million (December 31, 2021: €931 million). The weighted average interest rate of our CP was 1.96% as at December 31, 2022 (December 31, 2021: –0.48%).

Loans

In March 2021, SAP drew two short-term bank loans of €950 million and €500 million with original tenors of one year that can be flexibly repaid until September 30, 2023, and currently bear interest at 3.25% and 3.22%, respectively.

Reconciliation of Liabilities Arising from Financing Activities

The changes in our financial debts are reconciled to the cash flows from borrowings included in the cash flow from financing activities.

€ millions	1/1/2022	Cash Flows	Business Combinations	Foreign Currency	Fair Value Changes	Other	12/31/2022
Current financial debt	3,755	-1,406	0	36	0	1,600	3,986
Non-current financial debt	9,338	0	0	40	0	-1,600	7,778
Financial debt (nominal volume)	13,094	-1,406	0	76	0	0	11,764
Basis adjustment	-34	0	0	2	-741	0	-773
Transaction costs	-55	0	0	0	0	8	-47
Financial debt (carrying amount)	13,005	-1,406	0	77	-741	8	10,943
Accrued interest and payment to banks	60	119	0	0	0	24	203
Interest rate swaps	42	0	0	-1	711	0	753
Lease ¹	2,143	-424	0	55	0	366	2,140
Total liabilities from financing activities	15,250	-1,711	0	131	-29	398	14,039

¹ Other includes new lease liabilities.

€ millions	1/1/2021	Cash Flows	Business Combinations	Foreign Currency	Fair Value Changes	Other	12/31/2021
Current financial debt	1,482	980	1	1	0	1,291	3,755
Non-current financial debt	11,801	-1,252	2	78	0	-1,291	9,338
Financial debt (nominal volume)	13,283	-272	3	79	0	0	13,094
Basis adjustment	126	0	0	3	-163	0	-34
Transaction costs	-66	0	0	0	0	11	-55
Financial debt (carrying amount)	13,344	-272	3	82	-163	11	13,005
Accrued interest	61	0	0	0	0	-1	60
Interest rate swaps	-114	0	0	-1	157	0	42
Lease ¹	2,120	-374	4	106	0	287	2,143
Total liabilities from financing activities	15,411	-646	7	187	-6	297	14,039

¹ Other includes new lease liabilities.

Section F – Management of Financial Risk Factors

This section discusses financial risk factors and risk management regarding foreign currency exchange rate risk, interest rate risk, equity price risk, credit risk, and liquidity risk. Further, it contains information about financial instruments.

(F.1) Financial Risk Factors and Risk Management

Accounting for Derivative Financial Instruments

We use derivatives to hedge foreign currency risk or interest rate risk and designate them as cash flow or fair value hedges if they qualify for hedge accounting under IFRS 9, which involves judgment.

Derivatives Not Designated as Hedging Instruments

Many transactions constitute economic hedges, and therefore contribute effectively to the securing of financial risks but do not qualify for hedge accounting under IFRS 9. To hedge currency risks inherent in foreign-currency denominated and recognized monetary assets and liabilities, we do not designate our held-for-trading derivative financial instruments as accounting hedges, because the profits and losses from the underlying transactions are recognized in profit or loss in the same periods as the profits or losses from the derivatives.

In addition, we occasionally have contracts that contain foreign currency embedded derivatives that are required to be accounted for separately.

Fair value fluctuations in the spot component of such derivatives at FVTPL are included in Other non-operating income/expense, net while the forward element is shown in Financial income, net.

Derivatives Designated as Hedging Instruments

a) Cash Flow Hedge

In general, we apply cash flow hedge accounting to the foreign currency risk of highly probable forecasted transactions. With regard to foreign currency risk, hedge accounting relates to the spot price and the intrinsic values of the derivatives designated and qualifying as cash flow hedges. Accordingly, the effective portion of these components determined on a present value basis is recorded in other comprehensive income. The forward element and time value as well as foreign currency basis spreads excluded from the hedging relationship are recorded as cost of hedging in a separate position in other comprehensive income. As the amounts are not material, they are presented together with the effective portion of the cash flow hedges in our consolidated statements of comprehensive income and consolidated statements of changes in equity. All other components including counterparty credit risk adjustments of the derivative and the ineffective portion are immediately recognized in Financial Income, net in profit or loss. Amounts accumulated in other comprehensive income are reclassified to profit or loss to Other non-operating income/expense, net and Financial income, net in the same period when the hedged item affects profit or loss.

b) Fair Value Hedge

We apply fair value hedge accounting for certain of our fixed-rate financial liabilities and show the fair value fluctuations in Financial income, net.

c) Valuation and Testing of Effectiveness

At inception of a designated hedging relationship, we document our risk management strategy and the economic relationship between hedged item and hedging instrument. The existence of an

economic relationship is demonstrated as well as the effectiveness of the hedging relationship tested prospectively by applying the critical terms match for our foreign currency hedges, since currencies, maturities, and the amounts are closely aligned for the forecasted transactions and for the spot element of the forward exchange rate contract or intrinsic value of the currency options, respectively. For interest rate swaps, effectiveness is tested prospectively using statistical methods in the form of a regression analysis, by which the validity and extent of the relationship between the change in value of the hedged items as the independent variable and the fair value change of the derivatives as the dependent variable is determined. The main sources of ineffectiveness are:

- The effect of the counterparty and our own credit risk on the fair value of the forward exchange contracts and interest rate swaps, which is not reflected in the respective hedged item, and
- Differences in the timing of hedged item and hedged transaction in our cash flow hedges.

Amendments to IFRS 9, IAS 39, IFRS 16, IFRS 4, and IFRS 7 – Interest Rate Benchmark Reform

The IASB issued amendments to IFRS 9, IAS 39, IFRS 16, IFRS 4, and IFRS 7 on August 27, 2020, completing Phase 2 of the Interest Rate Benchmark Reform (IBOR reform) project. This was necessary because major interest rate benchmarks were reformed or even replaced.

We are exposed to interest rate benchmarks due to our investing, financing, and hedging activities. The impact of the interest rate benchmark reform, however, is very limited either because the interest rate benchmarks we are mainly using will stay in place (that is, Euribor, USD Fed Funds Rate), the instruments will mature well before the respective benchmark rate is discontinued, or because the instruments have fixed interest rates.

We are impacted by the IBOR reform with regard to:

- Derivatives held in a hedging relationship: We have already replaced the old interest rate benchmark with the new risk-free rate for our EUR interest rate swaps designated in hedging relationships for which we transitioned from EONIA to Euro Short-Term Rate (€STR) + 8.5bps in the first quarter of 2021, or
- Non-derivative financial instruments: We have already replaced the old interest rate benchmark for our USD bond of US\$300 million during the course of 2022, for which we transitioned from the three-month USD LIBOR to a fixed rate in the last quarter of 2022. We are in the process of reviewing our €2.5 billion syndicated credit facility agreement, which allows us to borrow in U.S. dollars with interest payments based on LIBOR, with the aim of amending the contract before the respective IBOR is no longer quoted.

We continue to monitor the IBOR reform project, assess any impact, manage our transition to alternative benchmark rates, and provide respective disclosures. Apart from that, the IBOR reform had no impact on our risk management strategy.

We are exposed to various financial risks, such as market risks (that is, foreign currency exchange rate risk, interest rate risk, and equity price risk), credit risk, and liquidity risk.

We manage market risks, credit risk, and liquidity risk on a Group-wide basis through our global treasury department, global risk management, and global credit management. Risk management policies are established to identify risks, to set appropriate risk limits, and to monitor risks. Risk management policies and hedging strategies are laid out in our internal guidelines (for example, treasury guideline and other internal guidelines), and are subject to continuous internal review, analysis, and update to reflect changes in market conditions and our business.

We only purchase derivative financial instruments to reduce risks and not for speculation, which is defined as entering into derivative instruments without a corresponding underlying transaction.

Foreign Currency Exchange Rate Risk

Foreign Currency Exchange Rate Risk Factors

As we are active worldwide, our ordinary operations are subject to risks associated with fluctuations in foreign currencies. Since the Group's entities mainly conduct their operating business in their own functional currencies, our risk of exchange rate fluctuations from ongoing ordinary operations is not considered significant. However, SAP occasionally generates foreign currency-denominated receivables, payables, and other monetary items by transacting in a currency other than the functional currency. To mitigate the extent of the associated foreign currency exchange rate risk, the majority of these transactions are hedged as described below.

In rare circumstances, transacting in a currency other than the functional currency also leads to embedded foreign currency derivatives being separated and measured at fair value through profit or loss.

In addition, the intellectual property (IP) holders in the SAP Group are exposed to risks associated with forecasted intercompany cash flows in foreign currencies. These cash flows arise out of royalty payments from subsidiaries to the respective IP holder. The royalties are linked to the subsidiaries' external revenue. This arrangement leads to a concentration of the foreign currency exchange rate risk with the IP holders, as the royalties are mostly denominated in the subsidiaries' local currencies, while the functional currency of the IP holders with the highest royalty volume is the euro. The highest foreign currency exchange rate exposure of this kind relates to the currencies of subsidiaries with significant operations, for example the U.S. dollar, the pound sterling, the Japanese yen, the Swiss franc, and the Australian dollar.

Generally, we are not exposed to any significant foreign currency exchange rate risk with regard to our investing and financing activities, as such activities are normally conducted in the functional currency of the investing or borrowing entity.

Foreign Currency Exchange Rate Risk Management

We continuously monitor our exposure to currency fluctuation risks based on monetary items and forecasted transactions and pursue a Group-wide strategy to manage foreign currency exchange rate risk, using derivative financial instruments, primarily foreign exchange forward contracts, as appropriate, with the primary aim of reducing profit or loss volatility. Most of the hedging instruments are not designated as being in a hedge accounting relationship.

Currency Hedges Designated as Hedging Instruments (Cash Flow Hedges)

We enter into derivative financial instruments, primarily foreign exchange forward contracts, to hedge significant forecasted cash flows (royalties) from foreign subsidiaries denominated in foreign currencies with a hedge ratio of 1:1 and a hedge horizon of up to 12 months, which is also the maximum maturity of the foreign exchange derivatives we use.

For all years presented, no previously highly probable transaction designated as a hedged item in a foreign currency cash flow hedge relationship ceased to be probable. Therefore, we did not discontinue any of our cash flow hedge relationships. Also, ineffectiveness was either not material or non-existent in all years reported. Generally, the cash flows of the hedged forecasted transactions are expected to occur and to be recognized in profit or loss monthly within a time frame of 12 months from the date of the statement of financial position.

The amounts as at December 31, 2022, relating to items designated as hedged items were as follows:

Designated Hedged Items in Foreign Currency Exchange Rate Hedges

	Forecasted License Payments
	2022
€ millions	
Change in value used for calculating hedge ineffectiveness	32
Cash flow hedge	32
Cost of hedging	-9
Balances remaining in cash flow hedge reserve for which hedge accounting is no longer applied	0

The amounts as at December 31, 2022, designated as hedging instruments were as follows:

Designated Hedging Instruments in Foreign Currency Exchange Rate Hedges

	Forecasted License Payments
	2022
€ millions	
Nominal amount	1,371
Carrying amount	
Other financial assets	33
Other financial liabilities	-9
Change in value recognized in OCI	32
Hedge ineffectiveness recognized in Finance income, net	0
Cost of hedging recognized in OCI	-9
Amount reclassified from cash flow hedge in OCI to Other non-operating income, net	-42
Amount reclassified from cost of hedging in OCI to Finance income, net	-7

On December 31, 2022, we held the following instruments to hedge exposures to changes in foreign currency:

Details on Hedging Instruments in Foreign Currency Exchange Rate Hedges

	Maturity	
	2022	
	1–6 Months	7–12 Months
Forward exchange contracts		
Net exposure in € millions	822	550
Average EUR:GBP forward rate	0.86	0.88
Average EUR:JPY forward rate	136.83	138.23
Average EUR:CHF forward rate	1.00	0.97
Average EUR:AUD forward rate	1.53	1.54
Average EUR:USD forward rate	1.05	1.03

Foreign Currency Exchange Rate Exposure

Our risk exposure is based on the following assumptions:

- The SAP Group's entities generally operate in their functional currencies. In exceptional cases and limited economic environments, operating transactions are denominated in currencies other than the functional currency, leading to a foreign currency exchange rate risk for the related monetary instruments. Where material, this foreign currency exchange rate risk is hedged. Therefore, fluctuations in foreign currency exchange rates do not have a significant impact on either profit or other comprehensive income with regard to our non-derivative monetary financial instruments and related income or expenses.
- Our free-standing derivatives designed for hedging foreign currency exchange rate risks almost completely balance the changes in the fair values of the hedged item attributable to exchange rate movements in the Consolidated Income Statements in the same period. As a consequence, the hedged items and the hedging instruments are not exposed to foreign currency exchange rate risks, and thereby have no effect on profit.

Consequently, we are only exposed to significant foreign currency exchange rate fluctuations with regard to the following:

- The spot component of derivatives held within a designated cash flow hedge relationship affecting other comprehensive income
- Foreign currency embedded derivatives affecting other non-operating expense, net

Thus, our foreign currency exposure (and our average/high/low exposure) as at December 31 was as follows:

Foreign Currency Exposure

€ billions	2022	2021
Year-end exposure toward all our major currencies	1.7	1.4
Average exposure	1.6	1.3
Highest exposure	1.7	1.6
Lowest exposure	1.3	1.0

Foreign Currency Exchange Rate Sensitivity

We calculate our sensitivity on an upward/downward shift of +/-10% of the foreign currency exchange rate between the euro and all major currencies (2021: +/-10% of the foreign currency exchange rate between the euro and all other major currencies; 2020: +/-10% of the foreign currency exchange rate between the euro and all other major currencies). If, on December 31, 2022, 2021, and 2020, the foreign currency exchange rates had been higher/lower as described above, this would have had the following effects on other non-operating expense, net and other comprehensive income:

Foreign Currency Sensitivity

€ millions	Effects on Other Non-Operating Expense, Net			Effects on Other Comprehensive Income		
	2022	2021	2020	2022	2021	2020
Derivatives held within a designated cash flow hedge relationship						
All major currencies -10% (2021: all major currencies -10%; 2020: all major currencies -10%)				135	106	43
All major currencies +10% (2021: all major currencies +10%; 2020: all major currencies +10%)				-135	-106	-43
Embedded derivatives						
All currencies -10%	31	40	40			
All currencies +10%	-38	-49	-49			

Interest Rate Risk

Interest Rate Risk Factors

We are exposed to interest rate risk as a result of our investing and financing activities mainly in euros and U.S. dollars, since a large part of our investments are based on variable rates and/or short maturities (2022: 64%; 2021: 67%) and most of our financing transactions are based on fixed rates and long maturities (2022: 87%; 2021: 87%).

Interest Rate Risk Management

The aim of our interest rate risk management is to reduce profit or loss volatility and optimize our interest result by creating a balanced structure of fixed and variable cash flows. We therefore manage interest rate risks by adding interest-rate-related derivative instruments to a given portfolio of investments and debt financing. The desired fixed-floating mix of our net debt is set by the Treasury Committee.

Derivatives Designated as Hedging Instruments (Fair Value Hedges)

To match the interest rate risk from our financing transactions to our investments, we use receiver interest rate swaps to convert certain fixed-rate financial liabilities to floating, and by this means secure the fair value of the swapped financing transactions on a 1:1 ratio. Including interest rate swaps, 52% (2021: 50%) of our total interest-bearing financial liabilities outstanding as at December 31, 2022, had a fixed interest rate.

The amounts as at December 31, 2022, relating to items designated as hedged items were as follows:

Designated Hedged Items in Interest Rate Hedges

€ millions	Fixed-Rate Borrowing in EUR	Fixed-Rate Borrowing in USD	2022
Notional amount	4,550	94	
Carrying amount	3,732	95	
Accumulated fair value adjustments in Other financial liabilities	782	-9	
Change in fair value used for measuring ineffectiveness	782	2	
Accumulated amount of fair value hedge adjustments for hedged items ceased to be adjusted for hedging gains/losses	0	-11	

The amounts as at December 31, 2022, designated as hedging instruments were as follows:

Designated Hedging Instruments in Interest Rate Hedges

	2022	
€ millions	Interest Rate Swaps for EUR Borrowing	Interest Rate Swaps for USD Borrowing
Notional amount	4,550	94
Carrying amount		
Other financial assets	0	0
Other financial liabilities	-749	-3
Change in fair value used for measuring ineffectiveness	-749	-3

As at December 31, 2022, we held the following instruments to hedge exposures to changes in interest rates:

Details on Hedging Instruments in Interest Rate Hedges

€ millions	2022					
	Maturity					
	2024	2027	2028	2029	2030	2031
EUR interest rate swaps						
Nominal amounts		1,000	1,000	800	500	1,250
Average variable interest rate		3.949%	3.373%	2.713%	3.348%	3.511%
USD interest rate swaps						
Nominal amounts	94					
Average variable interest rate	5.150%					

None of the fair value adjustment from the receiver swaps, the basis adjustment on the underlying hedged items held in fair value hedge relationships, and the difference between the two recognized in Financial income, net, is material in any of the years presented.

Interest Rate Exposure

Our interest rate exposure (and our average/high/low exposure) as at December 31 was as follows:

Interest Rate Risk Exposure

€ billions	2022				2021			
	Year-End	Average	High	Low	Year-End	Average	High	Low
Fair value interest rate risk								
From investments	0.03	0.04	0.04	0.03	0.03	0.03	0.03	0.02
Cash flow interest rate risk								
From investments (including cash)	6.19	5.83	7.21	4.87	7.72	6.25	7.72	4.67
From financing	1.45	1.71	1.76	1.45	1.71	2.07	2.95	1.70
From interest rate swaps	4.64	4.84	4.88	4.64	4.83	4.82	4.83	4.81

Interest Rate Sensitivity

A sensitivity analysis is provided to show the impact of our interest rate risk exposure on profit or loss and equity in accordance with IFRS 7, considering the following:

- Changes in interest rates only affect the accounting for non-derivative fixed-rate financial instruments if they are recognized at fair value. Therefore, such interest rate changes do not change the carrying amounts of our non-derivative fixed-rate financial liabilities, as we account for them at amortized cost. Investments in fixed-rate financial assets classified as fair value through profit or loss were not material at each year end reported. Thus, we do not consider any fixed-rate instruments in the equity-related sensitivity calculation.
- Income or expenses recorded in connection with non-derivative financial instruments with variable interest rates are subject to interest rate risk if they are not hedged items in an effective hedge relationship. Thus, we take into consideration interest rate changes relating to our variable-rate financing and our investments in money market instruments in the profit-related sensitivity calculation.
- The designation of interest rate receiver swaps in a fair value hedge relationship leads to interest rate changes affecting Financial income, net. The fair value movements related to the interest rate swaps are not reflected in the sensitivity calculation, as they offset the fixed interest rate payments for the bonds and private placements as hedged items. However, changes in market interest rates affect the amount of interest payments from the interest rate swap. As a consequence, we include those effects of market interest rates on interest payments in the profit-related sensitivity calculation.

Due to the different interest rate expectations for the U.S. dollar and the euro area, we base our sensitivity analyses on a yield curve upward shift of +75/+125 basis points (bps) for the U.S. dollar/euro area (2021: +75/+20bps for the U.S. dollar/euro area; 2020: +50/+10bps for the U.S. dollar/euro area), and a yield curve downward shift of –25/–10bps for the U.S. dollar/euro area (2021: –25/–20bps for the U.S. dollar/euro area; 2020: –50/–20bps for the U.S. dollar/euro area).

If, on December 31, 2022, 2021, and 2020, interest rates had been higher/lower than as described above, this would not have had a material effect on Financial income, net, for our variable interest rate investments and would have had the following effects on Financial income, net.

Interest Rate Sensitivity

€ millions	Effects on Financial Income, Net		
	2022	2021	2020
Derivatives held within a designated fair value hedge relationship			
Interest rates +75bps for U.S. dollar area/+125bps for euro area (2021: +75/+20bps for U.S. dollar/euro area; 2020: +50/+10bps for U.S. dollar/euro area)	–58	–11	–6
Interest rates –25bps for U.S. dollar area/–10bps for euro area (2021: –25/–20bps for U.S. dollar/euro area; 2020: –50/–20bps for U.S. dollar/euro area)	5	10	10
Variable-rate financing			
Interest rates +75bps for U.S. dollar area/+125bps for euro area (2021: +75/+20bps for U.S. dollar/euro area; 2020: +50/+10bps for U.S. dollar/euro area)	–14	–4	–1
Interest rates –25bps for U.S. dollar area/–10bps for euro area (2021: –25/–20bps for U.S. dollar/euro area; 2020: –50/–20bps for U.S. dollar/euro area)	1	3	1

Equity Price Risk

Equity Price Risk Factors

We are exposed to equity price risk with regard to our investments in equity securities.

Equity Price Risk Management

Our listed equity investments are monitored based on the current market value that is affected by the fluctuations in the volatile stock markets worldwide. Unlisted equity investments are monitored based on detailed financial information provided by the investees. The fair value of our listed equity investments depends on the equity prices, while the fair value of the unlisted equity investments is influenced by various unobservable input factors.

Equity Price Exposure

On December 31, 2022, our exposure from our investments in equity securities was €5,137 million (2021: €5,799 million; 2020: €3,113 million).

Equity Price Sensitivity

Our sensitivity towards a fluctuation in equity prices is as follows:

Equity Price Sensitivity

€ millions	2022	2021	2020
Investments in equity securities			
Increase in equity prices and respective unobservable inputs of 10% - increase of financial income, net	503	515	259
Decrease in equity prices and respective unobservable inputs of 10% - decrease of financial income, net	-503	-515	-259

Credit Risk

Credit Risk Factors

To reduce the credit risk in investments, we arrange to receive rights to collateral for certain investing activities in the full amount of the investment volume, which we would be allowed to make use of only in the case of default of the counterparty to the investment. In the absence of other significant agreements to reduce our credit risk exposure, the total amounts recognized as cash and cash equivalents, current investments, loans, and other financial receivables, trade receivables, and derivative financial assets represent our maximum exposure to credit risks, except for the agreements mentioned above.

Credit Risk Management

Cash at Banks, Time Deposits, and Debt Securities

To mitigate the credit risk from our investing activities and derivative financial assets, we conduct all our activities only with approved major financial institutions and issuers that carry high external ratings, as required by our internal treasury guideline. Among its stipulations, the guideline requires that we invest only in assets from issuers with a minimum rating of at least "BBB flat." We only invest in issuers with a lower rating in exceptional cases. Such investments were not material in 2022 and 2021. The weighted average rating of our financial assets is A. We pursue a policy of cautious investments characterized by predominantly current investments, standard investment instruments, as well as a wide portfolio diversification by doing business with a variety of counterparties.

To further reduce our credit risk, we require collateral for certain investments in the full amount of the investment volume, which we would be allowed to make use of in the case of default of the counterparty to the investment. As such collateral, we only accept bonds with at least investment-grade rating level.

In addition, the concentration of credit risk that exists when counterparties are involved in similar activities by instrument, sector, or geographic area is further mitigated by diversification of

counterparties throughout the world and adherence to an internal limit system for each counterparty. This internal limit system stipulates that the business volume with individual counterparties is restricted to a defined limit that depends on the lowest official long-term credit rating available by at least one of the major rating agencies, the Tier 1 capital of the respective financial institution, or participation in the German Depositors' Guarantee Fund or similar protection schemes. We continuously monitor strict compliance with these counterparty limits. As the premium for credit default swaps mainly depends on market participants' assessments of the creditworthiness of a debtor, we also closely observe the development of credit default swap spreads in the market to evaluate probable risk developments and react in a timely manner to changes should these manifest.

For cash at banks, time deposits, and debt securities such as acquired bonds or commercial papers, we apply the general impairment approach. As it is our policy to only invest in high-quality assets of issuers with a minimum rating of at least investment grade so as to minimize the risk of credit losses, we use the low credit risk exception. Thus, these assets are always allocated to stage 1 of the three-stage credit loss model and we record a loss allowance for an amount equal to 12-month expected credit losses. This loss allowance is calculated based on our exposure as at the respective reporting date, the loss given default for this exposure, and the credit default swap spread as a measure for the probability of default. To ensure that during their lifetime our investments always fulfill the requirement of being investment-grade, we monitor changes in credit risk by tracking published external credit ratings. Among other things, we consider cash at banks, time deposits, and debt securities to be in default when the counterparty is unlikely to pay its obligations in full, when there is information about a counterparty's financial difficulties, or in case of a drastic increase in the credit default swap spread of a counterparty for a prolonged time period while the overall market environment remains rather stable. Such financial assets are written off either partially or in full if the likelihood of recovery is considered remote, which might be evidenced, for example, by the bankruptcy of a counterparty of such financial assets.

Trade Receivables

The default risk of our trade receivables is managed separately, mainly based on assessing the creditworthiness of customers through external ratings and on our past experience with the customers concerned. Based on this assessment, individual credit limits are established for each customer and deviations from such credit limits need to be approved by management.

We apply the simplified impairment approach using a provision matrix for all trade receivables and contract assets to take into account any lifetime expected credit losses already at initial recognition. For the purpose of the provision matrix, customers are clustered into different risk classes, mainly based on market information such as the country risk assessment of their country of origin. Loss rates used to reflect lifetime expected credit losses are determined using a roll-rate method based on the probability of a receivable progressing through different stages of being overdue and on our actual credit loss experience over the past years. These loss rates are enhanced by forward-looking information to reflect differences between economic conditions during the period over which the historical data has been collected, current conditions, and the expected changes in the economic conditions over the expected life of the receivables. Forward-looking information is based on changes in country risk ratings, or fluctuations in credit default swaps of countries of the customers we do business with. We continuously monitor outstanding receivables locally to assess whether there is objective evidence that our trade receivables and contract assets are credit-impaired. Evidence that trade receivables and contract assets are credit-impaired include, among the trade receivables being past due, information about significant financial difficulty of the customer or non-adherence to a payment plan. Under extreme situations such as the current war situation in Ukraine, related account receivables and contract assets are critically assessed to determine whether they are credit-impaired. We consider receivables to be in default when the counterparty is unlikely to pay its obligations in full. However, a delay of payments (for example, more than 90 days past due) in the normal course of business alone does not necessarily indicate a customer default. We write off account balances either partially or in full if we judge that the likelihood of recovery is remote, which might be evidenced, for

example, when bankruptcy proceedings for a customer are finalized or when all enforcement efforts have been exhausted.

The impact of default on our trade receivables from individual customers is mitigated by our large customer base and its distribution across many different industries, company sizes, and countries worldwide. For more information about our trade receivables and the impact of SAP's decision to wind down activities in Russia and Belarus on trade receivables, see [Note \(A.2\)](#).

Credit Risk Exposure

Cash, Time Deposits, and Debt Securities

As at December 31, 2022, our exposure to credit risk from cash, time deposits, and debt securities was as follows:

Credit Risk Exposure from Cash, Time Deposits, and Debt Securities

2022					
€ millions, unless otherwise stated	Equivalent to External Rating	Weighted Average Loss Rate	Gross Carrying Amount Not Credit-Impaired	Gross Carrying Amount Credit-Impaired	ECL Allowance
Risk class 1 - low risk	AAA to BBB-	-0.0%	6,554	0	-3
Risk class 2 - high risk	BB+ to D	0.0%	33	0	0
Risk class 3 - unrated	NA	-6.5%	46	0	-3
Total		-0.1%	6,633	0	-6

2021					
€ millions, unless otherwise stated	Equivalent to External Rating	Weighted Average Loss Rate	Gross Carrying Amount Not Credit-Impaired	Gross Carrying Amount Credit-Impaired	ECL Allowance
Risk class 1 - low risk	AAA to BBB-	-0.0%	6,864	0	-3
Risk class 2 - high risk	BB to D	0.0%	37	0	0
Risk class 3 - unrated	NA	-10.3%	29	0	-3
Total		-0.1%	6,930	0	-6

As at December 31, 2022, the major part of our other loans and other financial receivables was concentrated in Germany. There were no loans, or other financial receivables past due but not impaired and we had no indications of impairments of such assets that were not past due and not impaired as at that date.

Trade Receivables and Contract Assets

As at December 31, 2022, our exposure to credit risk from trade receivables was as follows:

Credit Risk Exposure from Trade Receivables and Contract Assets

2022				
€ millions, unless otherwise stated	Weighted Average Loss Rate	Gross Carrying Amount Not Credit-Impaired	Gross Carrying Amount Credit-Impaired	ECL Allowance
AR not due and due	-1.0%	3,146	10	-31
AR overdue 1 to 30 days	-1.0%	1,420	80	-15
AR overdue 30 to 90 days	-2.3%	582	64	-15
AR overdue more than 90 days	-27.2%	499	236	-200
TOTAL	-4.3%	5,647	390	-261

2021

€ millions, unless otherwise stated	Weighted Average Loss Rate	Gross Carrying Amount Not Credit-Impaired	Gross Carrying Amount Credit-Impaired	ECL Allowance
AR not due and due	-0.5%	4,106	6	-19
AR overdue 1 to 30 days	-1.0%	611	57	-7
AR overdue 30 to 90 days	-1.8%	514	48	-10
AR overdue more than 90 days	-19.3%	482	240	-139
TOTAL	-2.9%	5,713	351	-175

For 2022, the movement in the ECL allowance for trade receivables and contract assets is as follows:

Movement in ECL Allowance for Trade Receivables and Contract Assets

€ millions	2022	2021
	ECL Allowance	ECL Allowance
Balance as at 1/1	-175	-186
Net credit losses recognized	-187	-87
Amounts written off	101	98
Balance as at 12/31	-261	-175

For more information about the impact of SAP's decision to wind down activities in Russia and Belarus on trade receivables, see [Note \(A.2\)](#).

Liquidity Risk

Liquidity Risk Factors

We are exposed to liquidity risk from our obligations towards suppliers, employees, and financial institutions.

Liquidity Risk Management

Our liquidity is managed by our global treasury department with the primary aim of maintaining liquidity at a level that is adequate to meet our financial obligations.

Generally, our primary source of liquidity is funds generated from our business operations. Our global treasury department manages liquidity centrally for all subsidiaries. Where possible, we pool their cash surplus so that we can use liquidity centrally for our business operations, for subsidiaries' funding requirements, or to invest any net surplus in the market. With this strategy, we seek to optimize yields, while ensuring liquidity, by investing only with counterparties and issuers of high credit quality, as explained before. Hence, high levels of liquid assets and marketable securities provide a strategic reserve, helping keep SAP flexible, sound, and independent.

Apart from effective working capital and cash management, we have reduced the liquidity risk inherent in managing our day-to-day operations and meeting our financing responsibilities by arranging an adequate volume of available credit facilities with various financial institutions on which we can draw if necessary.

In order to retain high financial flexibility, in 2017, SAP SE entered into a €2.5 billion syndicated credit facility agreement with a term until 2024. The use of the facility is not restricted by any financial covenants. Borrowings under the facility bear interest of EURIBOR or LIBOR for the respective currency plus a margin of 17bps. We are also required to pay a commitment fee of 5.95bps per annum on the unused available credit. We have not drawn on the facility.

In September 2019, we initiated a commercial paper (Commercial Paper, or CP) program. As at December 31, 2022, we had €930 million of CP outstanding with maturities generally less than six months (2021: €930 million).

Additionally, as at December 31, 2022 and 2021, the Group had available lines of credit totaling €555 million and €346 million, respectively. There were immaterial borrowings outstanding under these lines of credit in all years presented.

Liquidity Risk Exposure

The table below is an analysis of the remaining contractual maturities of all our financial liabilities held as at December 31, 2022. Financial liabilities for which repayment can be requested by the contract partner at any time are assigned to the earliest possible period. Variable interest payments were calculated using the latest relevant interest rate fixed as at December 31, 2022. As we generally settle our derivative contracts gross, we show the pay and receive legs separately for all our currency and interest rate derivatives, whether or not the fair value of the derivative is negative. The cash outflows for the currency derivatives are translated using the applicable spot rate.

Contractual Maturities of Non-Derivative Financial Liabilities

€ millions	Carrying Amount 12/31/2022	Contractual Cash Flows					
		2023	2024	2025	2026	2027	Thereafter
Non-derivative financial liabilities							
Trade payables	-1,496	-1,496	0	0	0	0	0
Lease liabilities	-2,140	-398	-317	-257	-228	-188	-1,071
Other financial liabilities	-11,365	-4,422	-1,288	-965	-1,165	-1,142	-3,636
Total of non-derivative financial liabilities	-15,002	-6,316	-1,605	-1,222	-1,393	-1,330	-4,707

€ millions	Carrying Amount 12/31/2021	Contractual Cash Flows					
		2022	2023	2024	2025	2026	Thereafter
Non-derivative financial liabilities							
Trade payables	-1,089	-1,089	0	0	0	0	0
Lease liabilities	-2,143	-448	-338	-263	-208	-184	-934
Other financial liabilities	-13,285	-4,084	-1,695	-1,228	-936	-1,165	-4,773
Total of non-derivative financial liabilities	-16,517	-5,621	-2,033	-1,491	-1,144	-1,349	-5,707

Contractual Maturities of Derivative Financial Liabilities and Financial Assets

€ millions	Carrying Amount 12/31/2022	Contractual Cash Flows		Carrying Amount 12/31/2021	Contractual Cash Flows			
		2023	Thereafter		2022	Thereafter		
Derivative financial liabilities and assets								
Derivative financial liabilities								
Currency derivatives not designated as hedging instruments	-88			-62				
Cash outflows		-3,185	-13		-2,381	-12		
Cash inflows		3,113	0		2,327	0		
Currency derivatives designated as hedging instruments	-9			-31				
Cash outflows		-309			-919			
Cash inflows		302			885			
Interest rate derivatives designated as hedging instruments	-753			-49				
Cash outflows		-102	-1,201		-48	-476		
Cash inflows		63	364		60	421		
Total of derivative financial liabilities	-849	-118	-850	-142	-76	-67		
Derivative financial assets								
Currency derivatives not designated as hedging instruments	30			41				
Cash outflows		-1,713			-2,878			
Cash inflows		1,740			2,923			
Currency derivatives designated as hedging instruments	33			1				
Cash outflows		-1,039			-136			
Cash inflows		1,069			137			
Interest rate derivatives designated as hedging instruments	0			7				
Cash outflows		0	0		-4	-4		
Cash inflows		0	0		9	6		
Total of derivative financial assets	63	57	0	50	51	2		
Total of derivative financial liabilities and assets	-787	-61	-850	-92	-25	-65		

(F.2) Fair Value Disclosures on Financial Instruments

Level Transfers

It is our policy that transfers between the different levels of the fair value hierarchy are deemed to have occurred at the beginning of the period of the event or change in circumstances that caused the transfer.

Fair Value of Financial Instruments

We use various types of financial instruments in the ordinary course of business, which are classified as either amortized cost (AC) or fair value through profit or loss (FVTPL). For those financial instruments measured at fair value or for which fair value must be disclosed, we have categorized the financial instruments into a three-level fair value hierarchy depending on the inputs used to determine fair value and their significance for the valuation techniques.

Fair Values of Financial Instruments and Classification Within the Fair Value Hierarchy

€ millions	Category						12/31/2022				
		Measurement Categories			Fair Value						
		Carrying Amount	At Amortized Cost	At Fair Value	Level 1	Level 2	Level 3	Total			
Assets											
Cash and cash equivalents		9,008									
Cash at banks ¹	AC	3,176	3,176								
Time deposits ¹	AC	2,976	2,976								
Money market and similar funds	FVTPL	2,855		2,855	2,855			2,855			
Trade and other receivables		6,405									
Trade receivables ¹	AC	5,776	5,776								
Other receivables ²	—	629									
Other financial assets		6,479									
Debt securities	AC	32	32		32			32			
Equity securities	FVTPL	5,138		5,138	258	0	4,880	5,138			
Investments in associates ²	—	151									
Time deposits	AC	654	654			654		654			
Financial instruments related to employee benefit plans ²	—	203									
Loans and other financial receivables	AC	233	233			233		233			
Derivative assets											
Designated as hedging instrument											
FX forward contracts	—	33		33		33		33			
Interest rate swaps	—	0		0		0		0			
Not designated as hedging instrument											
FX forward contracts	FVTPL	30	30			30		30			
Call options for share-based payments	FVTPL	0		0		0		0			
Call option on equity shares	FVTPL	5		5			5	5			
Liabilities											
Trade and other payables		−2,226									
Trade payables ¹	AC	−1,496	−1,496								
Other payables ²	—	−730									
Financial liabilities		−14,355									
Non-derivative financial liabilities											
Loans	AC	−1,456	−1,456			−1,456		−1,456			
Bonds	AC	−9,083	−9,083		−8,301	−928		−9,229			
Private placements	AC	−405	−405			−383		−383			
Other non-derivative financial liabilities ³	AC	−2,562	−2,562			−422		−422			
Derivatives											
Designated as hedging instrument											
FX forward contracts	—	−9		−9		−9		−9			
Interest rate swaps	—	−753		−753		−753		−753			
Not designated as hedging instrument											
FX forward contracts	FVTPL	−88	−88			−88		−88			
Total financial instruments, net		5,311	−2,154	7,212	−5,156	−3,087	4,886	−3,357			

Fair Values of Financial Instruments and Classification Within the Fair Value Hierarchy

€ millions	Category	Measurement Categories					12/31/2021	
		Carrying Amount	At Amortized Cost	At Fair Value	Level 1	Level 2	Level 3	Total
Assets								
Cash and cash equivalents		8,898						
Cash at banks ¹	AC	3,149	3,149					
Time deposits ¹	AC	1,467	1,467					
Money market and similar funds	FVTPL	4,281		4,281	4,281			4,281
Trade and other receivables		6,499						
Trade receivables ¹	AC	5,888	5,888					
Other receivables ²	—	611						
Other financial assets		9,033						
Debt securities	AC	30	30		30			30
Equity securities	FVTPL	5,799		5,799	772	155	4,871	5,799
Investments in associates ²	—	155						
Time deposits	AC	2,602	2,602		2,602			2,602
Financial instruments related to employee benefit plans ²	—	201						
Loans and other financial receivables	AC	186	186		186			186
Derivative assets								
Designated as hedging instrument								
FX forward contracts	—	1		1		1		1
Interest rate swaps	—	7		7		7		7
Not designated as hedging instrument								
FX forward contracts	FVTPL	41		41	41			41
Call options for share-based payments	FVTPL	0		0	0			0
Call option on equity shares	FVTPL	10		10		10		10
Liabilities								
Trade and other payables		-1,702						
Trade payables ¹	AC	-1,089	-1,089					
Other payables ²	—	-613						
Financial liabilities		-15,571						
Non-derivative financial liabilities								
Loans	AC	-1,533	-1,533		-1,533			-1,533
Bonds	AC	-10,682	-10,682		-10,248	-931		-11,179
Private placements	AC	-790	-790		-801			-801
Other non-derivative financial liabilities ³	AC	-2,424	-2,424		-281			-281
Derivatives								
Designated as hedging instrument								
FX forward contracts	—	-31		-31	-31			-31
Interest rate swaps	—	-49		-49	-49			-49
Not designated as hedging instrument								
FX forward contracts	FVTPL	-62		-62	-62			-62
Total financial instruments, net		7,158	-3,194	9,997	-5,164	-695	4,881	-978

¹We do not separately disclose the fair value for cash and cash equivalents, trade receivables, and accounts payable as their carrying amounts are a reasonable approximation of their fair values.

²Since the line items Trade receivables, Trade payables, and Other financial assets contain both financial and non-financial assets or liabilities (such as other taxes or advance payments), the carrying amounts of non-financial assets or liabilities are shown to allow a reconciliation to the corresponding line items in the Consolidated Statements of Financial Position.

³For lease liabilities, included in the line item Other non-derivative financial liabilities, separate disclosure of fair value is not required.

Fair Values of Financial Instruments by Instrument Classification

€ millions	Category	12/31/2022		
		Carrying Amount	At Amortized Cost	At Fair Value
Financial assets				
At fair value through profit or loss	FVTPL	8,028		8,028
At amortized cost	AC	12,847	12,847	
Financial liabilities				
At fair value through profit or loss	FVTPL	-88		-88
At amortized cost	AC	-15,002	-15,002	

Fair Values of Financial Instruments by Instrument Classification

€ millions	Category	12/31/2021		
		Carrying Amount	At Amortized Cost	At Fair Value
Financial assets				
At fair value through profit or loss	FVTPL	10,131		10,131
At amortized cost	AC	13,323	13,323	
Financial liabilities				
At fair value through profit or loss	FVTPL	-62		-62
At amortized cost	AC	-16,517	-16,517	

Determination of Fair Values

A description of the valuation techniques and the inputs used in the fair value measurement is given below:

Financial Instruments Measured at Fair Value on a Recurring Basis

Type	Fair Value Hierarchy	Determination of Fair Value/Valuation Technique	Significant Unobservable Inputs	Interrelationship Between Significant Unobservable Inputs and Fair Value Measurement
Other financial assets				
Money-market and similar funds	Level 1	Quoted prices in an active market	NA	NA
Debt securities	Level 1	Quoted prices in an active market	NA	NA
Debt securities	Level 1	Quoted prices in an active market	NA	NA
Listed equity securities	Level 2	Quoted prices in an active market deducting a discount for the disposal restriction derived from the premium for a respective put option.	NA	NA
Unlisted equity securities	Level 3	Market approach. Comparable company valuation using revenue multiples derived from companies comparable to the investee.	- Peer companies used (revenue multiples range from 0.75 to 24.0) - Revenues of investees - Discounts for lack of marketability (7.3% to 28.3%)	The estimated fair value would increase (decrease) if: - The revenue multiples were higher (lower) - The investees' revenues were higher (lower) - The liquidity discounts were lower (higher)

			- Nature and selection of financing rounds - Weighting of financings rounds - Discounts for lack of marketability - Weighting of equity allocation method such as option pricing model and common stock equivalent model - Volatility assumptions - Estimated time to exit - Imminent exit value	The estimated fair value would increase (decrease) if: - Different financing rounds are selected - Weighting of financing rounds changes - Weighting of the applied equity allocation methods changes - Volatility assumptions were higher (lower) - Estimated time to exit increases (decreases) - The imminent exit value increases (decreases)
		Last financing round valuations	Nature and pricing indication of latest financing round	The estimated fair value would increase (decrease) if: - Price of latest financing round would increase (decrease) - The overall company value would be higher (lower) - The respective analyzed share class would be affected by this change due to its rights and preferences
		Net asset value/fair market value as reported by the respective funds	Net asset value calculations of the respective funds	The estimated fair value would increase (decrease) if: Reported net asset value of respective fund would be higher (lower)
Call option on equity shares	Level 3	Market approach. Venture capital method evaluating a variety of quantitative and qualitative factors such as actual and forecasted results, cash position, recent or planned transactions, and market comparable companies.	NA	NA
Other financial assets/ Financial liabilities				
FX forward contracts	Level 2	Discounted cash flow using par method. Expected future cash flows based on forward exchange rates are discounted over the respective remaining term of the contracts using the respective deposit interest rates and spot rates.	NA	NA
Interest rate swaps	Level 2	Discounted cash flow. Expected future cash flows are estimated based on forward interest rates from observable yield curves and contract interest rates, discounted at a rate that reflects the credit risk of the counterparty.	NA	NA

Financial Instruments Not Measured at Fair Value

Type	Fair Value Hierarchy	Determination of Fair Value/Valuation Technique
Financial liabilities		
Fixed-rate bonds (financial liabilities)	Level 1	Quoted prices in an active market
Fixed-rate private placements/ loans (financial liabilities)	Level 2	Discounted cash flows Future cash outflows for fixed interest and principal are discounted over the term of the respective contracts using the market interest rates as at the reporting date.

For other non-derivative financial assets/liabilities and variable rate financial debt, it is assumed that their carrying value reasonably approximates their fair values.

Transfers Between Levels 1 and 2

Transfers of equity securities from Level 2 to Level 1, which occurred because disposal restrictions lapsed and deducting a discount for such restriction was no longer necessary, were €93 million in 2022 (2021: €1.030 million), while transfers from Level 1 to Level 2 did not occur at all.

Level 3 Fair Value Disclosures

The following table shows the reconciliation of fair values from the opening to the closing balances for our unlisted equity securities and call options on equity shares classified as Level 3 fair values:

Reconciliation of Level 3 Fair Values

€ millions		2022	2021
1/1		4,881	2,508
Transfers			
Into Level 3		0	0
Out of Level 3		-25	-455
Purchases		522	1,076
Sales		-43	-852
Gains/losses			
Included in financial income, net		-789	2,348
Included in exchange differences in other comprehensive income		337	256
12/31		4,883	4,881
Change in unrealized gains/losses in profit or loss for equity investments held at the end of the reporting period		-788	1,789

Transfers out of Level 3 are due to initial public offerings of the respective investees or distributions in kind in the form of listed investees. Changing the unobservable inputs to reflect reasonably possible alternative assumptions would not have a material impact on the fair values of our unlisted equity securities held as FVTPL as at the reporting date.

Section G – Other Disclosures

This section provides additional disclosures on miscellaneous topics, including information pertaining to the Executive Board, the Supervisory Board, related party transactions, and other corporate governance topics.

(G.1) Prepaid Expenses and Other Tax Assets

€ millions	2022			2021		
	Current	Non-Current	Total	Current	Non-Current	Total
Prepaid expenses	828	512	1,340	588	242	830
Other tax assets	244	49	293	219	53	272
Total	1,072	561	1,633	807	295	1,102
¶ Other non-financial assets	2,139	3,580	5,719	1,633	2,628	4,261
Prepaid expenses and other tax assets as % of ¶ Other non-financial assets	50	16	29	49	11	26

Prepaid expenses primarily consist of prepayments for hyperscalers, support services, and software royalties. Other tax assets primarily consist of value-added tax (VAT).

(G.2) Other Tax Liabilities

€ millions	2022			2021		
	Current	Non-Current	Total	Current	Non-Current	Total
Other tax liabilities	662	0	662	646	0	646
¶ Other non-financial liabilities	4,818	705	5,523	5,203	860	6,063
Other tax liabilities as % of ¶ Other non-financial liabilities	14	0	12	12	0	11

Other tax liabilities primarily consist of VAT, payroll tax, sales tax, and withholding tax.

(G.3) Other Litigation, Claims, and Legal Contingencies

This Note discloses information about intellectual property-related litigation and claims, tax-related litigation other than income tax-related litigation (see [Note \(C.5\)](#)), and anti-bribery matters.

Uncertainty in Context of Legal Matters

The policies outlined in [Note \(A.4\)](#) for customer-related provisions, which include provisions for customer-related litigation cases and claims, equally apply to our other litigation, claims, and legal contingencies disclosed in this Note.

The outcome of litigation and claims is intrinsically subject to considerable uncertainty. Management's view of these matters may also change in the future. Actual outcomes of litigation and claims may differ from the assessments made by management in prior periods, which could result in a material impact on our business, financial position, profit, cash flows, or reputation. Most of the lawsuits and claims are of a very individual nature and claims are either not quantified by the claimants or the claim amounts quantified are, based on historical evidence, not expected to be a good proxy for the expenditure that would be required to resolve the case concerned. The specifics of the jurisdictions where most of the claims are located further impair the predictability of the outcome of the cases. Therefore, it is typically not practicable to reliably estimate the financial effect that these lawsuits and claims would have if SAP were to incur expenditure for these cases.

Further, the expected timing of any resulting outflows of economic benefits from these lawsuits and claims is typically uncertain and not estimable, as it depends generally on the duration of the legal proceedings and settlement negotiations required to resolve them.

We are subject to a variety of claims and lawsuits that arise from time to time in the ordinary course of our business, including proceedings and claims that relate to companies we have acquired. We will continue to vigorously defend against all claims and lawsuits against us. The provisions recorded for these claims and lawsuits as at December 31, 2022, are neither individually nor in the aggregate material to SAP.

Among the claims and lawsuits disclosed in this Note are the following classes:

Intellectual Property-Related Litigation and Claims

Intellectual property-related litigation and claims are cases in which third parties have threatened or initiated litigation claiming that SAP violates one or more intellectual property rights that they possess. Such intellectual property rights may include patents, copyrights, and other similar rights.

Contingent liabilities exist from intellectual property-related litigation and claims for which no provision has been recognized. Generally, it is not practicable to estimate the financial impact of these contingent liabilities due to the uncertainties around the litigation and claims, as outlined above. The total amounts claimed by plaintiffs in those intellectual property-related lawsuits or claims in which a claim has been quantified were not material to us as at December 31, 2022 and 2021. Based on our past experience, most of the intellectual property-related litigation and claims tend to be either dismissed in court or settled out of court for amounts significantly below the originally claimed amounts. We currently believe that resolving the intellectual property-related claims and lawsuits pending as at December 31, 2022, will neither individually nor in the aggregate have a material adverse effect on our business, financial position, profit, or cash flows.

Individual cases of intellectual property-related litigation and claims include the following:

In June 2018, Teradata Corporation, Teradata US, Inc. and Teradata Operations, Inc. (collectively "Teradata") filed a civil lawsuit against SAP SE, SAP America, Inc., and SAP Labs, LLC in U.S. federal court in California. Teradata alleged that SAP misappropriated trade secrets of Teradata, infringed Teradata's copyrights (this claim was subsequently withdrawn by Teradata), and violated U.S. antitrust

laws. Teradata sought unspecified monetary damages and injunctive relief. In 2019, SAP asserted patent infringement counterclaims against Teradata seeking monetary damages and injunctive relief. In 2020, Teradata initiated a second civil lawsuit against SAP asserting patent infringement, seeking monetary damages and injunctive relief; in February 2021, SAP filed patent infringement counterclaims against Teradata in this second U.S. lawsuit as well as a civil lawsuit against Teradata in Germany asserting patent infringement, seeking monetary damages and injunctive relief. Currently, all claims between the parties have been dismissed. Teradata has appealed the dismissal of its trade secret and antitrust claims; this appeal is expected to be completed by late 2023.

Tax-Related Litigation

We are subject to ongoing audits by domestic and foreign tax authorities. In respect of non-income taxes, we are involved in various proceedings with only a few foreign tax authorities regarding assessments and litigation matters on intercompany royalty payments and intercompany services. The total potential amount in dispute related to these matters for all applicable years is approximately €344 million (2021: €195 million). We have not recorded a provision for these matters, as we believe that we will prevail.

For more information about our income tax-related litigation, see [Note \(C.5\)](#).

Anti-Bribery Matters

SAP has received communications and whistleblower information alleging conduct that may violate anti-bribery laws in the United States (including the U.S. Foreign Corrupt Practices Act (FCPA)), and other countries. The Office of Ethics and Compliance (OEC) of SAP is conducting investigations with the assistance of an external law firm and voluntarily advised the U.S. Securities and Exchange Commission (U.S. SEC) and the U.S. Department of Justice (U.S. DOJ), as well as local authorities where potential violations are being investigated. The investigations and dialogue between SAP and the local authorities and the U.S. SEC and U.S. DOJ are ongoing and neither the outcome of the investigations nor the date when substantiated findings will be available is predictable at this point in time.

The alleged conduct may result in monetary penalties or other sanctions under the FCPA and/or other anti-bribery laws. In addition, SAP's ability to conduct business in certain jurisdictions could be negatively impacted. The comprehensive and exhaustive investigations and the corresponding remediation activities are still ongoing. In South Africa, SAP is seeking resolution of pending civil claims relating to ongoing investigations. Although there could be an unfavorable outcome in one or more of the ongoing investigations, it is impossible at this point in time to make an informed judgment about any possible financial impact.

As a consequence, as at December 31, 2022, no provisions have been recognized for potential anti-bribery law violations in our consolidated financial statements. It is currently also not practicable to estimate the financial effect of any contingent liabilities that may result from these potential violations.

(G.4) Board of Directors

Executive Board

Memberships on supervisory boards and other comparable governing bodies of enterprises, other than subsidiaries of SAP, on December 31, 2022

Christian Klein

Chief Executive Officer

Corporate Development and Strategy, Security and Secrecy, Compliance, Sustainability and Business Networks

Supervisory Board, adidas AG, Herzogenaurach, Germany

Sabine Bendiek

Chief People & Operating Officer, Labor Relations Director

HR Strategy, Business Transformation, Leadership Development, Talent Development

Supervisory Board, Schaeffler AG, Herzogenaurach, Germany

Luka Mucic

Chief Financial Officer

Global Finance and Administration including Investor Relations, Internal Audit, Data Protection & Privacy, Working Capital Management Solutions

Supervisory Board, HeidelbergCement AG, Heidelberg, Germany

Juergen Mueller

Chief Technology Officer

Technology & Innovation

Technology and Innovation Strategy, SAP Business Technology Platform including Data Management, Analytics and Planning, Integration, and Application Development Capabilities

Supervisory Board, DFKI GmbH, Kaiserslautern, Germany (until February 15, 2022)

Scott Russell

Customer Success

Global Field Organization including Sales, Services, Partner Ecosystem, and Customer Engagement

Thomas Saueressig

SAP Product Engineering

Global Responsibility for all SAP Business Software Applications, Cloud Operations and Support, Cross-Development Functions, SAP Enterprise Adoption Organization

Board of Directors, Nokia Corporation, Espoo, Finland (from April 5, 2022)

Julia White

Chief Marketing and Solutions Officer

Global Marketing, Corporate Communications, Government Affairs

Supervisory Board

Memberships on supervisory boards and other comparable governing bodies of enterprises, other than subsidiaries of SAP, on December 31, 2022

Prof. Dr. h.c. mult. Hasso Plattner^{2, 4, 6, 8}

Chairperson

Lars Lamadé^{1, 2, 4, 8}

Deputy Chairperson

Head of Global Sponsorships

Supervisory Board, Rhein-Neckar Loewen GmbH, Kronau, Germany

Manuela Asche-Holstein^{3, 7, 8}

Industry Advisor Expert

Member of the SAP Germany SE & Co. KG Works Council

Aicha Evans^{2, 4, 6, 7}

Chief Executive Officer and Member of the Board of Directors, Zoox, Inc., Foster City, CA, United States

Board of Directors, Joby Aviation LLC, Santa Cruz, CA, United States

Prof. Dr. Gesche Joost^{4, 7}

Professor for Design Research and Head of the Design Research Lab, Berlin University of the Arts, Berlin, Germany

Supervisory Board, Ottobock SE & Co. KGaA, Duderstadt, Germany

Supervisory Board, ING-DiBa AG, Frankfurt, Germany

Margret Klein-Magar^{1, 2, 3, 4}

Vice President, Head of SAP Alumni Relations

Chairperson of the Spokespersons' Committee of Senior Managers of SAP SE

Monika Kovachka-Dimitrova^{1, 2, 4, 7}

Chief Operations Expert

Member of the SAP SE Works Council (Europe)

Peter Lengler^{1, 3, 7, 8}

Value Advisor Expert

Member of the SAP Germany SE & Co. KG Works Council and Member of the SAP SE Works Council (Europe) (until November 21, 2022)

Jennifer Xin-Zhe Li (from May 18, 2022)^{3, 5}

General Partner of Changcheng Investment Partners, Beijing, China

Board of Directors, Flex Ltd., Singapore and San José, CA, United States (until August 25, 2022)

Board of Directors, ABB Ltd., Zurich, Switzerland

Board of Directors, Kone Oy, Espoo, Finland

Board of Directors, Full Truck Alliance Co. Ltd., Nanjing, Jiangsue, China, and Cayman Islands

Dr. Qi Lu^{4, 7, 8}

CEO, MiraclePlus Ltd., Beijing, China

Board of Directors, Pinduoduo Inc., Shanghai, China

Chairperson of the Board of Directors, Pine Field Holding Limited, Cayman Islands

Chairperson of the Board of Directors, Pine Field Holding Limited, Hong Kong, China

Chairperson of the Board of Directors, Pine Field Ltd., Beijing, China

Gerhard Oswald^{2, 4, 8}

Managing Director of Oswald Consulting GmbH, Walldorf, Germany

Advisory Board, TSG 1899 Hoffenheim Fußball-Spielbetriebs GmbH, Sinsheim, Germany

Christine Regitz^{1, 2, 4, 5}

Vice President, User Experience

Vice President, Head of Women in Tech@SAP

Supervisory Board, Schloss Dagstuhl – Leibniz Center for Informatics, Wadern, Germany (from May 20, 2022)

Supervisory Board, HV Capital Manager GmbH, Munich, Germany (from May 1, 2022)

Dr. Friederike Rotsch^{2, 3, 6, 7}

Group General Counsel and Head of Group Legal & Compliance, Merck KGaA, Darmstadt, Germany

Heike Steck^{1, 4, 5, 7}

Senior Operations Manager

Member of the SAP SE Works Council and Member of the SAP SE Works Council (Europe)

Helmut Stengele

On Early Retirement

Dr. Rouven Westphal^{3, 5, 6, 8}

Member of the Executive Board of the Hasso Plattner Foundation, Potsdam, Germany, and Managing Director of the General Partner of HPC Germany GmbH & Co. KG, Potsdam, Germany

Advisory Board, Sharks Sports & Entertainment LLC, San José, CA, United States

Dr. Gunnar Wiedenfels^{3, 5, 6}

Chief Financial Officer, Warner Bros. Discovery, Inc., New York, NY, United States

Board of Directors, OWN LLC, West Hollywood, CA, United States

Board of Directors, Speechagain, Inc., New York, NY, United States

James Wright^{1, 3, 5, 8}

Chairperson of the SAP SE Works Council (Europe) (until November 21, 2022)

Member of the SAP SE Works Council (Europe) (from November 22, 2022)

Supervisory Board Members Who Left During 2022

Bernard Liautaud (until May 18, 2022)

¹ Appointed by the SAP SE Works Council (Europe)

² Member of the Company's Personnel and Governance Committee

³ Member of the Company's Audit and Compliance Committee

⁴ Member of the Company's Technology and Strategy Committee

⁵ Member of the Company's Finance and Investment Committee

⁶ Member of the Company's Nomination Committee

⁷ Member of the Company's People and Culture Committee

⁸ Member of the Company's Go-To-Market and Operations Committee

(G.5) Executive and Supervisory Board Compensation

⌚ Accounting Policy

The share-based payment amounts disclosed below in the table "Executive Board Compensation" are based on the grant date fair value of the share units in the respective year. In 2022, 2021 and 2020, share units were issued to the Executive Board members under the LTI 2020. For more information about the terms and details of this plan, see [Note \(B.3\)](#).

In the table "Share-Based Payment for Executive Board Members," the share-based payment expense is the amount recorded in profit or loss under IFRS 2 (Share-Based Payment) in the respective period.

The total compensation of the Executive Board members for each of the years 2022, 2021, and 2020 was as follows:

Executive Board Compensation

€ thousands	2022	2021	2020
Short-term employee benefits	12,556	25,015	5,094
Share-based payment	20,726	25,095	23,095
Subtotal	33,282	50,110	28,189
Post-employment benefits	-1,429	464	488
Thereof defined-benefit	-1,433	461	487
Thereof defined-contribution	4	3	1
Termination Benefits	9,600	NA	NA
Total	41,453	50,574	28,677

Share-Based Payment for Executive Board Members

	2022	2021	2020
Number of share units granted	205,965	238,428	201,690
Total expense in € thousands	9,986	6,356	11,173

The defined benefit obligation (DBO) for pensions to Executive Board members and the annual pension entitlement of the members of the Executive Board on reaching age 62 based on entitlements from performance-based and salary-linked plans were as follows:

Retirement Pension Plan for Executive Board Members

€ thousands	2022	2021	2020
DBO 12/31	1,462	3,435	3,520
Annual pension entitlement	114	108	98

The total annual compensation of the Supervisory Board members is as follows:

Supervisory Board Compensation

€ thousands	2022	2021	2020
Total compensation	5,206	3,856	3,755
Thereof fixed compensation	3,149	3,176	3,149
Thereof committee remuneration	2,058	680	606

The Supervisory Board members do not receive any share-based payment for their services. As far as members who are employee representatives on the Supervisory Board receive share-based payment, such compensation is for their services as employees only and is unrelated to their status as members of the Supervisory Board.

Payments to/DBO for Former Executive Board Members

€ thousands	2022	2021	2020
Payments	2,217	2,159	3,010
DBO 12/31	31,217	42,313	44,043

SAP did not grant any compensation advance or credit to, or enter into any commitment for the benefit of, any member of the Executive Board or Supervisory Board in 2022, 2021, or 2020.

Detailed information about the different elements of the compensation is disclosed in the Compensation Report, which is available on SAP's Web site.

(G.6) Related Party Transactions Other Than Board Compensation

Certain Supervisory Board members of SAP SE currently hold, or held within the last year, positions of significant responsibility with other entities. We have relationships with certain of these entities in the ordinary course of business, whereby we buy and sell products, assets, and services at prices believed to be consistent with those negotiated at arm's length between unrelated parties.

Companies controlled by Hasso Plattner, Chairperson of the Supervisory Board of SAP SE and Chief Software Advisor of SAP, engaged in the following transactions with SAP: providing consulting services to SAP, receiving sport sponsoring from SAP, and making purchases of SAP products and services.

Occasionally, members of the Executive Board of SAP SE obtain services from SAP for which they pay a consideration consistent with those negotiated at arm's length between unrelated parties.

All amounts related to the abovementioned transactions were immaterial to SAP in all periods presented.

Related Party Transactions

	Executive Board Members		Supervisory Board Members		Companies Controlled by Supervisory Board Members		Associated Entities	
	2022	2021	2022	2021	2022	2021	2022	2021
€ millions								
Products and services provided	NA	NA	0	0	1	2	11	6
Products and services received	NA	NA	2 ¹	2 ¹	4	4	93	37
Sponsoring and other financial support provided	NA	NA	NA	NA	5	3	NA	NA
Outstanding balances at year end (Vendors)	NA	NA	0	0	0	0	-18	-15
Outstanding balances at year end (Customers)	NA	NA	0	0	0	0	4	4
Commitments at year end	NA	NA	0	0	51 ²	6	NA	NA

¹ Including services from employee representatives on the Supervisory Board in their capacity as employees of SAP

² The longest of these commitments is six years.

All of these balances are unsecured and interest-free and settlement is expected to occur in cash.

For information about the compensation of our Executive Board and Supervisory Board members, see [Note \(G.5\)](#).

(G.7) Principal Accountant Fees and Services

At the Annual General Meeting of Shareholders held on May 18, 2022, our shareholders elected KPMG AG Wirtschaftsprüfungsgesellschaft (KPMG) as SAP's independent auditor for 2022. KPMG has been the Company's principal auditor since the fiscal year 2002. Bodo Rackwitz has signed as auditor responsible for audit of the financial reporting and the group reporting of SAP SE since the fiscal year 2018. KPMG and other firms in the global KPMG network charged the following fees to SAP for audit and other professional services related to 2022 and the previous years:

€ millions	2022			2021			2020		
	KPMG AG (Germany)	Foreign KPMG Firms	Total	KPMG AG (Germany)	Foreign KPMG Firms	Total	KPMG AG (Germany)	Foreign KPMG Firms	Total
Audit fees	4	10	14	3	8	12	3	9	12
Audit-related fees	3	7	10	2	5	7	0	1	2
Tax fees	0	0	0	0	0	0	0	0	0
All other fees	0	0	0	0	0	0	0	0	0
Total	7	17	24	6	13	19	3	10	14

Audit fees are the aggregate fees charged by KPMG for auditing our consolidated financial statements and the statutory financial statements of SAP SE and its subsidiaries. Audit-related fees are fees charged by KPMG for assurance and related services that are reasonably related to the performance of the audit and for service organization attestation procedures.

(G.8) Events After the Reporting Period

Increased Focus on Strategic Growth Areas and Accelerated Cloud Transformation

In 2023, SAP will conduct a targeted restructuring program in selected areas of the Company. The purpose is to further focus on strategic growth areas by aligning our operating models and go-to-market approach with our accelerated cloud transformation. Furthermore, SAP intends to strengthen its core business and improve overall process efficiency. The program is expected to affect approximately 2.5% of SAP's employees. The vast majority of the €250 million to €300 million in restructuring costs associated with the program is expected to be recognized in the first quarter of 2023, impacting IFRS operating profit.

SAP to Explore a Sale of Its Stake in Qualtrics

In line with SAP's strategic initiative to streamline its portfolio, SAP has decided to explore a sale of its stake in Qualtrics. In the event of a successful transaction, SAP intends to remain a go-to-market and technology partner, servicing its joint customers and contributing to its growth and category leadership. SAP is currently evaluating the accounting treatment and a potential recognition as discontinued operation according to IFRS 5. A final decision on any transaction, its conditions, and timing is subject to market conditions, agreement on acceptable terms, regulatory approvals, and the approval of the SAP SE Supervisory Board.

Organizational Changes

At the beginning of 2023, SAP modified its organizational structure to further drive simplification and integration. The organizational changes might also affect SAP's segment reporting.

(G.9) Scope of Consolidation; Subsidiaries and Other Equity Investments

Entities Consolidated in the Financial Statements

	Total
12/31/2020	269
Additions	39
Disposals	-18
12/31/2021	290
Additions	26
Disposals	-28
12/31/2022	288

The additions relate to legal entities added in connection with acquisitions and foundations. The disposals are mainly due to mergers, and liquidations of legal entities.

Subsidiaries¹

Major Subsidiaries

Name and Location of Company	Owner -ship	Total Revenue in 2022 ²	Profit/Loss (-) After Tax for 2022 ²	Total Equity as at 12/31/2022 ²	Number of Employees as at 12/31/2022 ³	Foot- note
	%	€ thousands	€ thousands	€ thousands		
Ariba Technologies India Private Limited, Bengaluru, India	100	104,281	18,076	41,087	1,308	
Ariba, Inc., Palo Alto, CA, United States	100	1,457,046	543,678	6,147,376	1,647	
Concur Technologies, Inc., Bellevue, WA, United States	100	2,036,964	329,150	8,702,490	3,368	
Qualtrics, LLC, Wilmington, DE, United States	100	1,389,345	-1,279,289	8,276,577	3,920	
SAP (China) Co., Ltd., Shanghai, China	100	1,315,556	78,398	-115,740	6,485	18
SAP (Schweiz) AG, Biel, Switzerland	100	1,220,424	121,350	240,769	860	
SAP (UK) Limited, Feltham, United Kingdom	100	1,326,666	109,566	174,850	1,721	
SAP America, Inc., Newtown Square, PA, United States	100	7,679,678	-49,123	20,620,854	9,275	
SAP Argentina S.A., Buenos Aires, Argentina	100	211,896	20,369	54,086	1,115	18
SAP Asia Pte. Ltd., Singapore, Singapore	100	658,218	18,237	16,758	1,109	18
SAP Australia Pty Ltd, Sydney, Australia	100	854,197	64,877	114,663	1,317	
SAP Brasil Ltda., São Paulo, Brazil	100	680,482	10,379	67,004	2,532	18
SAP Canada Inc., Toronto, Canada	100	1,143,722	61,871	701,953	3,106	
SAP Deutschland SE & Co. KG, Walldorf, Germany	100	5,213,029	792,021	1,724,802	4,915	9
SAP España – Sistemas, Aplicaciones y Productos en la Informática, S.A., Madrid, Spain	100	555,000	16,247	207,794	912	
SAP France S.A., Levallois-Perret, France	100	1,095,975	271,450	1,982,374	1,562	
SAP Hungary Rendszerek, Alkalmazások és Termékek az Adatfeldolgozásban Informatikai Kft., Budapest, Hungary	100	149,269	3,350	26,803	1,317	
SAP India Private Limited, Bengaluru, India	100	752,754	105,449	439,985	2,279	
SAP Industries, Inc., Newtown Square, PA, United States	100	589,487	122,241	1,316,745	256	
SAP Italia Sistemi Applicazioni Prodotti in Data Processing S.p.A., Vimercate, Italy	100	643,856	30,780	147,910	792	
SAP Japan Co., Ltd., Tokyo, Japan	100	1,186,733	103,861	407,789	1,424	
SAP Labs Bulgaria EOOD, Sofia, Bulgaria	100	97,599	4,192	25,753	1,249	
SAP Labs India Private Limited, Bengaluru, India	100	807,222	77,473	285,829	10,406	
SAP Labs, LLC, Palo Alto, CA, United States	100	628,751	86,076	758,813	1,871	
SAP México S.A. de C.V., Mexico City, Mexico	100	517,905	-7,337	119,388	1,060	
SAP National Security Services, Inc., Newtown Square, PA, United States	100	1,148,035	225,370	554,346	592	
SAP Nederland B.V., 's-Hertogenbosch, the Netherlands	100	749,366	384,264	827,982	693	13
SAP Service and Support Centre (Ireland) Limited, Dublin, Ireland	100	273,401	43,567	68,008	1,706	
SAP Services s.r.o., Prague, Czech Republic	100	100,727	1,264	17,933	1,280	
SuccessFactors, Inc., Newtown Square, PA, United States	100	817,875	322,698	5,416,686	767	

Other Subsidiaries⁴

Name and Location of Company	Ownership %	Footnote
"SAP Kazakhstan" LLP, Almaty, Kazakhstan	100	
110405, Inc., Newtown Square, PA, United States	100	
Abakus Ukraine Limited Liability Company, Kyiv, Ukraine	100	
Ambin Properties Proprietary Limited, Johannesburg, South Africa	100	18
Apex Expert Solutions LLC, Chantilly, VA, United States	100	
AppGyver Inc., Indianapolis, IN, United States	100	
AppGyver Oy., Espoo, Finland	100	
Ariba Czech s.r.o., Prague, Czech Republic	100	
Ariba India Private Limited, Gurugram, India	100	
Ariba International Holdings, Inc., Wilmington, DE, United States	100	
Ariba International Singapore Pte. Ltd., Singapore, Singapore	100	
Ariba International, Inc., Wilmington, DE, United States	100	
Ariba Slovak Republic, s.r.o., Košice, Slovakia	100	
Ariba Software Technology Services (Shanghai) Co., Ltd., Shanghai, China	100	
Ariba Technologies Netherlands B.V., 's-Hertogenbosch, the Netherlands	100	13
Baiza Capital LLC, Newark, NJ, United States	0	5, 8
Baiza Capital S.A., Luxembourg, Luxembourg	0	5, 8
Business Objects Holding B.V., 's-Hertogenbosch, the Netherlands	100	13
Business Objects Option, LLC, Wilmington, DE, United States	100	
Business Objects Software Limited (Trading as SAP Solutions), Dublin, Ireland	100	
Callidus Software Inc., San Ramon, CA, United States	100	
Callidus Software Pty. Ltd., Sydney, Australia	100	
CallidusCloud (India) Private Limited, Hyderabad, India	100	
Christie Partners Holding C.V., 's-Hertogenbosch, the Netherlands	100	
Clarabridge Netherlands B.V., Amsterdam, the Netherlands	100	
Clarabridge UK Ltd, London, United Kingdom	100	
Clarabridge, Inc., Reston, VA, United States	100	
ClearTrip Inc. (Mauritius), Ebene, Mauritius	100	
ClearTrip Inc., George Town, Cayman Islands	57	
CNQR Operations Mexico S. de. R.L. de. C.V., Mexico City, Mexico	100	
Concur (Canada), Inc., Toronto, Canada	100	
Concur (Czech) s.r.o., Prague, Czech Republic	100	
Concur (France) S.A.S., Levallois-Perret, France	100	
Concur (Germany) GmbH, Frankfurt am Main, Germany	100	10, 11
Concur (Japan) Ltd., Tokyo, Japan	97	
Concur (New Zealand) Limited, Wellington, New Zealand	100	16
Concur (Philippines) Inc., Makati City, Philippines	100	
Concur (Switzerland) GmbH, Zurich, Switzerland	100	15
Concur Holdings (France) S.A.S., Levallois-Perret, France	100	
Concur Holdings (Netherlands) B.V., 's-Hertogenbosch, the Netherlands	100	13
Concur Technologies (Australia) Pty. Limited, Sydney, Australia	100	
Concur Technologies (Hong Kong) Limited, Hong Kong, China	100	
Concur Technologies (India) Private Limited, Bengaluru, India	100	

Name and Location of Company	Ownership %	Footnote
Concur Technologies (Singapore) Pte. Ltd., Singapore, Singapore	100	18
Concur Technologies (UK) Limited, Feltham, United Kingdom	100	
ConTgo Consulting Limited, Feltham, United Kingdom	100	18
ConTgo Limited, Feltham, United Kingdom	100	12
Crystal Decisions (UK) Limited, Feltham, United Kingdom	100	12
Delighted, LLC, Wilmington, DE, United States	100	
Delos Cloud GmbH, Schönefeld, Germany	100	5
Emarsys Beijing Limited, Beijing, China	100	
Emarsys eMarketing Systems GmbH, Vienna, Austria	100	
Emarsys İletişim Sistemleri Tic. Ltd Şti., Istanbul, Turkey	100	
Emarsys Interactive Services GmbH, Berlin, Germany	100	
Emarsys Limited, Hong Kong, China	100	
Emarsys North America, Inc., Indianapolis, IN, United States	100	
Emarsys Pte. Ltd., Singapore, Singapore	100	
Emarsys Pty Ltd, Sydney, Australia	100	
Emarsys S.A.S., Levallois-Perret, France	100	
Emarsys Schweiz GmbH, Zurich, Switzerland	100	
Emarsys UK Ltd, London, United Kingdom	100	
EMARSYS-Technologies Informatikai Szolgáltató Kft., Budapest, Hungary	100	
Engagor N.V., Ghent, Belgium	100	
Engagor, Inc., Wilmington, DE, United States	100	
ESS Cubed Procurement Proprietary Limited, Johannesburg, South Africa	100	
Extended Systems, Inc., San Ramon, CA, United States	100	
Financial Fusion, Inc., San Ramon, CA, United States	100	
Flyin Travel and Tourism Private Limited, Hyderabad, India	100	
FreeMarkets Ltda., São Paulo, Brazil	100	
Hipmunk, Inc., San Francisco, CA, United States	100	
hybris (U.S.) Corporation, Wilmington, DE, United States	100	
hybris GmbH, Munich, Germany	100	10, 11
INNAAS s.r.l., Rome, Italy	100	5
Inxight Federal Systems Group, Inc., Wilmington, DE, United States	100	
IP Asset Holdings, LLC, Provo, UT, United States	100	
LeadFormix, Inc., San Ramon, CA, United States	100	
LLC "Emarsys", Moscow, Russia	100	
LLC "SAP Labs", Moscow, Russia	100	
LLC "SAP Ukraine", Kyiv, Ukraine	100	18
Loyalsys GmbH, Vienna, Austria	100	
Loyalsys Technologies Israel Ltd., Tel Aviv, Israel	100	
Market Metrix Iberia S.L., Barcelona, Spain	100	
Market Metrix Singapore Pte. Ltd., Singapore, Singapore	100	
Market Metrix, A Clarabridge Company, LLC, Wilmington, DE, United States	100	
New Debden Merger Sub II LLC, Wilmington, DE, United States	100	
Nihon Ariba K.K., Tokyo, Japan	100	
Outerjoin, Inc., San Ramon, CA, United States	100	

Name and Location of Company	Ownership %	Footnote
OutlookSoft Deutschland GmbH, Walldorf, Germany	100	10, 11
Plat.One Lab S.r.l., Genoa, Italy	100	
PT SAP Indonesia, Jakarta, Indonesia	99	
QAL Technologies Pty Ltd, Sydney, Australia	100	
QCL Technologies Holdings, LLC, Wilmington, DE, United States	100	5
QCL Technologies ULC, Toronto, Canada	100	
QDL Technologies GmbH, Munich, Germany	100	
QFL Technologies S.A.R.L., Paris, France	100	
QIL Technologies Limited, Dublin, Ireland	100	
QPL Technologies sp. z o.o., Kraków, Poland	100	
QSL Technologies Pte. Ltd., Singapore, Singapore	100	
Quadrem Africa Pty. Ltd., Johannesburg, South Africa	100	
Quadrem Brazil Ltda., Rio de Janeiro, Brazil	100	
Quadrem Chile Ltda., Santiago de Chile, Chile	100	
Quadrem International Ltd., Hamilton, Bermuda	100	
Quadrem Netherlands B.V., 's-Hertogenbosch, the Netherlands	100	13
Quadrem Overseas Cooperatief U.A., 's-Hertogenbosch, the Netherlands	100	
Quadrem Peru S.A.C., Lima, Peru	100	
Qualtrics Colombia S.A.S., Bogotá, D.C., Colombia	100	5
Qualtrics de Argentina S.R.L., Buenos Aires, Argentina	100	5
Qualtrics Holdings I, LLC, Wilmington, DE, United States	100	5
Qualtrics Holdings II, LLC, Wilmington, DE, United States	100	5
Qualtrics Holdings Inc., Wilmington, DE, United States	100	
Qualtrics Hong Kong Limited, Hong Kong, China	100	
Qualtrics India Private Limited, Mumbai, India	100	
Qualtrics International Inc., Wilmington, DE, United States	71	19
Qualtrics Ireland Limited, Dublin, Ireland	100	
Qualtrics Japan LLC, Tokyo, Japan	100	
Qualtrics Korea, LLC, Seoul, South Korea	100	
Qualtrics Mexico, S. DE R.L. DE C.V., Mexico City, Mexico	100	
Qualtrics Middle East FZ-LLC, Dubai, United Arab Emirates	100	5
Qualtrics Netherlands B.V., Amsterdam, the Netherlands	100	
Qualtrics Provo HQ, LLC, Wilmington, DE, United States	100	
Qualtrics Sweden AB, Stockholm, Sweden	100	
Qualtrics Switzerland AG, Zurich, Switzerland	100	
Qualtrics Technologies Brasil Ltda., São Paulo, Brazil	100	
Qualtrics Technologies Spain, S.L.U., Madrid, Spain	100	
QUL Technologies Limited, London, United Kingdom	100	
SAP (Beijing) Software System Co., Ltd., Beijing, China	100	
SAP (China) Holding Co., Ltd., Beijing, China	100	
SAP Andina y del Caribe C.A., Caracas, Venezuela	100	18
SAP AZ LLC, Baku, Azerbaijan	100	
SAP Belgium – Systems, Applications and Products S.A., Brussels, Belgium	100	
SAP Beteiligungs GmbH, Walldorf, Germany	100	

Name and Location of Company	Ownership %	Footnote
SAP Bulgaria EOOD, Sofia, Bulgaria	100	
SAP Business Services Center Nederland B.V., 's-Hertogenbosch, the Netherlands	100	13
SAP Chile Limitada, Santiago de Chile, Chile	100	18
SAP CIS, LLC, Moscow, Russia	100	
SAP Colombia S.A.S., Bogotá, D.C., Colombia	100	18
SAP Costa Rica, S.A., San José, Costa Rica	100	18
SAP ČR, spol. s r.o., Prague, Czech Republic	100	
SAP Cyprus Limited, Nicosia, Cyprus	100	
SAP d.o.o., Zagreb, Croatia	100	18
SAP Danmark A/S, Copenhagen, Denmark	100	
SAP Dritte Beteiligungs- und Vermögensverwaltungs GmbH, Walldorf, Germany	100	
SAP East Africa Limited, Nairobi, Kenya	100	18
SAP Egypt LLC, Cairo, Egypt	100	18
SAP EMEA Inside Sales S.L., Madrid, Spain	100	
SAP Erste Beteiligungs- und Vermögensverwaltungs GmbH, Walldorf, Germany	100	10, 11
SAP Estonia OÜ, Tallinn, Estonia	100	
SAP Financial, Inc., Toronto, Canada	100	
SAP Finland Oy, Espoo, Finland	100	
SAP Foreign Holdings GmbH, Walldorf, Germany	100	
SAP France Holding S.A., Levallois-Perret, France	100	
SAP Global Marketing, Inc., New York, NY, United States	100	
SAP Hellas Single Member S.A., Athens, Greece	100	
SAP Hong Kong Co., Ltd., Hong Kong, China	100	18
SAP Hosting Beteiligungs GmbH, St. Leon-Rot, Germany	100	10, 11
SAP India (Holding) Pte. Ltd., Singapore, Singapore	100	
SAP International Panama, S.A., Panama City, Panama	100	
SAP International, Inc., Miami, FL, United States	100	
SAP Investments, Inc., Wilmington, DE, United States	100	
SAP Ireland Limited, Dublin, Ireland	100	14
SAP Ireland US - Financial Services Designated Activity Company, Dublin, Ireland	100	
SAP Israel Ltd., Ra'anana, Israel	100	18
SAP Korea Ltd., Seoul, South Korea	100	
SAP Labs France S.A.S., Mougins, France	100	
SAP Labs Israel Ltd., Ra'anana, Israel	100	
SAP Labs Korea, Inc., Seoul, South Korea	100	
SAP Latvia SIA, Riga, Latvia	100	
SAP Malaysia Sdn. Bhd., Kuala Lumpur, Malaysia	100	
SAP Middle East and North Africa L.L.C., Dubai, United Arab Emirates	49	6, 18
SAP Middle East FZ-LLC, Dubai, United Arab Emirates	100	18
SAP Nederland Holding B.V., 's-Hertogenbosch, the Netherlands	100	13
SAP New Zealand Limited, Auckland, New Zealand	100	
SAP Norge AS, Oslo, Norway	100	
SAP North West Africa Ltd, Casablanca, Morocco	100	
SAP Österreich GmbH, Vienna, Austria	100	

Name and Location of Company	Ownership %	Footnote
SAP Perú S.A.C., Lima, Peru	100	18
SAP Philippines, Inc., Taguig City, Philippines	100	18
SAP Polska Sp. z o.o., Warsaw, Poland	100	
SAP Portals Europe GmbH, Walldorf, Germany	100	
SAP Portals Holding Beteiligungs GmbH, Walldorf, Germany	100	
SAP Portals Israel Ltd., Ra'anana, Israel	100	
SAP Portugal – Sistemas, Aplicações e Produtos Informáticos, Sociedade Unipessoal, Lda., Porto Salvo, Portugal	100	
SAP Projektverwaltungs- und Beteiligungs GmbH, Walldorf, Germany	100	
SAP Public Services, Inc., Washington, DC, United States	100	
SAP Puerto Rico GmbH, Walldorf, Germany	100	10, 11, 18
SAP Retail Solutions Beteiligungsgesellschaft GmbH, Walldorf, Germany	100	
SAP Romania SRL, Bucharest, Romania	100	
SAP Saudi Arabia Software Services Ltd, Riyadh, Kingdom of Saudi Arabia	100	
SAP Saudi Arabia Software Trading Ltd, Riyadh, Kingdom of Saudi Arabia	75	18
SAP Sechste Beteiligungs- und Vermögensverwaltungs GmbH, Walldorf, Germany	100	10, 11
SAP Siebte Beteiligungs- und Vermögensverwaltungs GmbH, Walldorf, Germany	100	10, 11
SAP sistemi, aplikacije in produkti za obdelavo podatkov d.o.o., Ljubljana, Slovenia	100	
SAP Slovensko s.r.o., Bratislava, Slovakia	100	
SAP Software and Services LLC, Doha, Qatar	49	6, 18
SAP Svenska Aktiebolag, Stockholm, Sweden	100	
SAP System Application and Products Asia Myanmar Limited, Yangon, Myanmar	100	
SAP Systems, Applications and Products in Data Processing (Thailand) Ltd., Bangkok, Thailand	100	
SAP Taiwan Co., Ltd., Taipei, Taiwan	100	
SAP Technologies Inc., Palo Alto, CA, United States	100	
SAP Training and Development Institute FZCO, Dubai, United Arab Emirates	100	18
SAP Türkiye Yazılım Üretim ve Ticaret A.Ş., Istanbul, Turkey	100	
SAP UAB, Vilnius, Lithuania	100	
SAP Ventures Investment GmbH, Walldorf, Germany	100	10, 11
SAP Vierte Beteiligungs- und Vermögensverwaltungs GmbH, Walldorf, Germany	100	
SAP Vietnam Company Limited, Ho Chi Minh City, Vietnam	100	
SAP West Balkans d.o.o., Belgrade, Serbia	100	
SAP Zweite Beteiligungs- und Vermögensverwaltungs GmbH, Walldorf, Germany	100	10, 11
SAP.io Fund, L.P., Austin, TX, United States	0	7
Sapphire Fund Investments II Holdings, LLC, Austin, TX, United States	100	7
Sapphire Fund Investments II, L.P., Austin, TX, United States	0	7
Sapphire Fund Investments III Holdings, LLC, Austin, TX, United States	100	5, 7
Sapphire Fund Investments III, L.P., Austin, TX, United States	0	7
Sapphire SAP HANA Fund of Funds, L.P., Austin, TX, United States	0	7
Sapphire Ventures Fund I, L.P., Austin, TX, United States	0	7
Sapphire Ventures Fund II, L.P., Austin, TX, United States	0	7
Sapphire Ventures Fund III, L.P., Austin, TX, United States	0	7
Sapphire Ventures Fund IV, L.P., Austin, TX, United States	0	7
Sapphire Ventures Fund V, L.P., Austin, TX, United States	0	7
Sapphire Ventures Fund VI, L.P., Austin, TX, United States	0	7

Name and Location of Company	Ownership %	Footnote
Sapphire Ventures Fund VII-A, L.P., Austin, TX, United States	0	5, 7
SAPV (Mauritius), Ebene, Mauritius	100	7
Shanghai SAP Cloud Technology Company, Ltd., Shanghai, China	70	5
Signavio ANZ Pty Ltd, Melbourne, Australia	100	
Signavio Pte. Ltd., Singapore, Singapore	100	
Signavio UK Ltd, Birmingham, United Kingdom	100	12
Signavio, Inc., Newtown Square, PA, United States	100	
Statwing, LLC, Wilmington, DE, United States	100	
SuccessFactors (Philippines), Inc., Pasig City, Philippines	100	18
SuccessFactors Cayman, Ltd., Grand Cayman, Cayman Islands	100	
SurveyVitals A Qualtrics Company, LLC, Wilmington, DE, United States	100	
Sybase Angola, LDA, Luanda, Angola	100	17
Sybase Iberia, S.L., Madrid, Spain	100	
Sybase International Holdings Corporation, LLC, San Ramon, CA, United States	100	
Sybase, Inc., San Ramon, CA, United States	100	
Systems Applications Products (Africa Region) Proprietary Limited, Johannesburg, South Africa	100	
Systems Applications Products (Africa) Proprietary Limited, Johannesburg, South Africa	100	
Systems Applications Products (South Africa) Proprietary Limited, Johannesburg, South Africa	81	18
Systems Applications Products Nigeria Limited, Victoria Island, Nigeria	100	18
Taulia (Shanghai) Smart Technology Co. Ltd., Shanghai, China	100	5
Taulia Australia Pty. Ltd., Sydney, Australia	100	5
Taulia Bulgaria EOOD, Sofia, Bulgaria	100	5
Taulia GmbH, Düsseldorf, Germany	100	5
Taulia LLC, San Francisco, CA, United States	96	5
Taulia Singapore Pte. Ltd., Singapore, Singapore	100	5
Taulia Trade Technology GmbH, Düsseldorf, Germany	100	5
Taulia UK Ltd., London, United Kingdom	100	5
Technology Management Associates Inc., Chantilly, VA, United States	100	
Temkin Group, LLC, Wilmington, DE, United States	100	
TM Property Holdings, LLC, Wilmington, DE, United States	100	
TomorrowNow, Inc., Bryan, TX, United States	100	
TRX Europe Limited, Feltham, United Kingdom	100	
TRX Technologies India Private Limited, Bengaluru, India	100	
TRX UK Limited, Feltham, United Kingdom	100	12
TRX, Inc., Bellevue, WA, United States	100	
Usermind d.o.o Beograd, Belgrade, Serbia	100	
Usermind International, LLC, Provo, UT, United States	100	
Usermind, LLC, Provo, UT, United States	100	
Volume Integration, Inc., Reston, VA, United States	100	

¹ For the classification of the subsidiaries, the following figures are considered: revenues, profit/loss after tax, total equity and number of employees.

² These figures are based on our local IFRS financial statements prior to eliminations resulting from consolidation and therefore do not reflect the contribution of these companies included in the Consolidated Financial Statements. The translation of the equity into Group currency is based on period-end closing exchange rates, and on average exchange rates for revenue and net income/loss.

³ As at December 31, 2022, including managing directors, in FTE.

⁴ Figures for profit/loss after tax and total equity pursuant to HGB, section 285 and section 313 are not disclosed if they are of minor significance for a fair presentation of the profitability, liquidity, capital resources, and financial position of SAP SE, pursuant to HGB, section 313 (2) sentence 3 no. 4 and section 286 (3) sentence 1 no. 1.

⁵ Consolidated for the first time in 2022.

⁶ Agreements with the other shareholders provide that SAP SE fully controls the entity.

⁷ Structured entity belonging to SAP SE. The results of operations of these entities are included in SAP's consolidated financial statements in accordance with IFRS 10 (Consolidated Financial Statements).

⁸ In accordance with IFRS 10, the structured entity does not include the receivables and liabilities resulting from the supply chain financing (SCF) activities.

⁹ Entity whose personally liable partner is SAP SE.

¹⁰ Entity with (profit and) loss transfer agreement.

¹¹ Pursuant to HGB, section 264 (3) or section 264b, the subsidiary is exempt from applying certain legal requirements to their statutory stand-alone financial statements including the requirement to prepare notes to the financial statements and a review of operations, the requirement of independent audit, and the requirement of public disclosure.

¹² Pursuant to section 480 of the UK Companies Act 2006, the entity is exempt from having its financial statements audited on the grounds that the entity is entitled to the benefits from a dormant entity exemption in respect of its financial year ended December 31, 2022.

¹³ Pursuant to article 2:403 of the Dutch Civil Code, the entity is exempt from applying certain legal requirements to their statutory stand-alone financial statements including the requirement to prepare the financial statements, the requirement of independent audit, and the requirement of public disclosure, on the basis that SAP SE has provided a guarantee of the entity's liabilities in respect of its financial year ended December 31, 2022, or in respect of its financial year ended September 30, 2022, respectively.

¹⁴ Pursuant to Irish Companies Act 2014, chapter 16 of Part 6, section 365, the entity is exempt from having its financial statements audited on the grounds that the entity is entitled to the benefits from a dormant entity exemption in respect of its financial year ended December 31, 2022.

¹⁵ Pursuant to article 727a, paragraph 2 of the Swiss Code of Obligations, the entity is exempt from having its financial statements audited in respect of its financial year ended December 31, 2022, or in respect of its financial year ended September 30, 2022, respectively.

¹⁶ Pursuant to section 211 (3) of the New Zealand Companies Act 1993 and section 45 (2) of the Financial Reporting Act 2013, the entity had approved exclusions and is not required to lodge audited financial statements in respect of its financial year ended September 30, 2022.

¹⁷ Pursuant to Angola Tax Law and Presidential Decree no. 147/13 of October 1, 2013, the entity does not qualify as being a Large Taxpayer and therefore is exempt from having its financial statements audited in respect of its financial year ended December 31, 2022.

¹⁸ Entity with support letter issued by SAP SE.

¹⁹ Share of voting rights is 96%.

Other Equity Investments

Name and Location of Company	Ownership %
Joint Arrangements and Investments in Associates	
China DataCom Corporation Limited, Guangzhou, China	28
Procurement Negócios Eletrônicos S/A, Rio de Janeiro, Brazil	17
SAP Pioneer GmbH, Walldorf, Germany	20
Name and Location of Company	
Equity Investments with Ownership of at Least 5%	
47th Street Partners I, L.P., Menlo Park, CA, United States	
83North IV, L.P., Hertzlia, Israel	
Adverity GmbH, Vienna, Austria	
Alation, Inc., Redwood City, CA, United States	
Alchemist Accelerator Fund I LLC, San Francisco, CA, United States	
Aleph-Bigg SPV, L.P., Grand Cayman, Cayman Islands	
All Tax Platform - Solucoes Tributarias S.A., São Paulo, Brazil	
Amplify Partners, L.P., Menlo Park, CA, United States	
Amplify Partners II L.P., Menlo Park, CA, United States	
Amplify Partners III, L.P., Menlo Park, CA, United States	
Amplify Partners IV, L.P., Menlo Park, CA, United States	
Amplify Partners Select Fund IV, L.P., Menlo Park, CA, United States	
BGS Holdings, Inc., Austin, TX, United States	
Bitonic Technology Labs, Inc., Karnataka, India	
Blue Yard Capital 1 Alternative GmbH & Co. KG, Berlin, Germany	
Blue Yard Capital I GmbH & Co. KG, Berlin, Germany	
Blue Yard Crypto 1, L.P., Hot Springs Village, AR, United States	
Boldstart Ventures V, L.P., New York, NY, United States	
Boldstart Ventures VI, L.P., New York, NY, United States	
Brightfield Holdings, Inc., New York, NY, United States	
BY Capital 2 GmbH & Co. KG, Berlin, Germany	
Canvas Ventures 3, L.P., Portola Valley, CA, United States	
Catchpoint Systems, Inc., New York, NY, United States	
CDQ AG, St. Gallen, Switzerland	
Chalfen Ventures Fund I L.P., St Helier, Jersey, Channel Islands	
Chalfen Ventures Fund II L.P., St Helier, Jersey, Channel Islands	
Chalfen Ventures Fund III L.P., St Helier, Jersey, Channel Islands	
CircleCI, Inc., San Francisco, CA, United States	
Clari, Inc., Sunnyvale, CA, United States	
ComponentLab, Inc., Seattle, WA, United States	
Contentful Global, Inc., Berlin, Germany	
Costanoa Venture Capital II L.P., Palo Alto, CA, United States	
Costanoa Venture Capital III L.P., Palo Alto, CA, United States	
Costanoa Venture Capital QZ, LLC, Palo Alto, CA, United States	
Creandum SPV TR (D) AB, Stockholm, Sweden	
Culture Amp, Inc., San Francisco, CA, United States	

Name and Location of Company

Cypress.io, Inc., Atlanta, GA, United States

Data Collective II L.P., Palo Alto, CA, United States

Data Collective III L.P., Palo Alto, CA, United States

Data Collective IV, L.P., Palo Alto, CA, United States

Digital Hub Rhein-Neckar GmbH, Ludwigshafen, Germany

Dremio Corporation, Santa Clara, CA, United States

FeedZai S.A., Lisbon, Portugal

Felix Capital Fund III, London, United Kingdom

Felix Ventures II, L.P., London, United Kingdom

Finco Services, Inc. (dba Current), New York, NY, United States

Follow Analytics, Inc., San Francisco, CA, United States

GitGuardian SAS, Paris, France

Gorgias, Inc., San Francisco, CA, United States

Haystack Ventures V, L.P., Mill Valley, CA, United States

Haystack Ventures VI, L.P., Mill Valley, CA, United States

IDG Ventures USA III, L.P., San Francisco, CA, United States

IEX Group, Inc., New York, NY, United States

InfluxData, Inc., San Francisco, CA, United States

Initialized CBH SPV LLC, Walnut, CA, United States

InnovationLab GmbH, Heidelberg, Germany

innoWerft Technologie- und Gründerzentrum Walldorf Stiftung GmbH, Walldorf, Germany

Involve.ai, Inc., Santa Monica, CA, United States

JupiterOne, Inc., Morrisville, NC, United States

Kaltura, Inc., New York, NY, United States

LeanData, Inc., Sunnyvale, CA, United States

LGPV F I LLC, Dover, DE, United States

Local Globe VII, L.P., St. Peter Port, Guernsey, Channel Islands

Local Globe VIII, L.P., St. Peter Port, Guernsey, Channel Islands

Local Globe X, L.P., St. Peter Port, Guernsey, Channel Islands

LocalGlobe XI, L.P., St. Peter Port, Guernsey, Channel Islands

LocalGlobe XII, L.P., St. Peter Port, Guernsey, Channel Islands

Local Globe Opportunity Fund, L.P., St. Peter Port, Guernsey, Channel Islands

Mango Capital 2018, L.P., Los Altos, CA, United States

Mango Capital 2020, L.P., Los Altos, CA, United States

Mango Capital 2022, L.P., Los Altos, CA, United States

Matillion Ltd., Altrincham, United Kingdom

Medable Inc., Palo Alto, CA, United States

MVP Strategic Partnership Fund GmbH & Co. KG, Munich, Germany

Notation Capital II CIRC, LLC, Brooklyn, NY, United States

Notation Capital, L.P., Brooklyn, NY, United States

Notation Capital II, L.P., Brooklyn, NY, United States

Notation Capital III, L.P., Brooklyn, NY, United States

NOTATION I SPV SV OCT 2020, LLC, Brooklyn, NY, United States

OpenX Software Limited, Pasadena, CA, United States

Name and Location of Company

OpsRamp, Inc., San Jose, CA, United States

Paper Education Company, Inc., Montreal, Canada

Pendo.io, Inc., Raleigh, NC, United States

PivotNorth Early Fund I, L.P., Atherton, CA, United States

Point Nine Annex GmbH & Co. KG, Berlin, Germany

Point Nine Capital Fund II GmbH & Co. KG, Berlin, Germany

Point Nine Capital Fund III GmbH & Co. KG, Berlin, Germany

Point Nine Capital Fund IV GmbH & Co. KG, Berlin, Germany

Point Nine Capital Fund V GmbH & Co. KG, Berlin, Germany

Project 44, Inc., Chicago, IL, United States

PubNub, Inc., San Francisco, CA, United States

Qualified.com, Inc., San Francisco, CA, United States

Reltio, Inc., Redwood Shores, CA, United States

Restream, Inc., Austin, TX, United States

Ridge Ventures IV, L.P., San Francisco, CA, United States

Ridge Ventures V, L.P., San Francisco, CA, United States

SafeGraph, Inc., Denver, CO, United States

Sapphire Sport, L.P., Austin, TX, United States

Sapphire Sport Parallel Fund, L.P., Austin, TX, United States

Sapphire Sport Parallel Fund II, L.P., Austin, TX, United States

Side, Inc., San Francisco, CA, United States

Smart City Planning, Inc., Tokyo, Japan

Splashtop, Inc., San Jose, CA, United States

Spring Mobile Solutions, Inc., Salt Lake City, UT, United States

StackHawk, Inc., Denver, CO, United States

Storm Ventures V, L.P., Menlo Park, CA, United States

Sun Basket, Inc., San Francisco, CA, United States

SV Angel IV, L.P., San Francisco, CA, United States

Tetratric.io, Inc., Milpitas, CA, United States

The SaaStr Fund, L.P., Palo Alto, CA, United States

The SaaStr Fund II, L.P., Palo Alto, CA, United States

Third Kind Venture Capital II, L.P., New York, NY, United States

Third Kind Venture Capital III, L.P., New York, NY, United States

Tribe Capital LLC Series 3, Redwood City, CA, United States

Tribe Capital LLC Series 8, Redwood City, CA, United States

UJET, Inc., San Francisco, CA, United States

Unmind Ltd., London, United Kingdom

Upfront V, L.P., Santa Monica, CA, United States

Uptycs, Inc., Waltham, MA, United States

VerbiIT, Inc., New York, NY, United States

Vistex, Inc., Hoffman Estates, IL, United States

Walkabout Ventures Fund II L.P., Los Angeles, CA, United States

Yapily Ltd., London, United Kingdom

Zesty Tech Ltd., Ramat Gan, Israel

(G.10) German Code of Corporate Governance

The German federal government published the German Corporate Governance Code (the “Code”) in February 2002 and introduced a commission that amends the Code from time to time. The Code contains statutory requirements and a number of recommendations and suggestions. Only the legal requirements are binding for German companies. With regard to the recommendations, the German Stock Corporation Act, section 161, requires that every year, listed companies publicly state the extent to which they have implemented them. Companies can deviate from the suggestions without having to make any public statements.

In 2022 and 2021, the Executive Board and Supervisory Board of SAP SE issued the required declarations of implementation. The declaration for 2022 was issued at the end of October 2022.

These statements are available on our Web site:

www.sap.com/investors/en/governance.html.

Walldorf, February 22, 2023

SAP SE

Walldorf, Baden

The Executive Board

Christian Klein

Sabine Bendiek

Luka Mucic

Dr. Juergen Mueller

Scott Russell

Thomas Saueressig

Julia White

Management's Annual Report on Internal Control over Financial Reporting in the Consolidated Financial Statements

U.S. law requires that management submit a report on the effectiveness of internal control over financial reporting in the consolidated financial statements. For 2022, that report is as follows:

The management of SAP is responsible for establishing and maintaining adequate internal control over financial reporting as such term is defined in Rules 13a-15(f) and 15d-15(f) under the U.S. Securities Exchange Act of 1934. SAP's internal control over financial reporting is a process designed under the supervision of SAP's CEO and CFO to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external reporting purposes in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board.

SAP's management assessed the effectiveness of the Company's internal control over financial reporting as at December 31, 2022. In making this assessment, it used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in Internal Control – Integrated Framework (2013).

Based on the assessment under these criteria, SAP management has concluded that, as at December 31, 2022, the Company's internal control over financial reporting was effective.

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About This Further Information on Economic, Environmental, and Social Performance

The social and environmental data and information included in the SAP Integrated Report has been prepared in accordance with the GRI Standards and were subject to an independent limited assurance engagement of our external auditor.

The Further Information on Economic, Environmental, and Social Performance includes information that is required to comply with the GRI Standards.

The following content was not subject to the independent limited assurance engagement of our external auditor.

We also report on our contribution towards the United Nations Sustainable Development Goals (SDGs) and respond to the recommendations of the Task Force on Climate-Related Financial Disclosure (TCFD).

Furthermore, we map our reporting to two additional frameworks:

- The Software & IT Services Sustainability Accounting Standards prepared by the Sustainability Accounting Standards Board (SASB), now part of the Value Reporting Foundation.
- The core “Stakeholder Capitalism Metrics” as proposed by the World Economic Forum’s International Business Council (WEF IBC).

Sustainability Management

At the heart of our strategy to bring SAP's purpose of "helping the world run better and improving people's lives" to life, sustainability is firmly anchored in our business strategy, governance, and executive compensation system. For more information about our corporate strategy, see the *Strategy* section.

We aim to create positive economic, environmental, and social impact within the planetary boundaries by using two key levers:

- 1) **SAP as enabler:** We strive to provide products and services that meet the sustainability challenges and opportunities of our customers.
- 2) **SAP as exemplar:** To live up to our corporate responsibility and to build resilience, we strive toward leading by example in SAP's business operations and practices by running our own operations more sustainably.

We leverage our dual approach in pursuit of a world with zero emissions, zero waste, and zero inequality.

Sustainability Governance

To better seize the strategic opportunities of sustainability, SAP brought together the key functional sustainability entities across SAP – corporate sustainability and the office of the chief sustainability officer, product development, marketing and solutions, and go-to-market teams – into a single end-to-end organizational unit and operating segment. This newly formed unit is led by the chief strategy officer and reports to the CEO. Reinforcing the strategic imperative for SAP, the CEO has become the new sponsor for sustainability on the Executive Board.

The Supervisory Board and its committees also deliberate on environmental, social, and governance (ESG) matters. To this end, the Supervisory Board is regularly (at least once a year) briefed by the Executive Board about the SAP Group's sustainability strategy and the state of its implementation. The entire Supervisory Board monitors the implementation of this sustainability strategy and advises the Executive Board in this regard.

Complementing the focused efforts of the sustainability unit, a Sustainability Council, convened by the chief sustainability officer and consisting of senior executives from across the Company, continues to provide strategic guidance and cross-company engagement for SAP's holistic sustainability agenda. The Council also acts as an ethical advisory board for the Company.

SAP also regularly engages with external stakeholder groups such as non-governmental organizations (NGOs), non-profit organizations (NPOs), and academia. This notably includes an external sustainability advisory panel comprised of expert representatives from our customers, investors, partners, NGOs, and academia, who provide us with valuable outside-in feedback and advice.

For more information, see the *Stakeholder Engagement* section.

Changing Our Behavior and Culture

Employee engagement is essential for driving change throughout SAP. We have set up a number of programs to help employees understand how sustainability is engrained in our purpose and strategy, and how they can contribute. For example, SAP continues to include sustainability in its onboarding training for new hires and various line-of-business-specific learning offerings. Furthermore, employees can take openSAP online courses on sustainability, which are also available to the general public for free.

To help drive progress in our sustainability initiatives, we need the support of employees in every part of SAP. We currently have a global internal network of more than 400 sustainability champions who represent different regions and areas of the business at SAP. Not only do they act as role models and multipliers, these champions tailor sustainability engagement activities to local and lines-of-business needs and interests and share best practices.

We measure the success of our initiatives through our employee engagement surveys. The latest results from 2022 showed that 82% of our employees stated, “I actively contribute to SAP’s sustainability goals.” This is up from 79% in 2021 and 47% in 2009 when we introduced the question.

Stakeholder Engagement

For SAP, stakeholder engagement and collaboration are deeply embedded into our process of innovation and the development of our products and services. Before we can design a new solution, we must first understand the issue we are addressing. This is why we regularly liaise with the stakeholder groups described below, including our sustainability and AI ethics advisory panels.

Customers

For more information about our customer engagement programs, see the *Customers* section.

Employees

We survey our employees regularly throughout the year. For the results of our latest employee survey and action items resulting from it, see the *Employees* section.

We strive for constructive labor relations across the world, working within each country's requirements. We currently have social partners in 37 countries in Europe, Asia, Africa, and the Americas. These employee representative bodies consist of elected union members and/or non-union members and are consulted by SAP management mainly on topics that define the work environment and work processes. Collective bargaining agreements with unions are only made in countries where legally required. Overall, about 50% of our employees are represented by works councils or an independent trade union, or are covered by collective bargaining agreements. The working conditions and terms of employment of the remaining employees are not influenced or determined based on other collective bargaining agreements. To foster the goal that every SAP employee worldwide can be heard and speak out without fear of retaliation, we have established a Global Ombuds Office which operates as an informal, independent, and confidential channel on top of the formal complaint mechanisms in place, including our Speak Out whistleblower reporting tool. For more information, see the *Business Conduct* section.

In addition, the Executive Board answers employees' questions in quarterly all-hands meetings. In regular coffee corner sessions, senior executives explain our strategy to employees and answer their questions directly.

Financial Analysts and Investors

For more information about our dialog with the financial community (that is, financial analysts, institutional investors, and retail shareholders), see the *Investor Relations* section.

Governments

For more information about our dialog with governments, see the *Public Policy* section.

Industry Analysts

Our Analyst Relations team, the Executive Board, and executives have strong relations with IT analysts and engage with them on strategic SAP solutions and services on a frequent basis.

Partners

With more than 20,000 partners around the world, the SAP ecosystem is vital to our success. We take a multifaceted approach to engagement that begins with the dedicated, interactive SAP Partner Portal. Partners receive regular communications including customized newsletters, training offers, and Web seminars, with the latest announcements and thought leadership relevant to their specific

partnership type. Additionally, virtual events are held throughout the year, around the globe, to further gauge partners' feedback on how SAP can continuously improve.

Non-Profit Organizations (NPOs) and Academia

Our dialog with NPOs and academic institutions helps us understand how we can address today's most pressing issues with our solutions and what is expected from us as a corporation. For example, SAP University Alliances introduces students and faculty to SAP software by providing networking and educational activities and partnering to build technology skills. For more information about how we engage with NPOs, see the *Employees* and *Our Contribution to the UN SDGs* sections.

Sustainability Advisory Panel

Our sustainability advisory panel consists of expert representatives from customers, investors, partners, NPOs, and academia. In 2022, the panel discussed key initiatives related to our sustainability management solutions, environmental performance, and social responsibility.

AI Ethics Advisory Panel

Our AI ethics advisory panel consists of academic, policy, and industry experts who advise us on the development and operationalization of the guiding principles for artificial intelligence. In 2022, the panel discussed, for example, how to identify high AI ethics risks and how to develop respective use cases.

Materiality

Defining Key Priorities for Our Non-Financial Reporting

To select the topics to be included in our integrated reporting, we conducted a comprehensive materiality assessment in 2022, applying the requirements of the German Commercial Code as well as the newly introduced materiality definition of the Universal Standards of the Global Reporting Initiative (GRI): “Material topics are topics that represent an organization’s most significant impacts on the economy, environment, and people, including impacts on their human rights.”

Below, we have detailed the key stages of the process we followed to assess the significance of each economic, social, and environmental impact.

Identification

We compiled a list of relevant topics that builds on the long list of 2020, using the artificial intelligence (AI) and Big Data solution from Datamaran Limited. To ensure timeliness and completeness, we enriched the list with an analysis of further external sources covering, among others, corporate peer reports as well as mandatory and voluntary regulations for the software sector. To identify key topics and their boundaries, we looked at areas related to our operations and supply chain and at topics related to our solutions. Additional topics identified were added and mapped to the long list.

Prioritization

To assess the significance of each topic on the updated long list, we considered the following two perspectives:

- 1) Outside-in perspective (impact of the topic on SAP)
- 2) Inside-out perspective (SAP's impact on the topic)

To assess the outside-in perspective, we evaluated the financial, strategic, and regulatory relevance of each topic to SAP's business success and resilience. To this end, we ranked the topics and applied thresholds.

Next, we assessed the inside-out perspective. In a first step, we qualitatively described positive and negative impact scenarios for each topic on the list based on the results of the impact assessment, using the Value Balancing Alliance (VBA) methodology, through which we can monetarily measure SAP's impact on society and environment across the value chain, see the *Why Holistic Steering and Reporting Matters* section.

Following this, we assessed each negative impact scenario according to its likelihood and severity (scale, scope, remediability), and each positive impact scenario according to its likelihood, scale, and scope. We considered mitigation measures in place in the course of this process, and hence the net risks. During the assessment, we considered the input of several SAP sustainability experts from various units and regions, taking different stakeholders' perspectives⁶⁴ into account.

Next, we prioritized the assessed impacts by translating the result of each evaluation category into numeric values, ranking the topics, and applying thresholds to derive the material topics for SAP from the inside-out perspective.

According to section 289c (3) of the German Commercial Code (Handelsgesetzbuch, HGB), the material topics are identified by considering both the inside-out and outside-in perspectives. In contrast, the material topics according to GRI 3 only take into account the inside-out perspective.

⁶⁴ Represented stakeholder groups are further explained in section *Stakeholder Engagement*.

Validation

The results of the materiality assessment were reviewed and confirmed by our executive owners for integrated reporting. Our CFO thereafter approved the materiality assessment.

The changes in 2022 compared to 2021 include:

- Due to the introduction of the new Universal Standards of GRI, we applied a completely new approach towards the materiality assessment.
- In 2022, we added “Human rights” as a new material topic according to the HGB, while the number of material topics according to GRI decreased in total. We deleted the topics “Governance,” “Transparency,” “Resource efficiency and waste,” “Responsible supply chain,” “Solutions for an inclusive and circular economy,” and “Product responsibility”.

Review

Feedback on and analysis of our integrated report will be taken into account during future materiality assessments.

Results

In our reporting, we seek to meet the materiality requirements of both the GRI Standards and section 289c (3) of the HGB despite diverging definitions

The following topics are material according to both the HGB and GRI:

Topic	Definitions	Related Non-Financial Matters
Security, privacy, and data protection	Protection of private, confidential, or sensitive information and data, as well as the vulnerability of critical information systems	
Ethics and compliance	Responsible business conduct, including anti-corruption, anti-bribery, fair competition, respect for intellectual property, and responsible tax principles	Anti-corruption and bribery matters
Climate change and air quality	(Non-)greenhouse gas emissions from operations and products, as well as present or potential disruptive impacts of climate change	Environmental matters
Customer responsibility	Responsibility to help ensure customer satisfaction and customer rights, including responsible marketing and selling practices	
Employee engagement	Corporate culture, employee engagement and motivation, and strategic decisions involving workforce changes	Employee matters
Employee rights	Labor rights, including unionization, as well as compensation and benefits offered to employees by their employer	Employee matters
Well-being, health, and safety	Social, economic, psychological, and physical conditions of employees in their workplace, as well as employees' occupational health and safety	Employee matters
Human rights	Fundamental rights of all individuals to live in dignity	Respect for human rights

Additionally, according to the GRI Standards, the following topics are material:

Topic	
Fair and inclusive workplace	Active integration, equal opportunity, as well as fair treatment and remuneration of all employees
Talent and development	Talent attraction, retention, and development
Energy	Energy consumption by operations and products, and the transition to renewable energy

Why Holistic Steering and Reporting Matters

Global crises and challenges such as climate change, environmental degradation, rising societal inequalities, and the COVID-19 pandemic have highlighted the urgent need for corporate accountability and value creation beyond financial performance.

Expectations of our stakeholders are still rising in this context: Customers ask us to help them in their sustainability transformation; employees expect SAP to be a truly purpose-driven company; investors demand disclosure of not only financial performance but also environmental, social, and governance (ESG) performance for their investment decisions; and governments around the globe increasingly implement ESG-related regulations, taxes, and policies.

Connecting financial and non-financial ESG metrics is key to comprehensively analyzing all dimensions of a company's performance and working toward their integration and harmonization. On this journey, digital technologies play a fundamental role in delivering embedded, validated, and real-time data.

In addition to the perspective of connecting financial and non-financial ESG metrics, holistic steering and reporting integrates the dimensions of positive and negative impacts that businesses create along their complete value chain.

Our corporate sustainability approach is to create positive economic, social, and environmental impact within planetary boundaries.

Our Journey Toward Sustainable Impact

At SAP, we have been measuring our progress holistically and connecting financial and non-financial data since 2012, when we merged our sustainability and annual reports into an integrated report.

From 2014 to 2018, we calculated a monetary value on how selected non-financial indicators (such as employee engagement and carbon emissions) impact our operating profit. Documenting the financial impact of non-financial indicators has helped us shift the conversation for managers, investors, employees, and other key stakeholders – and is now seen as essential to carrying out a successful business strategy.

As the next logical step, we broadened our perspective to evaluate the consequences of our business activities on society and the environment as well as the wider economy. We also started measuring positive and negative societal impacts across our complete value chain. In 2019, SAP became a founding member of the Value Balancing Alliance (VBA) to contribute our experience to support the development of a standardized methodology along with 19 other like-minded, multinational companies. VBA helps companies, investors, and other stakeholders integrate and compare non-financial performance based on the concept of impact.

We strive to embed impact measurement in our corporate and relevant business unit decision-making and target-setting. Holistic steering and reporting is being developed across the value chain. Our impact measurement experiences also form a foundation for our software innovations in the fields of climate action, circular economy, social responsibility, and holistic steering and reporting, helping customers on their ESG journeys.

Impact Measurement and Valuation

We derive the definition of impact from the Organisation for Economic Co-operation and Development (OECD), which states that the impact of an organization is the effect it has on the condition of the

natural environment and the well-being of people. This impact can either be positive or negative and can be intended or unintended. Impact measurement and valuation is the process of first identifying and quantifying the positive and negative impacts that SAP has on people and the planet in monetary terms, and then intentionally reducing the negative impacts and increasing the positive impacts.

Monetary valuation of sustainability aspects is increasingly used by corporations and investors to integrate sustainability aspects in decision-making processes. It is the language that business understands, it enables comparability, it incorporates the local context and the complexity of how impacts arise, and in the future, it could be integrated in traditional accounting systems.

Several institutions are working on developing and maturing impact measurement and valuation methodologies, most notably Harvard's Impact-Weighted Accounts Project and VBA. These insights enable companies to create business value beyond revenue or profit growth while taking into consideration the long-term impacts of their business operations on the environment and society as a whole.

The methodologies in that context continue to mature year over year, and still have several challenges to solve. Fundamentals such as global standardization, non-netting of positive and negative impacts, regulatory uptake, and ensuring a reasonable range of valuation coefficients should be integrated in the ongoing global efforts. One of the ways we overcome maturity challenges today is by taking a sensitivity analysis approach, where we determine the impacts across a broad range of potential valuation coefficients.

First Examples of Business Steering Based on Impact Metrics

We disclosed a selection of the results of VBA's second methodology piloting exercise, which ended in November 2021, in our Integrated Report published in March 2022. In 2022, we embedded these results and learnings to steer a number of our internal sustainability programs, which are mentioned below.

- **Materiality analysis:** In 2022, we updated our materiality analysis to identify and prioritize key material topics. The VBA pilot analysis, which shows prioritized issues based on our procurement spend, was used as one of the sources to identify material issues for SAP. This data-driven, quantitative result complemented the qualitative approach generally used for materiality analyses, further improving quality and completeness.
- **Compensation adjustments:** Our piloting of a living wage methodology showed that in certain regions of the world, our compensation required adjustments to ensure parity with other regions. We used the results to adjust the relevant compensation targets in the 2022 compensation cycle.
- **Human rights due diligence:** The upstream hotspot analysis and upstream monetized values for social indicators – which are child labor, forced labor, occupational health and safety, and living wages – contributed to our pilot risk assessment to prepare for the German Supply Chain Due Diligence Act. The monetary valuation provided the possibility to set thresholds universally across different metrics to identify low, medium, or high risks.
- **Net zero 2030 and internal carbon pricing:** We used the pilot results to update the emission baseline figures for our net zero 2030 target. In addition, the current social cost of carbon value set by VBA, which is US\$94 per ton of greenhouse gas (GHG), was used as the reference to update our internal carbon pricing. This brought it closer to the social cost of carbon than in previous years.

2022 Piloting and Results

Ending in December 2022, our third VBA pilot analyzed metrics including gross domestic product (GDP) contribution, occupational health and safety, training, water consumption, water pollution, GHG emissions, air pollution, land use, and waste. We used data from our Integrated Report 2021, internal controlling and HR systems, and our environmental management system. The analysis primarily focused on our own operations and our supply chain. In addition, we piloted a limited scope of our downstream impacts looking at GHG impacts from our on-premise software installations.

Wherever possible, we used primary data for calculations. Where primary data was not available, we used proxies, modeling techniques, and assumptions that were well-defined and documented in the VBA method papers. Key stakeholders across all relevant lines of business were engaged in the pilot, which was sponsored by our CFO.

The most relevant findings from the GHG emissions, GDP contribution, living wages, and upstream hotspot analyses comprise:

- **GHG emissions:** Our analysis enabled us to identify the GHG impact of each subsidiary and location, and we now have insights into which SAP locations have the highest CO₂ impacts and which locations have the lowest. Negative impacts of GHG on own operations and supply chain were monetized at more than \$137 million, and this has helped inform decision-making regarding our CO₂ reduction strategy. While we are still developing a full downstream impact methodology, we calculated the negative impact of GHG emissions from our existing on-premise installations of our customer base at more than \$807 million. While these impacts were calculated using VBA's recommended social cost of carbon valuation co-efficient of US\$94 per ton of GHG, we realize that there is a wide range of values in the market, and the effort to standardize them further is ongoing.
- **GDP contribution:** Our overall GDP contribution from our operations and supply chain stands at more than \$ 5.5 billion. We have the breakdown of the GDP contribution by all our operating countries. This insight enables us to sharpen our messaging toward public sector companies and governments.
- **Living wages:** The living wage can be defined as “a basic but decent level of life that allows a household to get good nutrition, housing, health and education.” Using the Health Utility of Income methodology from Valuing Impact and WageIndicator’s living wage database, both of which are recommended by VBA, our monetized impact in own operations was more than \$2 billion.
- **Upstream risk analysis:** We conducted a complete upstream risk analysis using our procurement spend of 2021. The analysis showed that one of the highest negative monetized impacts was valued at more than \$322 million for KPI Occupational Health & Safety, and the highest positive monetized impact was valued at \$5.5 billion for KPI GDP contribution. The real value of monetization of impacts is observable when all our procurement categories and all the KPIs are represented on X and Y axes and the main risk areas are visualized.

Outlook

As the impact measurement and valuation ecosystem matures, we will continue to play an active role in its co-development and application and to enable our customers and partners. While we maintain existing partnerships with VBA and WifOR Institute, we will actively seek other institutional and academic partnerships. We plan to use materiality analyses and material topics as the foundation for developing and applying methodologies to understand, steer, and improve our overall impact. Through our SAP Cloud for Sustainable Enterprises solution and other product lines, we support our customers in their own impact management journeys. As we look ahead, we see the potential for us to place impact management at the center of everything we do and strive to become an impact positive company.

Q Audit Scope

The content of this section was subject to neither the independent limited assurance nor reasonable assurance engagement of our external auditor.

Social Investments

Strategy

At SAP, we believe that today's environmental and social challenges are profoundly interconnected and must be viewed holistically. **Corporate social responsibility** (CSR) is part of SAP's holistic sustainability framework and puts SAP's purpose to help the world run better and improve people's lives into action by working towards the aspiration of a world with zero inequality. CSR at SAP aims to drive long-term social impact and business value with three focus areas that power equitable access to economic opportunity, education and employment, and a green economy:

(1) Accelerate Social Business

(2) Build Future Skills

(3) Collaborate for Sustainability

Our investments embrace the framework of the United Nations Sustainable Development Goals (SDGs), focusing primarily on: quality education (SDG 4); gender equality (SDG 5); decent work and economic growth (SDG 8); reduced inequalities (SDG 10); climate action (SDG 13); and strengthening partnership for sustainable development (SDG 17).⁶⁵ In 2022, SAP donated €27.6 million to causes aligned to these SDGs.⁶⁶

Governance, Guidelines, and Policies

Our global head of CSR leads the SAP CSR team, which is part of the Government Affairs organization. Executive-level representatives from different Board areas comprise the **Global CSR Governance Committee**, which advises, supervises, and approves the direction of the SAP CSR strategy. In addition, regional CSR governance committees advise and approve all major CSR partnerships and efforts with the respective regional SAP CSR lead.

The guidelines in our internal SAP CSR policy define and articulate our focus areas and aim to ensure that our social investments are conducted with integrity and responsibility. In addition, they set the standards and policies under which we operate and explain the different roles and responsibilities between global SAP CSR, regional SAP CSR, and line-of-business activities.

Social Impact Management and Measurement

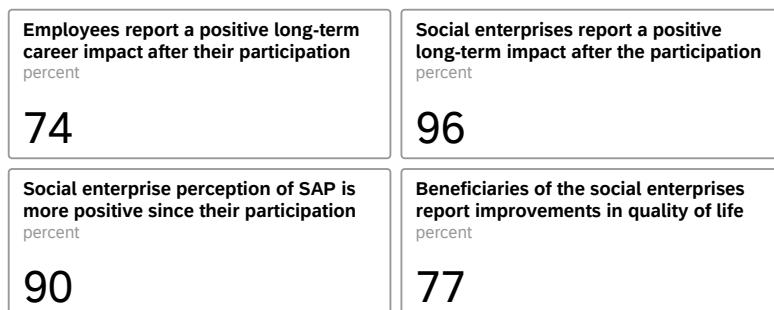
We measure the impact of our social investments regularly and report the following output numbers for all initiatives and regions: employees engaged, volunteering hours, lives impacted, youth trained, and social enterprises enabled. In addition, every signature initiative follows a dedicated impact measurement framework and logic model.

We also work with external partners to validate our intended social impact and business value. For example, in 2022, the impact measurement company 60_decibels reviewed the last 10 years of our SAP Social Sabbatical (SoSa) program. In the last decade, more than 1,400 SAP employees provided business know-how through pro bono consulting to over 400 social enterprises. In addition to proven social impact for the social enterprises, the SoSa program also created significant business value for SAP by contributing to our employees' professional and personal growth and leadership development.

⁶⁵ The topic of SDGs was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor.

⁶⁶ See [SAP CSR in Review 2022](#) (link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor).

Results of the 60_decibels analysis⁶⁷:



(1) Accelerate Social Business – Equitable Access to Economic Opportunity

Most social enterprises are the catalysts for positive change, serving some of the world's most vulnerable people and ecosystems. SAP supports them in two ways: First, SAP provides on-site and virtual pro bono consulting programs to our employees who support social enterprises on specific business challenges and help them to become corporate-ready. Second, by fostering social procurement, SAP enables social enterprises to access new B2B markets. Doing so, we support infrastructure development by building the necessary networks and by investing in expanding the capacity of critical stakeholders. As a result, in 2022, SAP built direct capacity for non-profit organizations and social enterprises via 121 dedicated pro bono consulting projects through in-kind contributions of US\$2.4 million (€2.3 million).⁶⁸

Given the documented success of our SoSa program, in 2022, we expanded pro bono consulting significantly at SAP. Together with MovingWorlds, Unilever, and TRANSFORM, we launched the **TRANSFORM Support Hub**. The hub offers virtual pro bono consulting opportunities globally, connecting SAP employees to social enterprises. It is the global, one-stop shop for non-financial support for social enterprises, bringing together public, private, and social sector offerings to support social entrepreneurs globally. These experiences offer our employees, the social entrepreneurs, and their businesses alike opportunities for personal and professional growth.

(2) Build Future Skills – Equitable Access to Education and Employment

SAP invests in innovative education models and fosters engagement with multistakeholder partnerships to enable pathways to employment and entrepreneurship in the digital and green economy for youth in need (under-represented, under-served, and under-privileged youth between the ages of 16 and 24). In 2022, digital skill-building and coding programs trained over 167,000 teachers and engaged more than 3 million underserved youth, of which 50% were girls.

In 2022, SAP extended our partnership with UNICEF through **Generation Unlimited** (GenU), focusing on employability. Next year, SAP and GenU will pilot a program leveraging **Yoma** (Youth Agency Marketplace), supporting “learning to earning” paths for youth in need. The program will teach the hard and soft skills they need to be successful in a changing digital and green economy. The partnership also supports **SAP Educate to Employ**, a new program educating youth in need on soft skills, foundational knowledge, and SAP skills to enable a pathway to a successful career in the SAP ecosystem.

(3) Collaborate for Sustainability – Equitable Access to a Green Economy

SAP offers employee engagement opportunities that address SAP's sustainability framework and extends its pro bono consulting offerings to social businesses that drive and contribute to green economy goals. In 2022, SAP employees dedicated over 117,000 volunteer hours, of which 65% were

⁶⁷ Based on a representative sample.

⁶⁸ Exchange rate date: December 31, 2022.

skills-based. The **SAP Together** platform serves as a volunteering tool and counts 42,749 registered SAP employees and 614 volunteering projects.

This area also covers our disaster relief engagements which are aligned with SAP's holistic sustainability framework and focus on building a green economy where possible. In our efforts to provide humanitarian aid for Ukraine, SAP donated more than €4.2 million as at the end of 2022. More than 4,500 internal donors have made it the most extensive giving campaign at SAP ever. We funded projects for people in need in and outside Ukraine. For immediate crisis relief, we provided funding for global organizations such as UNHCR. We also funded smaller projects and organizations such as Optima School, enabling Ukrainian pupils in and outside Ukraine to continue their Ukrainian school curriculum.

Sustainable Procurement

Making Our Supply Chain More Sustainable

A significant part of our social and environmental impact is delivered through our supply chain. Eliminating single-use plastics, decreasing carbon emissions, enforcing human rights, and closely collaborating with a diverse supplier network are factors that contribute to a sustainable supply chain.

Our Global Procurement Organization (GPO), led by our chief procurement officer (CPO), aims to transform into a purpose-driven organization. That is why we established the overarching Procurement with Purpose (PwP) strategy, which promotes purpose-driven programs such as diversity and social inclusion and responsible resource usage.

Upholding High Standards Across Our Supply Chain

The [SAP Supplier Code of Conduct](#)⁶⁹ (SCoC) is included in our standard supplier contracts and is an essential part of our supplier registration. This supplier registration ensures that potential suppliers of SAP are aware of SAP's SCoC. We review and update our SCoC regularly to maintain high standards within our supplier network – latest update was published in July 2022. This strengthens the code's enforceability and sends a clear message to our suppliers about its importance for SAP.

Our SCoC contains provisions on labor standards, human rights, environmental standards, and diversity and inclusion. Furthermore, we recommend to SAP suppliers that they deliver goods and services that are accessible to everyone, including people with disabilities.

What We Buy and Where We Buy It From

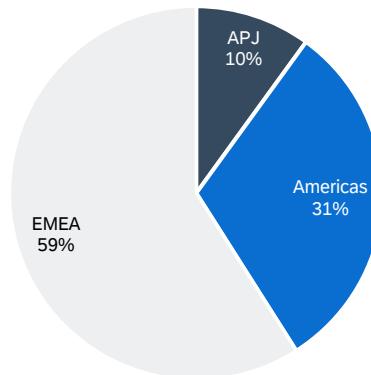
In 2022, we spent approximately €7.2 billion in purchases from more than 13,000 suppliers worldwide (2021: approximately €5.3 billion from more than 15,000 suppliers worldwide). Within our seven procurement categories,⁷⁰ we approach sustainable procurement from different angles: IT Solutions (example: reduce single-use plastics packaging and packaging material), Professional Services (example: CO₂-reduced mobility concepts, electronic contracts), Marketing (example: sustainable merchandise and events), Cloud Infrastructure (example: sustainable cooling of data centers), Technical Services (example: managed services with remote delivery), Real Estate & Facilities (example: increase of self-produced solar energy and avoidance of single use tableware), and Car Fleet (example: sustainable mobility concepts with a commitment to emissions-free vehicle-only car fleet from the year 2025).

⁶⁹ Link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor.

⁷⁰ (1) Car Fleet: Includes procurement relating to the global company car fleet and additional mobility options. (2) Cloud Infrastructure: Procures products and services for SAP's cloud operations such as network services, data center, co-location, hyperscaler, middleware and related goods and services. (3) Marketing: Supports topics related to SAP's marketing, events, and merchandise. (4) Professional Services: Includes financial and legal services, temporary staff, and business travel areas. (5) Technical Services: Includes application and development services. (6) IT Solutions: Includes procurement for areas such as client services, equipment, communication, and software. (7) Real Estate and Facilities: Manages building related capital projects and operations, including catering and facility management.

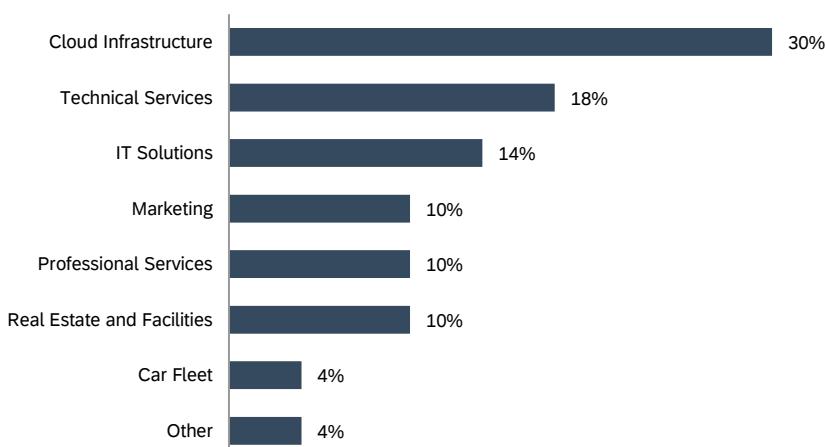
Percent of Suppliers per Region

Percent of total spend



Suppliers by Category (Tier 1)

Percent of total spend



Social Procurement

We believe that diverse and sustainable businesses bring significant added value to SAP. Establishing an inclusive supplier network – that is, minority enterprises defined by gender, ethnicity, disability, sexual orientation, and other characteristics, as well as certified social enterprises that focus their company's mission on making social impact – remains a priority for SAP. We believe that our commitment to an inclusive, bias-free culture in our workplace must be mirrored in our approach to our supplier base.

Driven by our GPO, SAP's supplier diversity and social enterprise initiatives aim to build the capacity of diverse and social businesses to provide a fair chance at competing for contracts and are treated equally to other SAP suppliers.

To support these efforts, the GPO established the PwP Ambassador Network. This network consists of volunteers within the GPO across various procurement spend categories and regions; its functions include, for example, identifying new opportunities to engage with certified diverse suppliers and social enterprises, and acting as a multiplier for passing on PwP knowledge, learning, and training opportunities to the GPO.

As part of its PwP program, SAP was a corporate member of supplier and social enterprise certification organizations such as WEConnect International, Disability:IN, and Social Enterprise UK.

These organizations enable the GPO to identify opportunities to engage with diverse suppliers and social enterprises, to support the 5 & 5 by '25 social procurement spend targets. This target is defined as 5% addressable spend with diverse suppliers and 5% addressable spend with Social Enterprises by year end 2025.

To ensure that all diverse and social spend is captured, our GPO evaluates its supplier network to identify and register all existing certified diverse suppliers and social enterprises. Activities such as this and expanding our efforts with the Buy Social Corporate Challenge aim to enable SAP to fulfill our pledge and shift our addressable spend to diverse suppliers and social enterprises. With Ariba Network, we invite existing suppliers, as well as potential suppliers, to engage more in the area of diversity and social enterprises.

In addition, our GPO has started to implement a supplier qualification process based on PwP criteria.⁷¹ This will enable the organization to make an informed supplier selection based on environmental and social performance. This process captures information pertaining to the performance of our suppliers in three focus areas: Social, diverse, and inclusive supply chain; environmental supply chain; and human rights in the value chain. As a next step, the GPO plans to set up a Supplier Enablement Team as a dedicated team responsible for the supplier qualification process.

Addressing Supply Chain Legislation Across the World

In light of the uptake in legislative action around the world, such as the UK and Australian Modern Slavery Act or the German Supply Chain Due Diligence Act (LkSG), SAP has to enforce the protection of human rights in its own operations but equally in its supply chain. This included, for instance, piloting concepts for analyzing human rights across our supply chain (for more information, see the [Human Rights](#) section).

⁷¹ More than 30 suppliers were part of the pilot for the improved qualification process.

Waste and Water

Aspiring to a World of Zero Waste

We believe in SAP's capabilities to help transform the economy into a low-carbon, circular system to reach a restorative and regenerative world of zero waste and significantly cleaner oceans. In alignment with SAP's *Global Environmental Policy*⁷², our waste and water strategy and corresponding company-wide initiatives aim to continuously reduce SAP's impact on the environment by generating less waste, reducing water consumption, and enabling our customer to do the same.

Being an Enabler: Leveraging Software Solutions

SAP advocates global systems change at scale to accelerate the transition to a circular economy. To make the circular economy the de facto approach to material use and waste management, we are working with our customers and partners on solutions that address full-circle transparency across a wide range of material flows. For instance, our SAP Responsible Design and Production solution helps to manage packaging and regulatory risks including extended producer responsibility obligations, while the GreenToken by SAP solution provides full multilayer transparency of raw material flows, including co-mingled commodities, and Scope 3 carbon traceability.⁷³

Being an Exemplar: Cutting Down Waste in Our Own Operations

Managing Our Discarded Electrical and Electronic Devices

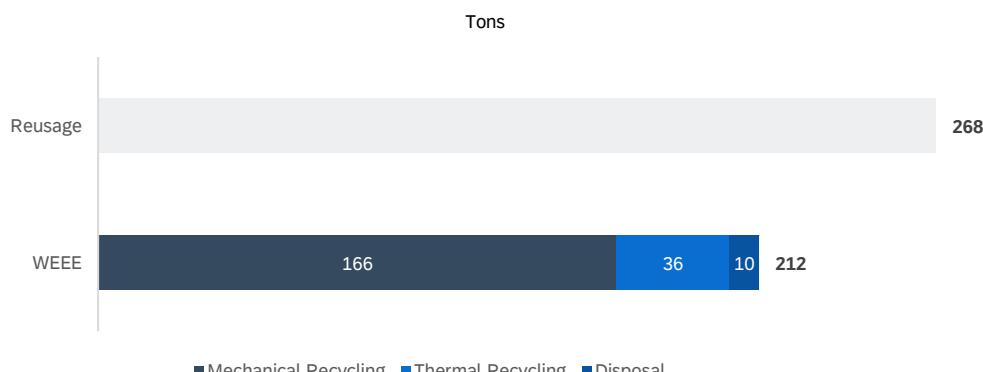
Waste of electrical and electronic equipment (WEEE, or e-waste) is one of the world's fastest-growing waste streams. As a global cloud company running data centers and office buildings across the world with a large amount of IT devices in place for our more than 110,000 employees, the ecological footprint of our electrical and electronic equipment (EEE) and their end-of-life treatment is a growing area of focus for SAP. In our Global Environmental Policy, we made the commitment to strive towards zero electronic waste in our own operations by diverting close to 100% of discarded SAP equipment within our own operations from incineration, landfill, and nature by 2030. As such, we cooperate with international and local IT asset lifecycle partners to give our disposed electronic assets a second life ("reusage"⁷⁴) By the end of 2022, we reused and recycled 90.5% of our (W)EEE. For detailed information about the accounting of our (W)EEE, see the *Non-Financial Notes: Environmental Performance* section.

⁷² Link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor.

⁷³ For more information into our circular economy solutions, see our [Web site](#) (link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor).

⁷⁴ In 2021, we only considered refurbishment and remarketing but not yet donations. We are now considering remarketing and donating EEE, which is why we changed the categorization from 'remarketing' to 'reusage'.

End-of-Life Treatment of Electrical and Electronic Equipment



Cutting Down Residual Waste Within Own Operations

Implemented Measures and Initiatives

Elimination of single-use plastics	<ul style="list-style-type: none"> Based on three principles 'reduce waste, reuse items, and recycle materials', we continued to collaborate with suppliers, service providers, partners, the internal global network of sustainability champions, and other stakeholders to eliminate single-use plastic products such as bottles, cups, stirrers, straws, cutlery, and food packaging. Reduced plastic packaging in cafeterias (Buenos Aires, Argentina; Santiago, Chile; Bogotá, Colombia; and Lima, Peru) Introduced a digital reusable food packaging system for takeout, delivery, and convenience across SAP canteens in Germany. Launched a third cafeteria kiosk free of single-use plastics at SAP's headquarters in Walldorf, Germany.
Improve waste segregation and reduce residual waste	<ul style="list-style-type: none"> Introduced the 'Too Good to Go' app in selected German cafeterias: For a small fee, employees can pick up leftover lunches to combat food waste. Installed a scale to weigh general and recyclable waste in São Leopoldo and São Paulo in Brazil and Colorado Springs (CO) in the United States to enable the implementation of a systematic data collection and waste handling process. Reuse of office furniture and equipment from vacated seats and floors (Bellevue (WA), United States; Walldorf). Introduced over 180 waste separation systems at SAP's headquarters in Walldorf. Our global printing volume remains at a low level: 10.6 million pages (increase of 9% vs. 2021; decrease of 78% vs. 2019) We are also developing a waste management plan with the objective of helping us achieve maximum reusage at the end-of-life of electrical and electronic equipment going forward.
Assessment of our suppliers and partners	<p>In 2022, we rolled out an assessment to a selected range of key upstream suppliers and downstream IT asset lifecycle partners with the following aim:</p> <ul style="list-style-type: none"> Upstream: We want to evaluate whether servers and data storage products comply with eco-design and hazardous waste requirements.⁷⁵ Downstream: We aim to assess whether servers and data storage products undergo preparation for re-use, recovery or recycling operations, or proper treatment, including removal of all fluids and selective treatment.⁷⁶ <p>The outcome and an analysis of the results are expected for 2023.</p>

⁷⁵ Referring to Directive 2009/125/EC (Commission Regulation 2019/424) and Directive 2011/65/EU.

⁷⁶ In accordance with Directive 2012/19/EU Annex VII.

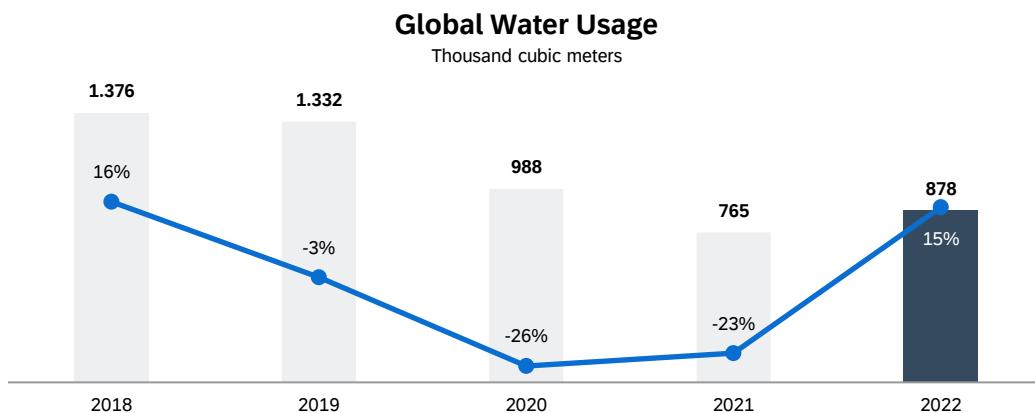
Using Water Efficiently

Climate change affects – and is affected by – global water resources and management. This is why we continue to aim to use water as efficiently as possible in our data centers and offices even though our operations are not water-intensive.

Implemented Measures and Initiatives

Water management efforts in SAP-owned data centers	<ul style="list-style-type: none"> In our data centers of our headquarters, we use adiabatic cooling (evaporative cooling) and closed water circuits to minimize water consumption for cooling our server racks. To avoid overheating of our Colorado Springs data center, we use free air cooling in the colder winter season and leverage a non-potable water system in the warmer months. By increasing the programmed outside temperature set point that determines when the sumps are filled with water in 2022, we aim to reduce the water demand going forward. In 2022, a risk screening was undertaken on SAP's data centers (own and co-location) to identify future exposure to climate risks including water stress. We have created a water use questionnaire to screen data center sites that abstract from or discharge to any water bodies, to determine if they contribute to achieving 'good environmental status' and 'good ecological potential' of water bodies and/or follow standard operating procedures to reduce potential environmental pollution of water bodies. For 2023, we plan to roll out the questionnaire and establish a water use and protection management plan in accordance with the EU Water Framework Directive 2000/60/EC to help ensure that our own data centers and co-location data centers use the resource water responsibly.
Water management efforts in our offices	<ul style="list-style-type: none"> At our headquarters and other locations, we use rain and run-off water for irrigation and toilets. Installed water (sub)meters and/or sensors to further improve data transparency and management in the office buildings across the globe. We conducted a water risk-assessment for our ISO 14001-certified sites⁷⁷: Twenty percent of these sites are located in high to extremely high water-risk regions. These sites must improve their water performance as part of the Environmental Management System. In Bangalore, India, a rainwater harvesting system was installed to improve water conservation and a system to capture atmospheric particles was implemented to produce water for the cafeteria. In Johannesburg, South Africa, we installed smart water meters combined with IoT solutions to better understand consumption trends and to improve pro-active monitoring to manage water consumption. In Ra'anana, Israel, we leverage a dedicated building management system (BMS) to monitor and track consumption. In addition, the location uses detectors to limit irrigation on rainy days and to detect water leakages early on.

In 2022, our global water usage increased due to the subsiding COVID-19 pandemic and a return to the offices. However, due to the introduced flexible working mode and our implemented water-reduction measures, the amount of water withdrawn remained at a lower level compared to the pre-pandemic situation.



⁷⁷ Based on the Aqueduct Water Risk Atlas of the World Resource Institute.

Public Policy

SAP has developed trusting and transparent relationships with governments worldwide by cooperatively exploring the potential for information and communications technologies to spur economic growth, create jobs, and address societal challenges. This includes consideration of the role governments play as users as well as policy makers, and by supporting the digital transformation of the public sector to become more efficient, effective, and citizen-oriented.

SAP engages with governments around the globe on various policy issues and on creating reasonable framework conditions for the adoption of new beneficial technologies or business models such as cloud computing, the Internet of Things, and Big Data.

SAP believes in transparency in the political process. Accordingly, we are registered in the newly established Lobby Registry of the German Federal Parliament and selected state parliaments and in the European Transparency Register for interest representatives. In the United States, SAP is registered, and reports in compliance with, the federal Lobbying Disclosure Act. We are also registered in other countries, wherever required by local law.

Political Contributions

In accordance with the SAP Global Code of Ethics and Business Conduct, SAP does not make direct contributions for political purposes, to political parties, politicians, or political organizations other than through event sponsorships and related marketing as allowed by law and specifically approved by SAP Global Government Affairs and the Office of Ethics & Compliance (OEC). By the laws of the United States, SAP employees exercise their right to operate a political action committee (PAC). The SAP America PAC is an independent, registered, and strictly regulated organization that allows eligible SAP employees to voluntarily contribute to the SAP America PAC in the United States to financially support candidates seeking public office at the state and federal levels. Consistent with U.S. laws, SAP exercises no control over or influence on the SAP America PAC. SAP America PAC expenditure figures are transparent and accessible through the U.S. Federal Election Commission Web site.

Memberships, Partnerships, and Commitments

To better understand and evolve sustainable performance, dialog, and exchange of knowledge and different perspectives on a national, regional, and global level, is vital for SAP, both for our company and customers. Hence, SAP subscribes to, commits to, and routinely engages in a range of third-party organizations, including:

Organization	
Acumen	Advancing Women Executives
Africa Code Week	Akina Foundation
Alliance for Development and Climate	Alliance for Integrity
ASEAN Foundation	Ashoka Young Changemakers
Australian Indigenous Education Foundation	
Beyond Sport	Bitkom e.V.
Breakthrough Energy Ventures	Business Avengers
Business Call to Action (UNDP)	Business for Nature's Call to Action
Business for Social Responsibility	Business Coalition for a Global Plastics Treaty
Buy Social Canada	Buy Social USA
Capital Equipment Coalition	CDP
CEO 2030 EU Climate Letters	CII-ITC Center of Excellence for Sustainable Development
Climate Neutral Data Centers Pact	Climate Neutral Now
Code Unnati (India)	
Deloitte Digital	Deutsches Rechnungslegungs Standards Committee e.V.
Deutschland sicher im Netz e.V.	DIGITALEUROPE
Disability:IN	
econsense e.V.	EcoVadis
Ellen MacArthur Foundation (EMF)	EMF ERP Pledge
EMF London Design Festival Circular Design Project	Emily Penn Sponsorship (eXXpedition and SHiFT)
ESMIG	Euclid Network
EU Code Week	European CEO Alliance
European Climate Pact Pledge	European Green Digital Coalition (EGDC)
European Roundtable for Industry (ERT)	
Get Nature Positive	Global Business Alliance
Global Business Coalition for Education	Global Citizen
GlobalGiving	Global Partnership for Sustainable Development Data
Goodwall	Gucci CEO Carbon Neutral Challenge
IMPACT2030 (founding member)	Information Technology Industry Council
INJAZ Al-Arab (former Junior Achievement MENA)	International Investors Association of Turkey (YASED)
Junior Achievement	
Klimabündnis Baden-Württemberg	

Organization

Latin Code Week	LEAF Coalition
Livelihood Funds	
Mechanical Engineering Industry Association	Meet and Code
Metropolregion Rhein-Neckar	meQuilibrium
National Chambers of Commerce	National Minority Supplier Development Council
Network for Teaching Entrepreneurship (NFTE)	
Ocean Plastics Leadership Network	OneSource Coalition
Platform for Accelerating the Circular Economy	Pyxera Global
Race to Zero	RE100
RebootKamp (RBK)	
Schmalenbach-Gesellschaft für Betriebswirtschaft e.V.	Science Based Targets initiative
SEND e.V.	Singapore Institute of International Affairs
Singapore International Foundation	Social Enterprise NL
Social Enterprise UK	Social Enterprise World Forum
Social Impact Award	Social Traders
Society of Corporate Compliance & Ethics	Sustainable Markets Initiative
Teach For All	techUK
TERI Innovative Solutions for Sustainable Development	Terra Carta of the Sustainable Markets Initiative
The Climate Pledge	The Conference Board, Inc.
The Female Quotient	The Green Web Foundation
Together with Nature Principles for Nature-Based Solutions	Topolytics
Transparency International Germany	Turkish Industry & Business Association (TÜSİAD)
UK Plastics Pact	United Nations Development Programme (UNDP)
United Nations Global Compact (since 2000)	UNGCI Sustainable Ocean Principles & Sustainable Oceans Coalition
UNGCI Statement from Business Leaders for Renewed Global Cooperation	UNICEF (Generation Unlimited)
Value Balancing Alliance e.V. (founding member)	
We Are Family Foundation	WEConnect International
WEF Alliance of CEO Climate Leaders	WEF Global Alliance for Social Entrepreneurship
WEF Global Plastic Action Partnership	WEF 1t.org
WEF Stakeholder Capitalism Coalition	"We Mean Business" coalition
"We Mean Business" Letter to G20 Leaders	Women in Data Science (WDS)
World Bank: "Put a Price on Carbon" statement	World Business Council for Sustainable Development (WBCSD)
World Economic Forum (WEF)	WWF OneSource Coalition
Yunus Social Business	

Q Audit Scope

The content of this section was not subject to the independent limited assurance engagement of our external auditor.

Non-Financial Notes: Environmental Performance

We understand environmental performance as the measurable outcome of SAP's ability to meet environmental objectives and targets set forth in our [Global Environmental Policy](#)⁷⁸. In this context, we determine SAP's greenhouse gas footprint (in the following called carbon emissions) as well as total energy consumed and data center electricity as the three key environmental performance indicators. Furthermore, we realize external compensations through self-generated renewable electricity and by purchasing offsets and Energy Attribute Certificates (EACs). Plus, we identify water consumption and the end-of-life treatment of SAP's electrical and electronic equipment as additional environmental topics relevant for our reporting.

Our gross carbon emissions for 2022 were 441 kilotons of CO₂ equivalents (CO₂e) (2021: 345 kilotons CO₂e), including all carbon emission categories of Scope 1 and 2, as well as selected categories of Scope 3 relevant for our carbon neutral target as described in [Methodology and Further Details](#) below. Our net carbon emissions (85 kilotons in 2022) are calculated by deducting purchased EACs, self-generated renewable electricity, and carbon offsets from our gross emissions in the reporting period. We disclose various environmental performance indicators, including carbon neutral-relevant Scope 1, 2, and 3 emissions in [Finance and ESG Data](#)⁷⁹.

General Information

We consider the Sustainability Context principle (the performance of the organization in the context of the limits and demands placed on environmental or social resources at the sectoral, local, regional, or global level) in a number of ways, such as by looking at global issues or trends including climate change and demographic shifts. For example, we assess our carbon emissions in the context of the emissions of the entire information and communications technology landscape, with particular focus on the abatement potential of the industry. When it comes to completeness, we recognize that while we comply with this principle in reporting on our own operations, we are still developing methodologies to reliably quantify our impact through our solutions.

Reporting Approach

Data for our environmental indicators is collected and reported on a quarterly basis and is subject to external assurance for annual reporting (limited or reasonable assurance). Reporting on total energy consumed and data center electricity is based on the data collected for the calculation of our carbon emissions. All numbers are based on the metric system. Whenever we state "tons," we mean metric tons.

Carbon Emissions

Definition

We define the gross carbon emissions as the sum of all greenhouse gas emissions, measured and reported as CO₂e, while net carbon emissions include the compensation with renewable electricity and carbon offsets (for more information, see [External Reductions](#) below).

⁷⁸ Link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor.

⁷⁹ Link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor.

Reporting Principles

SAP's preparation of the carbon emissions is based on the Corporate Accounting and Reporting Standard, the GHG (Greenhouse Gas) Protocol Scope 2 Guidance, and the Corporate Value Chain (Scope 3) Accounting and Reporting Standard of the World Resources Institute/World Business Council for Sustainable Development. This approach conforms to the requirements of GRI Standard indicators 305-1, 305-2, and 305-3.

In alignment with the GHG Protocol Scope 2 Guidance, we report our net carbon emissions based on the two different calculation approaches: location-based and market-based.

Organizational Boundaries

SAP defines its organizational boundaries by applying the operational control approach as set out in the GHG Protocol.

Operational control is established when SAP has the full authority to introduce and implement its operating policies. The emissions of all operations over which the company has operational control and all owned, leased facilities, co-location data centers, and vehicles that the company occupies or operates are accounted for in the carbon emissions. They are based either on measurements or, where no measured data is available, on estimations and extrapolations.

A portion of SAP's leased facilities operates under full-service or multitenant leases, where SAP does not have access to actual energy consumption information. SAP includes these facilities in our definition of operational control and accounts for them by estimating related energy consumption.

To support the growing demand for SAP's cloud offerings, we subcontract computation power in local third-party data centers. Carbon emissions are approximated and included based on the consumed or extrapolated computation power.

In most instances, however, SAP has 100% ownership of its subsidiaries. Accordingly, the difference between applying the control versus the equity approach is about 0.98% based on SAP revenue. If investments in associates were included, the difference would be even smaller, about 0.71%.

Data Consistency

Methodology Change

We aim to continuously refine SAP's emissions calculation methodology and to increase the usage of measured instead of extrapolated input data. Methodology changes include changes in the source of activity data, additional new activity types, changes in emission factors, and changes in the methodology used to calculate carbon emissions. As we implemented our methodology approaches to the best of our current knowledge and ability, and consider such changes to be continuous desired progress, methodology changes will not lead to retrospective data adjustments. Hence, changes will be applied from the current year onward. The current year's methodology changes are made transparent in this section, particularly under [Methodology and Further Details](#).

Error Correction

If a significant error is found in the current year that has an impact on the preceding year's emissions, it will be corrected not only in the current year but also retrospectively. An error is significant if it affects SAP's gross carbon footprint by more than 5%. No restatement due to an error correction of historical data was necessary in 2022.

Structural Changes

A structural change due to company acquisitions will be considered in our emission calculations by extrapolating the company's emissions based on FTEs for relevant emission categories.

For other types of structural or organizational changes, we use a significance threshold of 5% of total gross current-year emissions. A structural or organizational change that increases or decreases the

total gross carbon emissions by 5% or more will trigger an adjustment of past years. A structural or organizational change that increases or decreases the total emissions inventory by less than 5% will be considered insignificant and thus no adjustment will be made.

Financial Impact of Sustainability Measures

We annually measure the cumulative cost avoidance of our carbon emissions, compared to a business-as-usual scenario. Since 2015, our calculation approach uses a triennial rolling method.

Conversion Factors

The calculation of the carbon emissions is based on factors for conversion and extrapolation, provided by IEA, US EPA, UK DEFRA, Environment Canada, and GHG Protocol. SAP also uses extrapolation factors based on own reported data (of previous quarters) to determine an average consumption value per base unit (such as corporate cars: liters of fuel per car; facility: electricity consumption per m²).

Where relevant, our conversion factors consider CO₂e for greenhouse gases. Global Warming Potential factors are based on the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). We report all our carbon emissions in CO₂ equivalents including the impact from CH₄ and N₂O in our target-relevant Scope 1, Scope 2, and Scope 3. The emission impact of refrigerants includes hydrofluorocarbons (HFCs) only. As SF₆ and PFCs mainly occur in chemical processes, they are not relevant for us. Since 2016, we annually review all our emissions and extrapolation factors and update them if required.

Due to office closures and travel restrictions during the COVID-19 pandemic, the 2022 extrapolation factors for the following emission categories were reduced by a factor considering the ratio between limited and business-as-usual operations: refrigerants in facilities and corporate cars, mobile combustion in corporate cars, electricity in office buildings, water consumption and logistics.

Methodology and Further Details

Below you will find the different parameters contributing to our carbon emissions. Data coverage refers to the share of measured data (compared to extrapolated data) that is the basis for emissions calculation, such as kWh for electricity emissions or liters of fuel for corporate car emissions.

Scope 1

Refers to direct carbon emissions and is defined as emissions from sources that are owned or controlled by the organization. At SAP, the following areas are covered by Scope 1:

- **Stationary Combustion in Facilities:** Emissions caused by oil or gas combustion of heating systems and generators in SAP office buildings and data centers. Emission calculation is based on gas and oil consumption in kWh. Where no measured data is available, stable values (kWh/m²) based on the previous year's stationary combustion consumption data are used for extrapolation (78% data coverage). In cases where no specific information is available, natural gas reported by local sites is assumed to be reported as a lower heating value. Besides gas and oil, we also use wood pellets to produce thermal heat for our buildings in our headquarters in Walldorf. The Scope 1 emissions of wood pellets can be set to net '0', since the wood itself absorbs an equivalent amount of carbon emissions during the growth phase as the amount of emissions released through combustion. Still, to ensure complete accounting for all emissions caused, we document the direct carbon dioxide impact of burning wood pellets as 'outside of scopes' carbon emissions. In 2022, these emissions accounted for 0.686 kilotons of carbon emissions.
- **Refrigerants in Facilities:** HFC emissions caused by the loss of refrigerants used in cooling systems and air conditioning equipment. The emissions are extrapolated based on the number of

server units in data centers⁸⁰ and office space with an air conditioning (A/C) system (100% data coverage). All refrigerants are assumed to be HFC134a.

- **Mobile Combustion in Corporate Cars:** Emissions from fuel combustion of company cars. In the context of carbon reporting, the term ‘company car’ refers to all cars for which SAP permanently covers the fuel costs. Emission calculation is based on fuel consumption. In 2022, 30 countries reported actual fuel data (93% data coverage); for other countries, stable values (liters/car) are used for extrapolation based on the number of company cars reported. The stable values for extrapolation are based on the previous year’s carbon emissions data.
- **Refrigerants in Corporate Cars:** HFC emissions caused by air conditioning devices in company cars. Refrigerant emissions are based on an estimate of HFC1234yf emissions per car (in Europe) and HFC134a emissions per car (for the rest of the world) and are extrapolated based on the number of corporate cars reported (100% data coverage).
- **Mobile Combustion in Corporate Jets:** Emissions caused by business trips with SAP-owned or chartered jets. Emission calculation for SAP’s own jets is based on actual fuel consumption (100% data coverage).

Scope 2

Refers to indirect carbon emissions and is defined as emissions from the consumption of purchased electricity, purchased steam, or other sources of energy generated upstream from the organization. To determine SAP’s global net emissions, we use the location-based method to calculate the Scope 2 emissions. To calculate the market-based Scope 2 emissions, we have applied a regional EAC portfolio approach since 2022 (see *Renewable Electricity*). At SAP, the following emission categories are covered by Scope 2:

- **Electricity in Office Buildings:** Emissions caused by the consumption of purchased electricity in office buildings. Calculation of emissions is based on building electricity consumption. CO₂e conversion factors are updated annually based on country-specific grid factors. Where no measured data is available, stable values (kWh/m²) based on the previous year’s energy consumption data are used for extrapolation (79% data coverage).
- **Electricity in SAP-Owned Data Centers:** Emissions caused by the consumption of purchased electricity in SAP-owned and -operated data centers. The calculation of emissions is based on data center electricity consumption (100% data coverage). CO₂e conversion factors are updated annually based on country-specific grid factors.
- **Electricity in Co-Location Data Centers:** Emissions caused by the consumption of purchased electricity in co-location data centers. A co-location is a local computing center where the building infrastructure is controlled and managed by an external provider but where SAP has control over the operations of the network and server infrastructure on which SAP software is running. Due to increased transparency into the operating and pricing model of third-party providers, we re-evaluated the categorization of the former Scope 3 upstream category “Electricity in External Data Centers” and decided to re-categorize the emissions as Scope 2 due to the underlying leasing model and SAP’s operational control over the IT infrastructure. CO₂e conversion factors are updated annually based on country-specific grid factors. Electricity consumption for co-location data centers is calculated based on the consumed server power and a power usage effectiveness (PUE) factor. Where no data is available, average factors are applied (89% data coverage).
- **E-Mobility:** Emissions from company cars with electric drive. We introduced this new KPI in 2022 to take into account the increased share of e-cars in SAP’s global car fleet. Electricity consumption is calculated based on the number of e-cars per country, an average energy consumption value for e-cars, and an average mileage per year. Emissions calculation is based on country-specific emission factors (100% data coverage).

⁸⁰ Since 2022, we also consider the server units located in our co-location data centers.

- **Home Office Electricity:** Emissions caused by end-user IT equipment used by SAP employees working from home. Based on the experience of the COVID-19 pandemic, SAP introduced a flexible, hybrid working model (Pledge to Flex) to empower SAP's employees to choose when and where to work. We therefore established this new KPI in 2022 to report the electricity emissions of IT equipment usage outside of the office. Per employee, an average equipment usage consisting of a notebook, monitor, and mobile phone is considered. For each of these hardware device types, the model that is primarily used by SAP employees is taken into account to determine the average electricity consumption per hour. Average daily usage, charging hours, and stand-by hours are additionally considered when calculating the electricity consumption of an employee in home office. The information about the share of home office per location is determined based on the latest commuting survey conducted in 2022 (see *Employee Commuting*). Emission calculation is based on country-specific emission factors (27% data coverage).
- **Purchased Chilled and Hot Water and Steam:** Emissions caused by the consumption of purchased heat or steam in office buildings (district heating). Calculation of emissions is based on consumption of district heating. Emission factors are updated annually. Where no measured data is available, stable values (kWh/m²) based on the previous year's energy consumption data are used for extrapolation (33% data coverage).

Scope 3

Refers to other indirect carbon emissions, and is defined as emissions that are a consequence of operations of an organization but are not directly owned or controlled by the organization. Scope 3 emissions are divided into upstream and downstream emissions.

Upstream

Only selected upstream emissions are measured directly and hence included in our corporate carbon target. The following upstream Scope 3 carbon emissions are included in our target:

- **Business Flights:** Emissions caused by business trips by airplane. Calculation of emissions is based on actual distance traveled and actual costs spent (83% data coverage). This data is used to determine an average emission factor per euro spent based on short, medium, and long-haul flight emission factors. For CO₂e calculation, this factor is applied to actual controlling costs for business flights. Emission factors for business flights do not consider the radiative forcing factors.
- **Rental Cars:** Emissions caused by business trips by rental car. An average emission factor from rental cars is calculated based on actual distance traveled and actual costs spent (98% data coverage). This average emission factor is used for extrapolation based on the controlling costs.
- **Train Travel:** Emissions from business trips by train. An average emission factor from train travel is calculated based on actual distance traveled and actual costs spent (40% data coverage). This average factor is used for extrapolation based on the controlling costs. In Germany, business trips by train are considered carbon neutral as they are compensated with 100% green electricity by Deutsche Bahn.
- **Business Trips with Private Cars:** Emissions from business trips with employee-owned cars and company cars without fuel card. Carbon calculation is based on distance traveled with car (100% data coverage). Company car trips with fuel cards are excluded from this activity type.
- **Employee Commuting:** Emissions caused by commuting between home and work at an SAP office location. Considered are all modes of transport, excluding commuters with company cars. An SAP-global, Qualtrics-based commuting survey about the distance to work and the mode of transport is conducted to collect relevant data. In autumn 2022, we conducted a new commuting survey for which we received approximately 30,000 valid responses. These responses are the basis for our carbon calculation of employee commuting and home office electricity in 2022. Commuting data for non-responding employees and quarterly updates are extrapolated based on the number of FTEs, excluding those employees who own a company car (27% data coverage).

- **Electricity Consumed by Hyperscale Services:** Emissions caused by the consumption of purchased electricity resulting from the usage of hyperscale services in providers' hyperscale data centers. Hyperscale data centers enable massive, efficient, and robust scalability of computing, system, and server architecture in order to respond to the increasing demand for cloud computing and Big Data solutions. Electricity consumption is calculated based on the total allocated server memory size (RAM) of all hyperscale services. A power conversion factor is used to convert the allocated RAM value into a server power value, and an average PUE factor is used to extrapolate the total hyperscale service electricity (100% data coverage).
- **Logistics:** This category consists of the following three emission sources: 1) Emissions caused by mail and parcel, 2) Emissions caused by the consumption of paper, and 3) Emissions caused by our customers downloading software data from our servers (prior to 2021, this was a downstream emissions category). Due to the insignificant emissions impact of these sources, calculation is done based on an average factor 'carbon emissions per FTE.' This factor has been determined based on the emissions data of each category of the previous three years (0% data coverage).

Each year, we measure the following additional upstream Scope 3 carbon emissions based on the GHG Protocol's Corporate Value Chain (Scope 3) Accounting and Reporting Standard: Purchased Goods and Services, Capital Goods, Waste Generated and Water Consumed in Operations, Other Fuel- and Energy-Related Activities. These emission categories are not included in our carbon neutral target but our science-based target. The emissions calculation is based on an estimate. Due to the link of our upstream emissions to operating expenses, we extrapolated these upstream figures for 2022 by multiplying the four key contributors to our previous year's upstream emissions with the year-over-year change of operating expenses between 2021 and 2022.

Downstream

In previous years, the only downstream emission category included in SAP's carbon neutral target was "Data Download." In 2021, this KPI was incorporated into the newly created upstream Scope 3 category "Logistics" as described above.

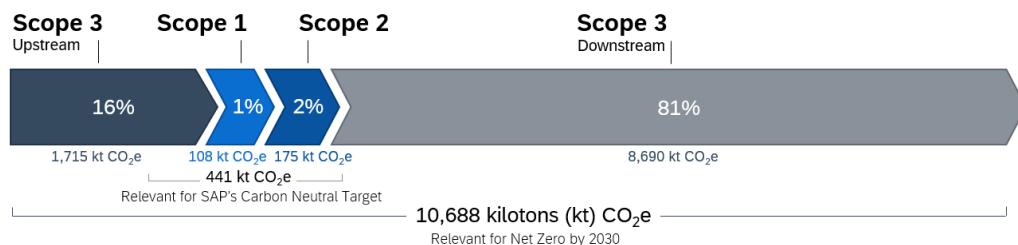
Use of Sold Products: The vast majority of our overall emissions stem from the use of our software (customers running SAP solutions on their hardware and premises). Due to our lack of control over our customers' IT landscapes, these emissions are not included in our carbon neutral target. Nonetheless, we have been calculating the emissions for indicative purposes for many years and take them into account for our science-based target.

The annual energy need per year is determined using a landscape simulation. It is extrapolated globally based on the number of productive installations and PUE. We use a PUE factor of 1.55, which is the average PUE of our external data centers. Emissions are calculated using a global electricity emission factor. Due to the special characteristics of software products, we chose an assessment of resource need per year. This deviates from the minimum boundaries as defined by the GHG Protocol's Corporate Value Chain (Scope 3) Accounting and Reporting Standard, which requires assessment and disclosure of "direct use-phase emissions of sold products over their expected lifetime." The calculation covers all of our major solutions, including on-premise software. Cloud solutions are not included, as they are part of internal, co-location, and hyperscale data center electricity emissions. Mobile solutions (for example, SAP apps running on customer IT equipment) are also not included. Calculation parameters will be adapted when significant technology changes occur.

Excluded Scope 3 Emissions

The following Scope 3 emissions sources are not applicable to SAP's business operations: Upstream Leased Assets, Processing of Sold Products, End-of-Life Treatment of Sold Products, Downstream Leased Assets, Franchises, and Investments.

SAP's 2022 Gross Carbon Emissions Along the Value Chain⁸¹



Scope 1

Emission Categories

- Stationary combustion and refrigerants in buildings
- Mobile combustion and refrigerants in corporate cars
- Mobile combustion in corporate jets

Scope 2

Emission Categories

- Electricity in own buildings, own data centers, and co-location data centers
- Indirect energy in buildings (chilled / hot water, steam)
- E-mobility
- Home office electricity

Scope 3

Upstream Emission Categories

Downstream Emission Categories

- | Upstream Emission Categories | Downstream Emission Categories |
|---|--------------------------------|
| Business travel (train, plane, rental car, private car) | Use of sold products* |
| Employee commuting | |
| Electricity in hyperscalers | |
| Logistics | |
| Purchased Goods and Services* | |
| Capital Goods* | |
| Waste Generated and Water Consumed in Operations* | |
| Other Fuel- and Energy-Related Activities* | |

External Reductions

SAP uses external reductions, such as purchases of EACs and certified voluntary “offsets,” to achieve its carbon neutral target. Emission reductions are subtracted from gross Scope 1 to Scope 3 emissions to achieve a net carbon inventory.

Renewable Electricity

We define renewable electricity as electricity coming from renewable electricity sources such as wind, solar, geothermal, sustainably sourced biomass (including biogas), and sustainable hydropower. The

⁸¹ For this gross emissions graph, we have not taken into account the application of renewable electricity (neither self-generated nor EACs). In the table, each category marked with a * indicates that it is not included in SAP's carbon neutral target but relevant for our net zero by 2030 commitment.

amount of renewable electricity used by SAP is calculated by adding the amounts of renewable electricity produced onsite by our own solar cells and covered by EACs.

As recommended by the Greenhouse Gas Protocol and CDP, we actively look for the best available quality and standards, which support renewable electricity projects that meet robust criteria in terms of environmental integrity, stakeholder inclusivity, and reporting and verification. We have developed a quality standard that defines key criteria for the procurement of EACs to drive change in the electricity market and to avoid the risk caused by low-quality products. The key characteristics of our renewable electricity purchasing guidelines are as follows:

- **Type of Renewable Electricity:** As of now, SAP only considers solar photovoltaics (PV) and wind for renewable electricity sourcing.
- **Installation:** The power plant producing the renewable electricity shall not be older than 10 years. In case of a renovation of an old power plant, the 10-year rule applies only to the additional electricity output due to efficiency increase. Furthermore, SAP does not consider EACs from government supported power plants.
- **Vintage:** The renewable electricity must be produced in the same year or the year preceding the reporting period to which it will be applied.
- **Accounting:** For location-based reporting, EACs are considered regardless of the site where the electricity is generated (unbundled EACs). SAP uses the regional- or country-specific emissions factors to calculate the emission reductions achieved by the EACs. The total of purchased EACs equals the total electricity consumption as well as the caused emissions. The renewable electricity is only considered if confirmed by an official certificate or written confirmation of our respective EAC suppliers (100% data coverage). In the location-based net carbon emissions, the purchased as well as the self-produced renewable electricity is already deducted from our Scope 2 and Scope 3 electricity-related emissions. For market-based reporting, we started to apply a region-based market-boundary approach in 2022 to account for our procured EACs for the market-based emissions. With 'region-based market-boundary approach' we refer to mapping the electricity consumption of our SAP sites to defined regions to ensure regional purchasing.⁸²
- **EKOenergy:** All of our purchased renewable electricity is EKOenergy-certified, a high-quality, internationally recognized not-for-profit ecolabel for renewable energy installations that fulfill additional sustainability criteria. Through the purchase of EKOenergy-certified electricity, we also contribute to EKOenergy's Climate Fund, which finances solar projects tackling energy poverty.

Carbon Offsets

Carbon offsets represent a unit of CO₂e that is reduced, avoided, and removed to compensate for emissions occurring elsewhere. We continuously refine our internal carbon emissions calculation methodology and uphold high requirements for dealing with carbon offsets:

- In 2022, the investments in the LCF were used to compensate for a portion of our business flights as well as 100% of the following emissions categories: company cars using Novofleet's climate fuel cards, corporate jets, business trips with private cars, logistics, stationary combustion, refrigerants in facilities, purchased chilled and hot water and steam, as well as employee commuting.
- By charging an internal carbon price for business flights and investing in climate projects, we were able to offset 90% (44 kt) of our business flights emissions in 2022.

SAP ensures that the quantified carbon emission reductions from offsets are credible (for example, by being certified by recognized international standards) and that they meet four key principles:

- **Real:** The carbon reductions represent actual emission reductions that have already occurred.

⁸² SAP aims to consider the latest guidelines on EAC market boundaries. In 2022, we achieved an EAC market boundary alignment of 79% based on the criteria of RE100.

- **Additional:** The carbon reductions are surplus to regulation and would not have happened without the offset.
- **Permanent:** The carbon reductions are permanent or have guarantees to ensure that any losses caused through a project which cannot be continued are replaced or compensated through appropriate measures.
- **Verifiable:** The performance of the carbon reduction projects can be readily and accurately quantified, monitored, and verified.

In the net carbon emissions, purchased offsets are already deducted from our gross emissions.

Total Energy Consumed

In 2021, this metric reflected Scope 1, 2, and 3 energy sources. Due to the (still) very limited control over the energy / electricity procurement of our value chain partners, we excluded the electricity consumption of hyperscale services (upstream value chain, Scope 3) in this metric for 2022. We now define total energy consumed as the sum of all energy consumed in SAP's own operations (Scope 1 and 2), including energy from renewable sources. It is calculated based on the consumption data obtained through our measurements for the carbon emissions and is the sum of energy consumption from stationary combustion in facilities, mobile combustion in company cars, mobile combustion in corporate jets, electricity in offices, electricity in own data centers, purchased chilled water, purchased hot water, and purchased steam, and electricity in co-location data centers (see [Data Center Electricity](#)).

Data Center Electricity

In 2021, this metric reflected the electricity consumption of own data centers, co-locations, and hyperscalers (Scope 2 and Scope 3). Due to the (still) very limited control over the energy / electricity procurement of our value chain partners, we excluded the electricity consumption of hyperscale services (upstream value chain, Scope 3) in 2022. In addition, we moved electricity consumption of co-location data centers from Scope 3 to Scope 2 due to increased transparency into the operating and pricing model. We now define data center electricity as the sum of electricity consumed to provide internal and external computation power in SAP-owned data centers and contracted third-party data centers (co-locations). A data center is any global, regional, or local computing center (location with any number of server units) that is part of our global IT infrastructure strategy. Hyperscale data centers are not part of our own operations and are therefore not reflected in this disclosure. Internally, we calculate the electricity consumption of hyperscale services as basis to determine the required procurement of EACs to ensure that SAP software solutions running on hyperscale data centers are powered with 100% renewable electricity.

Additional Environmental Aspects

Water Usage

By water usage, we mean the total amount of freshwater withdrawn for our office buildings and data centers. Data is based on measurements and estimations from sites. Data was provided for 71% of the total water consumption; the remaining data is extrapolated based on square meter footage.

End-of-Life Treatment of SAP's Electrical and Electronic Equipment

The discarded electrical and electronic equipment (EEE) ranges from end-user IT equipment such as laptops, peripherals, and mobile devices to compute, to networking and storage devices of our data centers. Our international and local IT asset lifecycle partners test the collected EEE to determine its end-of-life treatment. In doing so, EEE is channeled either into the remarketing or waste stream. We define these streams as follows:

1. Reusage (top priority): Refurbishing and reselling or donating functioning EEE to give it a second life.

2. Waste: By waste of electrical and electronic equipment (WEEE) or e-waste, we mean any electric devices and assets discarded in our offices and data centers that cannot be refurbished or remarketed due to outdatedness or unrepairable dysfunctions.

Within the WEEE stream, we distinguish between the following processing treatments:

- Mechanical recycling (secondary priority): Extracting raw materials to preserve and reuse them (such as plastics, metals, and rare earths)
- Thermal recycling: Generating energy through the incineration of waste
- Landfill: Disposing waste on a landfill site (we strive to avoid this treatment as much as possible)

Accounting of Electrical and Electronic Equipment with Treatment Insights

The remarketing and e-waste data we receive from our large IT asset lifecycle partners is based on weight or the number of devices which is converted into weight based on an average weight of the devices. To determine the share of end-of-life treatment practices (mechanical versus thermal recycling versus landfill), our partners aim to use the specific quotas of the recycling sites. If this data is not available, regional quotas or other available country quotas are used for approximation.

In 2022, we also started to collect EEE-related reusage data (including donations) from ISO 14001-certified SAP locations that are not (fully) covered by our large IT asset lifecycle partners. This amount is included in the reusage data visualized in the [Waste and Water](#) section.

Accounting of Electrical and Electronic Equipment Without Treatment Insights

To supplement our treatment-based WEEE data from our large IT asset lifecycle partners, we also collect e-waste data from all locations that are a) in scope of our ISO 14001-certified environmental management system (EMS), and b) not (fully) covered by our large partners.

For SAP sites that are neither covered by our partners nor are part of SAP's EMS, we extrapolate a reusage and WEEE share for end-user IT equipment based on full-time equivalents. The e-waste treatment split into mechanical recycling and thermal recycling / landfill is calculated based on the country-specific or region-specific factors of the [Global E-waste Monitor 2020](#).⁸³

For co-location data centers not covered by our global IT asset lifecycle partners, we extrapolate a reusage and e-waste portion based on an electricity consumption share. The e-waste treatment split into mechanical recycling and thermal recycling / landfill is calculated based on the country-specific or region-specific factors of the [Global E-waste Monitor 2020](#).⁸⁴

Overall, we achieved a data coverage for our (W)EEE reporting of 95%.

⁸³ Link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor.

⁸⁴ Link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor.

Our Contribution to the UN Sustainable Development Goals

The 17 United Nations Sustainable Development Goals (SDGs) provide a globally accepted framework anchored in human rights, which we use for communicating our purpose to “help the world run better and improve people’s lives.” We strive to execute on this purpose by being a role model for sustainable, purpose-led operations and by enabling our customers to operate in a sustainable way.

Following the adoption of the SDGs by world leaders in September 2015, we identified and aligned existing initiatives with all 17 SDGs. For example, we looked at the environmental and social impacts of customers using SAP technology and applications, linking these impacts to the SDGs. The resulting *Web book* “SAP and the UN Global Goals” was published in early 2016 and has been updated regularly.

In discussions with our Sustainability Council and external sustainability advisory panel, we defined the SDGs for which there is a tangible and material link between our own operational activities or the use of our software by customers.

The following table describes the potential positive (+) and negative (-) direct or indirect impacts of our company and of our products and services related to the selected SDGs. We use “direct” when we refer to impacts through our own operations; “indirect” describes impacts through the use of our solutions and technology or in our ecosystem.

Audit Scope

The content of this section was not subject to the independent limited assurance engagement of our external auditor.

SDG 3 Good Health and Well-Being

Our Potential Direct and Indirect Impact	Direct: <ul style="list-style-type: none"> + Provide access to a healthy lifestyle and a safe and healthy working environment for our employees 	Indirect: <ul style="list-style-type: none"> + Enhance safe and healthy working conditions, healthcare, and personalized medicine on a global scale - Increase transparency of physical, medical, and health conditions of individuals, which might be abused
Our KPIs and Targets	Business Health Culture Index	
Our Policies and Selected Activities and Programs to Enhance Positive Impacts and Mitigate Negative Impacts	Direct: <ul style="list-style-type: none"> Global Health and Safety Management Policy; Employee Assistance Program; Corporate Oncology Program for Employees; Mental Health Initiative 	Indirect: <ul style="list-style-type: none"> SAP's solutions for healthcare: SAP Environment, Health, and Safety Management; SAP S/4HANA for product compliance; Corona-Warn-App; SAP Concur duty of care functionality
Where You Can Find More Information in the SAP Integrated Report	<i>Employees</i>	

SDG 4 Quality Education

Our Potential Direct and Indirect Impact	Direct: + Train and educate SAP employees	Indirect: + Build capability in our ecosystem and among our customers
Our KPIs and Targets	Engaging two million children, youth, and young adults in digital skills and coding programs by 2023	
Our Policies and Selected Activities and Programs to Enhance Positive Impacts and Mitigate Negative Impacts	Direct: Cloud-based learning management system for employees	Indirect: openSAP; SAP CSR education and digital skills program SAP digital learning initiative in partnership with UNICEF and Generation Unlimited.
Where You Can Find More Information in the SAP Integrated Report	Employees; Social Investments	

SDG 8 Decent Work and Economic Growth

Our Potential Direct and Indirect Impact	Direct: + Create decent jobs at SAP through our growth plans, specifically in developing markets	Indirect: + Enable an inclusive economy + Facilitate socially responsible employment + Respect human rights across value chains + Combat forced and child labor throughout supply chains - Fuel negative effects on employment through digitalization and automation; potentially increase precarious jobs
Our KPIs and Targets	Number of employees	
Our Policies and Selected Activities and Programs to Enhance Positive Impacts and Mitigate Negative Impacts	Direct: SAP recruiting programs	Indirect: SAP's solution for social responsibility: SAP Rural Sourcing Management SAP Ariba Supplier Risk; SAP Fieldglass Contingent Workforce Management SAP CSR Accelerating Social Business Initiative
Where You Can Find More Information in the SAP Integrated Report	Employees	

SDG 9 Industry, Innovation, and Infrastructure

Our Potential Direct and Indirect Impact	<p>Direct:</p> <ul style="list-style-type: none"> + Increase inclusive and sustainable industrialization through SAP's investments in research and development (including in developing countries) 	<p>Indirect:</p> <ul style="list-style-type: none"> + Support providers of infrastructure, financial services, and clean technologies + Provide "Best Practice" business processes through standard software solutions + Integrate small and medium-sized enterprises into global value chains and markets
Our KPIs and Targets	NA	
Our Policies and Selected Activities and Programs to Enhance Positive Impacts and Mitigate Negative Impacts	<p>Direct:</p> <ul style="list-style-type: none"> SAP Labs Network; One Billion Lives initiative fostering purpose-driven innovation 	<p>Indirect:</p> <ul style="list-style-type: none"> SAP support for startups through various programs
Where You Can Find More Information in the SAP Integrated Report	<i>Strategy and Business Model</i>	

SDG 10 Reduced Inequalities

Our Potential Direct and Indirect Impact	<p>Direct</p> <ul style="list-style-type: none"> + Ensure equal opportunity and inclusion of all employees, irrespective of age, sex, disability, race, ethnicity, origin, religion, or economic or other status 	<p>Indirect</p> <ul style="list-style-type: none"> + Enable an inclusive economy by providing tools and systems to foster inclusion of all in workforce and supply chains - Decouple societal groups from entire areas of employment through an accelerated digital divide and lack of digital skills
Our KPIs and Targets	<ul style="list-style-type: none"> - 30% women in management by year end 2023 - Double the representation of African-American talent in the United States over the next three years (2022–2025) - Reach 5% of annual addressable procurement spend with social enterprises and with diverse businesses by 2025 	
Our Policies and Selected Activities and Programs to Enhance Positive Impacts and Mitigate Negative Impacts	<p>Direct:</p> <ul style="list-style-type: none"> Human Rights Commitment Statement; Diversity & Inclusion programs including EDGE certification; Global Antidiscrimination Statement; 5 & 5 by '25 initiative 	<p>Indirect:</p> <ul style="list-style-type: none"> SAP's solutions for social responsibility: SAP SuccessFactors HXM Suite; SAP Ariba Supplier Risk; SAP Qualtrics Employee Technology Experience; SAP's internal standard for product accessibility
Where You Can Find More Information in the SAP Integrated Report	<i>Employees; Sustainable Procurement</i>	

SDG 12 Responsible Consumption and Production

Our Potential Direct and Indirect Impact	Direct: <ul style="list-style-type: none"> + Drive sustainable business practices and integrated reporting - Use energy, water, and resources; produce waste 	Indirect: <ul style="list-style-type: none"> + Decouple economic prosperity from resource consumption by enabling transparency and optimizing resource productivity in linear or circular economies - Increase absolute resource and energy consumption because efficiency gains through automation may be counteracted (rebound effect)
Our KPIs and Targets	We drive resource productivity with an aspiration to a world with zero waste.	
Our Policies and Selected Activities and Programs to Enhance Positive Impacts and Mitigate Negative Impacts	Direct: <p>Beyond Single-Use Plastics initiative; Supplier Code of Conduct; Sustainable Procurement; e-waste recycling</p>	Indirect: <p>SAP's solutions for the circular economy: SAP Responsible Design and Production; 5 & 5 by '25 initiative; SAP Ariba Supplier Risk; product lifecycle management solutions; SAP S/4HANA for waste and recycling; SAP Returnable Packaging Management; SAP Rural Sourcing Management</p>
Where You Can Find More Information in the SAP Integrated Report	Energy and Emissions ; Waste and Water ; Sustainable Procurement	

SDG 13 Climate Action

Our Potential Direct and Indirect Impact	Direct: <ul style="list-style-type: none"> + Assume responsibility for products in use-related emissions by running customer applications in the SAP green cloud - Emit greenhouse gases 	Indirect: <ul style="list-style-type: none"> + Contribute to climate change mitigation and strengthen resilience and adaptive capacity to climate-related hazards and natural disasters of our customers + Enable holistic operational steering by integrating climate-change relevant parameters and help understand and minimize the climate footprint of a company's products, operations, and services - Increase customers' energy consumption through use of software
Our KPIs and Targets	Become carbon neutral by 2023 in our own operations: Net-zero along our value chain by 2030	
Our Policies and Selected Activities and Programs to Enhance Positive Impacts and Mitigate Negative Impacts	Direct: <p>Global Environmental Policy; report and reduce CO₂ emissions and energy consumption; procure 100% renewable electricity; carbon impact relevance for Executive Board compensation</p>	Indirect: <p>Cloud powered by 100% renewable electricity; Business ambition for 1.5°C; SAP's solutions for climate action: SAP Product Footprint Management; SAP E-Mobility; SAP Landscape Management Cloud; SAP Transportation Management; SAP Environment, Health and Safety Management; SAP Cloud for Energy; SAP Concur Travel; TripIT</p>
Where You Can Find More Information in the SAP Integrated Report	Energy and Emissions ; Compensation Report	

SDG 17 Partnerships for the Goals

Our Potential Direct and Indirect Impact	Direct: + Build capacity throughout our broader ecosystem
Our KPIs and Targets	NA
Our Policies and Selected Activities and Programs to Enhance Positive Impacts and Mitigate Negative Impacts	For more information, see the section <i>Memberships, Partnerships, and Commitments</i>
Where You Can Find More Information in the SAP Integrated Report	<i>Social Investments; Memberships, Partnerships, and Commitments</i>

GRI Content Index

SAP SE has reported in accordance with the GRI Standards for the period from January 1, 2022, to December 31, 2022.

The 11 material topics in this GRI Content Index were selected based on the comprehensive *materiality assessment* conducted in 2022 and reflect the requirements of GRI 3 – Material Topics. We have clustered these topics according to the relevant *non-financial matters* set out in the German Commercial Code (Handelsgesetzbuch, HGB) (exception: the material topic “ethics and compliance” is not clustered under “Anti-corruption and bribery matters” as the corresponding GRI standards are defined more broadly).

We present the interconnection between the GRI topic-specific disclosures that are material to SAP and the 17 United Nations Sustainable Development Goals (UN SDGs).

Audit Scope

The content of the column UN SDGs as well as quantitative and qualitative information in relation to GRI 207 Tax were not subject to the independent limited assurance engagement of our external auditor.

General Disclosures

	Links and Content	In scope of External Audit ⁸⁵	UN SDGs
2-1	Strategy and Business Model	✓	
2-2	Strategy and Business Model About This Report https://www.sap.com/about/company/office-locations.html	✓ ✓	
2-3	About This Report Independent assurance practitioner's report Financial Calendar and Addresses	✓	
2-4	Non-Financial Notes In 2022, we did not have any material restatements of information of previous reporting periods.	✓	
2-5	Independent assurance practitioner's report https://www.sap.com/investors/en/governance/supervisory-board.html		
2-6	Strategy and Business Model Sustainable Procurement	✓ ✓	
2-7	Headcount and Personnel Expense Note (B.1) Employee Headcount Finance and ESG Data At SAP, we have a multitude of non-headcount relevant employee categories defined. None of these categories match the GRI definition of “non-guaranteed hours employees.” However, at SAP we have employees who are paid hourly (for example, working students) but who have a reliable minimum number of hours guaranteed. This group represents less than 1.5% of the total SAP workforce.	✓ ✓ ✓	8, 10

⁸⁵ Level of external audit: Limited assurance, reasonable assurance, and statutory audit. For further information regarding the External Audit scope, please refer to the Audit Scope checkboxes in each chapter.

	Links and Content	In scope of External Audit ⁸⁵	UN SDGs
2-8	<p>In 2022 we had on average 1177 workers⁸⁶, who are not employees and whose work is controlled by SAP. GRI's definition matches SAP's external workforce category "temporary staff".</p> <p>Temporary staff are all contracted via a recruitment agency, with a contract in line with country specific legislation.</p> <p>This external workforce is deployed to act as a replacement employee for a limited period of time, provide a specialist skill on a short-term basis or cover temporary peaks in work. The performed work is equivalent to that done by employees and spans all types of roles in the business.</p> <p>Temporary staff has access to our Health, Safety & Well-Being offerings. However, we do not include temporary staff into our Health, Safety & Well-Being related KPIs due to data collection boundaries.</p>	✓	8
2-9	<p>SAP Executive Board</p> <p>Corporate Governance Statement</p> <p>Sustainability Management</p> <p>https://www.sap.com/investors/en/governance/executive-board.html</p> <p>https://www.sap.com/investors/en/governance/supervisory-board.html</p>		5, 16
2-10	Corporate Governance Statement		5, 16
2-11	German stock corporations have a two-tier governance system due to the legislation (AktG §105), that is, an executive board and a supervisory board. Members of the supervisory board cannot also serve in the executive board.	✓	16
2-12	<p>Corporate Governance Statement</p> <p>Sustainability Management</p> <p>Risk Management and Risks</p>	✓ ✓	16
2-13	<p>Corporate Governance Statement</p> <p>Sustainability Management</p>	✓	
2-14	<p>Corporate Governance Statement</p> <p>Materiality</p>	✓	
2-15	Corporate Governance Statement		16
2-16	<p>Letter from the Chairman</p> <p>Corporate Governance Statement</p> <p>The Supervisory Board is informed regularly and on an ad-hoc basis by the Executive Board about the Company's strategy and the status of its implementation, business planning, profitability, and all aspects of business performance which are material for the SAP Group, including any deviations of actual business performance from plan, as well as about current risks, risk management, and corporate compliance. In addition, the Executive Board involves the Supervisory Board in decisions on matters of fundamental importance for the Company, including in case of transactions requiring the Supervisory Board's prior consent. The Supervisory Board's activities of the previous year, including its decisions on transactions requiring its prior consent, are described in detail in the Report by the Supervisory Board for the relevant fiscal year, which is included in SAP's Integrated Report. Due to the overlapping and not always sharply delineated nature of matters discussed, disclosing a total number of critical concerns would not be accurate. We provide transparency qualitatively through the Supervisory Board Report.</p>	✓	
2-17	<p>Compensation Report 2022</p> <p>Corporate Governance Statement</p>	✓	
2-18	<p>Report by the Supervisory Board</p> <p>Performance Management System</p>	✓	

⁸⁶ Number represents the average headcount over the year 2022. The number of temporary staff declined by ~10% over the year 2022.

	Links and Content	In scope of External Audit ⁸⁵	UN SDGs
2-19	Compensation Report 2022	✓	
2-20	Corporate Governance Statement Compensation Report 2022 https://www.sap.com/investors/en/calendar/agm/voting-on-resolutions.html	✓	
2-21	Compensation Report 2022 Corporate Governance Statement	✓	
2-22	Letter from the CEO		
2-23	Business Conduct Human Rights Code of Ethics and Business Conduct (CoEBC)	✓ ✓	16
2-24	Business Conduct	✓	
2-25	Human Rights	✓	
2-26	Business Conduct	✓	16
2-27	Note (G.3) Other Litigation, Claims, and Legal Contingencies	✓	
2-28	Memberships, Partnerships, and Commitments		
2-29	Stakeholder Engagement	✓	
2-30	Stakeholder Engagement	✓	8

Disclosures on Material Topics

	Links, Content, and Omissions	Boundaries	In scope of External Audit ⁸⁵	UN SDGs
3-1	Materiality	SAP	✓	
3-2	Materiality	SAP	✓	

Topic-Specific Disclosures

Ethics and Compliance

	Links, Content, and Omissions	Boundaries	In scope of External Audit ⁸⁵	UN SDGs
3-3	Business Conduct Risks and Risk Management	SAP	✓ ✓	
205-1	Business Conduct Risk Management and Risks In alignment with the different legal requirements in various countries, and as per SAP Global Risk Management Policy and supporting processes, SAP, together with legal advisory services as deemed	SAP	✓ ✓ ✓	16

	Links, Content, and Omissions	Boundaries	In scope of External Audit ⁸⁵	UN SDGs
	<p>appropriate, perform risk assessments globally. These include cross-business topics and the evaluation of risks related to compliance, bribery, and corruption. Overall, our corporate risk assessments focus on compliance topics. In addition, 53% of all audits concluded in 2022 under the risk-based audit plan are compliance-relevant audits. As part of this process, a regular and dedicated focus is also placed on identifying high-risk countries so as to identify deep dive reviews and necessary mitigations accompanied by regular monitoring.</p> <p>Furthermore, ad hoc audits are performed if there are grounds of suspicion. This regular auditing is a vital component of ensuring compliance worldwide in our business processes and identifying weaknesses or non-compliance to derive adequate measures.</p> <p>Given the holistic approach of our compliance risk assessment, SAP does not report on the number of audits solely related to corruption.</p>			
205-2	<p>The CoEBC provides the primary ethical and legal framework within which SAP conducts business. It also addresses SAP's policies regarding anti-corruption.</p> <p>SAP's Code of Ethics and Business Conduct (CoEBC) is available internally on the Company's intranet and externally on the Internet. All members of the SAP Executive Board and Supervisory Board, all SAP employees, all SAP partners, suppliers, and shareholders, as well as the general public have full access to the CoEBC.</p> <p>We do not collect the data of the geographical distribution and the type of our business partners, who accessed the CoEBC. For a breakdown of the geographical distribution of all SAP employees, see "Finance and ESG Data."</p> <p>The completion rate for mandatory training applicable to all SAP employees⁸⁷ on the subject of anti-corruption exceeded 99% in 2022. The numbers of employees per region are listed below:</p> <ul style="list-style-type: none"> • APJ: 18,698 • Greater China: 5,916 • EMEA: 11,726 (includes five Executive Board Members) • MEE: 32,480 • LAC: 4,954 • North America: 19,582 (includes two Executive Board members) <p>Furthermore, the Group Chief Compliance Officer (GCCO) reports on compliance matters on a quarterly basis to the Executive Board and to the Audit and Compliance Committee of the Supervisory Board.</p>	SAP + external parties	✓	
206-1	<i>Note (G.3) Other Litigation, Claims, and Legal Contingencies</i>	SAP	✓	16, 17
207-1	<i>SAP Global Tax Principles</i>	SAP		9, 11, 16
207-2	<i>SAP Global Tax Principles</i>	SAP		9, 11, 16
207-3	<i>SAP Global Tax Principles</i>	SAP		9, 11, 16
207-4	As a German company, we report our tax expense separately for Germany and the rest of the world. We are confident that this information meets our stakeholders'			

⁸⁷ Excludes employees on long-term sick leave, parental leave, members of acquired companies, and those in early retirement.

Links, Content, and Omissions		Boundaries	In scope of External Audit ⁸⁵	UN SDGs
demands.				
419-1	<i>Note (G.3) Other Litigation, Claims, and Legal Contingencies</i>	SAP	✓	16, 17

Environmental Matters

Energy

Links, Content, and Omissions		Boundaries	In scope of External Audit ⁸⁵	UN SDGs
3-3	<i>Energy and Emissions</i> <i>Non-Financial Notes</i>	SAP	✓ ✓	
302-1	<i>Energy and Emissions</i> <i>Non-Financial Notes</i> <i>Finance and ESG Data</i>	SAP	✓ ✓	7, 8, 12, 13
302-2	<i>Energy and Emissions</i> <i>Non-Financial Notes</i> <i>Finance and ESG Data</i>	SAP + external parties	✓ ✓	7, 8, 12, 13
302-3	<i>Energy and Emissions</i> <i>Non-Financial Notes</i> <i>Finance and ESG Data</i> <i>Five-Year Summary</i> The ratio uses only energy consumption within the organization.	SAP	✓ ✓ ✓ ✓	7, 8, 12, 13
302-4	<i>Energy and Emissions</i> <i>Non-Financial Notes</i> Allocation of energy consumption reductions (which we experienced in 2022, for example for our own data center electricity) to conservation and efficiency initiatives cannot be presented precisely due to overlapping effects (such as reductions caused by the COVID-19 pandemic).	SAP	✓ ✓ ✓	7, 8, 13

Climate Change and Air Quality

Links, Content, and Omissions		Boundaries	In scope of External Audit ⁸⁵	UN SDGs
3-3	<i>Energy and Emissions</i> <i>Non-Financial Notes</i>	SAP	✓ ✓	
305-1	<i>Energy and Emissions</i> <i>Non-Financial Notes</i> <i>Finance and ESG Data</i>	SAP	✓ ✓	3, 12, 13, 14, 15

	Links, Content, and Omissions	Boundaries	In scope of External Audit ⁸⁵	UN SDGs
305-2	<i>Energy and Emissions</i> <i>Non-Financial Notes</i> <i>Finance and ESG Data</i>	SAP	✓ ✓	3, 12, 13, 14, 15
305-3	<i>Energy and Emissions</i> <i>Non-Financial Notes</i> <i>Finance and ESG Data</i>	External parties	✓ ✓	3, 12, 13, 14, 15
305-4	<i>Non-Financial Notes</i> <i>Five-Year-Summary</i> <i>Finance and ESG Data</i>	SAP + external parties	✓ ✓	13, 14, 15
305-5	<i>Energy and Emissions</i> <i>Non-Financial Notes</i> <i>Finance and ESG Data</i> Allocation of carbon emission reductions to avoidance and efficiency initiatives cannot be connected precisely due to overlapping effects (such as reductions caused by the COVID-19 pandemic).	SAP + external parties	✓ ✓ ✓	13, 14, 15
305-6	As a software company with no production sites, emissions of ozone-depleting substances (ODS) are not material to SAP.	SAP	✓	3, 12, 13, 14, 15
305-7	We report all our carbon emissions in CO ₂ equivalents (CO ₂ e) including the impact from CH ₄ , N ₂ O, and HFCs in our Scope 1 and 2 emissions. We do not provide a breakdown. As a software company with no production sites, sulfur oxides (SOx) and other significant air emissions are not material to SAP.	SAP	✓	3, 12, 13, 15

Employee Matters

The management approaches for the material topics ‘employee rights’, ‘employee engagement’, ‘talent and development’ and ‘fair and inclusive workplace’ strongly overlap. This is why we decided to combine them in one joint table, including their corresponding topic-specific disclosures:

	Links, Content, and Omissions	Boundaries	In scope of External Audit ⁸⁵	UN SDGs
3-3	Nothing has a greater impact on our long-term success than the creativity, talent, commitment, health, and well-being of our people. Their ability to innovate and understand the needs of our customers has the potential to deliver sustainable value to our Company and our society. The management approach is applicable not only to employee engagement and employee rights, but also to fair and inclusive workplace and talent and development. <i>Employees</i>	SAP	✓ ✓	
Women in Management	<i>Employees</i> <i>Finance and ESG Data</i>	SAP	✓	5
Employee Engagement	<i>Employees</i>	SAP	✓	

		Links, Content, and Omissions	Boundaries	In scope of External Audit ⁸⁵	UN SDGs
401-1		<p><i>Employees</i></p> <p><i>Note (B.1) Employee Headcount</i></p> <p><i>Finance and ESG Data</i></p>	SAP	✓ ✓	8
404-1		<p><i>Employees</i></p> <p>SAP offers a wide portfolio of learning and development offerings to help all of our employees to upskill and accelerate their career. Every individual employee is encouraged to learn and expand their skills – independent of employee level/category or gender. We align training activities according to the needs of each employee and they can freely choose what makes sense for them.</p>	SAP	✓ ✓	4, 5, 8, 9, 10
404-2		<p><i>Employees</i></p> <p>SAP has dedicated as well as volunteer staff that supports generational intelligence on matters of continued employability, managing career endings, and cross-generational integration and collaboration. These experts work to continuously improve processes and design programs that sustain employability for as long as possible. They provide training for cross-generation collaboration, facilitate flexible career endings for employees (such as part-time options), and keep employees connected with the Company after retirement (the “HR Lounge – Mature Talents” consultation session, for example, provides a platform for our experienced, long-term employees in Germany to gain insight on sharing experiences across generations, career development, transitioning to retirement, and so on).</p>	SAP	✓ ✓	4, 5, 8, 9, 10
404-3		<p><i>Employees</i></p> <p>With our performance appraisal approach called SAP Talk, our employees receive regular performance and development reviews – independent of gender and employee category.</p>	SAP	✓ ✓	5, 8, 10
405-1		<p><i>Employees</i></p> <p><i>Corporate Governance Statement</i></p> <p><i>https://www.sap.com/investors/en/governance/supervisory-board.html</i></p> <p><i>Finance and ESG Data</i></p>	SAP	✓	5, 8, 10
407-1		<p><i>Human Rights</i></p> <p>We are not aware of any operations or suppliers in which the right to exercise freedom of association and collective bargaining may be at significant risk.</p> <p><i>Sustainable Procurement</i></p> <p><i>Stakeholder Engagement</i></p>	SAP + external parties	✓ ✓ ✓ ✓	8

Well-Being, Health, and Safety

Links, Content, and Omissions	Boundaries	In scope of External Audit ⁸⁵	UN SDGs
<p>3-3</p> <p>Nothing has a greater impact on our long-term success than the creativity, talent, commitment, health, safety, and well-being of our people. Their ability to collaborate, innovate, and understand the needs of our customers has the potential to deliver sustainable value to our company, customers, and society.</p> <p>As an enterprise software company, SAP does not have the occupational health and safety issues associated with manufacturing or heavy-industry jobs. Most of our people have sedentary, intellectually demanding jobs in a constantly changing business environment that requires considerable flexibility and agility. Therefore, typical health and safety management issues at SAP include ergonomic and safe workplaces, stress management, self-management, work-life balance, travel medicine, and general medical prevention.</p> <p><i>Employees</i></p> <p>SAP provides manifold feedback opportunities and encourages its people to get involved and shape SAP's caring culture and working conditions to "tell it like it is," and in so doing, help us improve where needed. Our success is tracked through the Business Health Culture Index (BHCI) and the Stress-Satisfaction Score (measured by regular employee surveys, which revealed that job satisfaction was equal or higher than the perceived stress for about 73% of SAP participants in 2022).</p> <p><i>Global Health and Safety Policy</i></p> <p>Conditions in which people live up to their full potential – now and in the future of work – are mainly defined by the organization's leadership style and working culture. We believe that there can be no organizational health without "individual health." SAP and its leaders take ownership for workplaces and a caring culture that foster physical health, safety, and mental well-being, while every employee is enabled and encouraged to take care of their individual health.</p> <p>The Global Health, Safety & Well-Being team (led by SAP's Chief Medical Officer), together with their partners in Human Resources, Real Estate and Facilities, Occupational Safety and Physical Security, provide the information, education, and support to foster a healthy working culture and a supporting environment for all people. In doing so, we enable the organization to be a role model in safe, healthy, and sustainable people management.</p>	SAP + external parties	✓	1, 3, 6

	Links, Content, and Omissions	Boundaries	In scope of External Audit ⁸⁵	UN SDGs
403-1	<p>SAP has developed an internal health management system called "RUN HEALTHY" which is built on International Labour Organization Occupational Health and Safety (ILO-OSH) standards. RUN HEALTHY enables SAP organizations to assess their maturity state on health, well-being, and safety, to develop and drive targeted initiatives across their organizations, and to boost their local Business Health Culture Index, employee engagement, and employer attractivity. The implementation is voluntary and driven by the managing director according to country/line-of-business needs. We give all workers access to global offerings which are complemented according to local business needs. Local RUN HEALTHY councils are key in the process to self-assess maturity levels in the light of covering local requirements and global standards. RUN HEALTHY is expanded on a continuous basis. In addition, SAP engages with its suppliers, partners, and customers to promote the topics of people health and occupational safety beyond the boundaries of our company.</p> <p><i>SAP Supplier Code of Conduct</i> <i>Safety Instructions for Contractors</i> Please also refer to GRI 2-8.</p>	SAP + external parties	✓	3
403-2	<p><i>Employees: How We Measure and Manage Our Performance</i> <i>Employees: Health and Well-Being</i> <i>Sustainable Procurement: Improving Sustainability Through Practice</i> <i>Global Health and Safety Policy</i> <i>Human Rights Commitment Statement</i> <i>Pledge to Flex</i></p> <p>SAP regularly conducts health risk assessments on global level with reporting on all manager levels. Mental health is key to SAP's ability to provide innovative solutions for our customers. SAP has a long tradition in taking action against stigmatization and in taking care of prevention and case management. With the Stress-Satisfaction Score SAP is monitoring an early-watch KPI to measure resilience on people level and to detect fields of action on individual and organizational level. In 2022, we conducted a hybrid-work-related risk assessment to identify health risk factors while working hybrid. A "Country Health Dashboard" based on SAP Analytics Cloud supports the identification of health risks on country level.</p> <p>SAP relies on the enablement of internal multiplier networks such as the Health Ambassador Network, and external trainings and certifications to ensure health and safety competence across the organization.</p> <p>Our employees can use various tools to report concerns as outlined in the Human Rights Commitment Statement, and are protected against retaliation. This document is core to our people-related policies, such as the Global Health and Safety Policy. SAP's Pledge to Flex empowers employees to choose when and where to work best while balancing business requirements and personal needs. This approach enables them to avoid and circumvent hazardous workplace situations.</p> <p>Please also refer to GRI 2-8.</p>	SAP + external parties	✓ ✓ ✓ ✓	3

		Links, Content, and Omissions	Boundaries	In scope of External Audit ⁸⁵	UN SDGs
403-3		<p><i>Employees: How We Measure and Manage Our Performance</i></p> <p><i>Employees: Health and Well-Being</i></p> <p>By regularly conducting surveys, we continuously receive insights which enable SAP and particularly its Global Health, Safety & Well-Being organization, together with its strong partners in Human Resources, Real Estate and Facilities, Occupational Safety and Physical Security to enforce and adjust its initiatives and counteract adverse developments in time.</p> <p>Our Global Health, Safety & Well-Being team provides global frameworks and a comprehensive health, safety, and well-being portfolio to enable SAP's business with its organizations at all levels to run healthy and safe.</p> <p>Please also refer to GRI 403-6 and GRI 2-8.</p>	SAP + external parties	✓ ✓ ✓	3
403-4		<p>SAP's RUN HEALTHY management system includes a self-assessment conducted by a cross-functional staffed council in order to drive tailor-made and effective local programs and initiatives.</p> <p>Digital solutions are leveraged to guide SAP's people to their relevant health content by considering individual needs and location, and to gather their feedback to drive highest standards of quality, as we do with the permanent Qualtrics-based Health Feedback Survey across all health and well-being offerings.</p> <p>A RUN HEALTHY council is the execution entity for the RUN HEALTHY program (see GRI 403-1 for its purpose and target). It meets regularly (usually quarterly) and contains the RUN HEALTHY lead, different line-of-business representatives, such as from the Human Resources, Facility, and Health departments, as well as an employee representative. The program is being expanded step by step; not all SAP employees are represented by the RUN HEALTHY program.</p> <p>Please also refer to GRI 2-8.</p>	SAP + external parties	✓	3
403-5		<p>At SAP, we offer a flexible training and enablement portfolio (such as SAP's learning platform Success Map) to enable our people to thrive in the future of work, foster healthy working habits, and become multipliers. In addition to flagship sessions on how to manage stress and foster a healthy work lifestyle, the "Are you OK?" mental well-being initiative and the "Lighten the Load" campaign for good physical and mental health were launched. Specific offerings for leaders support caring for people's health, safety, and well-being.</p> <p>Please also refer to GRI 2-8.</p>	SAP + external parties	✓	3

	Links, Content, and Omissions	Boundaries	In scope of External Audit ⁸⁵	UN SDGs
403-6	<p><i>Employees: Health and Well-Being</i> <i>SAP Health and Well-Being: Fostering a Healthy Culture</i></p> <p>At SAP, we offer a wide range of health and well-being services to our employees, ranging from general guidance on how to be more active and to deal with stress and challenging situations in- and outside SAP, conducting health and people days, consultation on ergonomic workplace set-up to prevent back pain, to local vaccination initiatives. Employees have access to these services and are informed about them in SAP's internal employee portal, monthly newsletters, live sessions, and campaigns, or by contacting the SAP Health team directly. In addition, we have Web-based tools such as the Qualtrics-based SAP Health Navigator which guides SAP people toward health offerings and tips according to their individual needs. The Run Your Way program on our Fit@SAP activity challenge platform encourages people to integrate more physical activity into their daily life.</p> <p>Please also refer to GRI 2-8.</p>	SAP + external parties	✓ ✓	
403-7	<p>As outlined in GRI 403-2, we have various approaches to identify negative occupational health and safety impacts such as the BHCI and Country Health Dashboard as well as various channels to report concerns and incidents. In addition, to ensure the health, safety, and well-being of our employees worldwide, SAP runs dedicated crises management and business continuity frameworks. To safeguard our people on business travels, SAP ensures medical and security assistance through a Travel Assistance Program.</p>	SAP + external parties	✓	3
403-10	<p>Fatalities and injuries are not a material issue for SAP, as most of our employees work in an office environment. Please refer to GRI 3-3 for the main types of work-related ill health.</p> <p>The identification of work-related hazards that pose a risk of ill health (such as via the BHCI or the RUN HEALTHY program), as well the actions taken to eliminate/ minimize these hazards and risks, are outlined in GRI 403-1 to GRI 403-7.</p> <p>Internally, we track and monitor an SAP illness rate (in %) which is defined as the total number of days absent (including absences shorter than 3 days) / scheduled workdays per year (250 days) x 100. In 2022, SAP had a global illness rate of 2.1%.⁸⁸ We do not break the illness rate down into different categories due to the low risk of specifically work-related illnesses. Therefore, we only track an overall illness rate.</p> <p>In 2022, our Stress Satisfaction Score evaluation (see GRI 403-2) confirmed lower stress levels on average compared to satisfaction. Furthermore, we leverage the company reports from our external Employee Assistance Program (EAP) providers to recognize health trends and to derive appropriate actions.</p> <p>For non-employee workers, we require our suppliers and sub-suppliers to uphold health and safety standards via our Global Supplier Code of Conduct. In addition, in Germany we have safety Instructions for contractors in place.</p> <p>Please also refer to GRI 2-8.</p>	SAP + external parties	✓	3

⁸⁸ Employees of recently acquired companies and SAP Israel as well as workers who are not SAP employees are excluded.

Human Rights

	Links, Content, and Omissions	Boundaries	In scope of External Audit ⁸⁵	UN SDGs
3-3	Human Rights	SAP + external parties	✓	
407-1	Human Rights We are not aware of any operations or suppliers in which the right to exercise freedom of association and collective bargaining may be at significant risk. Sustainable Procurement Stakeholder Engagement	SAP + external parties	✓ ✓ ✓ ✓	8
408-1	Human Rights We are not aware of any operations or suppliers being at significant risk for incidents of child labor. Sustainable Procurement	SAP + external parties	✓ ✓ ✓	3, 8
409-1	Human Rights We are not aware of any operations or suppliers being at significant risk for incidents of forced or compulsory labor. Sustainable Procurement	SAP + external parties	✓ ✓ ✓	3, 8, 10

Security, Privacy, and Data Protection

	Links, Content, and Omissions	Boundaries	In scope of External Audit ⁸⁵	UN SDGs
3-3	Security and Privacy SAP Trust Center: Data Protection and Privacy SAP Privacy Statement	SAP + external parties	✓	
418-1	Security and Privacy SAP has not received a written statement addressed from a competent authority or similar official body on customer privacy breaches or a complaint filed with SAP that has been acknowledged as legitimate by SAP.	SAP + external parties	✓ ✓	12, 16

Customer Matters

Customer Responsibility

	Links, Content, and Omissions	Boundaries	In scope of External Audit ⁸⁵	UN SDGs
3-3	At SAP, we are committed to our purpose of helping the world run better and improving people's lives. To this end, we aim to create innovations that help accelerate economic prosperity, drive positive social impact, and safeguard the planet. Strategy and Business Model Performance Management System Note (A.4) Customer-Related Provisions	SAP + external parties	✓ ✓ ✓ ✓	

	Links, Content, and Omissions	Boundaries	In scope of External Audit ⁸⁵	UN SDGs
416-1	<p><i>Human Rights</i> As a software company without any physical products or production sites, customer health and safety is mainly related to the responsible usage of technology, especially artificial intelligence.</p> <p><i>Guiding Principles for Artificial Intelligence</i></p>	SAP + external parties	✓ ✓	3
Customer Loyalty	<p><i>Customers</i> <i>Performance Management System</i></p>	SAP	✓ ✓	4, 5, 8, 10

Stakeholder Capitalism Metrics

To support long-term value creation, SAP has committed to applying the World Economic Forum (WEF) Stakeholder Capitalism Metrics and encourages further global standardization and convergence in the ESG reporting landscape. We include the standards in our own reporting and also offer the framework in our core sustainability software solutions.

The following table provides information about the core metrics proposed by the WEF White Paper titled “Measuring Stakeholder Capitalism: Towards Common Metrics and Consistent Reporting of Sustainable Value Creation.”

The table refers to the sections of our Management Report, Notes, Form 20-F, and other sources that contain the respective disclosures. Core metrics that have not been identified as material for SAP during our latest materiality analysis have been omitted.

Principles of Governance

Theme	Core Metrics and Disclosures	Links	Comments
Governing Purpose	Setting purpose	Strategy	
Quality of Governing Body	Governance body composition	Corporate Governance Statement https://www.sap.com/investors/en/governance/supervisory-board.html Form 20-F Item 6 Note (G.4)	
Stakeholder Engagement	Material issues impacting stakeholders	Materiality Stakeholder Engagement	
Ethical Behavior	Anti-corruption	Business Conduct Note (G.3) Other Litigation, Claims, and Legal Contingencies SAP Partner Code of Conduct	Provisions for material corruption cases would be reported together with further details in Note (G.3). Partners are also requested to complete any compliance training available based on their partner type. For more information, see SAP's Partner Code of Conduct.
	Protected ethics advice and reporting mechanisms	Business Conduct Speak Out at SAP	
Risk and Opportunity Oversight	Integrating risk and opportunity into business process	Risk Management and Risks Expected Developments and Opportunities	

Planet

Theme	Core Metrics and Disclosures	Links	Comments
Climate Change	Greenhouse gas (GHG) emissions	Energy and Emissions Finance and ESG Data	
	TCFD implementation	Task Force on Climate-Related Financial Disclosure Energy and Emissions	

People

Theme	Core Metrics and Disclosures	Links	Comments
Dignity and Equality	Diversity and inclusion (%)	Employees Finance and ESG Data	No disclosure of other indicators of diversity due to legal requirements in Germany.
	Pay equality (%)	SAP Recertifies with EDGE SAP Named Among Best Companies to Work For in 2022 SAP Among Forbes' America's Best Employers For Women 2022	Creating an inclusive workplace that benefits employees, customers, and partners is a strategic commitment for SAP. We are the first EDGE-certified global technology company and have received numerous recognitions for our advances in creating an inclusive and more equal workplace, such as, best place to work as part of "Fortune 100 Best Companies to Work For 2022", Forbes' America's Best Employers For Women ranking, and many others.
	Wage level (%)	Compensation Report	In our Compensation Report, we disclose the vertical pay ratio. This ratio compares the total compensation granted to the CEO with that of all employees who were employed at year end.
Skills for the Future	Training provided (#, \$)	Employees	Training hours split by gender and employee category are not a material issue for SAP, as we align our training activities according to the needs of each employee and do not tolerate discrimination.

Prosperity

Theme	Core Metrics and Disclosures	Links	Comments
Community and Social Vitality	Total tax paid	Analysis of Consolidated Statements of Cash Flow	

Audit Scope

The content of this section was not subject to the independent limited assurance engagement of our external auditor.

SASB Index

SAP maps existing sustainability disclosures to the standards of the Sustainability Accounting Standards Board (SASB). The table below presents a set of sustainable indicators based on the SASB standards for Software and IT Services (Version 2018-10).

Topic	Code	Links	Comments
Environmental Footprint of Hardware Infrastructure	TC-SI-130a.1	Energy and Emissions	
	TC-SI-130a.2	Waste and Water	
	TC-SI-130a.3	Energy and Emissions	
Data Privacy & Freedom of Expression	TC-SI-220a.1	Security and Privacy	For more information about data protection and privacy, see the SAP Trust Center .
Data Security	TC-SI-230a.2	Security and Privacy Risk Management and Risks	
Recruiting & Managing a Global, Diverse and Skilled Workforce	TC-SI-330a.1	Employees Note (B.1) Employee Headcount	SAP is a multinational company with locations all over the world. At each location, we hire people based on their qualifications and our business needs. For an overview of our headcount per geographical area, see Note (B.1) .
	TC-SI-330a.2	Employees	
	TC-SI-330a.3	Employees	As a global organization with employees from over 163 nationalities, our aspiration is that SAP's workforce mirrors the diversity in society that includes gender parity and demographics of all of the regions where we have employees.
Managing Systemic Risks from Technology Disruptions	TC-SI-550a.2	Risk Management and Risks	

Q Audit Scope

The content of this section was not subject to the independent limited assurance engagement of our external auditor.

Task Force on Climate-Related Financial Disclosure (TCFD)

The TCFD recommends companies to disclose their climate-related financial risks to investors, lenders, insurers, and other stakeholders. SAP started to report in alignment with the TCFD recommendations in 2018. For more information, see the table below.

Area	Content	Section
Governance	SAP's governance of climate-related risks and opportunities.	<i>Energy and Emissions Sustainability Management</i>
Strategy	Actual and potential impacts of climate-related risks and opportunities on SAP's businesses, strategy, and financial planning where such information is material.	<i>Energy and Emissions Sustainability Management Risk Management and Risks Strategy</i>
Risk Management	How does SAP identify, assess, and manage climate-related risks?	<i>Energy and Emissions</i>
Metrics and Targets	Metrics and targets that SAP uses to assess and manage relevant climate-related risks and opportunities where such information is material.	<i>Energy and Emissions Risk Management and Risks Non-Financial Notes: Environmental Performance Finance and ESG Data⁸⁹</i>

Audit Scope

The content of this section was not subject to the independent limited assurance engagement of our external auditor.

⁸⁹ Link leads to information that was neither part of the statutory audit nor the independent limited assurance engagement performed by our external auditor.

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Five-Year Summary¹

€ millions, unless otherwise stated	2022	2021	2020	2019	2018
Revenues					
Cloud (IFRS)	12,555	9,418	8,080	6,933	4,993
Non-IFRS adjustments	0	0	5	81	33
Cloud (non-IFRS)	12,555	9,418	8,085	7,013	5,027
Software licenses (IFRS)	2,056	3,248	3,642	4,533	4,647
Non-IFRS adjustments	0	0	0	0	0
Software licenses (non-IFRS)	2,056	3,248	3,642	4,533	4,647
Software support (IFRS)	11,909	11,412	11,506	11,547	10,981
Non-IFRS adjustments	0	0	0	0	0
Software support (non-IFRS)	11,909	11,412	11,506	11,548	10,982
Cloud and software (IFRS)	26,521	24,078	23,228	23,012	20,622
Non-IFRS adjustments	0	0	5	81	33
Cloud and software (non-IFRS)	26,521	24,078	23,233	23,093	20,655
Services (IFRS = non-IFRS)	4,350	3,764	4,110	4,541	4,086
Total revenue (IFRS)	30,871	27,842	27,338	27,553	24,708
Non-IFRS adjustments	0	0	5	81	33
Total revenue (non-IFRS)	30,871	27,842	27,343	27,634	24,741
Share of more predictable revenue (IFRS, in %)	79	75	72	67	65
Share of more predictable revenue (non-IFRS, in %)	79	75	72	67	65
Operating Expenses					
Cost of cloud (IFRS)	-3,853	-3,105	-2,699	-2,534	-2,068
Non-IFRS adjustments	243	229	248	305	213
Cost of cloud (non-IFRS)	-3,610	-2,876	-2,451	-2,228	-1,855
Cost of software licenses and support (IFRS)	-1,694	-1,925	-2,008	-2,159	-2,092
Non-IFRS adjustments	104	103	97	141	130
Cost of software licenses and support (non-IFRS)	-1,590	-1,822	-1,911	-2,018	-1,962
Cost of cloud and software (IFRS)	-5,547	-5,030	-4,707	-4,692	-4,160
Non-IFRS adjustments	347	332	345	446	343
Cost of cloud and software (non-IFRS)	-5,200	-4,698	-4,362	-4,247	-3,817
Cost of services (IFRS)	-3,388	-2,916	-3,178	-3,662	-3,302
Non-IFRS adjustments	303	286	178	254	151
Cost of services (non-IFRS)	-3,085	-2,630	-3,000	-3,408	-3,151
Total cost of revenue (IFRS)	-8,936	-7,946	-7,886	-8,355	-7,462
Non-IFRS adjustments	650	617	523	700	494
Total cost of revenue (non-IFRS)	-8,286	-7,328	-7,362	-7,655	-6,969
Research and development (IFRS)	-6,166	-5,190	-4,454	-4,292	-3,624
Research and development (in % of total revenue, IFRS)	20.0	18.6	16.3	15.6	14.7
Research and development (in % of total operating expenses, IFRS)	23.5	22.4	21.5	18.6	19.1
Sales and marketing (IFRS)	-8,943	-7,505	-7,106	-7,693	-6,781
General and administration (IFRS)	-2,072	-2,431	-1,356	-1,629	-1,098
Depreciation and amortization (IFRS)	-1,896	-1,775	-1,831	-1,872	-1,362

To Our Stakeholders	Combined Group Management Report	Consolidated Financial Statements IFRS	Further Information on Sustainability	Additional Information
€ millions, unless otherwise stated				
Profits and Margins		2022	2021	2020
Cloud gross margin (in % of corresponding revenue, IFRS)	69.3	67.0	66.6	63.5
Cloud gross margin (in % of corresponding revenue, non-IFRS)	71.2	69.5	69.7	68.2
Cloud and software gross margin (in % of corresponding revenue, IFRS)	79.1	79.1	79.7	79.6
Cloud and software gross margin (in % of corresponding revenue, non-IFRS)	80.4	80.5	81.2	81.6
Services gross margin (in % of corresponding revenue, IFRS)	22.1	22.5	22.7	19.4
Services gross margin (in % of corresponding revenue, non-IFRS)	29.1	30.1	27.0	25.0
Software and support gross margin (IFRS, in %)	87.9	86.9	86.7	86.6
Software and support gross margin (non-IFRS, in %)	88.6	87.6	87.4	87.4
Gross margin (in % of total revenue, IFRS)	71.1	71.5	71.2	69.7
Gross margin (in % of total revenue, non-IFRS)	73.2	73.7	73.1	72.3
Operating profit (IFRS)	4,670	4,656	6,623	4,473
Non-IFRS adjustments	3,362	3,573	1,664	3,735
Operating profit (non-IFRS)	8,032	8,230	8,287	8,208
Operating margin (in % of total revenue, IFRS)	15.1	16.7	24.2	16.2
Operating margin (in % of total revenue, non-IFRS)	26.0	29.6	30.3	29.7
Financial income, net	-1,385	2,174	776	198
Profit before tax (PBT)	3,090	6,847	7,220	4,596
PBT margin (in % of revenues)	10.0	24.6	26.4	16.7
Income tax expense	-1,382	-1,471	-1,938	-1,226
Profit after tax	1,708	5,376	5,283	3,370
Effective tax rate (IFRS, in %)	44.7	21.5	26.8	26.7
Effective tax rate (non-IFRS, in %)	29.6	20.0	26.5	26.2
Return on equity (profit after tax in percentage of average equity)	4	15	17	11
Current cloud backlog				
Current cloud backlog	12,030	9,447	7,155	6,681
Non-IFRS Adjustments				
Revenue adjustments	0	0	5	81
Adjustment for acquisition-related charges	610	623	577	689
Adjustment for share-based payment expenses	2,614	2,794	1,084	1,835
Adjustment for restructuring	138	157	-3	1,130
Segment Results				
Applications, Technology & Support				
Segment revenue	28,298	26,054	25,742	26,140
Segment gross margin (in % of corresponding revenue)	72.1	73.4	73.7	72.6
Segment profit	8,806	9,284	9,412	9,330
Segment margin (Segment profit in % of Segment revenue)	31.1	35.6	36.6	35.7
Qualtrics				
Segment revenue	1,423	930	681	508
Segment gross margin (in % of corresponding revenue)	77.9	79.6	77.6	78.3
Segment profit	95	44	-4	-9
Segment margin (Segment profit in % of Segment revenue)	6.7	4.8	-0.6	-1.7
Liquidity and Cash Flow				
Net cash flows from operating activities	5,647	6,223	7,194	3,496
Net cash flows from investing activities	667	-3,063	-2,986	-7,021
				-3,066

To Our Stakeholders	Combined Group Management Report	Consolidated Financial Statements IFRS	Further Information on Sustainability	Additional Information
€ millions, unless otherwise stated		2022	2021	2020
Net cash flows from financing activities	–6,337	–56	–3,997	102
Capital expenditure	–874	–800	–816	–817
Free cash flow ¹⁰	4,348	5,049	6,000	2,276
Free cash flow in % of total revenue	14	18	22	8
Cash conversion rate (net cash flows from operating activities in % of profit after tax)	331	116	136	104
Cash and cash equivalents	9,008	8,898	5,311	5,314
Short-term investments	686	2,632	1,470	67
Group liquidity (cash and cash equivalents/short-term investments/restricted cash)	9,694	11,530	6,781	5,382
Financial debts	–11,764	–13,094	–13,283	–13,668
Net liquidity (net debt)	–2,070	–1,563	–6,503	–8,286
Assets, Equity and Liabilities				
Trade and other receivables	6,405	6,499	6,730	8,037
Total current assets	18,522	20,044	15,069	15,213
Goodwill	33,106	31,089	27,538	29,159
Total non-current assets	53,638	51,130	43,395	44,999
Total current liabilities (including contract liabilities/deferred income)	17,453	16,136	12,842	14,462
Total non-current liabilities (including contract liabilities/deferred income)	11,858	13,515	15,696	14,929
Total equity (including contract liabilities/deferred income)	42,848	41,523	29,927	30,822
Total assets	72,159	71,174	58,464	60,215
Contract liabilities/Deferred income – current (IFRS) ⁷	5,309	4,431	3,996	4,266
Equity ratio (total equity in % of total assets)	59	58	51	51
Debt ratio (total liabilities ² in % of total assets)	41	42	49	49
Investments in goodwill, intangible assets, or property, plant, and equipment (including capitalizations due to acquisitions)	2,226	3,522	1,780	8,090
Key SAP Stock Facts				
Issued shares ⁷ (in millions)	1,229	1,229	1,229	1,229
Earnings per share, basic (in €)	1.95	4.46	4.35	2.78
Earnings per share, basic (non-IFRS, in €)	4.08	6.73	5.41	5.11
Earnings per share, diluted (in €)	1.94	4.46	4.35	2.78
Dividend per share ³ (in €)	2.05	2.45	1.85	1.58
Total dividend distributed ³	2,393	2,865	2,182	1,864
Total dividend distributed ³ (in % of profit after tax)	140	53	41	55
SAP share price ⁷ (in €)	96.39	129.40	107.22	120.32
SAP share price – peak (in €)	124.82	128.98	142.26	124.72
SAP share price – low (in €)	81.06	101.78	87.63	84.31
Market capitalization ⁷ (in € billions)	118.5	153.4	131.7	147.8
Return on SAP shares ⁴ , 1-year investment period (in %)	–22.8	16.5	–10.9	38.4
Return on SAP shares ⁴ , 5-year investment period (in %)	0.6	8.6	7.9	15.6
Return on SAP shares ⁴ , 10-year investment period (in %)	4.7	11.8	11.0	13.9
Employees and Personnel Expenses				
Number of employees ⁷	111,961	107,415	102,430	100,330
Number of employees, annual average ⁵	111,015	104,364	101,476	99,157
Number of employees in research and development ^{5,7}	34,122	32,244	29,580	27,634
Personnel expenses	17,256	15,552	13,420	14,870

To Our Stakeholders	Combined Group Management Report	Consolidated Financial Statements IFRS	Further Information on Sustainability	Additional Information
€ millions, unless otherwise stated				
Personnel expenses – excluding share-based payments	14,642	12,758	12,336	13,035
Personnel expenses per employee – excluding share-based payments (in € thousands)	132	122	122	131
Operating profit per employee (in € thousands)	42	45	65	45
Women working at SAP (in %)	35.0	34.3	33.6	33.5
Women in management ⁷ (total, in % of total number of employees)	29.4	28.3	27.5	26.4
Women managing managers ^{6, 7} (in %)	25.0	24.1	23.5	22.5
Women managing teams ^{6, 7} (in %)	30.9	29.7	29.0	27.8
Employee Engagement Index (in %)	80	83	86	83
Business Health Culture Index (BHCI, in %)	81	81	80	80
Leadership Trust Index (LTI, as NPS)	72	67	62	59
Employee retention (in %)	92.3	92.8	95.3	93.3
Total turnover rate (in %)	9.0	9.0	7.0	10.7
Customer				
Customer Net Promoter Score ⁹	3.0	10.0	4.0	-6.0
Environment				
Net carbon emissions ^{11, 12} (in kilotons)	85	110	135	300
Net carbon emissions ¹¹ per employee ⁵ (in tons)	0.8	1.0	1.3	3.0
Net carbon emissions ¹¹ per € revenue (in grams)	2.8	3.9	4.9	10.9
Total energy consumption (Scope 1 and Scope 2) ¹³ (in GWh)	906	845	871	1,110
Energy consumed (Scope 1 and Scope 2) ¹³ per employee ⁵ (in kWh)	8,140	8,050	8,570	11,180
Total data center electricity consumption (Scope 2) ¹³ (in GWh)	306	332	353	333
Data center electricity consumption (Scope 2) ¹³ per € revenue ⁸ (in Wh)	10	12	13	12
Renewable electricity sourced (Scope 2 ¹⁴ and Scope 3 ¹⁵) (in %)	100	100	100	100

¹ SAP Group. Amounts according to IFRS, unless otherwise stated.

² As sum of current and non-current liability

³ 2022 Numbers are based on the proposed dividend and on level of treasury stock at year end.

⁴ Average annual return.

⁵ Full-time equivalents

⁶ Relates to different levels of management position.

⁷ Numbers at year end.

⁸ Data center electricity consumption normalized against € revenue represents the required electricity to develop and operate solutions in SAP-owned and co-location data centers (Scope 1 and Scope 2).

⁹ Due to changes in sampling in 2018, Customer NPS is not fully comparable to the prior years' scores.

¹⁰ As at January 1, 2019, we changed our free cash flow definition to avoid effects resulting from the adoption of IFRS 16.

¹¹ In CO₂ equivalents

¹² Rounded to 5 kilotons

¹³ In 2022, we changed the composition of included KPIs. We excluded electricity consumed by hyperscale services (indirect energy of our value chain, Scope 3) due to the (still) very limited control over the energy / electricity procurement of our value chain partners. In addition, we moved electricity consumption of co-location data centers from Scope 3 to Scope 2 due to the underlying leasing model and SAP's operational control over the IT infrastructure.

¹⁴ Scope 2 includes electricity in offices, electricity in own data centers, and electricity in co-location data centers

¹⁵ Internally, we calculate the electricity consumption of hyperscale services as basis to determine the required procurement of EACs to ensure that SAP software solutions running on hyperscale data centers are powered with 100% renewable electricity.

Financial Calendar and Addresses

Financial Calendar

2023

April 21	Results for the first quarter 2023
May 11	Annual General Meeting of Shareholders, Mannheim, Germany
May 16	Dividend payment
July 20	Results for the second quarter and half-year 2023
October 19	Results for the third quarter 2023

2024

January 24	Results for the fourth quarter and full year 2023
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Financial and Sustainability Publications

We present our financial, social, and environmental performance in the SAP Integrated Report 2022, which is available at www.sapintegratedreport.com. This SAP Integrated Report 2022 comprises all of the information required by accounting and disclosure standards applicable to us.

The following publications are available in English at www.sap.com/investor, or in German at www.sap.de/investor.

- Annual Report on Form 20-F (IFRS, available in English only)
- SAP Integrated Report (PDF)
- SAP SE Statutory Financial Statements and Review of Operations (HGB, available in German only)
- Half-Year Reports
- SAP Compensation Report
- SAP Quarterly Statements
- SAP INVESTOR, SAP's quarterly shareholder magazine
(in German)

Complete information on the governance of SAP SE is available at www.sap.com/corpgov. Materials include:

- Information about the management of SAP SE, including the current members of the Executive Board and the Supervisory Board, their CVs and memberships in boards of other companies
- Information about the Supervisory Boards' committees, including their tasks and current composition
- Details of managers' (the Executive and Supervisory Board members') transactions in SAP securities
- Documents relating to SAP SE's Annual General Meetings of Shareholder, including voting results
- SAP SE's Articles of Incorporation
- Agreement on the Involvement of Employees in SAP SE
- German Code of Corporate Governance
- Declaration of Implementation pursuant to the German Stock Corporation Act, Section 161
- Global Code of Ethics and Business Conduct for EmployeesCorporate Governance Statement pursuant to the German Commercial Code, Sections 315d and 289f
- Rules of Procedure for the SAP SE Supervisory Board
- Rules of Procedure for the SAP SE Executive Board
- Profile of Skills and Expertise for the SAP SE Supervisory Board
- Overview of the participation of Supervisory Board members in meetings of the Supervisory Board and its committees

Additional SAP policies are made public at www.sap.com/sustainability.

- SAP Human Rights Commitment Statement
- SAP Global Health and Safety Management Policy
- SAP Environmental Policy
- SAP Global Anti-Discrimination Statement
- SAP's Guiding Principles for Artificial Intelligence and SAP Global Artificial Intelligence Ethics Policy
- SAP Supplier Code of Conduct
- SAP Partner Code of Conduct
- SAP's Global Tax Principles

Further, the SAP Glossary is available at www.sap.com/glossary

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