

TCFD Report: climate-related risks and opportunities

It is expected that if society continues to emit greenhouse gasses at current rates, global warming will speed up and temperature rises of more than 2° Celsius (2°C) – relative to the pre-industrial period – could have major economic, environmental, and social consequences. Climate change and the transition to a low-carbon economy can impact ASML. This report focuses on the potential impacts of climate-related risks and opportunities on our business, including potential impacts on some key parts of our value chain.

Global warming is driving a growing demand for decision-useful, climate-related information and the development of several climate-related disclosure standards. The Task Force on Climate-Related Financial Disclosures (TCFD) was established in December 2015 with the goal of developing a set of voluntary climate-related financial risk disclosures, which companies can adopt to inform stakeholders of the risks and opportunities they face in relation to climate change.

In 2022, we continued our application of the TCFD guidelines to assess both physical and transition risks and opportunities in two climate scenarios, a 1.5°C scenario and a 4°C scenario. The assessment considers the impacts of climate-related risks and opportunities for ASML, also considering the potential effect on ASML through our suppliers and customers. The results of the assessment, including identification of mitigating measures, are further integrated into our Enterprise Risk Management (ERM) process.

The TCFD developed a stand-alone document for organizations to use when preparing disclosures, structuring their recommendations around four themes that represent core elements of how organizations operate: governance, strategy, risk management, and metrics and targets. This report follows the structure of the TCFD recommendations. The first chapter discloses our governance around climate-related risks and opportunities. Secondly, the strategy chapter describes potential climate-related risks and opportunities and their potential impact on our strategy and financial planning. In the third chapter we disclose how we identify, assess, and manage climate-related risks. Finally, the chapter on metrics and targets discloses the metrics and targets we use to assess and manage relevant climate-related risks and opportunities.

Going forward we aim to perform a quantitative assessment on the financial impact of climate-related risks and opportunities. Please note that this document discusses risks related to climate-related matters but may not include all the risks that may ultimately affect ASML in this regard. Some risks not yet known, or believed not to be material, could ultimately have a significant impact on our business objectives, financial condition, results, operations, and reputation.

This document should be read in connection with our Annual Report 2022, and references are made to the Annual Report 2022 for additional information on the matters discussed in this report. The climate-related governance, strategy, risk management and monitoring themes discussed below are embedded in broader structures and processes within the organization. It is therefore necessary to complement the information in this disclosure with the referenced sections in the Annual Report.

Governance

Disclose the organization's governance around climate-related risks and opportunities.

Recommended disclosures:	a. Describe the board's oversight of climate-related risks and opportunities. b. Describe management's role in assessing and managing climate-related risks and opportunities.
--------------------------	---

ESG Sustainability, including climate-related risks and opportunities, is managed across several levels and functions of the organization. Members of our Board of Management participate in the governance of climate-related issues by setting the ESG Sustainability aspects of our integrated strategy, and in their roles in climate risk ownership and in the Corporate Risk Committee. This gives them direct ownership of the mechanisms to identify and assess climate-related risks and to integrate them into the organization's strategy. Moreover, the ESG Sustainability team and ESG Sustainability KPIs also cascade climate-relevant governance and targets across the organization. Read more in: *ASML Annual Report 2022, section 'Managing ESG sustainability'*.

ESG Sustainability in our Strategy

The Board of Management sets and oversees the execution of the ESG Sustainability aspects of our integrated strategy, which include nine ESG Sustainability strategic themes and associated KPIs. The Supervisory Board supervises, monitors and advises the Board of Management on the ESG Sustainability aspects which are relevant to the Company (see Rules of Procedure as published in the Governance section on our website). Climate considerations are integral to our strategy, with 'Energy Efficiency and Climate Action' identified as one of the nine sustainability strategic themes. The responsibility for strategy execution sits with business lines and sectors, and the Board of Management conducts quarterly progress monitoring. *Read more in: ASML Annual Report 2022, section 'Managing ESG Sustainability'*.

Risk Owner

The Board of Management is further involved in the management of climate-related risks since the Chief Business Officer (a Board of Management member) is the risk owner for climate-related risks (with the Head of ESG Sustainability acting as a delegate). Risk owners monitor the development of risks in the ASML risk universe and drive risk response across ASML according to requirements that are defined by the Corporate Risk Committee. As such, the risk owner takes identified risks (for example from the TCFD assessment conducted in 2022) and proposes risk responses. The Corporate Risk Committee provides oversight and approves risk appetite.

Corporate Risk Committee and ERM Integration

The Board of Management also plays a role in integrating climate risks into our overall ERM process. The Corporate Risk Committee is chaired by the Chief Financial Officer and comprises senior management representatives across ASML, including the Chief Executive Officer and Chief Operating Officer. The Corporate Risk Committee is a central risk oversight body that reviews, manages and controls risks in the ASML risk universe. Each quarter the Corporate Risk Committee reviews, updates and discusses the ASML risk landscape. Risk assessments are carried out according to the risk management plan and any additional engagement is approved by the Corporate Risk Committee. We define strategies to address relevant risks and take these into account when we define our corporate priorities. The board and its relevant committees consider climate-related issues in the same way as other risks when reviewing and guiding risk management. *Read more in: ASML Annual Report 2022, section 'How we manage risk' and 'Risk Factors'*.

ESG Sustainability team

The ESG Sustainability team is also included in the governance of climate-related risks and opportunities. It does so by supporting the Board of Management in relation to ESG Sustainability aspects (such as focus areas and targets) and monitoring developments (including climate related risks and opportunities) that could impact our short-, medium- and long-term ESG Sustainability objectives.

ESG Sustainability KPIs

Finally, the ESG Sustainability KPIs defined for our nine ESG Sustainability strategic themes (which include 'Energy Efficiency and Climate Action') are cascaded across different levels of the organization. Each of the material ESG topics is assigned to a senior executive, supported by a topic expert. Each senior executive is responsible for a KPI from the ESG Sustainability aspects of our strategy, and is responsible for monitoring progress against agreed targets and ensuring there are sufficient resources available to meet targets and objectives. Progress towards targets is discussed at cross functional table meetings. *Read more in: chapter 4 'Metrics and Targets'*

Strategy

Disclose the actual and potential impacts of climate-related risks and opportunities on the organization’s businesses, strategy, and financial planning where such information is material.

Recommended disclosures:	<p>a. Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.</p> <p>b. Describe the impact of climate-related risks and opportunities on the organization’s businesses, strategy, and financial planning.</p> <p>c. Describe the resilience of the organization’s strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.</p>
--------------------------	--

This chapter considers the identified climate-related risks and opportunities and the potential (financial) impact on our business. In 2022, we conducted a qualitative scenario assessment to assess the potential climate-related risks and opportunities for our business, including potential impacts on some key suppliers and customers. The assessment considers two scenarios: a 1.5°C scenario and a 4°C scenario, which are described in more detail in the table below. These scenarios represent two extreme temperature pathways. Choosing two scenarios that are at the end of each extreme allows for a complete risk mapping in the climate risk portfolio, including the full breadth of potential impacts on ASML. Please note that these scenarios are not forecasts or predictions, but rather highlight central elements of a possible future that help in assessing potential risks for ASML.

	1.5°C scenario	4°C scenario
Based on	IEA ‘Net Zero Emissions by 2050’ scenario	IPCC RCP 8.5 scenario
Description	A 1.5°C scenario would only occur if society manages swift decarbonization in the coming decades, resulting in more pronounced transition risks.	A 4°C scenario would occur if society fails to decarbonize, resulting in more pronounced physical risks.
Time horizon	For the 1.5°C scenario, this assessment considers a time horizon until 2030 (short to medium term). This time horizon is in line with ASML’s overall strategy and risk time horizon.	For the 4°C scenario, this assessment considers a time horizon until 2030 (short to medium term), but also until 2050 (long term). The 2050 time horizon is included for this scenario since physical risks could pose a greater threat in the long term if the world fails to decarbonize.

The assessment considers the possible effects of climate change on ASML’s value chain, including its upstream and downstream value chain. This year, 6 key suppliers (located within the EU), 7 of our own manufacturing locations and 3 key customers are included in the scope of the assessment. These suppliers were selected because they are our biggest suppliers in terms of spend, while the customers are our three biggest customers in terms of sales. The scoring included in this assessment is relative and based on qualitative analysis. Please note that the assessment considers the potential impact of climate-related risks on ASML, but the risk level also demonstrates how ASML is affected by climate-related risks that occur in their full value chain.

Risk level:

- **Neutral:** no material expected financial impact on ASML
- **Low risk:** some expected financial impact on ASML
- **Medium risk:** moderate expected financial impact on ASML
- **High risk:** high expected financial impact on ASML

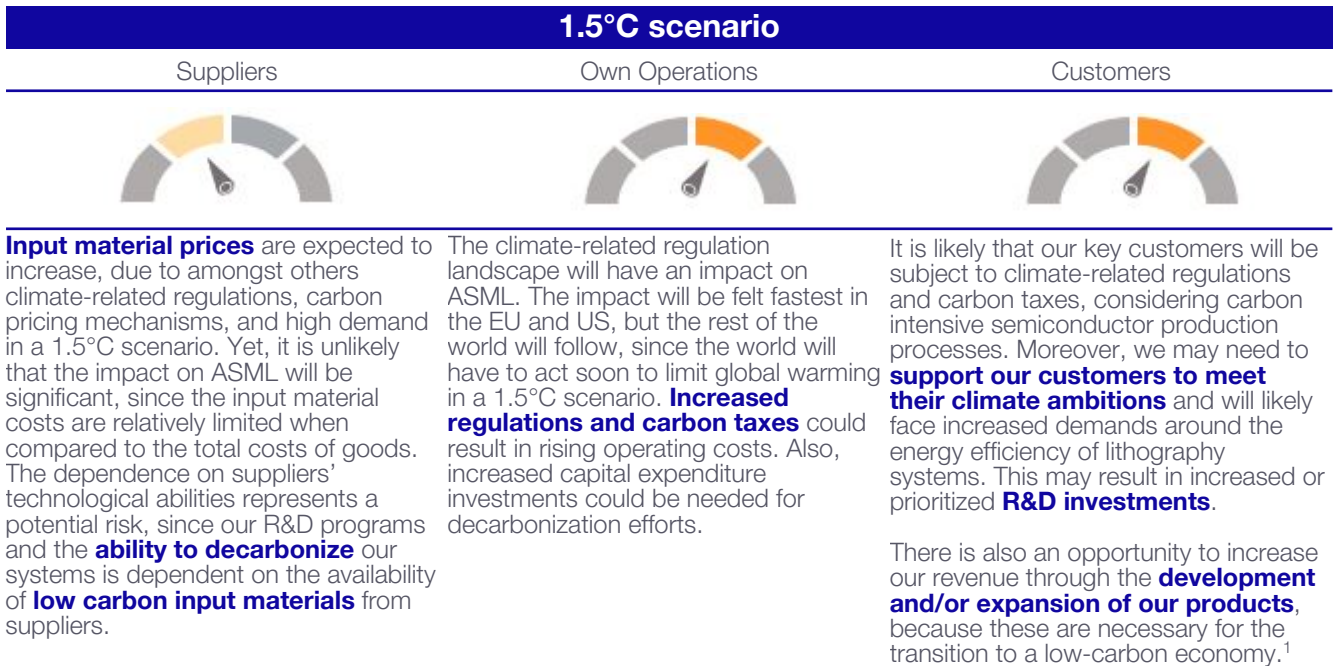
Potential impact of climate-related risks and opportunities on ASML

The objective of our climate assessment was to determine the most material climate-related risks and opportunities for our business. The assessment is based on publicly available data, including public reports from our key suppliers and customers and regulatory developments, and internal multi-stakeholder engagement. Three heatmaps were populated based on the acquired information:

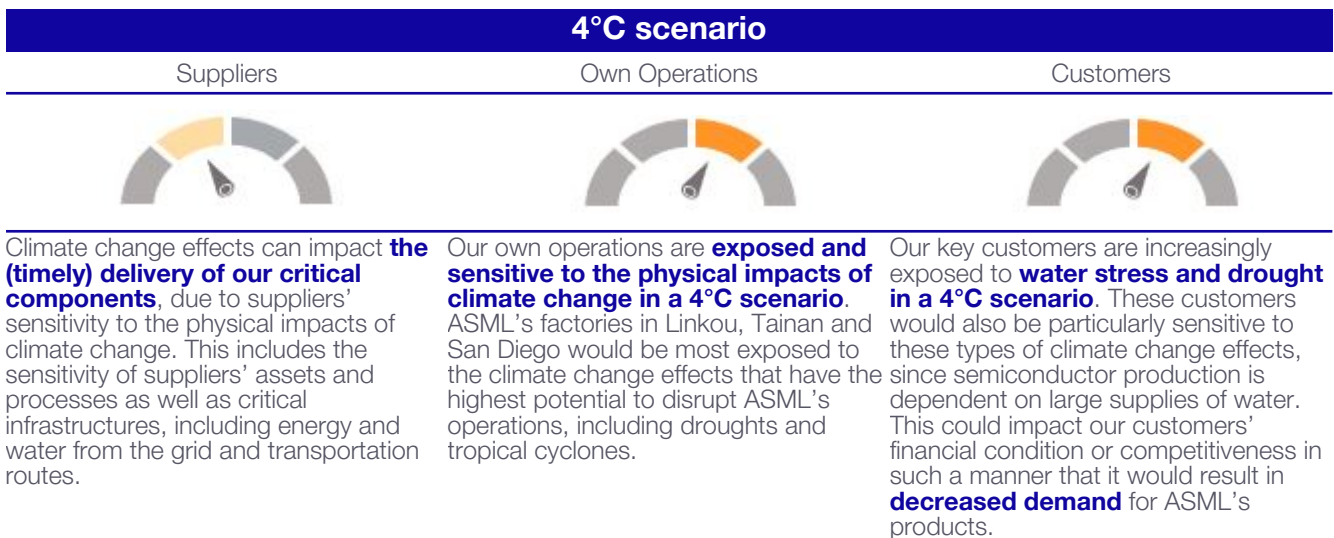
- Heatmap of transition risks in a 1.5°C scenario, including four types of risks: policy and legal, market and economic, technology and reputation.
- Heatmap of both acute and chronic physical risks in a 4°C scenario. This heatmap is, amongst others, based on data models (Swiss RE, Munich RE, FM Global), which are used as input for assessing our exposure to physical climate risks in the medium- and long term.

- Heatmap of climate-related opportunities, including five types: resource efficiency, energy source, products and services, markets, and resilience.

The heatmap exercise allows for identification of the most material risks and opportunities. Below we include a summary of findings aggregated from the underlying heatmaps.



1. Please note that this is identified as a key opportunity for ASML in a 1.5°C scenario, based on the climate-related opportunity heatmap. This opportunity is however separate from the climate-related risks identified in this scenario and does therefore not contribute to the aggregated medium risk level identified for customers.



Four key climate-related risks and opportunities

Based on the heatmap exercise and inquiries with internal stakeholders from different areas of expertise, we selected four key climate-related risks and opportunities. For these four climate-related issues, the impacts on our business, strategy and financial planning are examined in more detail. Below are the summaries of these deep dives, describing the potential risk (and current mitigation) or opportunity, and the potential financial impact on our business in one of the two selected scenarios.

Climate-related regulation risks for our value chain - 1.5°C scenario

Potential climate-related risk

Description of the potential risk

In a 1.5°C scenario, the climate-related regulation landscape will change in most regions. The EU and the US will be the first to decarbonize. They will have strict regulation on sectors such as energy, industry, and transportation. ESG reporting will also have to become more extensive in these regions. The rest of the world will follow the EU and US with strict regulations and carbon pricing. Climate regulation will have a strong impact on the medium term (2030) because the world will have to act soon to limit the eventual warming of the climate. These regulations may impact ASML directly in relation to its own manufacturing processes or indirectly via cost of input materials or customer requirements for carbon efficiency.

Current risk mitigation

We monitor climate-related regulations and policies to understand the potential impact for our business and stakeholders. We deploy our carbon footprint strategy, with which we aim to achieve net zero emissions for scope 1 and 2 by 2025. Furthermore, the objective of our product energy efficiency roadmap is to reduce the carbon footprint of our products and enable low carbon technology and products in the value chain.

Potential financial impact

Increased cost of input materials

The price of our input materials is likely to increase in a 1.5°C scenario due to climate-related regulations and carbon taxes. However, it is unlikely that the impact on ASML will be significant because input material costs are relatively limited when compared to the total costs of goods.

Increased operating costs

There will be increased operating costs due to a price on carbon in a 1.5°C scenario.

Increased capital expenditures

In a 1.5°C scenario, there will be increased capital expenditures as investments are needed to adapt the production processes to be more energy efficient or to change the energy source. This is most relevant for facilities in Taiwan and South Korea, where the costs of moving to renewable energy are already very high. Additionally, increased or prioritized R&D investments will be needed to support our customers in meeting their carbon reduction requirements.

Physical risks for our own operations – 4°C scenario

Potential climate-related risk

Description of the potential risk

In a 4°C scenario, the frequency and severity of climate change effects increase, particularly after 2050. Tropical cyclones, wildfires and floods are predicted to be more severe, potentially damaging and disrupting operations. Additionally, droughts could result in the disruption of production due to water dependent processes.

Current risk mitigation

We have several key controls in place to mitigate the potential impacts of physical risks, including but not limited to robust building designs, fire suppression systems in critical areas, stormwater control mechanisms, water reserve controls, maintenance management and power back-up for safety/emergency systems.

Potential financial impact

Operational costs

Temperature increases can increase operational costs, due to the necessity of additional air conditioning to ensure consistent climate conditions for our production processes and the productivity of the workforce. Also, it is likely that insurance costs will increase due to increased frequency and severity of extreme weather events in a 4°C scenario.

Lost revenue

Extreme weather events can disrupt production processes or transportation, resulting in late deliveries. This can have a material adverse effect on our revenue and financial condition.

Increased capital expenditures

In some cases, investments will be needed to make our factories increasingly resistant to the effects of climate change, including droughts, tropical cyclones, heat stress, precipitation stress, floods, and fire weather stress.

Physical risks for our key customers – 4°C scenario

Potential climate-related risk

Potential financial impact

Description of the potential risk

The increased frequency and severity of climate change effects in a 4°C scenario will also impact our key customers, particularly in the long term (2050). Water stress and drought are predicted to be more severe, potentially disrupting the operations of our key customers which are increasingly exposed to these climate change effects in such an extreme scenario. These customers are particularly sensitive to water stress and drought due to the heavy reliance on water for the semiconductor manufacturing processes.

Current risk mitigation

Our machines, with exception of immersion scanners, do not consume significant amounts of water, but rather the semiconductor manufacturing process requires large amounts of water. Customers are already implementing mitigating measures themselves, such as the retrofitting of facilities to increase water efficiency.

Lost revenue

In a 4 °C scenario, water stress and drought can lead to increased operational and capital expenditures, and revenue loss for our key customers. Consequently, the demand for our products could decrease as customers lose financial power. Our dependence on a concentrated number of customers for revenue could have a material adverse effect on ASML's financial condition.

Market demand in a low-carbon economy - 1.5°C scenario

Potential climate-related opportunity

Potential financial impact

Description of the potential opportunity

In a 1.5°C scenario, the impact of increased demand for low-carbon technologies will impact the demand for semiconductors. When looking at the scenario of a low-carbon economy, semiconductors play a multifaceted role in mitigating carbon emissions. Semiconductors are needed for the generation and use of low carbon energy sources. They are necessary for, amongst others, wind turbines, solar panels, and electric vehicles. Moreover, semiconductors are key in increasing energy efficiency, since they are necessary in all smart technologies that help improve energy efficiency, such as smart grids. Also, power semiconductors can be key in reducing energy use. As demand for semiconductors may surge, the need for our lithography systems is also very likely to increase.

Increased revenue

In a 1.5°C scenario, demand for semiconductors may surge and hence the need for lithography systems will very likely increase. ASML will likely be able to serve this need as we continue to follow our vision of producing microchips that are constantly becoming more energy efficient. Therefore, the increase in demand for semiconductors will likely lead to increased revenues.

Carbon footprint reduction strategy

At ASML, we are committed to reducing our carbon footprint. In terms of carbon footprint, we identify three impact areas: the direct emissions from fossil fuels (scope 1) used on our premises, the indirect emissions from the electricity consumption (scope 2) on our premises, and the indirect emissions in our value chain (scope 3) from upstream supply chain and downstream use of our products by customers. In our carbon footprint strategy, we have determined our ambition and set targets in all three areas. Our ambition is to achieve carbon neutrality with net zero emissions in our operations (scope 1 and 2) by 2025. We aim to achieve net zero emissions in our supply chain by 2030, and net zero emissions in the use of our products by our customers (scope 3) by 2040.

Our scope 1 and 2 emission reduction targets are consistent with reductions required to keep warming to 1.5°C and are approved by the Science Based Targets initiative (SBTi) – under the category ‘near-term’.

Read more in: ASML Annual Report 2022, section ‘Our business and ESG strategy’ and ‘Environmental - Energy efficiency and climate action - Energy management and carbon footprint’

Risk management

Disclose how the organization identifies, assesses, and manages climate-related risks.

Recommended disclosures:	a. Describe the organization's processes for identifying and assessing climate-related risks
	b. Describe the organization's processes for managing climate-related risks.
	c. Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.

As described in detail in the Strategy section, we have leveraged the TCFD's recommendations to perform a qualitative assessment of our climate-related risks and opportunities across our value chain. This assessment includes a consideration of relevant physical and transition risks across two climate scenarios, which has enabled us to gain a qualitative understanding of the relative significance of different risks under each scenario. *Read more in: chapter 2 'Strategy'.*

Moreover, climate risk is fully integrated into our existing ERM process. This means that risks are identified, analyzed, and evaluated, with relevant financial and non-financial risk factors plotted into our risk landscape. The risk landscape contains the risk exposure as well as the main risk response (mitigating action). Both are discussed with the Board of Management and Supervisory Board. This ERM process ensures that actions to mitigate risk are monitored through a system of multidisciplinary assessments, monitoring, reporting and operational reviews.

Such an integration is possible despite the specific characteristics of climate-related risks, such as the long timeframe in which they may materialize, since ASML's ERM framework has the flexibility to include long term risks. The process for prioritizing and deciding on actions for climate-related risks is thus the same as for other risks. The Chief Business Officer is the risk owner for climate-related risks and raises relevant risks to the Corporate Risk Committee. *Read more in: ASML Annual Report 2022, section 'How we manage risk' and 'Risk Factors'.*

Climate-related risks are identified as a strategic risk in ASML's risk universe, with physical and transition risks being included in our 2022 Annual Report as risk developments (i.e., external developments that affected the exposure of a series of risk categories). From a transition risk perspective, decarbonization is an integral part of our ESG Sustainability strategy, with several KPIs set to decrease emissions and increase energy efficiency. From a physical risk perspective, several actions have been taken to mitigate potential impacts of climate-related risks, such as including extreme weather potential in the upgrade and design of new buildings, putting in place insurances to mitigate financial implications due to physical climate change impacts, and controlling for other risks such as flooding and windstorms. *Read more in: chapter 4 'Metrics and Targets'.*

For more details of the relevant risk terminology deployed please refer to chapter 2 'Strategy'.

Metrics and targets

Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material

Recommended disclosures:	<ol style="list-style-type: none">Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.
--------------------------	--

ASML uses several metrics to assess and manage climate-related risks and opportunities and measure progress against targets. For the specific metrics, please refer to the relevant sections and subsequent KPI tables in the Annual Report 2022 (referenced below). *Read more in: ASML Annual Report 2022, section 'How we manage risk' and 'Risk factors'*

Climate and energy

We assess our GHG emissions and energy consumption (refer to the sections of the Annual Report referenced below for our disclosures on GHG emissions). We have adopted targets to manage our GHG emissions footprint and energy use and their related climate-related risks. Our carbon footprint reduction strategy demonstrates our goal to help to limit global warming to 1.5°C, thereby managing our climate-related risks and opportunities. Limiting our carbon footprint and energy consumption along the value chain decreases our vulnerability to both transition and physical risks.

Read more in: Chapter 2 'Strategy'

Read more in: ASML Annual Report 2022 and section: 'Environmental - Energy efficiency and climate action - Energy management and carbon footprint', and 'Non-financial statements - Non-financial indicators - Energy efficiency and climate action'.

Water management

Even though water-related risks are not identified as material for our own operations, we do have water management metrics in place which allow us to manage climate-related risks. We measure the (ultra-pure) water consumption at our sites, the percentage of recycled and reused water, and the water intensity. This allows us to limit our water-related physical climate risks even further, since our operations will be less vulnerable to the effects of droughts and water stress. *Read more in: ASML Annual Report 2022, section 'Environmental - Circular economy - Water management' and 'Non-financial statements - Non-financial indicators - Circular economy - Water management'.*

Responsible supply chain

Our main metric concerns the percentage of supplier spend covered by a commitment to sustainability. This is either in the form of signing a letter of intent to share environmental data with us or providing us with their CO₂ emissions data. Our Supplier Sustainability Program addresses environmental risks in our tier-1 supply chain by focusing on, amongst others, reducing the carbon footprint. The responsible supply chain metrics allow us to assess and manage climate-related risks and opportunities within our supply chain. *Read more in: ASML Annual Report 2022, section 'Social - Our supply chain'*

Remuneration

Remuneration policies can provide an important incentive for achieving climate-related targets. Our performance in ESG is part of the long-term incentive (LTI) plans of our Board of Management and senior management. We measure our overall sustainability performance by benchmarking our rating from the annual comprehensive Dow Jones Sustainability Index (DJSI) – which assesses more than 20 ESG topics, including climate change – with the best of the semiconductor industry. For the performance period until 2023, the LTI includes the DJSI rating. For the performance period 2022-2024, the focus of the LTI will be on, amongst others, product energy consumption. Therefore, EUV energy use per wafer pass is included in the LTI performance measures and target setting. Our product energy efficiency strategy allows us to manage the vulnerability to transition risks in a 1.5°C scenario. *Read more in: 'ASML Remuneration Policy Board of Management 2022', published in the Governance section of our website.*

Special note regarding forward-looking statements

This document contains statements that are forward-looking, including statements with respect to climate-related risks and opportunities, potential impact and risk mitigation, climate-related and ESG sustainability strategy, metrics, targets and goals including carbon footprint reduction strategy and emissions targets and plans and strategies to mitigate impact of climate-related risks and other TCFD targets and goals including climate neutrality and other non-historical statements. You can generally identify these statements by the use of words like "may", "will", "could", "should", "project", "believe", "anticipate", "expect", "plan", "estimate", "forecast", "potential", "intend", "continue", "target", and variations of these words or comparable words. These statements are not historical facts, but rather are based on current expectations, estimates, assumptions and projections about our business and our future financial results and readers should not place undue reliance on them. Forward-looking statements do not guarantee future performance and involve risks and uncertainties. These risks and uncertainties include, without limitation, risks relating to our ability to meet our goals and targets and follow our strategy and comply with our TCFD goals and targets and the risk factors included in ASML's Annual Report on Form 20-F and other filings with and submissions to the US Securities and Exchange Commission. These forward-looking statements are made only as of the date of this document. We do not undertake to update or revise the forward-looking statements, whether as a result of new information, future events or otherwise.