Welcome to your CDP Climate Change Questionnaire 2022

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

Valmet is a leading global developer and supplier of services and technologies for the pulp, paper and energy industries. We focus on delivering technology and services globally to industries that use bio-based raw materials. Our vision is to become the global champion in serving our customers, and our mission is to convert renewable resources into sustainable results. Valmet's **Sustainability360º Agenda** is integrated to our strategy and Must Wins. Valmet is organized around five business lines in five geographical areas: North America, South America, EMEA, Asia Pacific, and China. Valmet is an established market leader and has a strong market position in all its businesses. In 2021, Valmet´s net sales were 3,935 MEUR.

1. **Services business line** provides customers with flexible and fit-for-purpose services throughout the lifecycle to improve process performance and reliability. Our Services' offering increases the environmental efficiency and cost-effectiveness of our customers' production processes, while ensuring safe and reliable operations.
2. **Automation Systems business line** delivers automation solutions ranging from single measurements to mill- or plant-wide process automation systems. They are designed to maximize the profitability and sustainability of customers' businesses by improving production performance, quality management, raw material and energy efficiency, and cost-effectiveness.
3. **Pulp and Energy business line** provides technology solutions for pulp and energy production, as well as for biomass conversion and emission control. The technologies maximize the value of renewable raw materials, while increasing production efficiency and minimizing the environmental impact.
4. **Paper business line** delivers complete production lines, machine rebuilds and process components for board, tissue and paper production that are designed for high process and environmental efficiency, flexibility, reliability and safety. The solutions have a modular structure with as much standardization as possible, and they are easy-to-use and cost-effective.
5. **Flow Control business line** delivers mission-critical flow control technologies and services for the continuously evolving needs of various process industries. We help our customers to improve their process performance and environmental efficiency, and to ensure the safe flow of materials.

Valmet believes that technology plays a key role in mitigating climate change and global warming in the transition to a carbon neutral economy.

Therefore we have created our **Climate Program** , which continues our comprehensive sustainability work. Our climate program includes ambitious CO_2 emission reduction targets (baseline 2019) and concrete actions for the whole value chain:

1. **We are collaborating with our suppliers to reduce emissions**
   We estimate that our supply chain accounts for appr. 4% of the carbon footprint of our entire value chain. Our target is to reduce CO_2 emissions in our supply chain by 20% by 2030. We will achieve this goal with a wide range of actions like increasing the share of recycled steel in our products, supporting CO_2-intensive suppliers in reducing their emissions, decreasing the weight of our products and introducing alternative materials, and supporting suppliers to optimize their manufacturing methods. We will also centralize spend on selected suppliers offering low carbon transportation, and we are continuing to develop freight planning.
2. **We are transforming our own operations:** Around 1% of our carbon footprint arises from our own operations. Our target is to reduce CO_2 emissions by 80% in our own operations by 2030. We are working toward a low-carbon future every day across the organization. We are driving this transformation by replacing fossil fuels with renewables in our locations, purchasing CO_2-free electricity and district heat, and implementing energy efficiency improvements. We will enhance the use of digital tools and further develop remote working habits that reduce business travel emissions. We will also promote low-carbon commuting.
3. **We are enabling carbon neutral processes for our customers :** Most of Valmet's value chain's carbon footprint comes from the use phase of its technologies. Today, our customers' chemical pulp mills provided by Valmet are usually bioenergy self-sufficient already. Furthermore, we enable carbon neutral heat and power production for our customers with our current biomass-based energy solutions. By 2030, our target is to enable 100% carbon neutral production for all our pulp and paper customers by developing new process technologies. We are also improving the energy efficiency of our current offering by 20%. Valmet has a **full scope offering for CO2 emission reduction and enviromental efficiency** including process technologies, automation and services.

The program is aligned with the Paris Climate Agreement and UN SDGs. The targets have been approved by the Science Based Targets initiative.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	January 1, 2021	December 31, 2021	Yes	3 years

C0.3

(C0.3) Select the countries/areas in which you operate.

Brazil
Canada
Chile
China
Czechia

Finland
France
India
Indonesia
Italy
Poland
Portugal
Spain
Sweden
Thailand
United Kingdom of Great Britain and Northern Ireland
United States of America

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

EUR

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

Financial control

C0.8

(C0.8) Does your organization have an ISIN code or another unique identifier (e.g., Ticker, CUSIP, etc.)?

Indicate whether you are able to provide a unique identifier for your organization	Provide your unique identifier
Yes, an ISIN code	FI4000074984

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Board Chair	Valmet has a strategic approach to climate change. The Board of Directors (lead by the Board Chair) is responsible for the administration and the proper organization of the operations of Valmet. It also decides on significant matters related to strategy (incl. climate related issues), investments, organizational and finances and ensures that Valmet has established the corporate values applied to its operations. Valmet develops and supplies energy and environmentally efficient clean technologies that contribute to mitigating climate change. Climate change is also one of the main drivers affecting Valmet's business and strategy. It's strategic importance increased in 2021, when Valmet's Board approved Valmet's Climate program, which includes long-term CO2 reduction targets for own operations, supply chain and our own technologies during use phase. Climate-related issues are relevant for the whole Board and discussed and monitored by the Board of Directors. The Board of Directors sign off the Disclosure of non-financial information annually, which is included into Valmet's Financial Statements and Information for Investors. The disclosure of non-financial information includes information on Valmet's sustainability issues, including environmental and climate-related matters according to TCFD framework. In addition to deciding on Valmet's Climate program, in 2021 Valmet's Board also decided on the Performance Share Plan's predefined performance measures and targets based on an ESG Index with predefined targets linked to implementing Valmet's Climate Program and Sustainability Agenda in addition to targets supporting the Company's long-term strategic and financial development for Executive Team (hereafter ET) members during performance period 2022–2024.
Chief Executive Officer (CEO)	The President and CEO manages Valmet's operations in accordance with the Finnish Companies Act, corporate governance rules and the instructions given by the Board of Directors. The President and CEO guides and supervises the operations of Valmet and its businesses. The President and CEO is responsible for the management and supervision of Valmet's day-to-day business. The President and CEO leads the Executive Team of Valmet, where major climate-related issues are managed. Sustainability issues (including climate related matters) are monitored continuously by Valmet ET and reported quarterly to CEO and at least annually to the Board of Directors of Valmet.

	The President and CEO appointed by the Board of Directors of Valmet. The President and CEO reports to the Board of Directors. As an example of strategic climate related decision: In 2021 the President and CEO approved Valmet's new Climate program (including long-term CO2 reduction targets for own operations, supply chain and our own technologies during use phase) and related governance model (Climate Program Steering Team). The President and CEO also approved the signing of EUR 300 million syndicated revolving credit facility with a margin linked to Valmet's climate targets.

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – some meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues	Valmet has a strategic approach to sustainability and therefore sustainability matters, incl. climate related issues, are discussed as part of Valmet's strategy by the Board of Directors. The Board of Directors, incl. the Board Chair, and the President and CEO of Valmet have oversight on climate-related matters and they approved Valmet's Climate program in early 2021, which includes long-term CO2 reduction targets for own operations, supply chain and our own technologies during use phase. Climate program and related targets are integrated into Valmet's strategy and therefore climate related issues are on Board's agenda at least 7 times a year, when the highest management (see C1.2) responsible for climate related matters reports to Board regarding performance against climate targets. The Board of Directors sign off the Disclosure of non-financial information, which is included into Valmet's Financial Statements 2021 and Information for Investors. The disclosure of non-financial information includes information on Valmet's sustainability, including environmental and climate-related matters according to TCFD framework.

		The President and CEO has the oversight of the day-to-day operative management of Valmet and its businesses. The President and CEO manages, guides and supervises the operations of Valmet and its businesses. E.g. The President and CEO monitors and oversees the progress on Valmet's targets set in Valmet's Climate Program. The Board of Directors convenes around 10-15 times a year. The President and CEO prepares the matters on the agenda of the Board of Directors and its committees and implements their decisions.

C1.1d

(C1.1d) Does your organization have at least one board member with competence on climate-related issues?

	Board member(s) have competence on climate-related issues	Criteria used to assess competence of board member(s) on climate-related issues
Row 1	Yes	Valmet applies risk management and strategy development criteria to assess the competence of board members on climate-related issues. E.g., previous experience related to environmental management from strategic and operational perspective.

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Other C-Suite Officer, please specify Senior Vice President, Marketing, Communications, Sustainability and Corporate Relations 1	Both assessing and managing climate-related risks and opportunities 2	Quarterly
Other C-Suite Officer, please specify Senior Vice President, Human Resources and Operational Development 3	Both assessing and managing climate-related risks and opportunities 4	Quarterly

Other C-Suite Officer, please specify Business line Presidents (Pulp and Energy, Paper, Automation and Services) [5]	Both assessing and managing climate-related risks and opportunities [6]	Annually
Sustainability committee [7]	Assessing climate-related risks and opportunities [8]	Quarterly

[1]Senior Vice President, Marketing, Communications, Sustainability and Corporate Relations

She has one of the highest management-level of responsibility for climate related issues at Valmet, She is the Chair of Valmet's Climate Program Steering Team and also responsible for the sustainability and corporate relations perspective at Valmet. She is a member of Valmet Executive Team and reports to the President and CEO quarterly and visits the Board 1-2 times a year on the progress of area of responsibility.

[2]Valmet's Climate program (the Chair of the steering team), Sustainability agenda and Corporate Relations.

Valmet's Climate program steering team monitors and oversees the progress of CO2 and energy efficiency targets set in the program and related action plans.

[3]Senior Vice President, Human Resources and Operational Development has one of the highest management-level of responsibility for climate related issues from the operational development (such as Business intelligence, procurement R&D and HSE) perspective. She is a member of Valmet Executive Team and reports to the President and CEO quarterly and visits the Board 1-2 times a year on the progress of area of responsibility.

[4]Operational Development (R&D, Procurement, HSE).

Operational development is the key function in achieving the targets set in Valmet's Climate Program for the whole value chain (supply chain (procurement), own operations (HSE), use phase of technologies (R&D).

[5]Business line Presidents (Pulp and Energy, Paper, Automation systems, Flow Control and Services).

All (5) Business line (BL) presidents have the one of highest management-level of responsibility for climate change from strategy and operational perspective. They are members of Valmet Executive Team and report to the President and CEO. Each BL president visits the Board 1-2 times a year on the progress of Climate program targets from the BL perspective.

[6]Business line strategy and operations.

[7]Valmet Climate program steering team includes two Executive Team members (SVP of Marketing, Communications, Sustainability and Corporate Relations (the Chair) and Area President of South America), in addition to the Head of Sustainability, the Vice Presidents of HSE, R&D and Procurement, and other key persons.

[8]The Climate program steering team meets quarterly and has the ownership of the climate program, following its targets' progress and providing status updates from program part owners and guidance on governance and content. The progress of Valmet's climate program reported to the CEO quarterly and Board annually.

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

Valmet has a strategic approach to climate change and therefore climate related issues are assessed and monitored widely by the organization executive management. Valmet is organized around four business lines and five geographical areas in addition to four corporate level functions (Finance, Marketing and Communication, Operational Development and Human resources). Climate-related issues are discussed in ET as there is a connection to Valmet's strategy and thus all Valmet's operations.

The highest management level of responsibility of climate change lies on several C-suite officers, who are all members of Valmet ET. ET reports to CEO and who oversees the day-to-day operative management of Valmet and its businesses.

On a corporate level the highest management-level of responsibility of climate related issues is on Senior Vice President, Marketing, Communications, Sustainability and Corporate Relations (hereafter SVP, Sustainability) and Senior Vice President, Human Resources & Operational Development (hereafter SVP, HR&OD).

The SVP Sustainability is responsible for overall sustainability issues and corporate relations, including the assessment and monitoring of climate-related issues. Sustainability and Corporate Relations are closely linked to our strategy and Must Wins. In addition to Valmet's strategy, climate related issues are included in Valmet's Sustainability Agenda via Valmet's Climate program. The SVP MarCom is the Chair of Climate program steering team and she briefs CEO quarterly about the progress. The Corporate Relations agenda is adjusted on a rolling basis to reflect the policy and legislative work program of different regions where Valmet operates, currently climate related matters have been heavily on the agenda due to tightening regulation and increasing global discussion. The progress of Valmet's Sustainability Agenda and related Climate Program, and Corporate Relations agenda are monitored continuously by CEO and reported to the Board of Directors of Valmet 1-2 times a year.

The SVP, HR&OD, is responsible for Valmet's operational development, such as HSE, R&D and procurement coordination and business intelligence. Operational development is the key function in achieving the targets set in Valmet's Climate program for the whole value chain (supply chain (procurement), own operations (HSE) and use phase (R&D). Therefore, assessment and monitoring of climate-related issues is an integral part of SVP, HR&OD's responsibility. Valmet implements its climate program through site-specific energy efficiency measures, renewable energy, sustainable procurement activities and transportation modes, and energy and environmentally efficient R&D work aiming to enable carbon neutral production

for our customers. The SVP HR&OD reports to CEO quarterly and the Board 1-2 times a year.

All five business line (BL) presidents are also in a key position from the strategy and operational perspective, as they are responsible of Valmet's Climate program implementation in their functions, including how climate change as a business driver is being reflected in their BL product and service portfolios. Thus, they all are responsible for both assessing and managing climate-related issues in their respective businesses and functions. Each BL president reports to the CEO and visits the Board 1-2 times a year.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	Valmet's Climate program progress related targets are link to Executive Team's long-term performance plan.

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Other C-Suite Officer	Monetary reward	Emissions reduction target Supply chain engagement Other (please specify) Technology development plan to enable carbon neutral production for customers	Valmet´s Executive Team's long term performance plan is based on company´s financial result and climate program progress. For Senior Vice President, Marketing, Communications, Sustainability and Corporate Relations, the targets will be monitored annually, and the incentive is monetary. The incentive includes the progress of Valmet's Climate Program, which include CO2 reduction, sustainable supply chain

			engagement and technology development targets.
Chief Executive Officer (CEO)	Monetary reward	Emissions reduction target Supply chain engagement Other (please specify) Technology development plan to enable carbon neutral production for customers	Valmet´s Executive Team's long term performance plan is based on company´s financial result and climate program progress. For CEO the targets will be monitored annually, and the incentive is monetary. The incentive includes the progress of Valmet's Climate Program, which include CO2 reduction, sustainable supply chain engagement and technology development targets.
Procurement manager	Monetary reward	Supply chain engagement	Valmet´s bonus system is based on company´s financial result and on team/individual bonus targets. For Vice President of Procurement the targets will be monitored annually, and the incentive is monetary. The incentive includes Valmet's Climate program related supply chain engagement target and other sustainable supply chain actions.
Environment/Sustainability manager	Monetary reward	Emissions reduction project Supply chain engagement	Valmet´s bonus system is based on company´s financial result and on team/individual bonus targets. For Head of Sustainability the targets will be monitored annually, and the incentive is monetary. The incentive includes Valmet's Climate program related projects, such as supply chain engagement target and other direct and indirect CO2 emission reduction actions.

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	0	1	Valmet has an annual strategy process, where, among others, Valmet's strategy, Must-Wins and financial targets are reviewed.
Medium-term	1	3	Valmet's strategy planning process has a three-year time frame.
Long-term	3	10	Processes with a long-term view are assessed with a case specific time horizon. In these processes, Valmet reviews the market and regulation development and Valmet as a company with a long-term perspective. Examples of these are long-term market outlook, megatrend outlook, Valmet 2030 strategic outlook, EU Reference Scenario and Climate scenario analysis 2030.

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

Valmet defines substantive financial impact in risk assessment (incl. identifying and assessing climate-related risk) to be the high and extreme risk levels, which impact to EBITA is 10-20% or more than 20% to the calculatory EBITA value. Risk levels are assessed by taking into consideration the probability of the risks and their estimated impact on EBITA and financial results. Valmet's risk assessment categorizes risks into five risk levels based on the probability and impact of the risk. In Valmet's risk assessment process, risks with EBITA impact of over 40 million EUR and ones which may have major reputational impact are considered as strategic/substantial.

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

Direct operations
Upstream
Downstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

More than once a year

Time horizon(s) covered

Short-term
Medium-term
Long-term

Description of process

Valmet has a systematic method to identify, assess and manage climate related risks at all the stages of the value chain on a Group level and also within each reporting segment on a regular basis in short, medium and long-term.

Climate-related risks related to direct operations, as well as the up/downstream are identified, assessed and responded with the same risk assessment process as other types of risks in the Group Valmet risk mgmt. Risks management covers strategic, financial, operational and hazard risks, which includes physical and transitional climate-related risks. The assessed risks are based on the risk map document, where the company risks are listed on the headline level and covers all operations.

Valmet's risk process aspires to minimize the adverse impacts of strategic, financial and operational risks and to remove or mitigate hazard risks. The line management of Valmet's businesses is operatively accountable for managing risks as part of its daily activities. Climate risks can have an impact to the full corporation, e.g. reputational and business risks are carefully assessed throughout the Group and also in location level (e.g. physical risks). Climate related risk assessment and monitoring is continuous (assessment is done more than once a year) and includes risk recognition, probability, impact and risk level assessment, and defined actions, responsibilities, timelines and decisions to treat the residual risk and identifying and capitalizing opportunities. The results are annually reported to Group Risk Mgmt team, Board and Audit Committee and to Valmet Executive Team.

Risk assessment process is based on Valmet Risk Management Policy and ISO 31000 standard. Valmet's business lines and selected group functions participate in 15 risk assessment workshops annually. Valmet's risk appetite is defined in the annual Risk Assessment process in which threats and opportunities are evaluated against Valmet's targets and objectives. In assessing risks, Valmet takes into consideration the probability of the risks and their estimated impact on EBITA and financial results. Valmet's estimated EBITA for current year are included in the risk assessment on an asset level (i.e. production sites). Assessing risks on a production site is the

responsibility of local management. The significance of the risk and the need for measures are evaluated.

Valmet´s risk management concerning climate change risks and opportunities are followed, assessed and managed on Group-level by Risk Management, Corporate Relations (CR), Health, Safety and Environment (HSE) and Business Intelligence (BI) functions. Reports are consolidated on company level. To determine which risks and opportunities could have a substantive financial or strategic impact, each business line annually assesses the probability and impact of climate related risks and defines the need and priority of actions to response, remove, mitigate, minimize or retain them and to utilize the opportunities by using Valmet's risk map.

Valmet uses Flexible Risk Mgmt Evaluation (FRiME) concept to evaluate the level and implementation of risk management practices in its locations. Annually 5 FRIME evaluations are committed in Valmet's key location's covering about 80% of Valmet's net sales within 5-year evaluation cycle. The evaluation of risk mgmt is always based on locations risk assessment and business interruption assessment (BIA) and is conducted by Valmet's insurance broker.

Physical risks, such as extreme weather events, are included in Valmet's risk assessment process as hazard risks. The impact of possible physical risk is systematically evaluated in direct operations and value chain. E.g. a probable impact to Valmet's direct operations would be disruption in production due to extreme weather events, resulting in possible production shutdown and delays in project delivery with almost immediate EBITA impact (estimated 100,000 EUR per day of shutdown). For Valmet, the climate-related physical risks lie in China, Asia-Pasific and North America, where flooding (Risk 2), tornadoes and hurricanes pose a risk to our direct operations, but also in our upstream value chain. These risks are monitored continuously in all of Valmet's 53 production sites (of which 7 have high risk status) and and precautions are taken in case of extreme events. Physical risks are managed on corporate level by actively and continuously following precipitation amounts and also by implementing new ways to protect production processes from water damages. E.g. in India, Valmet has duplicated IT servers to ensure business continuum during disruptions and also the site facilities have been modified to ensure that flooding does not harm the servers. Valmet has a contingency plan and crisis management system in place for sites on extreme weather areas.

We identify, assess and respond to climate related transitional risks continuously on EU-level and globally. Valmet mitigates and controls these regulatory risks by being active in policy advocacy work to secure informed and proactive decision-making internally and externally. Transitional risks' quantification & impact are analysed by CR, BI and business functions jointly on a continuous, rolling basis. Information about these is fed into our internal discussion systematically and reported to the Valmet ET, and these are taken into consideration in our policy advocacy work and when making strategic or business decisions throughout the year.

In 2021, Valmet continued advocacy work and monitoring of the discussion and

decisions related to EU's Carbon Border Adjustment Mechanism (CBAM) and EU ETS (Risk 1). The proposed mechanism would increase Valmet's main raw material prices and i.e. increase Valmet's operational costs in the EU significantly in the medium and long term. To be able to prioritize this risk, Valmet has assessed the long term financial impact to support the strategic decision making as described above. The financial impact of this risk has been estimated to be at least 2.25-4.5 MEUR, but actual level is highly uncertain and dependent on the carbon prices.

Valmet also continued to monitor the Renewable Energy Directive (REDIII) and the renewable energy discussion related to biomass (Risk 3). Regulation that limits our customers' access to biomass and possibilities for new investments in the EU will have a significant financial and strategic impact on Valmet. Estimated financial impact is around 500MEUR annually.

Valmet has identified transitional opportunities to increase revenue with its existing CO2 reduction and energy efficiency offering and by developing new solutions to enable carbon neutral production to our customers with ambitious climate targets (Opp1). Valmet believes that technology plays a key role in mitigating climate change. Valmet has estimated financial impact to be around 50-100 MEUR annually.

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Valmet has a continuous risk management process. Policy, regulatory and cultural development risks are included into Valmet's risk assessment process as strategic risks. This includes climate-related regulation. We continually monitor, review, and assess current regulation as part of Valmet's risk management to mitigate and manage potential impacts on our business. An example of the current regulatory risk is the revised EU's Renewable Energy Directive (REDII), which defines sustainability criteria for the use of biomass. Also an amendment on the EU's Energy Efficiency Directive (EED), where the European Commission proposes changing the sustainability criteria through the EED, and if accepted, the proposal would ban biomass and waste co-combustion in new power plants, only natural gas could be used as a secondary fuel. Waste as a secondary fuel is needed due to the restricted availability and price of biomass, or the threshold to invest in bioenergy increases considerably. E.g., the Nordic countries have a long tradition of using sorted waste as secondary fuel, and it should also be allowed in the

		future. As Valmet is supplying technology for the pulp and paper industry, as well as the energy sector, who are using biomass to replace coal and other fossil fuels, this will have significant impact on Valmet's energy business. Both the REDII's strict sustainability criteria for biomass and the possible ban of waste as a secondary fuel, will decrease Valmet's revenue as biomass boiler demand will be reduced and most certainly stop the whole market, as our customers won't no longer make biomass related energy investments in Europe. Due to the significance of the regulation to our energy technologies, we closely monitor, participate to the discussion and assess risks associated with it.
Emerging regulation	Relevant, always included	Valmet has a continuous risk management process. Political, regulatory and cultural development risks are included into Valmet's risk assessment process as strategic risks. This includes climate-related regulation. We continually monitor, review, and assess proposed and incoming regulatory change as part of Valmet's risk management to mitigate and manage potential impacts on our business. Valmet has a systematic, global approach to manage political and legislative risks related to Valmet’s operations. We monitor these on EU-level and globally continuously. Their quantification and impact are analyzed together with our Corporate Relations, Business Intelligence and business functions jointly. Information about these is fed into our internal discussion systematically, and these are taken into consideration in our policy advocacy work and when making strategic or business decisions. Initiatives related to climate are included in these. In 2021 we monitored, reviewed, and assessed carbon price mechanisms globally, including EU's Carbon Border Adjustment Mechanism (CBAM). Carbon pricing related regulation will most likely have a big impact on Valmet from upstream and direct operation perspective and increase cost of energy and raw materials, such as steel and thus increase Valmet operational costs in medium and especially long-term. As the proposal is in progress, there is still uncertainties related to the regulation but the outlines are known. Valmet continues to monitor, actively be involved in the discussion and assess its financial impact also in 2022. In 2021, Valmet mitigated and controlled the risk by being active in the policy advocacy work in order to secure informed and proactive decision-making internally and externally.

Technology	Relevant, always included	Valmet has a continuous risk management process. Technology risks are included into Valmet's risk assessment process as strategic risks as Valmet promotes energy efficient technology through its strategic Research and Development work. Valmet assesses that around 95% of the environmental impacts of Valmet's entire value chain take place when Valmet's solutions are being used for production at the customer sites, and therefore by adapting its technology, Valmet has a significant positive environmental impact with its products. As an example, to realize technological opportunities Valmet has mapped process technologies, automation solutions and services that have the biggest CO2 reduction and environmental efficiency impact in customers processes and in 2022 introduced full scope climate offering for the Board & Paper, Tissue and Pulp producers, Automation and Services. Valmet monitors the orders received and revenue of the climate offering. Valmet is also heavily investing to R&D of new technologies to be able to enable our customer carbon neutral production. For example, future digitalization and climate-related requirements will influence the market expectations and can lead to completely new or alternative technology solutions and processes. Inability to meet these requirements threatens business continuity in the long term. Also emerging technologies and the transition to a low carbon economy will change business models, customer demand and might weaken our competitive position if non-optimal choices in R&D are maid in the development of our product and services offering and unsuccessful investments are made in terms of new technologies.
Legal	Relevant, always included	Valmet has a continuous risk management process. Legal risks are included into Valmet's risk assessment process as operational risks. Potential climate-related legal risks are identified in multi-disciplinary company-wide approach including the review and evaluation by Legal, Internal audit and Risk management functions. Legal risks are managed by conducting internal and external audits and by regularly tracking compliance requirements and our environmental performance. We consider the probability of climate-related litigation claims small. Climate-related litigation risk is relevant and always included, but due to careful and proactive preventive practices these claims are currently extremely rare or non-existent. An example of a climate-related legal risk would be linked to environmental performance in our operations and local legislation, e.g. exceeding emissions limits to air in our production site.

		Valmet has identified the climate related legal risks and manages it also in its sales contracts and global management systems. Valmet has also compliance processes in place in the supply chain and our own operations and there is zero tolerance for any breaches of local and global regulations. Valmet emphasizes compliance training throughout the supply chain and the code of conduct is mandatory for all suppliers as well as internal parties.
Market	Relevant, always included	Valmet has a continuous risk management process. Market risks are included into Valmet's risk assessment process as strategic risks. This includes market risks related to climate-matters. Changes in the market environment due to climate change, including shift in the customer demand and customer behavior can pose risks to Valmet. As an example; with the global need to reduce GHG emissions and increasing use of biomass for products and energy, there is also an increasing public debate on the role of forests and sustainable use of forest biomass. The risk would realize in case if the increasing public debate would have an impact on the use and preferences of biomass in the market. It would imply adjustments in Valmet's product offering, as well as to changing demand on our products and services. Uncertainties related to market environment is creating a threat to Valmet.
Reputation	Relevant, always included	Valmet has a continuous risk management process. Business environment risks and market risks are included into Valmet's risk assessment process as strategic risks. This includes reputational risks related to climate-matters. Reputation and brand value are highly valued at Valmet. Poor performance or perception by stakeholders on climate-related issues is therefore identified to have potential adverse impact on Valmet´s overall brand image globally and also have an effect to negative development of net sales. As an example of reputational risk; there is an increasing public debate on the role of forests and sustainable use of forest biomass. The stigmatization of biomass and a negative perception of companies could adversely affect Valmet's own or our customers' reputation and social acceptance. Negative reputation (our own or the industry's) can adversely impact investors and have financial impact. To minimize reputational risk Valmet has active dialogue with decision makers and other stakeholders. Also Valmet may have to assess its R&D strategy and to imply adjustments in its technology offering and possibly customer industries it serves in the long term.

Acute physical	Relevant, always included	Valmet has a continuous risk management process. Natural event risks are included into Valmet's risk assessment process as hazard risks. This includes acute physical risks related to climate-matters. Climate change increases the amount and severity of weather extremes globally. Altogether climate-related acute weather events pose a risk to all of Valmet's production site globally. Heavy storms, ice and snowfalls have had and continue to have a direct effect for Valmet´s production sites in Finland, Sweden and USA (totaling approx. 60% Valmet's production capacity) and increases the demands for e.g. maintenance and the need for heating of hall space and machines and systems. For Valmet these could result increased costs in maintenance and energy costs. Climate change can also lead to increase of other types of weather extremes, such as tornadoes and floods, which can have a direct impact to Valmet's own production sites in India, China, Indonesia and North America, e.g. by leading to production shutdowns and having financial impact. Risks related to Valmet's own operations are well assessed and managed, e.g. Valmet assesses water related risks related to own operations with Water Risk Filter –tool annually. The risk assessment is based on a geographic location (basin-related risks) and impact/performance (company/commodity-specific risk). In addition, Valmet's insurance company is supporting the work by evaluating flooding risk of our sites annually as a part of their own processes. Supply chain poses a risk to Valmet, and we have assessed key suppliers' sites, which are located in areas, where the flooding risk has increased.
Chronic physical	Relevant, always included	Valmet has a continuous risk management process. Natural events risks are included into Valmet's risk assessment process as hazard risks. This includes chronic physical risks related to climate-matters. Longer-term shifts in climate patterns that may cause sea level rise would pose a risk to Valmet's operations in China, India, Thailand and Indonesia, affecting Valmet's facilities and production in these areas. Approximately 10 % of Valmet's sites located close to water systems in risk of chronic physical climate. In 2021 Valmet analysed financial impact of operational delays due to sea level rise and flooding in these selected areas with two different climate scenarios (+1,5 and +4 degree), and in latter scenario the likelyhood poses a risk to Valmet and increase the operating costs and decrease revenue due to operational delays. Climate-related physical risks in Valmet's value chain: Reduced

		accessibility to water will negatively impact customers' operations. Also, Access to raw materials can be hindered by chronic changes in the environment. For some customers, this can mean reduced business and therefore decreased sales for us. Operational delays may also appear in Valmet's supply chain.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Upstream

Risk type & Primary climate-related risk driver

Emerging regulation

Carbon pricing mechanisms

Primary potential financial impact

Increased indirect (operating) costs

Company-specific description

Valmet has identified risks related to carbon pricing mechanisms and revisions in the scope of emission trading schemes, e.g. EU Emissions Trading System (ETS) and Carbon Border Adjustment Mechanism (CBAM). In the proposal EU businesses would pay a CBAM charge for imports of certain carbon intensive goods (incl. iron and steel), equal to the price they would have to pay if the goods had been produced under the EU ETS rules. In the EU ETS, free allowance allocation have been used to safeguard the competitiveness of the regulated industries and to avoid carbon leakage, but free allocation of ETS allowances will no longer be available to industry sectors that is also covered by CBAM, such as steel, in the future (according to the Commission's proposal, free allowances would be phased out during 2026-2035).

Valmet's own operations are not under any ETS currently, but from the supply chain (upstream) and raw material perspective these changes in the regulation will pose a risk to Valmet, as Valmet's technologies are mainly manufactured from steel. Valmet has large production sites in Europe, where the steel related purchases are around 45 MEUR annually (representing almost half of Valmet's total raw material spend globally,

which is around 100 MEUR). Increasing carbon prices will most certainly have significant financial impact to Valmet's operating costs in medium and long term in the EU.

Time horizon

Medium-term

Likelihood

Virtually certain

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

2,250,000

Potential financial impact figure – maximum (currency)

4,500,000

Explanation of financial impact figure

Cost increase of the raw material prices is visible already in Europe and continues to arise when CBAM will be taken into full use in 2026. The CBAM charge will be based on the EU ETS allowance price, which has quadrupled since 2019: from 25EUR/tCO2 to almost 100EUR/tCO2 in 2022. Depending on the climate scenario, the EU ETS carbon price can vary from 34 EUR to 340 EUR per ton of CO2 in 2030 with low end representing the +4 degree scenario carbon price and high end representing the +1.5 degree scenario.

In 2021 Valmet assessed the financial implications of CBAM. According to external impact assessments estimate an increase of 5-10 % in costs of iron, steel and aluminium, but the actual level is highly uncertain and dependent on the cost of an EU emission allowance. In 2021 Valmet steel related purchase spend was around 45 MEUR in Europe, with 5-10% cost increase, the potential financial impact on Valmet's operational costs would be 2.25-4.5 MEUR.

Also if the price of steel rises to a level that our customers are not ready to pay, Valmet's production will move outside the EU. The cost of this would be significantly higher than shown in the column.

Cost of response to risk

30,000

Description of response and explanation of cost calculation

Valmet's target is to reduce CO_2 emissions in our supply chain by 20% by 2030, e.g., by increasing the share of recycled steel in our products (from 65% to 80%), decreasing the weight of our products by introducing alternative materials. This is also part of Valmet's strategy to mitigate the risk of increased carbon pricing on raw materials, such as steel. We have not evaluated the financial impact of these risk response actions fully, thus we are using following to evaluate the costs of response to the risk:

-- In 2021 Valmet assessed the financial implications of climate-related transitional risks, including carbon pricing mechanisms in its supply chain, with two different climate scenario (+4 and +1.5 degree scenario) in 2030. The cost allocated: around 25,000 EUR.

-- Valmet is constantly monitoring and participating in the discussion on the emerging regulation and policies. In 2021,Valmet mitigated and controlled the CBAM risk by being active in the policy advocacy work in order to address the risk, influence the policy and secure informed decision-making internally and externally. Cost of response to risk consists Valmet's Corporate Relations functions work time allocated to this topic. Valmet has estimated that in 2021 around 5% could be the share for EU CBAM related advocacy work.. The cost of response to risk is appr. 3,000EUR (=0,05FTE), calculated with Valmet average employee compensation 59,182EUR (=FTE) in 2021.

Rounding up the total cost of response to 30,000 EUR.

In 2021 Valmet's Corporate Relation function was heavily involved in the discussion on the CBAM. CBAM's adoption by the co-legislators is expected during 2022/23. Valmet will participate the discussion on the scrutiny of the proposal and the internal evaluation will continue until the legislative process is finalized. As the and the evaluation is in progress, it is too early to draw any reliable conclusions or outcomes of the work but with the current proposal the outcome would be that EU manufactured products would have a cost disadvantage in global markets, which would have significant strategic and financial impact on Valmet. There is still large number of uncertainties related to the regulation thus Valmet continues to monitor and assess the impacts in 2022.

Comment

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Acute physical

Flood (coastal, fluvial, pluvial, groundwater)

Primary potential financial impact

Decreased revenues due to reduced production capacity

Company-specific description

Climate change will increase the amount of weather extremes globally. Flooding poses a risk for Valmet's direct operations, but also in its upstream value chain. Especially floods may impact directly to Valmet´s production sites in India (Paper business line), Indonesia (Service business line), United States (Paper & Service business line) and China (Paper business line) and possibly causing production delays and shutdowns. Paper and Services business lines' production are the most at risk as around 20% and 25% of their annual production (in terms of net sales) respectively are located in high water risk areas.

Time horizon

Long-term

Likelihood

Very likely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

100,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The end products and capacities of Valmet's production sites vary, therefore the potential financial impact can also vary. Valmet estimates the daily loss of profit of a one day production shut down in one average production site to be around 100,000 EUR. Assessment is calculated based on average cross margins of Valmet's production sites. The lost production time due to production disrupt can often be compensated with extra resources, if the production shut down is temporary and short term. For longer shutdowns the production can be substituted in other locations.

Cost of response to risk

70,000

Description of response and explanation of cost calculation

Climate change will increase the amount of weather extremes globally, especially floods may impact directly to Valmet´s production sites in India, Indonesia, United States and China and possibly cause production delays and shutdowns. Physical risks are assessed and managed on location and corporate-level actively and continuously, and

action plans are in place for following precipitation amounts, conducting annual water risk assessments, evaluations of our locations and also by implementing new ways to protect production processes from water damages. E.g., Valmet implements certain actions in beforehand and monitors the changes, such as Valmet´s maintenance and service personnel prepares and optimizes the available equipment for difficult weather conditions beforehand. The risk is also mitigated by spreading production, all Valmet's business lines have production in many different locations and countries, which helps to reduce the risk by offering back up if needed.

Lead by Valmet's corporate risk management, Valmet uses Flexible Risk Management Evaluation (FRiME) to evaluate the level and implementation of risk management practices in its locations. Annually 5 FRIME audits are conducted in Valmet’s key locations, such as the main production sites. Business continuity plans are done, incl. location specific plans to mitigate risks of extreme weather events, when relevant. The cost of 5 annual audits: appr. 30,000EUR (=0,5FTE), calculated with Valmet average employee compensation 59,182EUR (=FTE) in 2021.

Valmet also have a global flood related property damage and business interruption insurance up to 30MEUR in general and up to 20MEUR in Indonesia and as a part of it our insurance company conducts risk engineering audits to our main production units (~10 per year). These audits include climate related physical risks among other topics, such as fire safety. Based on the possible audit findings, locations will receive recommendations for improvement, which are followed quarterly and expected to be implemented within a year as they are linked to the annual insurance costs.The cost of external audits is appr. 40,000EUR, totaling the cost of response to the risk: 70,000EUR annually. As an example of implemented actions based on the recommendations to improve the production resilience: in India,Valmet has duplicated IT servers to ensure business continuum and also the facilities has been modified to ensure that flooding does not harm the servers.

Comment

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Current regulation

Mandates on and regulation of existing products and services

Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Company-specific description

The European Green Deal is a set of policy initiatives aiming to make Europe climate neutral by 2050, including new climate-related policies and legislation as well as revisiting the existing ones. The EU is currently working on revisions of its climate, energy and transport-related legislation under the so-called “Fit for 55 package” in order to align existing laws with its 2030 and 2050 climate ambitions. This larger initiative triggered a review of the EU’s Renewable Energy Directive (RED), and with it an assessment of the sustainability criteria for the use of biomass.

In 2022 EU Parliament’s Environment Committee has recommended to scale back of burning forest biomass to produce energy. The key recommendation urges that primary woody biomass to produce energy and heat no longer receive government subsidies under the EU’s revised Renewable Energy Directive (RED) and no longer to be counted toward EU member states’ renewable energy targets. Currently, biomass accounts for 60% of the EU’s renewable energy portfolio.

Also the European Commission proposes changing the sustainability criteria through EU's Energy Efficiency Directive (EED), which would ban biomass and waste co-combustion in new power plants. If waste cannot be used as a secondary fuel, the threshold to invest in bioenergy increases considerably, as it is needed due to the availability and price of biomass. E.g., the Nordics sorted waste have a long tradition as a secondary fuel.

As Valmet is supplying technology for the pulp and paper industry, as well as the energy sector, who are using biomass to replace coal and other fossil fuels, this will have significant impact on Valmet's energy business. Both the REDII's strict sustainability criteria for biomass and the possible ban of waste as a secondary fuel, will decrease Valmet's revenue as biomass boiler demand will be reduced and most certainly stop the whole market, as our customers won't no longer make biomass related energy investments in Europe. E.g., the EU's share of Valmet's biomass related energy business revenue has been around 60% for the past years (2019-2021), representing around 10% of Valmet's total net sales).

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

300,000,000

Potential financial impact figure – maximum (currency)

500,000,000

Explanation of financial impact figure

If waste cannot be used as a secondary fuel in energy production, the threshold to invest in bioenergy increases considerably, as waste is needed due to the limited availability and price of sustainable biomass. This will impact on Valmet's biomass power technologies orders and in the worst case scenario stop the whole market in Europe and affect Valmet's total net sales. The financial range, 300 MEUR to 500 MEUR, is calculated based on historic biomass power technologies' net sales minimum and maximum figures from 2019-2021 (the EU's share of Valmet's biomass related energy business net sales has been around 60% for the past years (2019-2021), representing around 20-30% of Valmet's net sales in EMEA and around 10% of Valmet's total net sales). Due to the nature of Valmet's capital projects, the related net sales have big annual fluctuations and therefore range is used.

Cost of response to risk

9,600,000

Description of response and explanation of cost calculation

If waste cannot be used as a secondary fuel in energy production, the threshold to invest in bioenergy increases considerably and it will have an impact on Valmet. Valmet's biomass boiler demand will be reduced and most certainly stop the whole market, as our customers won't no longer make biomass related energy investments in Europe. Valmet is constantly monitoring and participating in the discussion and has identified the risk in 2018, when the sustainable biomass use discussion started. Since then, Valmet has assessed, mitigated and controlled the risk by being active in the policy advocacy work to address the risk and secure informed decision-making internally and externally. Valmet sees that sustainably produced bioenergy plays a significant role in climate change mitigation, in improving the security of supply of energy, and it needs to play an important role also in the future renewable energy mix.

Based on the assessment Valmet has decided to mitigate the financial impact by researching and developing new energy technologies. Valmet has invested to R&D to create growth by developing new competitive, decarbonizing and flexible solutions with low emissions for energy segment customers. In 2021 Valmet identified high potential growth opportunities together with its customers and other external stakeholders in its 'Technology vision 2030', such as carbon capture, storage and utilization, and green hydrogen. Target is to reach 1,000 MEUR orders received with the new business opportunities by 2030 (around 25% energy related). We have started detailed planning for the selected growth opportunities and applied also external financing for larger initiatives to leverage and speed up the development to be able to respond to customers' needs. E.g., In 2022 Business Finland granted 20 MEUR to Valmet’s project, Beyond Circularity, through the EU’s Recovery and Resilience Facility (RRF). Beyond circularity is a initiative, where international companies are invited to solve some of society's most pressing challenges, through increased RDI investments. Beyond Circularity improves Valmet’s readiness to support the green transition in Valmet’s customer industries and is based on 'Technology vision 2030' and Climate program.

Valmet plans to invest 40 MEUR into the project during the project period 2022-25.

In 2021 energy solutions share of Valmet's R&D spend was 9,6 MEUR (11% of Valmet's total spend), which is considered here as the cost of response to the risk.

Comment

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

Valmet believes that technology plays a key role in mitigating climate change and global warming in the transition to a carbon neutral economy. Already many of Valmet's customers have set ambitious climate targets to limit the global warming to 1.5 degree, and they are asking now concrete technologies and solutions. Valmet wants to be the enabler and support our customers in their climate work. Valmet sees this as a significant and likely opportunity to increase demand of our products and services in medium and long term.

Valmet is well positioned already to capture the opportunities of the market situation, as we have mapped the pulp and energy, board & paper and tissue technologies, automation solutions and services that have the biggest CO2 reduction and energy efficiency impact in customers processes, since the 95% of CO2 emissions rise from the

customers use of our technologies. Valmet has a full scope offering for CO2 emissions reduction and environmental efficiency and we have identified Valmet´s existing process technologies, process parts and individual products that enable significant CO2 emission reductions and increase energy efficiency during the use phase. E.g., In pulp making: lime-kilns are the last user of fossil fuels, and by changing it to biomass gasification or wood powder firing, customer can reduce around 100 kgCO2/ton of pulp. In tissue making the energy costs can cover over 30% of the total costs due to two high energy consuming processes: pressing and drying. With Valmet's Advantage ViscoNip press in best case scenario, customer can reduce up to 300 kWh or -56 kgCO2/ton of paper, and with additional heat recovery systems (AHR) to improve drying efficiency, customer can reduce up to 50% energy and140 kgCO2/ton of paper. Valmet monitors the market demand for these technologies by monitoring the share of orders received (OR) from new products and services.

This opportunity is relevant to Valmet's existing portfolio globally. Although Valmet has a strong background in this area with existing portfolio, investments in RDI are crucial in order to realize this opportunity as climate and environmental regulation continues to tighten, product requirements related to the use of energy and water, and materials are becoming increasingly complex. Valmet is developing new technologies to decarbonize the pulp and paper and energy industry. The possible increased demand is due to both new innovations and promoting existing.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

53,000,000

Potential financial impact figure – maximum (currency)

105,000,000

Explanation of financial impact figure

Valmet follows a KPI: Orders Received (OR) of new products and services. Valmet’s new products and services reduce CO2 emissions, water and raw material consumption and waste, while increasing energy efficiency. Valmet monitors the market demand for more environmentally efficient technologies by monitoring the share of orders received from new products and services. The KPI is a good indicator that shows Valmet's new,

energy and resource efficient products' and services' impact on the company's revenues.

In 2021, Valmet's OR from new products and services were 1,054 MEUR (22% of Valmet's total OR). Based on market analysis and projections Valmet has estimated that the potential financial impact could be around 5-10% increase: 5% increase would translate into 53 MEUR and 10% increase would translate into 105 MEUR.

Cost to realize opportunity

83,000,000

Strategy to realize opportunity and explanation of cost calculation

Climate targets and the ongoing energy transition are drivers for increased demand of energy and resource efficient products and services. Development and expansion of low emission products and services through R&D has the potential to increase revenue and create new business opportunities for Valmet. Environmental aspects are an integrated part of the R&D concept to reduce energy, raw material, chemicals and fresh water consumption; reduce emissions and carbon footprint; applying best available technologies; help comply with environmental laws and regulations. Valmet is answering to the increased demand through its R&D work. The role of R&D is to ensure an effective process and commercialization of new innovations, right project portfolio and a clear roadmap to secure Valmet's technological leadership also in the future. At the end of 2021 approximately 1,300 Valmet inventions were protected by patents. In addition, R&D is done with a network made up of customers, research facilities and universities. Valmet also runs R&D programs in partnership with our customers, to ensure their short-term competitiveness and long-term business development.

New products are also crucial for future growth. Valmet's R&D activities focus on our ability to respond to present and future challenges, such as global availability and cost of energy, water and raw materials. E.g., Valmet has successfully commercialized its techological low carbon innovations, such as OptiConcept M (OCM) board and paper machine with increasing energy, raw material and chemicals efficiency. Valmet has sold steadily OCMs for many years and by the end of 2021, Valmet had sold 38 (2020: 32) OCMs to customers around the world since 2014.

In 2021, Valmet R&D spend was 83 MEUR (calculated as cost to realize opportunity) to ensure new innovations, continuous development of low carbon, resource-efficient solutions for our customers. This spend consists of circa 60% personnel costs for 470 FTEs and 40% of external purchases for internal R&D activities; consulting, engineering services and also some costs related to tools, supplies, regular upkeep and maintenance.

Comment

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Markets

Primary climate-related opportunity driver

Access to new markets

Primary potential financial impact

Increased revenues through access to new and emerging markets

Company-specific description

The megatrend of globalizing economy is likely to be large driver for change in our customer industries for the next decades. In line with globalizing economy, consumer habits are changing due to climate change and rise in living standards, especially in emerging markets. Changing consumer habits mean new business opportunities for Valmet. The level of knowledge of climate change and environmental issues is already relatively high among our customer segments, that is motivating markets and customers to invest in environmetally efficient products with increased profitability in a long-term. When the level of knowledge of environmental and climate change issues rises in emerging markets, it creates yet a large opportunity for Valmet´s businesses.

Valmet is strengthening the local presence in all business lines and increasing the growth in emerging markets, particularly in Brazil, India and China (BIC). We aim to strengthen our position in all the selected growth markets by adapting our business practices and products to meet local needs, by increasing investments and by expanding the sales and services network to serve customers everywhere in the world. Valmet is in a good position to realize this opportunity due to its long history in emerging markets, e.g. Valmet has been in India since 1992. In 2021, around 60% of Valmet's production and around 40% of orders received came from BIC countries.

As an example of adapted technology is Valmet´s Opticoncept M (OCM), where modular processes and solutions, set within optimally fixed machine widths, allow the designing of individual papermaking lines for customers' varying needs and targets. OCM is especially good for emerging markets since the papermaking line is remarkably lower and shorter requiring-reduced need for piling-smaller building size-less land area is needed-shorter construction time-reduced building investment. This smart paper machine concept combines the advantages of standardization with modular tailoring.

With increased awareness of sustainable technologies Valmet is likely to increase its business, especially in the emerging markets in medium term. We expect that increasing environmental awareness and commodity prices further boost the demand for our CO2 reduction and enviromentally efficient product offering in emerging countries.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

80,000,000

Potential financial impact figure – maximum (currency)

160,000,000

Explanation of financial impact figure

Business success in the changed competitive environment requires added value from product development, design, know-how, brand and life-cycle services, and sustainable manufacturing. The global megatrends have likely affected Valmet´s increased business opportunities also in the high market growth countries. In 2021, BIC countries accounted around 40% of our net sales (3,935 MEUR). Based on market analysis and projections Valmet has estimated that the potential financial impact could be 5-10%, totaling around 80-160 MEUR range for financial impact (=(0,05x(0,4x3,935) and =(0,1x(0,4x3,935) MEUR).

Cost to realize opportunity

190,000,000

Strategy to realize opportunity and explanation of cost calculation

Valmet is managing the opportunity rising from changing consumer behavior by strengthening the local presence in all business lines and increasing the growth, particularly in Brazil, India and China (which represent around 40% of Valmet's net sales and more than 50% of Valmet's annual production volume). We have identified these countries as high market growth areas and we want to be close to our customers, why we aim to further strengthen our position in these selected growth markets by adapting our business practices and products to meet local needs, by increasing investments and by expanding the sales and services network to serve customers everywhere in the world. Relevant global megatrends have been identified and investments planned accordingly. Although the megatrends are largely global, their impact vary depending on region and market. These impacts are considered in our strategy, business model and approach in different markets.

To ensure the capacity to serve our local customers, we are investing in utilizing growth countries for global procurement and production without forgetting to bring new products and service concepts created in the growth countries to the developed markets:

-- Valmet has developed Industrial Internet services, Valmet Performance centers, providing our customers remote monitoring, optimization and on-demand expert support services especially in the emerging markets.
-- An example of adapted technology is Valmet´s OptiConcept M (OCM), which modular tailoring enables profitability in daily operations through energy, material and chemicals efficiency, efficiency in operations, better usability and easy maintenance and flexibility in grade changes. Since 2013, around 50% of OCMs have been ordered from China and Brazil since 2014.
--During last years Valmet has also developed new cost effective small and medium size machinery (SMM) for emerging markets. These products have been used in several board manufacturing lines and individual products have been sold. E.g. Valmet's SMM business unit's orders received has doubled since 2019 in BIC countries.

E.g. we have reinforced our presence and invested particularly in BIC countries, where we have 2,823 employees (~20% of total) in 2021. In 2021, Valmet's personnel expenses were 948 MEUR (2020: 891 MEUR), of which wages and salaries were 743 MEUR (2020: 713 MEUR). 20 % of personnel expenses (0,20x 948MEUR) would amount to 190 MEUR (cost to realize the opportunity).

Comment

C3. Business Strategy

C3.1

(C3.1) Does your organization’s strategy include a transition plan that aligns with a 1.5°C world?

Row 1

Transition plan

Yes, we have a transition plan which aligns with a 1.5°C world

Publicly available transition plan

Yes

Mechanism by which feedback is collected from shareholders on your transition plan

We have a different feedback mechanism in place

Description of feedback mechanism

Valmet engages shareholders, investors, and analysts in dialogue to ensure that the markets have correct and sufficient information, such as market outlook, financial development and strategy (incl. Climate program progress), for determining the value of Valmet shares and as a feedback mechanism.

During AGM Valmet's President and the CEO gives a review of Valmet's performance,

which includes also Climate program overview. Shareholders have the right to ask questions, request information and give feedback about the transition plan during the AGM, but it is not a voting topic.

The financial community's, including shareholders, interest in sustainability issues and responsible (ESG) investing continued to increase in 2021. In particular, there was increasing interest in sustainable finance, including EU taxonomy and TCFD recommendations related reporting. In 2021, we organized a record amount of meetings with our financial stakeholders by introducing our role and progress in the transition to a carbon neutral economy and continued to develop our ESG equity story. The dialogue includes financial statements, interim reviews, the company website, stock exchange releases, press releases, investor meetings, seminars, webcasts, results news conferences, site visits and general meetings.

Frequency of feedback collection

Annually

Attach any relevant documents which detail your transition plan (optional)

Valmet's Annual Review p. 56-57 for Valmet's Climate program and Valmet's GRI Supplement p. 14 for Stakeholder dialogue

valmet-gri-supplement-2021.pdf

valmet-annual-review-2021.pdf

C3.2

(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?

	Use of climate-related scenario analysis to inform strategy
Row 1	Yes, qualitative and quantitative

C3.2a

(C3.2a) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenario	Scenario analysis coverage	Temperature alignment of scenario	Parameters, assumptions, analytical choices
Physical climate scenarios RCP 2.6	Company-wide		Valmet analyzed how climate related exposures will affect Valmet's whole value chain with 1.5ºC scenario (strong mitigation, ability to meet the Paris Agreement, RCP2.6 scenario). Parameters with assumptions made: -global GDP growth as projected by OECD (2%) -Valmet's financial performance target (12-14% for Comparable EBITA) -Valmet's supply chain CO2 reduction target (-20%)

			-Valmet's estimated emissions (scope 1, 2, 3) in 2030 -Valmet's net sales 2021 of each business line -Valmet's long-term market growth estimates of each business line (estimated by taking projections from Valmet and realized historical annual growth into account, development on these assumptions is thus largely driven by the estimated growth projections and the historical realized growth) -Minimum and maximum carbon price in 2030 in 1.5C and 4C scenarios (The carbon tax is implemented at a certain moment in time, thus will not develop linearly from 2022 to 2030) -Estimated impact of a daily shutdown for a Valmet facility located in high flooding risk area (100,000 EUR) -Estimated Valmet steel volume in 2030 (based on raw material (steel) volume growth assumption of 2%) - Steel baseline price (490€/t) -Estimated Valmet share of low-emission steel / conventional steel in a 1.5 ºC scenario (70/30) and 4 ºC scenario (30/70) in 2030 -Raw material price increase assumed a full pass-on to Valmet (not yet considered another pass-on rate to clients) - During the analysis the following assumptions where made: In RCP2.6 scenario regulations will be more ambitious, globally consistent, and aiming for low-carbon economy Analytical choices: -Time horizon: 2030 - Data sources: KPMG databases, IPCC, IEA & NGFS (carbon prices), WWF Water Risk Filter, Trading Economics (steel baseline price), Valmet company data and literature sources. -Pathways, models and scenarios: SEI: Low-emission steel production: decarbonizing heavy industry, IPCC reports. IIASA's SSPs was used alongside the IPPC's RCPs to analyze the feedbacks between climate change and socioeconomic factors, such as the assumptions of world population growth, economic development and technological progress. Valmet's analysis using this scenario included both quantitative or qualitative assessment.
Physical climate	Company-wide		Valmet analyzed how climate related exposures will affect Valmet's whole value chain with 4ºC scenario

scenarios RCP 8.5			(business as usual, RCP8.5 scenario). Parameters with assumptions made: -global GDP growth as projected by OECD (2%) -Valmet's financial performance target (12-14% for Comparable EBITA) -Valmet's supply chain CO2 reduction target (-20%) -Valmet's estimated emissions (scope 1, 2, 3) in 2030 -Valmet's net sales 2021 of each business line -Valmet's long-term market growth estimates of each business line (estimated by taking projections from Valmet and realized historical annual growth into account, development on these assumptions is thus largely driven by the estimated growth projections and the historical realized growth) -Minimum and maximum carbon price in 2030 in 1.5C and 4C scenarios (The carbon tax is implemented at a certain moment in time, thus will not develop linearly from 2022 to 2030) -Estimated impact of a daily shutdown for a Valmet facility located in high flooding risk area (100,000 EUR) -Estimated Valmet steel volume in 2030 (based on raw material (steel) volume growth assumption of 2%) - Steel baseline price (490€/t) -Estimated Valmet share of low-emission steel / conventional steel in a 1.5 ºC scenario (70/30) and 4 ºC scenario (30/70) in 2030 -Raw material price increase assumed a full pass-on to Valmet (not yet considered another pass-on rate to clients). - During the analysis the following assumptions where made: In RCP8.5 scenario, transition to low-carbon economy is disorganized, as climate policies are fragmented, carbon markets are not integrated, and carbon leakage will increase due to large differences in carbon regulations between countries, and the physical assumptions dominate. Analytical choices: -Time horizon: 2030 - Data sources: KPMG databases, IPCC, IEA & NGFS (carbon prices), WWF Water Risk Filter, Trading Economics (steel baseline price), Valmet company data and literature sources. -Pathways, models and scenarios: SEI: Low-emission steel production: decarbonizing heavy industry, IPCC

			reports. IIASA's SSPs was used alongside the IPPC's RCPs to analyze the feedbacks between climate change and socioeconomic factors, such as the assumptions of world population growth, economic development and technological progress. Valmet's analysis using this scenario included both quantitative or qualitative assessment.
Transition scenarios IEA SDS	Company-wide		IEA Sustainable Development Scenario (SDS) scenario was used to evaluate (make assumptions) impact e.g., from policy/regulation, power market, fuel prices perspectives. The Sustainable Development Scenario (SDS) presents the most desirable scenario in terms of human and global safety whereby nations work together to successfully limit climate change, by transforming the energy market and addressing air pollution. Assumptions: -“well below 2°C” pathway, SDS represents a gateway to the outcomes targeted by the Paris Agreement. - SDS is based on a surge in clean energy policies and investment that puts the energy system on track for key SDGs. -All current net zero pledges are achieved in full and there are extensive efforts to realise near-term emissions reductions; advanced economies reach net zero emissions by 2050, China around 2060, and all other countries by 2070 at the latest. -Cross-cutting, Power sector and Industry sector policies Analytical choices: -Time horizon: 2030 -Data sources: IEA
Transition scenarios IRENA	Company-wide		International Renewable Energy Agency's (IRENA) Global Renewables Outlook: Energy transformation 2050 scenario was used to evaluate (make assumptions) impact e.g., from policy/regulation, power market, fuel prices perspectives. IRENA outlines the investments and technologies needed to decarbonise the energy system in line with the Paris Agreement. It also explores deeper decarbonisation options for the hardest sectors, aiming

			to eventually cut CO2 emissions to zero. Raising regional and country-level ambitions will be crucial to meet interlinked energy and climate objectives. Comprehensive policies could tackle energy and climate goals alongside socio-economic challenges, fostering the transformative decarbonisation of societies. The transition to renewables, efficiency and electrification can drive broad socio-economic development. Analytical choices: -Time horizon: 2030 -Data sources: IRENA

C3.2b

(C3.2b) Provide details of the focal questions your organization seeks to address by using climate-related scenario analysis, and summarize the results with respect to these questions.

Row 1

Focal questions

General focal questions:
-What are the potential most significant climate-related financial and strategic impact for Valmet throughout its value chain in 10 years?
-What possible future changes and developments need to be probed for own production, procurement and R&D strategy to minimize the identified risks and realize the opportunities?
-What variables are needed to support decision-making?

Own operations focal questions:
- What are the potential most significant climate-related transitional /physical risks and their financial impact in Valmet's own operations?
- What risks could challenge Valmet's locations over the next 10 years?
- What is the financial impact of operational delays due to sea level rise and flooding in selected areas?

Supply Chain focal questions:
-What are the potential most significant climate-related transitional / physical risks and their financial impact in Valmet's supply chain?
- What risks could challenge Valmet's supply chain over the next 10 years?
- What is the financial impact of weakened access / increased price of raw materials ?
- What is the financial impact of increased carbon price on operating costs?

Technology and services focal questions:
-What are the potential most significant climate-related transitional risks and their financial impact for Valmet's technologies and services?
-What risks could challenge Valmet's market position over the next 10 years?
-What is the financial impact of changing customer demand?
-What is the financial impact of changing investor preferences and requirements on cost of capital?

Valmet has analyzed the potential impact of climate change on its operations and business environment across the value chain, including the supply chain, own operations, and customers' use phase of Valmet´s technologies. The potential long-term impacts of climate change have been analyzed through two different physical scenarios: in the first scenario the global warming is limited to 1.5°C (IPCC's RCP2.6) and in the second scenario the global warming has reached 4°C (IPPC's RCP8.5). These scenarios have been chosen as they represent different climate states of the future. Valmet's long term strategy and risk assessment work extends to 2030, where the scenarios were set as well, to be able to analyze the potential business impacts when climate-related risks have most likely materialized, and to analyze outcomes from company strategy and risk management perspective.

Transition scenarios were considered for the whole value chain according to IEA SDS and IRENA scenarios to evaluate impact e.g., from policy/regulation, power market, fuel prices perspectives, when assuming the most desirable scenario to successfully limit climate change, by transforming the energy market and addressing air pollution (SDS), and that the investments and technologies needed to decarbonise the energy system are in line with the Paris Agreement and to eventually cut CO2 emissions to zero (IRENA).

Results of the climate-related scenario analysis with respect to the focal questions

Technology:
In both scenarios, in 10 years Valmet is seen to benefit from its energy and water efficient technologies and its position as one of the enablers of climate change mitigation. Demand for technologies enabling carbon neutral pulp, paper, and energy production together with alternative energy sources, such as biomass and CO2 free electricity, are likely to increase rapidly. There are also reputational opportunities to Valmet, if pulp and paper and bioenergy industries reach carbon neutrality enabled by Valmet's technologies.

In the 1.5°C scenario, the demand for sustainable and climate resilient solutions creates opportunities for Valmet (Opp1). The potential risks rise from the high demand for bio-based products, which increases competition for forest-based raw material. Availability of forest-based raw material for pulp and paper and energy industries might face limitations, impacting the growth potential for Valmet. Also if the cofiring of biomass is not considered to be sustainable demand for these solutions will decrease (Risk 3). There is also an increasing risk that forest utilization as raw material will be seen more negatively as protecting and extending forests to mitigate climate change is expected to

increase. This increases reputational risks also for Valmet as a technology provider.

In the 4°C scenario, the demand for energy and water efficient technologies will grow in advanced economies, whereas in developing markets the demand is not likely to change. Overall, Valmet's offering will provide limited competitive advantage. There is also a risk that customers are not willing to pay for such solutions, and that the expectations of customers between regions will increasingly differ.

Supply chain:
Carbon pricing is expected to significantly increase the price of Valmet's key raw materials, such as steel, which has the potential most significant climate-related financial and strategic impact for Valmet in 10 years (Risk 1).

Own operations:
Increased risk of floods and tornadoes impacting Valmet's own production and suppliers in certain high risk areas (Risk 2).

These results have influenced Valmet's strategy and financial planning, e.g., through implementation of Valmet's Climate Program and R&D 2030 Strategy. There are future changes and developments that need to be probed for own operations, procurement and R&D strategy to minimize the identified risks and realize the opportunities, e.g., Valmet is increasigly investing to energy efficiency of existing technologies and developing new ones to enable carbon neutral paper, pulp and energy production for our customers (Opp1).

C3.3

(C3.3) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	Valmet believes that technology plays a key role in mitigating climate change and global warming in the transition to a carbon neutral economy. Valmet sees transition to carbon neutral economy as an opportunity, as development of towards energy and resource efficient products are seen as a driver in short, medium- and long-term horizon. Demand for sustainable product and services has impacted Valmet's strategy and products and services portfolio and offering (opp1). For Valmet the most substantial strategic decision influenced by this climate-related opportunity, has been when decided

		to focus on the development and expansion of low carbon products and services through RDI and set target to monitor the progress annually. This strategic decision also informed by the climate-related scenario analysis. Due to this strategic decision, Valmet has developed a wide energy and environmetal efficient product portfolio that ensures future growth. In 2021 Valmet's our Board of Directors approved Climate Program and the ambitious carbon neutral and energy efficiency targets for the use phase of its technologies to further strength the strategy and to utilize this opportunity. Realization of this opportunity will increase in revenue through increased demand of Valmet's CO2 emission reduction and environmentally technologies, such as the OptiConcept M (OCM). OCM is an example of successful RDI, a concept for cost-efficient paper and board making. Maximum efficiency with minimum operating costs: OCM keeps costs down by increasing energy, raw material and chemicals efficiency. Valmet continue increasingly focus on developing products such as OCM. In the end of 2021, Valmet had sold 38 (2020:32) OCM paper machine lines. Valmet is heavily investing into developing new concepts and processes that reduces the environmental impact of the entire life-cycle of our products. Valmet continues to develop Life Cycle Assessment (LCA) as a tool to support the R&D work. We are using LCA to guide our product development towards more sustainable offering. Valmet follows a KPI: Orders Received (OR) of new products and services, for which there is a target (over 25%) in place (2021: 22%, 2020: 27%). The KPI shows Valmet's new, energy and resource efficient products' and services' impact on the company's revenues.
Supply chain and/or value chain	Evaluation in progress	Climate change mitigation has been integrated into Valmet's business strategy. Emerging climate-related regulation will most likely effect on our both upstream (Risk 1) and downstream (Risk 3) value chain, will also have substantial impact on our own production, procurement strategy and technology development in medium and the long term. Emerging regulation is continuously evaluated and if needed included in the strategy work.

		An example of emerging regulation in 2021 is EU's Carbon Border Adjustment Mechanism (CBAM), the revision of Renewable Energy Directive (REDII) and the amendment of EU's Energy Efficiency Directive (EED). These processes will influence the availability and price of steel, and the use of bioenergy in Europe in the short and medium-term, which will have significant strategic and financial impact on Valmet's production and procurement activities (Risk 1) and customers' investments on energy technologies (Risk 3) in Europe. The strategic impact evaluation is in progress as Valmet monitors the emerging regulation continuously until it is implemented. Both CBAM's and REDII's are in first reading and adoption is expected during 2022/23. Valmet will participate the discussion on the scrutiny of the proposals as needed and the internal evaluation will continue until the legislative process is finalized. In addition to the revision of RED, EU's new Forest strategy reopened the discussion concerning the use of forests as energy source, raw material and the forests' role as carbon sinks – and affects the way forests are used in the future. The availability of biomass in the market is key to the demand of Valmet's pulp, paper and energy technologies. Depending on the future approach how the forest use is seen and the overall availability of biomass, this could have a direct impact on the demand on Valmet's products and services, e.g. a EU level legislation that would limit our customers' access to biomass and possibilities for new investments in the region would have a negative financial impact on Valmet (in 2021 represented 41% of Valmet's net sales in EMEA).
Investment in R&D	Yes	Climate change mitigation has been integrated into Valmet's business strategy. Valmet sees transition to low carbon economy as an opportunity, where investments in the research and development of low carbon and environmentally efficient products (opp 1) are seen as a driver in medium and long term horizon. Valmet has identified the development and expansion of low emission goods and services to increase revenue through demand for lower emissions products and services. For Valmet the most substantial strategic decision, which have been influenced by the climate-related opportunities, is the investment in the development of new low carbon

		products or services through R&D and innovation (opp 1). High end product development work is at core of Valmet's strategy. Valmet's systematic work on Research and Development gives a significant input to realizing this opportunity. Valmet focuses even stronger on developing environmentally efficient products and services and new concepts and processes that reduces the environmental impact of the entire life-cycle of our products in the long term. Valmet's RDI focuses are: 1) Ensure advanced and competitive technologies and services; 2) Enhance raw material, water and energy efficiency and; 3) Promote renewable materials. In 2021 Valmet´s R&D spend was 83 MEUR (2% of net sales) from which purely on 27% was allocated to resource efficiency and renewable materials. In 2022 Business Finland granted 20 MEUR to Valmet's leading company project, Beyond Circularity, through the EU's Recovery and Resilience Facility (RRF). Beyond circularity is a part of the "Veturi initiative", where international companies are invited to solve some of society's most pressing challenges, through increased RDI investments. Beyond Circularity improves Valmet's readiness to support the green transition in customer industries and is based on Valmet's Technology vision 2030 and Climate program, promoting transformation of waste and emissions into valuable resources for sustainable growth. Valmet plans to invest 40 MEUR into the project during 2022-2025. A green transition ecosystem is built as a part of Valmet's internal R&D projects. Valmet continues to develop Life Cycle Assessment (LCA) as a tool to support the Research and Development work. We are using LCA to guide our product development towards more sustainable offering.
Operations	Yes	Climate change mitigation has been integrated into Valmet's business strategy. In 2021, Board's strategic decision was to reduce 80% of our own operations' CO2 emissions by 2030 as changes in the scope of emission trading scheme (i.e. EU ETS) would influence Valmet´s production. Valmet has identified uncertainty in carbon pricing mechanisms as a risk also for own operations in long term. For example, if Valmet´s operations were to be part of the emissions trading scheme, this would increase operating costs significantly. E.g. in 2021 the market price for carbon was 65 EUR per ton

		in EU ETS and the trend is on the rise. Around 40% of Valmet's production sites are located in Europe, amounting to 41 526 tCO2 (2020: 51 121 tCO2) in 2021. The financial value for Valmet's emissions within the EU is ca. 2.7 MEUR (65€/ton x 41 526 tons). According to climate scenarios, price for carbon can increase up to 340€ per CO2 ton by 2030. Valmet mitigates the financial risk by investing on energy efficiency improvements and rewable energy use in its locations.

C3.4

(C3.4) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Direct costs Capital expenditures Capital allocation Access to capital Assets	Identified climate related risks and opportunities have impacted on Valmet's financial planning widely. Revenue: For example, demand for lower emissions product and services (Opp1) have impacted revenues. As Valmet has a wide resource-efficient product portfolio that ensures cost-efficient and sustainable products and process solutions. This is an opportunity for Valmet to increase its revenues in medium- and long-term. Therefore, the risks and opportunities related to the market demand for resource efficient technologies and solutions are imperative for Valmet's business. Valmet´s high-end products are developed to decrease energy, water and raw materials use, reduce effluents and improve process efficiency. Valmet follows financial KPI Orders Received of new products and services and have set a target to monitor how much demand our customers have for energy and resource efficient solutions and its impact to the company's revenues. Valmet's target for the KPI is over 25% by the end of 2021. In 2021 Valmet's orders received from new products and services were 1,054 MEUR, which is 22 % of the total orders received. Valmet sees that demand for sustainable resource efficient products and solutions are most likely to increase, the magnitude of this impact is likely to increase in long term. Capital allocation: Valmet is investing development of low emission and new energy and resource efficient solutions products and services through Research and Development and innovation (Opp1) in medium- and long-term horizon. In 2021, Valmet's R&D costs were 83MEUR , all directed to low-carbon and resource efficiency. Direct Operating costs: Valmet has identified that change in the carbon

		pricing regulation could increase operating costs (Risk 1) in the medium and long term. For example, if steel and iron prices would increase due to carbon pricing within EU that would directly impact on operating costs. E.g., with 5-10% price increase would mean 2.25-4.5 MEUR financial impact. Capital expenditures: Valmet have made energy efficiency investments, e.g. bought solar panels and investment in more efficient production infrastructure, for many years with long time horizon perspective. In 2021, e.g. two locations increased energy efficiency by improving their heating and ventilation system and heat recovery, at one location there was a modernization of production equipment from a gas system to a system using electricity, six locations changed their lighting to energy-efficient LED luminaries and electric charging stations for vehicles were done in two locations. These investments totaled to 6.6 MEUR in 2021. Access to capital: Valmet's longer-term annual target level of "External R&D funding received / gross R&D spend" is set at >5%. External funding has a significant impact for these projects and therefore the magnitude on financial planning for particular projects is significant. Valmet has identified that by having an energy and resource efficient product offering may lead to enhanced access in capital in the long term. E.g., Valmet's Climate program and the development of low carbon products and services through Research and Development and Innovation (opp1) has impacted Valmet's access to capital through funding. In 2021, Valmet signed a EUR 300 million syndicated revolving credit facility with a margin linked to its climate targets. Valmet also got funding, which were allocated specifically towards Research and Development projects. In 2022, Business Finland granted 20 MEUR to Valmet's leading company project, Beyond Circularity, through the EU's Recovery and Resilience Facility (RRF). Beyond Circularity improves Valmet's readiness to support the green transition in Valmet's customer industries and is based on Valmet's Technology vision 2030 and Climate program, promoting transformation of waste and emissions into valuable resources for sustainable growth. Valmet plans to invest 40 MEUR into the project during the project period 2022 – 2025. A green transition ecosystem is built as a part of the project around Valmet's internal R&D projects. Assets: Extreme weather conditions (Risk 2) have impacted Valmet's financial planning process related to company assets. When acquiring

		new assets, climate-related physical risks, such as tornadoes and flooding risks are assessed. Additional potential impact to Valmet's financial planning process would be if Valmet would have to close or relocate its production facilities or service centers due to extreme weather conditions. The potential timescale of the impact is long-term, but the impact would be a high, as Valmet has 23 production sites in North America, Asia Pacific and China, which could potentially be impacted by these above-mentioned extreme weather conditions.

C3.5

(C3.5) In your organization's financial accounting, do you identify spending/revenue that is aligned with your organization's transition to a 1.5°C world?

Yes

C3.5a

(C3.5a) Quantify the percentage share of your spending/revenue that is aligned with your organization's transition to a 1.5°C world.

Financial Metric

Revenue

Percentage share of selected financial metric aligned with a 1.5°C world in the reporting year (%)

51

Percentage share of selected financial metric planned to align with a 1.5°C world in 2025 (%)

51

Percentage share of selected financial metric planned to align with a 1.5°C world in 2030 (%)

51

Describe the methodology used to identify spending/revenue that is aligned with a 1.5°C world

Revenue reported is derived from the net sales of low-carbon products or services as defined by the EU Taxonomy for environmentally sustainable economic activities.

Valmet has reviewed its offering against the Taxonomy activities to assess eligibility based on the eligible economic activities listed in Annexes I and II of the delegated regulation. The financially most material economic activities were identified for Valmet:

- 3.1 Manufacture of renewable energy technologies
- 3.6 Manufacture of other low carbon technologies
- 8.2 Data-driven solutions for GHG emissions reductions (Climate Change Mitigation)

Of Valmet's 2021 net sales, 51 percent was taxonomy eligible and thus aligned with a 1.5°C world. Valmet's economic activities can be seen as eligible under Climate Change Mitigation environmental objective.

Valmet follows the revenue that is aligned with a 1.5°C world. Due to weak visibility of EU's Taxonomy development of the environmental objectives and the uncertainties related to the future of biomass, Valmet has not planned any spesific targets for 2025 and 2030, and assumes that the revenue remains on the same level as now. Valmet actively monitors the regulation development and update once we get more information.

Financial Metric

OPEX

Percentage share of selected financial metric aligned with a 1.5°C world in the reporting year (%)

29

Percentage share of selected financial metric planned to align with a 1.5°C world in 2025 (%)

29

Percentage share of selected financial metric planned to align with a 1.5°C world in 2030 (%)

29

Describe the methodology used to identify spending/revenue that is aligned with a 1.5°C world

Numbers reported are derived from the low-carbon products or services as defined by the EU Taxonomy for environmentally sustainable economic activities.

Valmet has reviewed its offering against the Taxonomy activities to assess eligibility based on the eligible economic activities listed in Annexes I and II of the delegated regulation. The four financially most material economic activities were identified for Valmet:

- 3.1 Manufacture of renewable energy technologies
- 3.6 Manufacture of other low carbon technologies
- 8.2 Data-driven solutions for GHG emissions reductions (Climate Change Mitigation)
- 9.1 Close to market research, development and innovation (Climate Change Mitigation)

Of Valmet's 2021 OpEx, 29 percent was taxonomy eligible and thus aligned with a 1.5°C world. Valmet's economic activities can be seen as eligible under Climate Change Mitigation environmental objective.

Valmet follows the OpEx that is aligned with a 1.5°C world. Due to weak visibility of EU's

Taxonomy development of the environmental objectives and the uncertainties related to the future of biomass, Valmet has not planned any spesific targets for 2025 and 2030 and assumes that the OpEx remains on the same level as now. Valmet actively monitors the regulation development and update once we get more information.

Financial Metric

CAPEX

Percentage share of selected financial metric aligned with a 1.5°C world in the reporting year (%)

30

Percentage share of selected financial metric planned to align with a 1.5°C world in 2025 (%)

30

Percentage share of selected financial metric planned to align with a 1.5°C world in 2030 (%)

30

Describe the methodology used to identify spending/revenue that is aligned with a 1.5°C world

Numbers reported are derived from the low-carbon products or services as defined by the EU Taxonomy for environmentally sustainable economic activities.

Valmet has reviewed its offering against the Taxonomy activities to assess eligibility based on the eligible economic activities listed in Annexes I and II of the delegated regulation. The four financially most material economic activities were identified for Valmet:
• 3.1 Manufacture of renewable energy technologies
• 3.6 Manufacture of other low carbon technologies
• 8.2 Data-driven solutions for GHG emissions reductions (Climate Change Mitigation)
• 9.1 Close to market research, development and innovation (Climate Change Mitigation; equivalent to Activity 9.2 under Climate
Change Adaptation), for operating expenditure only.

Of Valmet's 2021 CapEx, 30 percent was taxonomy eligible and thus aligned with a 1.5°C world. Valmet's economic activities can be seen as eligible under Climate Change Mitigation environmental objective.

Valmet follows the CapEx that is aligned with a 1.5°C world. Due to weak visibility of EU's Taxonomy development of the environmental objectives and the uncertainties related to the future of biomass, Valmet has not planned any spesific targets for 2025 and 2030 and assumes that the CapEx remains on the same level as now. Valmet actively monitors the regulation development and update once we get more information.

Financial Metric

Other, please specify

R&D spend for carbon neutral production

Percentage share of selected financial metric aligned with a 1.5°C world in the reporting year (%)

100

Percentage share of selected financial metric planned to align with a 1.5°C world in 2025 (%)

100

Percentage share of selected financial metric planned to align with a 1.5°C world in 2030 (%)

100

Describe the methodology used to identify spending/revenue that is aligned with a 1.5°C world

Valmet's R&D is focusing on enhancing raw material, water and energy efficiency, performance, digitalization and promoting renewable materials aiming to mitigate climate change by enabling carbon neutral production to our pulp, paper and energy customers. The whole (100%) R&D spend is aligned with 1.5°C world and Valmet is planning on keeping it that way also in the future. In 2021 Valmet´s RDI spend was 83 million Euros (2% of net sales).

Financial Metric

Other, please specify

Dedicated GHG budget

Percentage share of selected financial metric aligned with a 1.5°C world in the reporting year (%)

100

Percentage share of selected financial metric planned to align with a 1.5°C world in 2025 (%)

100

Percentage share of selected financial metric planned to align with a 1.5°C world in 2030 (%)

100

Describe the methodology used to identify spending/revenue that is aligned with a 1.5°C world

As a part of Valmet's Climate program Valmet has dedicated spesific GHG budget for renewable energy purchases and energy efficiency investments to reduce CO2 emissions in our own locations to mitigate climate change.

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Absolute target
Intensity target

C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number

Abs 1

Year target was set

2021

Target coverage

Company-wide

Scope(s)

Scope 1
Scope 2

Scope 2 accounting method

Market-based

Scope 3 category(ies)

Base year

2019

Base year Scope 1 emissions covered by target (metric tons CO2e)

19,698

Base year Scope 2 emissions covered by target (metric tons CO2e)

100,349

Base year Scope 3 emissions covered by target (metric tons CO2e)

Total base year emissions covered by target in all selected Scopes (metric tons CO2e)

120,047

Base year Scope 1 emissions covered by target as % of total base year emissions in Scope 1

100

Base year Scope 2 emissions covered by target as % of total base year emissions in Scope 2

100

Base year Scope 3 emissions covered by target as % of total base year emissions in Scope 3 (in all Scope 3 categories)

Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes

100

Target year

2030

Targeted reduction from base year (%)

92

Total emissions in target year covered by target in all selected Scopes (metric tons CO2e) [auto-calculated]

9,603.76

Scope 1 emissions in reporting year covered by target (metric tons CO2e)

21,549

Scope 2 emissions in reporting year covered by target (metric tons CO2e)

81,216

Scope 3 emissions in reporting year covered by target (metric tons CO2e)

Total emissions in reporting year covered by target in all selected scopes (metric tons CO2e)

102,765

% of target achieved relative to base year [auto-calculated]

15.6478567633

Target status in reporting year

New

Is this a science-based target?

Yes, and this target has been approved by the Science Based Targets initiative

Target ambition

1.5°C aligned

Please explain target coverage and identify any exclusions

Valmet's Climate program includes group wide CO2 emission reduction targets for the whole value chain, including the supply chain, our own operations (including Scopes 1 and 2, both absolute and relative targets), and customers' use of our technologies. For CO2 emissions in Scopes 1 and 2, reduction targets are set for our environmental reporting locations with 2019 as the baseline year: Scope 1 2019 baseline is 19,700t with target at -60% by 2030; Scope 2 (market based) 2019 baseline is 100,300t with target at -98% by 2030. Reduction targets in Scope 1 and Scope 2 (market based) together amount to -92% by 2030. These baseline calculations include Valmet's CO2 emissions from 2019 and CO2 emissions from acquisitions from 2019 and 2020. The targets cover 100% of Valmet´s production sites and offices at those sites. Valmet's Climate program was established in 2021, therefore 2021 was the first reduction year towards the target. Our 2021 target in Scope 1 was a 6,67% reduction (6,67% per year x 9 years). Our 2021 target in Scope 2 (market based) was a 10,9% reduction (10,9% per year x 9 years). Our 2021 target in Scopes 1 and 2 combined was a 10,22% reduction (10,22% per year x 9 years). Valmet is using both intensity and absolute targets in its environmental and CO2 emissions reductions program. Valmet has since 2010 run an Energy Efficiency Program and has as a result implemented over 270 energy efficiency actions in operations globally during the past 10 years.

This target is 15.6% complete.

Plan for achieving target, and progress made to the end of the reporting year

Valmet has launched a new Climate program in 2021 with baselines, roadmaps and targets for emission reduction across the value chain towards 2030, including Valmet's own operations and Scope 1 and Scope 2 CO2 emissions. The targets in the program have been approved by the Science based targets initiative. Our total Scope 1 and Scope 2 (market based) emissions decreased in 2021, compared to base year. In 2021, environmental reporting was implemented in the new operations acquired in 2020 (PMP group) - these operations were included in the environmental data in 2021. We invest continually in energy efficiency improvements in our locations. Again in 2021 we had record net sales and high workload in the largest units and our CO2 intensity relative to net sales improved towards targets.

Valmet's Climate program targets will be achieved without emission compensation. Main actions to reduce Scope 1 and 2 CO2 emissions in own operations include replacement of fossil fuels with renewables in locations; purchasing CO2 free electricity and district heat; and implementing energy efficiency improvements in locations.

Valmet's Scope 1 emissions increased in 2021 slightly compared to base year. This is because the Climate program was established in 2021, and we did not yet implement measures to switch fossil fuels to renewables; however, plans and actions were created to start carrying out fuel switches in Valmet's locations. Scope 1 emissions increased in 2021 only slightly, even though environmental reporting was implemented in the new

operations acquired in 2020 (PMP group), Valmet was a little less affected by Covid pandemic, which affected especially energy consumption in China, and we had record net sales and high workload across our organization.

Valmet's Scope 2 (market based) emissions decreased significantly in 2021 compared to base year, even though environmental reporting was implemented in the new operations acquired in 2020 (PMP group), Valmet was a little less affected by Covid pandemic, which affected especially energy consumption in China, and we had record net sales and high workload across our organization. This good progress was achieved by Valmet's actions in own operations to implement energy efficiency improvements in locations and to purchase CO2 free electricity and district heat.

This target is 15.6% complete.

List the emissions reduction initiatives which contributed most to achieving this target

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Target reference number

Abs 2

Year target was set

2021

Target coverage

Company-wide

Scope(s)

Scope 3

Scope 2 accounting method

Scope 3 category(ies)

Category 1: Purchased goods and services

Base year

2019

Base year Scope 1 emissions covered by target (metric tons CO2e)

Base year Scope 2 emissions covered by target (metric tons CO2e)

Base year Scope 3 emissions covered by target (metric tons CO2e)

1,937,529

Total base year emissions covered by target in all selected Scopes (metric tons CO2e)

1,937,529

Base year Scope 1 emissions covered by target as % of total base year emissions in Scope 1

Base year Scope 2 emissions covered by target as % of total base year emissions in Scope 2

Base year Scope 3 emissions covered by target as % of total base year emissions in Scope 3 (in all Scope 3 categories)

100

Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes

100

Target year

2030

Targeted reduction from base year (%)

20

Total emissions in target year covered by target in all selected Scopes (metric tons CO2e) [auto-calculated]

1,550,023.2

Scope 1 emissions in reporting year covered by target (metric tons CO2e)

Scope 2 emissions in reporting year covered by target (metric tons CO2e)

Scope 3 emissions in reporting year covered by target (metric tons CO2e)

2,783,047

Total emissions in reporting year covered by target in all selected scopes (metric tons CO2e)

2,783,047

% of target achieved relative to base year [auto-calculated]

-218.194927663

Target status in reporting year

New

Is this a science-based target?

Yes, and this target has been approved by the Science Based Targets initiative

Target ambition

1.5°C aligned

Please explain target coverage and identify any exclusions

The analysis is based on the monetary value of purchased goods and services by category and supplier country. The emission flows have been calculated based on environmentally extended input output analysis and emission factors from Exiobase (www.exiobase.eu). The purchasing spend data used covers approximately 98% (2020: 98%) of Valmet's total purchase order amount (excluding business travel, transportation, and taxes and charges related spend).

Plan for achieving target, and progress made to the end of the reporting year

Valmet has launched a new Climate program in 2021 with baselines, roadmaps and targets for emission reduction across the value chain towards 2030, including Valmet's supply chain related s CO2 emissions. The targets in the program have been approved by the Science Based Targets initiative. Our Scope 3 category 1 CO2 emissions increased in 2021, compared to base year, due to acquisition (PMP Group) in 2020 and organic growth. Again in 2021 we had record net sales and order backlog, why procurement spend increased in 2021 which impacted also to CO2 emissions (calculation is based on monetary values). Valmet is working on improving the data quality and getting more primary data to be able to show more accurate CO2 impact and progress of reaching the Climate program target with concreate actions.

Main actions to reduce CO2 emissions in supply chain, includes increasing the share of recycled steel in our products, supporting CO_2-intensive suppliers in reducing their emissions, decreasing the weight of our products and introducing alternative materials, and supporting suppliers to optimize their manufacturing methods. Impact of these actions will be visible in coming years as we move closer to target year 2030 (exponential progress).

List the emissions reduction initiatives which contributed most to achieving this target

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Target reference number

Abs 3

Year target was set

2021

Target coverage

Company-wide

Scope(s)

Scope 3

Scope 2 accounting method

Scope 3 category(ies)

Category 6: Business travel

Base year

2019

Base year Scope 1 emissions covered by target (metric tons CO2e)

Base year Scope 2 emissions covered by target (metric tons CO2e)

Base year Scope 3 emissions covered by target (metric tons CO2e)

44,000

Total base year emissions covered by target in all selected Scopes (metric tons CO2e)

44,000

Base year Scope 1 emissions covered by target as % of total base year emissions in Scope 1

Base year Scope 2 emissions covered by target as % of total base year emissions in Scope 2

Base year Scope 3 emissions covered by target as % of total base year emissions in Scope 3 (in all Scope 3 categories)

0.1

Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes

100

Target year

2030

Targeted reduction from base year (%)

30

Total emissions in target year covered by target in all selected Scopes (metric tons CO2e) [auto-calculated]

30,800

Scope 1 emissions in reporting year covered by target (metric tons CO2e)

Scope 2 emissions in reporting year covered by target (metric tons CO2e)

Scope 3 emissions in reporting year covered by target (metric tons CO2e)

18,000

Total emissions in reporting year covered by target in all selected scopes (metric tons CO2e)

18,000

% of target achieved relative to base year [auto-calculated]

196.9696969697

Target status in reporting year

New

Is this a science-based target?

Yes, and this target has been approved by the Science Based Targets initiative

Target ambition

1.5°C aligned

Please explain target coverage and identify any exclusions

The analysis of business travel emissions is based on emission, mileage and spend data from travel agencies. Valmet's business travel emissions: the air travel data used covers Austria, Czech Republic, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Poland, Portugal, Russia, South Africa, Spain, Sweden, Turkey, UK, UAE, USA, Canada, Brazil, Australia, New Zealand, India, Indonesia, Japan, Korea, Thailand, Vietnam, China and represents 99,9% (2020: 99%) of Valmet's global workforce. For other business travel modes, including rented vehicles, compensated mileages and hotel nights, data used covers Austria, Czech Republic, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Poland, Portugal, Russia, South Africa, Spain, Sweden, UK, USA, Canada, Brazil, Australia, New Zealand, India, Indonesia, Japan, Korea, Thailand, Vietnam,
China and represents 97% of Valmet's global workforce.

Due to COVID-19 Valmet's business travel emissions have been lower in 2020 and 2021 comparing to the baseline in 2019. We still don't consider this as achieved as the target is to remain lower business travel level also during 2022-2030.

Plan for achieving target, and progress made to the end of the reporting year

Valmet has launched a new Climate program in 2021 with baselines, roadmaps and targets for emission reduction across the value chain towards 2030, including Valmet's business travel related CO2 emissions. The targets in the program have been approved by the Science Based Targets initiative. Our Scope 3 category 6 CO2 emissions slightly decreased in 2021, compared to base year.

Main actions to reduce CO2 emissions from business travel, includes enhancing the use of digital tools and further develop remote working habits. We are aiming to keep

business travelling at the same level as in 2020 and 2021 and avoiding unnesessary flying and making sustainable business travel decisions.

List the emissions reduction initiatives which contributed most to achieving this target

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Target reference number

Abs 4

Year target was set

2021

Target coverage

Company-wide

Scope(s)

Scope 3

Scope 2 accounting method

Scope 3 category(ies)

Category 11: Use of sold products

Base year

2019

Base year Scope 1 emissions covered by target (metric tons CO2e)

Base year Scope 2 emissions covered by target (metric tons CO2e)

Base year Scope 3 emissions covered by target (metric tons CO2e)

45,149,000

Total base year emissions covered by target in all selected Scopes (metric tons CO2e)

45,149,000

Base year Scope 1 emissions covered by target as % of total base year emissions in Scope 1

Base year Scope 2 emissions covered by target as % of total base year emissions in Scope 2

Base year Scope 3 emissions covered by target as % of total base year emissions in Scope 3 (in all Scope 3 categories)

99

Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes

100

Target year

2030

Targeted reduction from base year (%)

60

Total emissions in target year covered by target in all selected Scopes (metric tons CO2e) [auto-calculated]

18,059,600

Scope 1 emissions in reporting year covered by target (metric tons CO2e)

Scope 2 emissions in reporting year covered by target (metric tons CO2e)

Scope 3 emissions in reporting year covered by target (metric tons CO2e)

100,781,000

Total emissions in reporting year covered by target in all selected scopes (metric tons CO2e)

100,781,000

% of target achieved relative to base year [auto-calculated]

-205.3644598994

Target status in reporting year

New

Is this a science-based target?

Yes, and this target has been approved by the Science Based Targets initiative

Target ambition

1.5°C aligned

Please explain target coverage and identify any exclusions

Data includes Valmet's 2021 sold entire paper, board and tissue production lines, fossil-fired fluidizer bed boilers and lime kilns, during their expected lifetime (25 years). The CO2 calculation is based on Valmet's average product specific energy consumption and product specifications including delivered capacity and intended fuel mix. N2O and CH4 included from biomass combustion in pulp and energy production. CO2 emissions from electricity are calculated based on IEA (2020) country-specific emission factors. CO2 emissions from steam are calculated based on Fisher International installed base fuel

mix data.
Emission factors for fuels are based on IPCC, Defra and Tilastokeskus. IEA Scenario for current policies (STEPS) power sector emission intensity reduction (CAGR) is utilized in projecting the lifetime emissions for electricity and steam. Quantifying and projecting the future emissions from use of sold products involves a large number of assumptions and the actual emissions from use of sold products are largely dependent on choices made by our customers. For these reasons, the figure reported is an estimate to understand the magnitude of category 11 lifetime emissions, which are representing more than 95% of Valmet's value chain emissions. The included paper, board and tissue machines represent 78% of PAP's total orders received in 2019-2021, excluding basic machine unit assembly groups and smaller equipment deliveries. The fossil-fired boilers and lime kilns represent 9% of the P&E's 2019-2021 orders received. The remaining 91% of P&E's orders received is assumed to be carbon neutral (incl. bioenergy self-sufficient pulp mills and biomass-fired boilers). The share of total orders received is calculated based on a three-year average (2019-2021) to balance the annual differences between project revenue realization. The data used covers 88% of Valmet's three-year average of total PAP's and P&E's orders received. The annual fossil emissions of the sold products were around 5,085,000 tCO2e, whereas biogenic emissions were around 6,908,000 tCO2e in 2021.

Plan for achieving target, and progress made to the end of the reporting year

Valmet has launched a Climate program in 2021 with baselines, roadmaps and targets for emission reduction across the value chain towards 2030, including Valmet's technology use phase. The targets in the program have been approved by the Science Based Targets initiative. Our Scope 3 category 11 CO2 emissions increased in 2021, compared to base year, due to Valmet orders received increased 30% (especially in China, 7%) in 2021. Orders to China increase the CO2 emissions significantly due to country level high use of fossil energy for electricity and steam production, which is impacting to use phase emissions, as the CO2 calculation is based on country spesific emission factors. Anticipated progress curve is exponential assuming that the availability of renewable energy will increase closer to 2030 and variable based on the demand and the country of customer's site.

Quantifying and projecting the future emissions from use of sold products involves a large number of assumptions and the actual emissions from use of sold products are largely dependent on choices made by our customers and the local availability of renewable energy. Valmet has no visibility if customers are using renewable energy in their production now or in the future and what is the share of it. Valmet is going to further improve the calculations and the underlying assumptions to improve the accuracy.

Valmet also continues to develop technologies that enable carbon neutral production to our customer and improves existing technologies to be more energy efficient, and that way decrease the carbon footprint during the use phase of Valmet's technologies according to the Climate program.

List the emissions reduction initiatives which contributed most to achieving this target

C4.1b

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).

Target reference number
Int 1

Year target was set
2021

Target coverage
Company-wide

Scope(s)
Scope 1
Scope 2

Scope 2 accounting method
Market-based

Scope 3 category(ies)

Intensity metric
Metric tons CO2e per unit revenue

Base year
2019

Intensity figure in base year for Scope 1 (metric tons CO2e per unit of activity)
0.000006

Intensity figure in base year for Scope 2 (metric tons CO2e per unit of activity)
0.000026

Intensity figure in base year for Scope 3 (metric tons CO2e per unit of activity)

Intensity figure in base year for all selected Scopes (metric tons CO2e per unit of activity)
0.000032

% of total base year emissions in Scope 1 covered by this Scope 1 intensity figure
100

% of total base year emissions in Scope 2 covered by this Scope 2 intensity figure

100

% of total base year emissions in Scope 3 (in all Scope 3 categories) covered by this Scope 3 intensity figure

% of total base year emissions in all selected Scopes covered by this intensity figure

100

Target year

2030

Targeted reduction from base year (%)

80

Intensity figure in target year for all selected Scopes (metric tons CO2e per unit of activity) [auto-calculated]

0.0000064

% change anticipated in absolute Scope 1+2 emissions

-92

% change anticipated in absolute Scope 3 emissions

0

Intensity figure in reporting year for Scope 1 (metric tons CO2e per unit of activity)

0.000005

Intensity figure in reporting year for Scope 2 (metric tons CO2e per unit of activity)

0.000021

Intensity figure in reporting year for Scope 3 (metric tons CO2e per unit of activity)

Intensity figure in reporting year for all selected Scopes (metric tons CO2e per unit of activity)

0.000026

% of target achieved relative to base year [auto-calculated]

23.4375

Target status in reporting year

New

Is this a science-based target?

Yes, and this target has been approved by the Science Based Targets initiative

Target ambition

1.5°C aligned

Please explain target coverage and identify any exclusions

Valmet's Climate program includes group wide CO2 emission reduction targets for the whole value chain, including the supply chain, our own operations (including Scopes 1 and 2, both absolute and relative targets), and customers' use of our technologies. The intensity metric is tonnes CO2 per million Euros net sales. For CO2 emissions in Scopes 1 and 2 and CO2 emissions intensity, reduction targets are set for our environmental reporting locations with 2019 as the baseline year: Scope 1 2019 baseline is 19,700t with target at -60% by 2030; Scope 2 (market based) 2019 baseline is 100,300t with target at -98% by 2030. Reduction targets in Scope 1 and Scope 2 (market based) together amount to -92% by 2030. In CO2 emissions intensity, our target is an 80% reduction by 2030. 2019 baseline net sales for CO2 emissions intensity calculation are 3807 million EUR. These baseline calculations and net sales for emissions intensity include: Valmet's CO2 emissions and net sales data from 2019; and CO2 emissions and net sales from acquisitions from 2019 and 2020. The targets cover 100% of Valmet´s production sites and offices at those sites. Valmet's Climate program was established in 2021, therefore 2021 was the first reduction year towards the target. Our 2021 target in Scope 1 was a 6,67% reduction (6,67% per year x 9 years). Our 2021 target in Scope 2 (market based) was a 10,9% reduction (10,9% per year x 9 years). Our 2021 target in Scopes 1 and 2 combined was a 10,22% reduction (10,22% per year x 9 years). Our 2021 target in emissions intensity was a 8,9% reduction (8,9% per year x 9 years). Valmet is using both intensity and absolute targets in its energy and CO2 emissions reductions program. Valmet has since 2010 run an Energy Efficiency Program and has as a result implemented over 270 energy efficiency actions in operations globally during the past 12 years.

This target is 23.4% complete.

Plan for achieving target, and progress made to the end of the reporting year

Valmet has launched a new Climate program in 2021 with baselines, roadmaps and targets for emission reduction across the value chain towards 2030, including Valmet's own operations and Scope 1 and Scope 2 CO2 emissions and CO2 emissions intensity. The targets in the program have been approved by the Science based targets initiative. Our total emissions decreased in 2021, compared to the base year. Valmet completed the acquisition of PMP group operations in 2020 - these operations were included in the environmental data in 2021. We invest continually in energy efficiency improvements in our locations. Again in 2021 we had record net sales and high workload in the largest units and our CO2 intensity relative to net sales improved towards targets.

Valmet's Climate program targets will be achieved without emission compensation. Main actions to reduce Scope 1 and 2 CO2 emissions in own operations include replacement of fossil fuels with renewables in locations; purchasing CO2 free electricity and district heat; and implementing energy efficiency improvements in locations.

This target is 23.4% complete.

List the emissions reduction initiatives which contributed most to achieving this target

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

Target(s) to increase low-carbon energy consumption or production

C4.2a

(C4.2a) Provide details of your target(s) to increase low-carbon energy consumption or production.

Target reference number

Low 1

Year target was set

2021

Target coverage

Company-wide

Target type: energy carrier

All energy carriers

Target type: activity

Consumption

Target type: energy source

Low-carbon energy source(s)

Base year

2019

Consumption or production of selected energy carrier in base year (MWh)

428,395

% share of low-carbon or renewable energy in base year

7.5

Target year

2030

% share of low-carbon or renewable energy in target year

100

% share of low-carbon or renewable energy in reporting year

21

% of target achieved relative to base year [auto-calculated]

14.5945945946

Target status in reporting year

New

Is this target part of an emissions target?

Yes, part of the CO2 emissions reduction targets, both absolute and intensity targets, and part of Valmet's environmental program.

Is this target part of an overarching initiative?

Science Based Targets initiative

Please explain target coverage and identify any exclusions

We target to have 100% of total energy consumption from low-carbon energy sources by 2030. Valmet has launched a new Climate program in 2021 with baselines, roadmaps and targets for emission reduction across the value chain towards 2030, including Valmet's own operations and Scope 1 and Scope 2 CO2 emissions and CO2 emissions intensity. The targets in the program have been approved by the Science based targets initiative.

Plan for achieving target, and progress made to the end of the reporting year

Valmet has launched a new Climate program in 2021 with baselines, roadmaps and targets for emission reduction across the value chain towards 2030, including Valmet's own operations and Scope 1 and Scope 2 CO2 emissions and CO2 emissions intensity. The targets in the program have been approved by the Science based targets initiative. Valmet's Climate program targets will be achieved without emission compensation. Main actions to reduce Scope 1 and 2 CO2 emissions in own operations include replacement of fossil fuels with renewables in locations; purchasing CO2 free electricity and district heat; and implementing energy efficiency improvements in locations. Therefore, the target to increase the amount of low-carbon energy consumption in Valmet's own operations is a core target within Valmet's Climate and environmental programs.

Our total energy consumption increased in 2021, compared to 2020, due to the acquisition of PMP group operations in 2020 - these operations were included in the environmental data in 2021. Also, in 2020 the Covid pandemic had a slightly decreasing impact on Valmet's energy consumption especially in China. Again in 2021 we had record net sales and high workload in the largest units, but our energy intensity relative to net sales decreased in 2021. In 2020, 9% of our total energy consumption was from renewable sources while in 2021 21% of our total energy consumption was from renewable sources, so in 2021 we were able to make a significant improvement towards our targets.

This target is 14.6% complete.

List the actions which contributed most to achieving this target

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	0
To be implemented*	0	0
Implementation commenced*	22	1,486
Implemented*	6	1,438
Not to be implemented	0	0

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

Energy efficiency in buildings

Maintenance program

Estimated annual CO2e savings (metric tonnes CO2e)

9

Scope(s) or Scope 3 category(ies) where emissions savings occur

Scope 2 (location-based)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

8,500

Investment required (unit currency – as specified in C0.4)

85,000

Payback period

4-10 years

Estimated lifetime of the initiative

11-15 years

Comment

Investments are made continuously as part of building maintenance and energy management systems. During 2021 an update to energy management system was carried out in Shanghai, China.

Initiative category & Initiative type

Energy efficiency in production processes
Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)

1,429

Scope(s) or Scope 3 category(ies) where emissions savings occur

Scope 1
Scope 2 (location-based)
Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

15,800

Investment required (unit currency – as specified in C0.4)

158,000

Payback period

4-10 years

Estimated lifetime of the initiative

11-15 years

Comment

Investments are made continuously in process and machine replacements and upgrades including automation system improvements. The new installed machines and processes are more energy efficient than the older technology that is being replaced, often more than 20 years old. Upgrades for more energy efficient machines were done

eg in Wuxi, China; Clarks Summit, USA; Lapua, Finland; and Jelenia Gora, Poland locations

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	Compliance with regulations is the minimum for our investment activities. We perform annual energy audits and improvement actions according to EU Energy Efficiency Directive. In 2015 an audit was done for two of the Finnish facilities (representing 10% of total energy consumption). In 2016 an audit was done for all the Swedish facilities. In 2018 the audit was done for the Portuguese facility. In 2021 an energy audit was done for Valmet's Swedish facilities.
Employee engagement	We run annual HSE awareness activities globally. In March we participate in WWF Earth Hour and in October/November we have an annual HSE awareness week with a focus on personal responsibility and individual behavior. In our global continuous improvement tool, all employees can make energy efficiency improvement suggestions.
Lower return on investment (ROI) specification	Energy efficiency and CO2 investments have been allowed a longer payback time and a weaker profitability to enhance the energy and CO2 savings.
Dedicated budget for low-carbon product R&D	Valmet's net spend on R&D is 81 MEUR or 1.7% of net sales (2021). Valmet's R&D spend is split according to following focus areas: 1) Ensure advanced and competitive technologies and services 2) Enhance raw material, water and energy efficiency 3) Promote renewable materials.
Dedicated budget for energy efficiency	As part of Valmet's Climate program, Valmet has a dedicated budget for improvement proposals aiming on energy savings.
Partnering with governments on technology development	We cooperate extensively with various research partners. Most of the research collaboration takes place close to Valmet's R&D facilities in Finland and in Sweden. In addition to universities, Technology Research Center of Finland (VTT) and RISE in Sweden are the key research institutes we cooperate with. We have also active collaboration with universities in other countries, e.g. in Germany, Italy, India, United States. We continuously seek partners and best available competences to support our R&D efforts. Especially EU Green Deal will activate lot of consortia research that Valmet will be also actively joining. Business Finland has granted a total of EUR 20 million to Valmet's leading company project through the EU's Recovery and Resilience Facility (RRF). This Beyond circularity Veturi RDI project published in 2022 will enable Valmet to seek out

	significant development opportunities with partners, customers and research institutes and is partially funded by Business Finland (owned by the Finnish Government) through the EU's Recovery and Resilience Facility (RRF).

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products.

Level of aggregation

Group of products or services

Taxonomy used to classify product(s) or service(s) as low-carbon

The EU Taxonomy for environmentally sustainable economic activities

Type of product(s) or service(s)

Pulp and paper

Other, please specify

Pulp and paper production technologies

Description of product(s) or service(s)

Valmet has a full scope offering for CO2 emissions reduction and environmental efficiency including process technologies, automation and services.

Valmet has reviewed its Pulp and paper offering against the EU Taxonomy economic activities. Valmet's Pulp and paper technologies are classified as low-carbon products under economic activity 3.6 Manufacture of other low carbon technologies: Technologies aimed at substantial GHG emission reductions.

Have you estimated the avoided emissions of this low-carbon product(s) or service(s)

No

Methodology used to calculate avoided emissions

Life cycle stage(s) covered for the low-carbon product(s) or services(s)

Functional unit used

Reference product/service or baseline scenario used

Life cycle stage(s) covered for the reference product/service or baseline scenario

Estimated avoided emissions (metric tons CO2e per functional unit) compared to reference product/service or baseline scenario

Explain your calculation of avoided emissions, including any assumptions

Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year

40

Level of aggregation

Group of products or services

Taxonomy used to classify product(s) or service(s) as low-carbon

The EU Taxonomy for environmentally sustainable economic activities

Type of product(s) or service(s)

Power

Other, please specify

Energy production technologies via biomass and biogas

Description of product(s) or service(s)

Valmet has a full scope offering for CO2 emissions reduction and environmental efficiency including process technologies, automation and services. For over thirty years, Valmet has been supplying the energy industry around the world with solutions for high-efficiency power production based on various kinds of biofuels.

Valmet has reviewed its offering against the EU Taxonomy economic activities. Valmet's Energy technologies are classified as low-carbon products under economic activity 3.1 Manufacture of renewable energy technologies, Technology aimed for energy production via biomass and biogas.

Have you estimated the avoided emissions of this low-carbon product(s) or service(s)

No

Methodology used to calculate avoided emissions

Life cycle stage(s) covered for the low-carbon product(s) or services(s)

Functional unit used

Reference product/service or baseline scenario used

Life cycle stage(s) covered for the reference product/service or baseline scenario

Estimated avoided emissions (metric tons CO2e per functional unit) compared to reference product/service or baseline scenario

Explain your calculation of avoided emissions, including any assumptions

Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year

8

Level of aggregation

Group of products or services

Taxonomy used to classify product(s) or service(s) as low-carbon

The EU Taxonomy for environmentally sustainable economic activities

Type of product(s) or service(s)

Other

Other, please specify

Data-driven solutions for GHG emissions reductions

Description of product(s) or service(s)

Valmet has a full scope offering for CO2 emissions reduction and environmental efficiency including process technologies, automation and services.

Valmet has reviewed its automation offering against the EU Taxonomy economic activities. Valmet's Auotmation systems are classified as low-carbon products under economic activity 8.2 Data-driven solutions for GHG emissions reductions.

Have you estimated the avoided emissions of this low-carbon product(s) or service(s)

No

Methodology used to calculate avoided emissions

Life cycle stage(s) covered for the low-carbon product(s) or services(s)

Functional unit used

Reference product/service or baseline scenario used

Life cycle stage(s) covered for the reference product/service or baseline scenario

Estimated avoided emissions (metric tons CO2e per functional unit) compared to reference product/service or baseline scenario

Explain your calculation of avoided emissions, including any assumptions

Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year

3

Level of aggregation

Group of products or services

Taxonomy used to classify product(s) or service(s) as low-carbon

Other, please specify

Best available technology (BAT)

Type of product(s) or service(s)

Other

Other, please specify

Our products represent the BAT for pulp, board, tissue and paper making and energy production. Valmet's wide range of solutions require less energy, water and raw materials compared to conventional technologies

Description of product(s) or service(s)

Our services and automation offering help to maximize the energy and resource efficiency of the technologies and ensure operational safety and reliability over the entire lifetime of the plant. Our ambition is to maintain our technology leadership with

sustainable products and process solutions. We continuously develop technology that is applicable for the growth markets and is responsive to the increasing importance of environmental efficiency. Scope 2 emissions are avoided through the increased energy efficiency and efficient use of raw materials in all of our products and services. OptiConcept M board and paper lines save up to 30% of energy and water. NTT tissue lines save 10-20% of fibers (raw material) and up to 50% of energy. IQ quality management solutions produce 40% less reject in board/paper grade changes. Multifuel boilers lower CO2 emissions through the utilization of renewable fuels, also waste fractions are possible. Multifuel boilers also produce less NOx and SO2 emissions. Gasifiers can replace fossil fuels up to 100%. LignoBoost process separates lignin that can be used as a renewable fuel to replace fossil fuels, or to produce renewable chemicals or products. With rebuilds, conversions, upgrades and services, we can increase the service life of customers' solutions and improve environmental performance. Climate change mitigation is addressed for the whole R&D project portoflio, for new key product launches, and for each key R&D project.

Have you estimated the avoided emissions of this low-carbon product(s) or service(s)

No

Methodology used to calculate avoided emissions

Life cycle stage(s) covered for the low-carbon product(s) or services(s)

Functional unit used

Reference product/service or baseline scenario used

Life cycle stage(s) covered for the reference product/service or baseline scenario

Estimated avoided emissions (metric tons CO2e per functional unit) compared to reference product/service or baseline scenario

Explain your calculation of avoided emissions, including any assumptions

Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year

99

C5. Emissions methodology

C5.1

(C5.1) Is this your first year of reporting emissions data to CDP?

No

C5.1a

(C5.1a) Has your organization undergone any structural changes in the reporting year, or are any previous structural changes being accounted for in this disclosure of emissions data?

Row 1

Has there been a structural change?

Yes, an acquisition

Name of organization(s) acquired, divested from, or merged with

In 2021, Valmet acquired one company in Finland: ECP Group, whose net sales in previous year were equivalent to 0.2% of Valmet's 2021 net sales, and one company in Germany: EWK Umwelttechnik, whose net sales in previous year were equivalent to 0.6% of Valmet's 2021 net sales. In 2020, Valmet acquired one company with operations in Poland, China and United States: PMP Group whose net sales were equivalent to 1.9% of Valmet's 2020 net sales.

Details of structural change(s), including completion dates

Valmet’s environmental reporting covers all locations with significant environmental impacts: six foundries; five fabrics production units; 32 service workshops; six pilot facilities; four automation supply centers; and 20 machine assembly and manufacturing units. Locations acquired in 2020 were reported for the first time in 2021. In 2021, Valmet acquired one company in Finland: ECP Group, whose net sales in previous year were about 6 million EUR (equivalent to 0.2% of Valmet's 2021 net sales), and one company in Germany: EWK Umwelttechnik, whose net sales in previous year were about 22 million EUR (equivalent to 0.6% of Valmet's 2021 net sales). The HSE data from the acquisitions in 2021 will be included in Valmet's HSE reporting in 2022; however, these operations do not include production or service center facilities that would be included in Valmet environmental reporting. In 2020, Valmet acquired one company with operations in Poland, China and United States: PMP Group whose net sales were equivalent to 1.9% of Valmet's 2020 net sales. The HSE data from these locations acquired in 2020 were reported for the first time 2021.

C5.1b

(C5.1b) Has your emissions accounting methodology, boundary, and/or reporting year definition changed in the reporting year?

	Change(s) in methodology, boundary, and/or reporting year definition?	Details of methodology, boundary, and/or reporting year definition change(s)
Row 1	Yes, a change in boundary	Valmet has launched a new Climate program in 2021 with baselines, roadmaps and targets for CO2 emission reduction across the value chain towards 2030, including Valmet's own operations and Scope 1 and Scope 2 CO2 emissions, both absolute and relative targets. The targets in the program have been approved by the Science based targets initiative. The intensity metric is tonnes CO2 per million Euros net sales. For CO2 emissions in Scopes 1 and 2 and CO2 emissions intensity, reduction targets are set for our environmental reporting locations with 2019 as the baseline year: Scope 1 2019 baseline is 19,700t with target at -60% by 2030; Scope 2 (market based) 2019 baseline is 100,300t with target at -98% by 2030. Reduction targets in Scope 1 and Scope 2 (market based) together amount to -92% by 2030. In CO2 emissions intensity, our target is an 80% reduction by 2030. 2019 baseline net sales for CO2 emissions intensity calculation are 3807 million EUR. These baseline calculations and net sales for emissions intensity include: Valmet's CO2 emissions and net sales data from 2019; and CO2 emissions and net sales from acquisitions from 2019 and 2020. The targets cover 100% of Valmet´s production sites and offices at those sites. Valmet's Climate program was established in 2021, therefore 2021 was the first reduction year towards the target.

C5.1c

(C5.1c) Have your organization's base year emissions been recalculated as result of the changes or errors reported in C5.1a and C5.1b?

	Base year recalculation	Base year emissions recalculation policy, including significance threshold
Row 1	Yes	Valmet has launched a new Climate program in 2021 with baselines, roadmaps and targets for CO2 emission reduction across the value chain towards 2030, including Valmet's own operations and Scope 1 and Scope 2 CO2 emissions, both absolute and relative targets. In the program, a new baseline year of 2019 was set for Valmet's own operations CO2 emissions in Scope 1 and Scope 2. These baseline calculations and net sales for emissions intensity include: Valmet's CO2 emissions and net sales data from 2019; and CO2 emissions and net sales from acquisitions from 2019 and 2020. Valmet also has a base year emissions recalculation policy, with significance

		threshold at +/- 5% change in Scope 1 and Scope 2 CO2 emissions. For Scope 3 we use net sales threshold.

C5.2

(C5.2) Provide your base year and base year emissions.

Scope 1

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

19,698

Comment

Valmet has launched a new Climate program in 2021 with baselines, roadmaps and targets for CO2 emission reduction across the value chain towards 2030, including Valmet's own operations and Scope 1 and Scope 2 CO2 emissions, both absolute and relative targets. The targets in the program have been approved by the Science based targets initiative. The intensity metric is tonnes CO2 per million Euros net sales. For CO2 emissions in Scopes 1 and 2 and CO2 emissions intensity, reduction targets are set for our environmental reporting locations with 2019 as the baseline year: Scope 1 2019 baseline is 19,700t with target at -60% by 2030; Scope 2 (market based) 2019 baseline is 100,300t with target at -98% by 2030. Reduction targets in Scope 1 and Scope 2 (market based) together amount to -92% by 2030. In CO2 emissions intensity, our target is an 80% reduction by 2030. 2019 baseline net sales for CO2 emissions intensity calculation are 3807 million EUR. These baseline calculations and net sales for emissions intensity include: Valmet’s CO2 emissions and net sales data from 2019; and CO2 emissions and net sales from acquisitions from 2019 and 2020. The targets cover 100% of Valmet´s production sites and offices at those sites.

Scope 2 (location-based)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 2 (market-based)

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

100,349

Comment

Valmet has launched a new Climate program in 2021 with baselines, roadmaps and targets for CO2 emission reduction across the value chain towards 2030, including Valmet's own operations and Scope 1 and Scope 2 CO2 emissions, both absolute and relative targets. The targets in the program have been approved by the Science based targets initiative. The intensity metric is tonnes CO2 per million Euros net sales. For CO2 emissions in Scopes 1 and 2 and CO2 emissions intensity, reduction targets are set for our environmental reporting locations with 2019 as the baseline year: Scope 1 2019 baseline is 19,700t with target at -60% by 2030; Scope 2 (market based) 2019 baseline is 100,300t with target at -98% by 2030. Reduction targets in Scope 1 and Scope 2 (market based) together amount to -92% by 2030. In CO2 emissions intensity, our target is an 80% reduction by 2030. 2019 baseline net sales for CO2 emissions intensity calculation are 3807 million EUR. These baseline calculations and net sales for emissions intensity include: Valmet’s CO2 emissions and net sales data from 2019; and CO2 emissions and net sales from acquisitions from 2019 and 2020. The targets cover 100% of Valmet´s production sites and offices at those sites.

Scope 3 category 1: Purchased goods and services

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

1,937,529

Comment

Valmet has a Climate program with baselines (2019), roadmaps and targets for CO2 emission reductions across the value chain by 2030, including Valmet's supply chain (Scope 3 cat 1).

Scope 3 category 2: Capital goods

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 3: Fuel-and-energy-related activities (not included in Scope 1 or 2)

Base year start
January 1, 2019

Base year end
December 31, 2019

Base year emissions (metric tons CO2e)
19,884

Comment

Scope 3 category 4: Upstream transportation and distribution

Base year start
January 1, 2019

Base year end
December 31, 2019

Base year emissions (metric tons CO2e)
105,289

Comment

Scope 3 category 5: Waste generated in operations

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 6: Business travel

Base year start
January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

43,531

Comment

Valmet has a Climate program with baselines (2019), roadmaps and targets for CO2 emission reductions across the value chain by 2030, including Valmet's business travel (Scope 3 cat 6).

Scope 3 category 7: Employee commuting

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 8: Upstream leased assets

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 9: Downstream transportation and distribution

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

15,793

Comment

Scope 3 category 10: Processing of sold products

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 11: Use of sold products

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

45,149,059

Comment

Valmet has a Climate program with baselines (2019), roadmaps and targets for CO2 emission reductions across the value chain by 2030, including Valmet's technology use phase (Scope 3 cat 11).

Scope 3 category 12: End of life treatment of sold products

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 13: Downstream leased assets

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 14: Franchises

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 15: Investments

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3: Other (upstream)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3: Other (downstream)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

C5.3

(C5.3) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

IEA CO2 Emissions from Fuel Combustion
IPCC Guidelines for National Greenhouse Gas Inventories, 2006
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
US EPA Emissions & Generation Resource Integrated Database (eGRID)

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

21,549

Start date

January 1, 2021

End date

December 31, 2021

Comment

Our total emissions in Scope 1 increased in 2021, compared to 2020, due to the acquisition of PMP group operations in 2020 - these operations were included in the environmental data in 2021. Also, in 2020 the Covid pandemic had a slightly decreasing impact on Valmet's energy consumption especially in China. We invest continually in energy efficiency improvements in our locations.

Past year 1

Gross global Scope 1 emissions (metric tons CO2e)

19,131

Start date

January 1, 2020

End date

December 31, 2020

Comment

Environmental data from the businesses acquired in 2019 was reported for the first time in 2020.

Past year 2

Gross global Scope 1 emissions (metric tons CO2e)

17,579

Start date

January 1, 2019

End date

December 31, 2019

Comment

Past year 3

Gross global Scope 1 emissions (metric tons CO2e)

17,653

Start date

January 1, 2018

End date

December 31, 2018

Comment

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

In 2016 we started to calculate and assure market-based emissions in addition to the location based emissions.
Valmet's reporting for 2021 included the acquisitions made in 2020.

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based

73,391

Scope 2, market-based (if applicable)

81,216

Start date

January 1, 2021

End date

December 31, 2021

Comment

Environmental data from the businesses acquired in 2020 was reported for the first time in 2021. We invest continually in energy efficiency improvements in our locations.

Past year 1

Scope 2, location-based

60,541

Scope 2, market-based (if applicable)

87,338

Start date

January 1, 2020

End date

December 31, 2020

Comment

Environmental data from the businesses acquired in 2019 was reported for the first time in 2020.

Past year 2

Scope 2, location-based

59,755

Scope 2, market-based (if applicable)

85,049

Start date

January 1, 2019

End date

December 31, 2019

Comment

Past year 3

Scope 2, location-based

65,978

Scope 2, market-based (if applicable)

87,900

Start date

January 1, 2018

End date

December 31, 2018

Comment

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

No

C6.5

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

2,783,047

Emissions calculation methodology

Spend-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

i) Valmet has assessed its Scope 3 emissions based on GHG Protocol´s Corporate Value Chain (Scope 3) Accounting and Reporting Standard. The analysis is based on monetary value of purchased goods and services by supplier type. (ii) Data quality is fair. Data quality has been assessed based on GHG Protocol's Corporate Value Chain Accounting and Reporting Standard. The biggest source of uncertainty are the emission factors (fair). Purchase data is based on Valmet's internal data systems and is relatively reliable (good). (iii) Conversion factors from Exiobase are used to calculate the CO2 emissions based on monetary flows. The data used covers ca. 98% of Valmet´s total supplier spend. For undefined spend data Valmet's average emission factor was applied, and for some categories for which no feasible emission factors are available were excluded from the calculation.

Capital goods

Evaluation status

Not relevant, explanation provided

Please explain

Valmet's gross capital expenditure (excluding acquicitions) in 2021 totaled EUR 97 million (2020: EUR 89 million), of which maintenance investments were EUR 39 million (2020: EUR 36 million). When compared to Valmet´s supplier spend (2021: 2,505MEUR), capital goods spend is not relevant. Also, the CO2 emissions from capital goods were calculated in 2014. Based on those calculations capital goods accounted for less than 1% of Scope 3 emissions, excluding use of sold products.

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

18,995

Emissions calculation methodology

Fuel-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

(I)The emissions have been calculated based on the breakdown of Valmet’s energy consumption by country and source. The emission factors from DEFRA have been utilized. (II) Data quality is fair. Additional uncertainty is caused by emission factors (fair quality). (III) The calculated emissions cover the same sources of energy as scope 1 and 2 calculations.

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

102,360

Emissions calculation methodology

Supplier-specific method

Spend-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

17

Please explain

The analysis is based on the monetary value spend by mode of transportation. In case the mode of transportation is not known, a weighted average of known transportation modes is used. The emissions are calculated using data from Exiobase (ii) Data quality is fair. Data quality has been assessed based on GHG Protocol's Corporate Value Chain Accounting and Reporting Standard. The biggest source of uncertainty is the emission factors (fair). Purchase data is based on Valmet's internal data systems and is relatively reliable (good). (iii) The calculated transportation modes include air, train, ocean and road transportation. In addition to purchase data, 17 % of emissions calculated are based on GHG emissions report from transportation service providers. The calculated transportation modes include air, train, ocean and road transportation.

The analysis of upstream and downstream transportation and distribution emissions is based on suppliers' emission reports (17%), and when not available, the monetary value of purchased transportation services following the same calculation methodology as for category 1 emissions.

Waste generated in operations

Evaluation status

Not relevant, explanation provided

Please explain

Valmet has assessed the CO2 emissions from the disposal of waste generated in operations in previous years. Based on those calculations, emissions from waste disposal (11 tons CO2-eq) accounted for less than 1% of total scope 3, excluding use of sold products. The sources and magnitude of energy use have since remained fairly similar, causing no relevant foreseeable changes in emissions.

Business travel

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

17,525

Emissions calculation methodology

Supplier-specific method
Spend-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

48

Please explain

(i) Business travel calculations at Valmet includes travelling by air mileages, rented vehicle, rail, compensated mileages as well as hotel spend. (ii) Data quality is fairly good. The data is gathered from our travel agencies (48%) and internal systems. (iii) Valmet's business travel emissions: the air travel data used covers Austria, Czech Republic, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Poland, Portugal, Russia, South Africa, Spain, Sweden, Turkey, UK, UAE, USA, Canada, Brazil, Australia, New Zealand, India, Indonesia, Japan, Korea, Thailand, Vietnam, China and represents 99,9% (2020: 99%) of Valmet's global workforce. For other business travel modes, including rented vehicles, compensated mileages and hotel nights, data used covers Austria, Czech Republic, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Poland, Portugal, Russia, South Africa, Spain, Sweden, UK, USA, Canada, Brazil, Australia, New Zealand, India, Indonesia, Japan, Korea, Thailand, Vietnam, China and represents 97% of Valmet's global workforce

Employee commuting

Evaluation status

Not relevant, explanation provided

Please explain

Valmet has assessed the CO2 emissions from employee commuting in previous years. Based on those calculations, these emissions (40 000 tons CO2-eq) accounted for 1-2% of total scope 3, excluding use of sold products.

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

Valmet has assessed the CO2 emissions from the upstream leased assets in previous years. Based on those calculations, these emissions (12 000 tons CO2-eq) accounted for less than 1% of total scope 3, excluding use of sold products. The value of leased assets has remained quite similar since, causing no relevant foreseeable changes in emissions. Also, no other relevance criteria apply to the emission source.

Downstream transportation and distribution

Evaluation status

Not relevant, calculated

Emissions in reporting year (metric tons CO2e)

15,354

Emissions calculation methodology

Average data method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

17

Please explain

i) The analysis is based on our estimate of average magnitude of transportation amounts between air, train, ocean and road transportation, using same CO2 emission factors as for upstream transportation calculations. (ii) Data quality is fair. (iii) Valmet estimates that the customer share of total transportation emissions is ca. 15%.

In addition to purchase data, 17 % of emissions calculated are based on GHG emissions report from transportation service providers. The calculated transportation modes include air, train, ocean and road transportation.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Please explain

Valmet is not selling any intermediate products to downstream companies; thus processing of sold products category is not relevant for Valmet.

Use of sold products

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

100,781,075

Emissions calculation methodology

Methodology for direct use phase emissions, please specify

According to GHG Protocol, lifetime emissions are calculated for direct use-phase emissions from products that directly consume energy (fossil fuels, steam or electricity) or produce process GHG-emissions during the use of the product.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

i) Lifetime emissions calculation is based on Valmet data on average product specific energy consumption and product specifications including delivered capacity and intended fuel mix. Lifetime emissions from electricity and heat consumption are based on IEA data and scenarios for power sector emissions intensity.

ii) Data quality is fair. Quantifying and projecting the future emissions from use of sold products involves a large number of assumptions and the actual emissions from use of sold products are largely dependent on choices made by our customers. For these reasons, the figure estimated is an estimate in order to understand the magnitude of category 11 emissions and to define the base year for SBTi targets. Valmet is also developing it's methods to have more complete and accurate data for projecting the emissions from use of sold products.

iii) Data regarding the GHG-emissions of our products are from product specifications and case by case basis taking into consideration customer specific aspects.

Data includes Valmet’s 2021 sold entire paper, board and tissue production lines, fossil-fired fluidizer bed boilers and limekilns, during their expected lifetime (25 years). The CO2 calculation is based on Valmet’s average product specific energy consumption and product specifications including delivered capacity and intended fuel mix. N2O and CH4 included from biomass combustion in pulp and energy production. CO2 emissions from electricity are calculated based on IEA (2020) country-specific emission factors. CO2 emissions from steam are calculated based on Fisher International installed base fuel mix data. Emission factors for fuels are based on IPCC, Defra and Tilastokeskus. IEA Scenario for current policies (STEPS) power sector emission intensity reduction (CAGR) is utilized in projecting the lifetime emissions for electricity and steam. Quantifying and projecting the future emissions from use of sold products involves a large number of assumptions and the actual emissions from use of sold products are largely dependent on choices made by our customers. For these reasons, the figure reported is an estimate to understand the magnitude of category 11 lifetime emissions, which are representing more than 95% of Valmet’s value chain emissions. The data used covers 88% of Valmet’s three-year average of total PAP's and P&E's orders received.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Please explain

Valmet's products consist almost completely of steel, which can be 100% recycled after use. There recycling of steel has negative carbon footprint according to data provided by Worldsteel.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

Based on our assessment the number of Valmet's downstream leased assets is zero (0).

Franchises

Evaluation status

Not relevant, explanation provided

Please explain

Valmet has no franchising business. Thus, the number of relevant operations is zero (0).

Investments

Evaluation status

Not relevant, explanation provided

Please explain

Valmet has assessed the CO2 emissions from investments in previous years. Based on those calculations, the emissions (2,000 tons CO2-eq) accounted for less than 1% of total scope 3, excluding use of sold products. The monetary value of investments has remained quite similar since, causing no relevant foreseeable changes in emissions. Also, no other relevance criteria apply to the emission source.

Other (upstream)

Evaluation status

Not relevant, explanation provided

Please explain

No other relevant upstream emission sources have been identified.

Other (downstream)

Evaluation status

Not relevant, explanation provided

Please explain

No other relevant downstream emission sources have been identified.

C6.5a

(C6.5a) Disclose or restate your Scope 3 emissions data for previous years.

Past year 1

Start date

January 1, 2020

End date

December 31, 2020

Scope 3: Purchased goods and services (metric tons CO2e)

2,020,156

Scope 3: Capital goods (metric tons CO2e)

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)

19,973

Scope 3: Upstream transportation and distribution (metric tons CO2e)

99,800

Scope 3: Waste generated in operations (metric tons CO2e)

Scope 3: Business travel (metric tons CO2e)

17,680

Scope 3: Employee commuting (metric tons CO2e)

Scope 3: Upstream leased assets (metric tons CO2e)

Scope 3: Downstream transportation and distribution (metric tons CO2e)

14,970

Scope 3: Processing of sold products (metric tons CO2e)

Scope 3: Use of sold products (metric tons CO2e)

59,491,199

Scope 3: End of life treatment of sold products (metric tons CO2e)

Scope 3: Downstream leased assets (metric tons CO2e)

Scope 3: Franchises (metric tons CO2e)

Scope 3: Investments (metric tons CO2e)

Scope 3: Other (upstream) (metric tons CO2e)

Scope 3: Other (downstream) (metric tons CO2e)

Comment

Data has been restated for 2020 due to improved data coverage and quality related to system change.

Past year 2

Start date

January 1, 2019

End date

December 31, 2019

Scope 3: Purchased goods and services (metric tons CO2e)

1,937,529

Scope 3: Capital goods (metric tons CO2e)

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)

19,884

Scope 3: Upstream transportation and distribution (metric tons CO2e)

105,000

Scope 3: Waste generated in operations (metric tons CO2e)

Scope 3: Business travel (metric tons CO2e)

43,531

Scope 3: Employee commuting (metric tons CO2e)

Scope 3: Upstream leased assets (metric tons CO2e)

Scope 3: Downstream transportation and distribution (metric tons CO2e)

15,793

Scope 3: Processing of sold products (metric tons CO2e)

Scope 3: Use of sold products (metric tons CO2e)

45,149,059

Scope 3: End of life treatment of sold products (metric tons CO2e)

Scope 3: Downstream leased assets (metric tons CO2e)

Scope 3: Franchises (metric tons CO2e)

Scope 3: Investments (metric tons CO2e)

Scope 3: Other (upstream) (metric tons CO2e)

Scope 3: Other (downstream) (metric tons CO2e)

Comment

Data has been restated for 2019 due to improved data coverage and quality related to system change.

Past year 3

Start date

End date

Scope 3: Purchased goods and services (metric tons CO2e)

Scope 3: Capital goods (metric tons CO2e)

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)

Scope 3: Upstream transportation and distribution (metric tons CO2e)

Scope 3: Waste generated in operations (metric tons CO2e)

Scope 3: Business travel (metric tons CO2e)

Scope 3: Employee commuting (metric tons CO2e)

Scope 3: Upstream leased assets (metric tons CO2e)

Scope 3: Downstream transportation and distribution (metric tons CO2e)

Scope 3: Processing of sold products (metric tons CO2e)

Scope 3: Use of sold products (metric tons CO2e)

Scope 3: End of life treatment of sold products (metric tons CO2e)

Scope 3: Downstream leased assets (metric tons CO2e)

Scope 3: Franchises (metric tons CO2e)

Scope 3: Investments (metric tons CO2e)

Scope 3: Other (upstream) (metric tons CO2e)

Scope 3: Other (downstream) (metric tons CO2e)

Comment

C-CG6.6

(C-CG6.6) Does your organization assess the life cycle emissions of any of its products or services?

	Assessment of life cycle emissions	Comment
Row 1	Yes	We have roughly ~50% of portfolio covered by LCA calculations.

C-CG6.6a

(C-CG6.6a) Provide details of how your organization assesses the life cycle emissions of its products or services.

	Products/services assessed	Life cycle stage(s) most commonly covered	Methodologies/standards/tools applied	Comment
Row 1	Representative selection of products/services	Cradle-to-grave	ISO 14040 & 14044 Other, please specify GaBi 4 software	We have estimated that around four percent (4%) of our environmental impact arises through

				our supply chain and around one percent (1%) through our own operations. The remaining 95 percent is caused when our customers use of our technologies over their entire life cycles. In 2021 Valmet lauched its Climate program and set climate targets for the whole value chain. Valmet also calculated lifetime CO2 emissions of our sold products (Scope 3 category 11) in 2021. Valmet has roughly ~50% of portfolio covered by LCA calculations. Through Valmet automation systems we have direct access to some of our customers processes/data. In 2020, LCA on press felt and filtration products was conducted.

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

0.000026

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

102,765

Metric denominator

unit total revenue

Metric denominator: Unit total

3,935,000,000

Scope 2 figure used

Market-based

% change from previous year

7.1

Direction of change

Decreased

Reason for change

Valmet's reporting for 2021 included the acquisitions made in 2020, and these acquisitions increased Valmet's environmental footprint. Valmet's net sales were higher in
2021 compared to 2020, however the CO2 emissions did not grow higher in proportion. In Valmet's Climate program, we invest in CO2 emission reductions. Valmet's Climate program targets will be achieved without emission compensation. Main actions to reduce Scope 1 and 2 CO2 emissions in own operations include replacement of fossil fuels with renewables in locations; purchasing CO2 free electricity and district heat; and implementing energy efficiency improvements in locations. In 2021, 21% of Valmet's total energy consumption was from renewable or carbon free sources, compared to 9% in 2020, so we were able to make a significant increase in usage of carbon free energy in our operations. We make continuous investments in energy efficiency in our facilities and our production machines and processes to reduce our CO2 emissions (see C4.3a&C4.3b). Lighting is continuously upgraded to LED lighting. For example in 2021, replacement of fluorescent / halogen lamps by LED lighting was completed in Tampere Yrittäjänkatu, Finland; Biddeford, USA; Shanghai, Xian and Tianjin, China; and Trois Rivieres, Canada. Various upgrades to heating and cooling systems and their control systems were made in 2021 in Tampere Yrittäjänkatu, Finland and Karlstad, Sweden locations. Investments are made continuously as part of building maintenance. During 2021 roof repairs and upgrades were done in four locations. Investments are made continuously in process and machine replacements and upgrades including automation system improvements. The new installed machines and processes are more energy efficient than the older technology that is being replaced, often more than 20 years old. Upgrades for more energy efficient machines were done in eg Wuxi, China; Clarks Summit, USA; Lapua, Finland; and Jelenia Gora, Poland locations. Fuel switch investments were made to switch from diesel forklifts to electric forklifts in Lapua and Shanghai workshops. All in all, in 2021 we saw an overall decrease in our total Scope 1

and Scope 2 (market based) emissions by 3,5% (or -3700 tonnes CO2e) compared to previous year and relative to the increased record high net sales this resulted in a 7.1% decrease in CO2 intensity relative to net sales

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C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

No

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
Brazil	46.9
Canada	221.8
China	2,026.94
Finland	8,081.23
France	720.08
India	39.29
Indonesia	0.64
Italy	69.47
Portugal	1,173.14
Spain	49.02
Sweden	1,826.58
Thailand	122.67
United Kingdom of Great Britain and Northern Ireland	490.62
United States of America	6,680.41

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By business division

C7.3a

(C7.3a) Break down your total gross global Scope 1 emissions by business division.

Business division	Scope 1 emissions (metric ton CO2e)
Automation business line (AUT)	3.22
Paper business line (PAP)	3,743.48
Pulp and Energy business line (PE)	482.44
Services business line (SER)	10,650.49
Asia Pacific Area	123.31
China Area	266.9
EMEA Area	1,259.72
North America Area	4,984.41
South America Area	34.82

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Brazil	166.86	103.37
Canada	259.31	0.99
Chile	142.51	142.52
China	26,620.19	35,904.16
Czechia	369.16	377.31
Finland	22,779.36	18,308.93
France	136.27	145.52
India	415.94	415.94
Indonesia	1,302.02	1,302.01
Italy	93.77	140.16
Poland	5,865.72	6,491.63
Portugal	1,268.43	1,613.5
Spain	106.3	117.96
Sweden	2,175.79	1,723.91
Thailand	850.44	850.44
United Kingdom of Great Britain and Northern Ireland	141.69	196.8
United States of America	10,697.32	13,381.27

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By business division

C7.6a

(C7.6a) Break down your total gross global Scope 2 emissions by business division.

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Automation business line (AUT)	1,752.47	1,768.52
Paper business line (PAP)	38,847.67	39,682.62
Pulp and Energy business line (PE)	1,982.7	1,906.99
Services business line (SER)	16,191.59	21,757.65
Asia Pacific Area (AP)	2,152.46	2,152.45
China Area	3,983.42	5,513.85
EMEA Area	1,721.01	1,889.23
North America Area	6,497.53	6,328.43
South America Area	262.25	216.69

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Decreased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	12,539.4	Decreased	11.8	In Finland, 45,000 MWh of renewable electricity was purchased with guarantees of origin, equivalent to12,060 tCO2. In Lenox, USA renewable electricity was

				purchased for part of the year, amounting to 515 MWh, equivalent to 211.7 tCO2. Switch was made to renewable district heat in Juankoski, Finland (1,872 MWh), equivalent to 267.7 tCO2. In 2021 it is estimated that -12,539.4 tons of CO2e were reduced by change to renewable energy, and our total market-based Scope 1 and Scope 2 emissions in the previous year (2020) were 10,6469 tCO2e, therefore we arrived at -11.8% through (12,539.4/106,469) * 100= -11.8% (i.e. a 11.8% decrease in emissions).
Other emissions reduction activities	2,924	Decreased	2.7	In 2021 it is estimated that -2,924 tons of CO2e were reduced by our emissions reduction projects, and our total location-based Scope 1 and Scope 2 emissions in the previous year (2020) were 106,469 tCO2e, therefore we arrived at -2,7% through (-2,924/10,6469) * 100= -2,7% (i.e. a 2,7% decrease in emissions).
Divestment	0	No change	0	There were no divestments in 2021.
Acquisitions	6,894	Increased	6.5	Valmet's reporting for 2021 included the acquisitions made in 2020: Valmet acquired PMP Group in October 2020. In 2021, 6,894 tons of CO2e were included in our emissions from acquisitions from the acquired locations in 2020 (Changzhou, China; Jelenia Gora, Poland; Swiecie, Poland; South Beloit - this is a quite small location and data from there is combined with Valmet's older Beloit location) and our total market-based Scope 1 and Scope 2 emissions in the previous year (2020) were 106,469 tCO2e, therefore we arrived at 6,5% through (6,894/106,469) * 100= 6.5% (i.e. a 6.5% increase in emissions).
Mergers	0	No change	0	No mergers in 2021.
Change in output	4,052	Increased	3.8	Valmet's net sales increased 3,3% from 3,740 MEUR in 2020 to 3,865 MEUR in 2021. 2021 net sales here has been adjusted by removing the net sales of the acquisition 2020 (PMP Group), whose

				emission data is accounted for on the row "acquisitions". Based on the 2021 CO2 emissions of 94,940 tonnes (Scope 1 + Scope 2 location based), this should account for an increase of 3,133 tonnes CO2. A new facility was opened at Valmet's Ovar, Portugal location, resulting in an increase of 919 tCO2. Altogether output increased 4,052.0 tCO2. Our total market-based Scope 1 and Scope 2 emissions in the previous year (2020) were 106,469 tCO2e, therefore we arrived at 3,8% through (4,052/10,6469) * 100= 3,8% (i.e. a 3,8% increase in emissions).
Change in methodology	0	No change	0	No change in methodology in 2021.
Change in boundary	0	No change	0	No changes in boundary in 2021.
Change in physical operating conditions	813.3	Increased	0.8	Colder weather in the Nordics during the winter months; an estimated 813.3 tons CO2 increase due to more heating need (813.3/106,469=0.8%). Our total market-based Scope 1 and Scope 2 emissions in the previous year (2020) were 106,469 tCO2e, therefore we arrived at 0.8% through (813,3/106,469) * 100= 0.8% (i.e. a 0.8% increase in emissions).
Unidentified	0	No change	0	No changes.
Other	0	No change	0	No changes.

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Market-based

C-CG7.10

(C-CG7.10) How do your total Scope 3 emissions for the reporting year compare to those of the previous reporting year?

Increased

C-CG7.10a

(C-CG7.10a) For each Scope 3 category calculated in C6.5, specify how your emissions compare to the previous year and identify the reason for any change.

Purchased goods and services

Direction of change

Increased

Primary reason for change

Acquisitions

Change in emissions in this category (metric tons CO2e)

762,890

% change in emissions in this category

37.8

Please explain

Due to organic growth and acquisitions Valmet net sales, and therefore also supplier spend has increased annually. Valmet's CO2 calculation from Purchased goods and services is spend-based, therefore also the CO2 emissions have increased.

Fuel and energy-related activities (not included in Scopes 1 or 2)

Direction of change

Decreased

Primary reason for change

Change in renewable energy consumption

Change in emissions in this category (metric tons CO2e)

978

% change in emissions in this category

4.9

Please explain

Due to increased renewable use, Valmet's CO2 emissions from fuel and energy-related activities has decreased.

Upstream transportation and distribution

Direction of change

Increased

Primary reason for change

Acquisitions

Change in emissions in this category (metric tons CO2e)

2,561

% change in emissions in this category

2.6

Please explain

Due to organic growth and acquisitions Valmet net sales, and therefore also transportation spend has increased. Valmet's CO2 calculation is mainly spend-based, therefore also the CO2 emissions have increased.

Business travel

Direction of change

Decreased

Primary reason for change

Other, please specify

Due to Covid and related travel restrictions, in addition to and stricter Travel policy

Change in emissions in this category (metric tons CO2e)

154

% change in emissions in this category

0.9

Please explain

Due to Covid pandemic and Climate Program related stricter Travel policy, Valmet has decreased business travelling, espesicially flying.

Downstream transportation and distribution

Direction of change

Increased

Primary reason for change

Acquisitions

Change in emissions in this category (metric tons CO2e)

384

% change in emissions in this category

2.6

Please explain

Due to organic growth and acquisitions Valmet net sales, and therefore also transportation spend has increased. Valmet's CO2 calculation is mainly spend-based, therefore also the CO2 emissions have increased.

Use of sold products

Direction of change

Increased

Primary reason for change

Other, please specify

Due to increased sold of products and orders to China

Change in emissions in this category (metric tons CO2e)

41,289,876

% change in emissions in this category

69.4

Please explain

Change due to Valmet orders received increased 30% (especially in China, 7%) in 2021. Orders to China increase the CO2 emissions significantly due to country level high use of fossil energy for electricity and steam production, which is impacting to use phase emissions, as the CO2 calculation is based on country spesific emission factors.

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 0% but less than or equal to 5%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	Yes
Consumption of purchased or acquired steam	Yes
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	0	102,718	102,718
Consumption of purchased or acquired electricity		47,716	183,738	231,454
Consumption of purchased or acquired heat		39,419	44,066	83,485
Consumption of purchased or acquired steam		0	5,429	5,429
Consumption of self-generated non-fuel renewable energy		0		0
Total energy consumption		87,135	335,951	423,086

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	No
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	Yes
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Sustainable biomass

Heating value
LHV

Total fuel MWh consumed by the organization
0

MWh fuel consumed for self-generation of heat
0

MWh fuel consumed for self-generation of steam
0

Comment

Other biomass

Heating value
LHV

Total fuel MWh consumed by the organization
857

MWh fuel consumed for self-generation of heat
857

MWh fuel consumed for self-generation of steam
0

Comment
Charcoal. Used in only two locations: the Karlstad Foundry in Sweden, for industrial process heat, and in Tampere, Osuusmyllynkatu, Finland R&D center in pilot trials for R&D to create district heating.

Other renewable fuels (e.g. renewable hydrogen)

Heating value
LHV

Total fuel MWh consumed by the organization
0

MWh fuel consumed for self-generation of heat
0

MWh fuel consumed for self-generation of steam

0

Comment

Coal

Heating value

LHV

Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

Comment

Oil

Heating value

LHV

Total fuel MWh consumed by the organization

5,108

MWh fuel consumed for self-generation of heat

5,108

MWh fuel consumed for self-generation of steam

0

Comment

Light fuel oil mainly used for industrial process heat in Jyväskylä Foundry, Finland, Karlstad Foundry, Sweden and Sundsvall workshop, Sweden . Also used for space heating in
Biddeford, USA. Diesel mainly used for industrial process heat in Shanghai Foundry China and in Zaragoza Spain workshop.

Gas

Heating value

LHV

Total fuel MWh consumed by the organization

96,752

MWh fuel consumed for self-generation of heat

68,477

MWh fuel consumed for self-generation of steam

28,275

Comment

Natural gas and liquified petroleum gas (LPG). Estimated that 1/3 of natural gas goes to steam.

Other non-renewable fuels (e.g. non-renewable hydrogen)

Heating value

LHV

Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

Comment

Total fuel

Heating value

LHV

Total fuel MWh consumed by the organization

102,717

MWh fuel consumed for self-generation of heat

74,442

MWh fuel consumed for self-generation of steam

28,275

Comment

C8.2d

(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is

				consumed by the organization (MWh)
Electricity	0	0	0	0
Heat	743.4	0	0	0
Steam	0	0	0	0
Cooling	0	0	0	0

C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a zero or near-zero emission factor in the market-based Scope 2 figure reported in C6.3.

Sourcing method

Unbundled energy attribute certificates (EACs) purchase

Energy carrier

Electricity

Low-carbon technology type

Sustainable biomass

Country/area of low-carbon energy consumption

Finland

Tracking instrument used

GO

Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)

45,000

Country/area of origin (generation) of the low-carbon energy or energy attribute

Finland

Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)

Comment

Details about this portion of renewable energy consumption: Valmet has acquired RES-GO guarantees of origin for electricity (Renewable Energy Sources –Guarantee of Origin) which are subject to EECS (European Energy Certificate System).

Sourcing method

Purchase from an on-site installation owned by a third party

Energy carrier

Electricity

Low-carbon technology type

Solar

Country/area of low-carbon energy consumption

Finland

Tracking instrument used

Contract

Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)

224.82

Country/area of origin (generation) of the low-carbon energy or energy attribute

Finland

Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)

Comment

Solar electricity installation owned by a third party at Valmet's Jyväskylä and Tampere Lentokentänkatu Finland locations.

Sourcing method

Default delivered electricity from the grid (e.g. standard product offering by an energy supplier), supported by energy attribute certificates

Energy carrier

Electricity

Low-carbon technology type

Hydropower (capacity unknown)

Country/area of low-carbon energy consumption

Canada

Tracking instrument used

Contract

Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)

1,976.43

Country/area of origin (generation) of the low-carbon energy or energy attribute

Canada

Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)

Comment

Valmet's facilities in Canada purchase electricity from supplier Hydro-Québec. Hydro-Québec meets the energy needs of its customers almost entirely with hydroelectricity. The utility also purchases small amounts of electricity from independent producers in Québec, elsewhere in Canada and the United States. These purchases include renewable energies (hydroelectricity, bioenergy and wind energy) as well as non-renewal energies (nuclear and thermal energy).

Sourcing method

Heat/steam/cooling supply agreement

Energy carrier

Heat

Low-carbon technology type

Low-carbon energy mix, please specify

District heat provided for Valmet's Jyväskylä, Järvenpää and Juankoski Finland facilities, with low carbon energy certificates from the suppliers.

Country/area of low-carbon energy consumption

Finland

Tracking instrument used

Contract

Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)

39,419.06

Country/area of origin (generation) of the low-carbon energy or energy attribute

Finland

Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)

Comment

Valmet purchases low carbon district heating in its facilities in Jyväskylä, Järvenpää and Juankoski Finland. District heating is provided by the supplier with certification documents verifying origin of renewable district heating.

Sourcing method

Green electricity products from an energy supplier (e.g. green tariffs)

Energy carrier

Electricity

Low-carbon technology type

Renewable energy mix, please specify

Renewable energy purchased from supplier at Valmet's Lenox USA facility for part of the reporting year, with verification documentation verifying consumption of renewable electricity.

Country/area of low-carbon energy consumption

United States of America

Tracking instrument used

Contract

Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)

515

Country/area of origin (generation) of the low-carbon energy or energy attribute

United States of America

Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)

Comment

Renewable energy purchased from supplier at Valmet's Lenox USA facility for part of the reporting year, with verification documentation verifying consumption of renewable electricity. Number of renewable energy certificates: 2856.

C8.2g

(C8.2g) Provide a breakdown of your non-fuel energy consumption by country.

Country/area

Brazil

Consumption of electricity (MWh)

1,675.29

Consumption of heat, steam, and cooling (MWh)

0

Total non-fuel energy consumption (MWh) [Auto-calculated]

1,675.29

Country/area

Canada

Consumption of electricity (MWh)

1,976.43

Consumption of heat, steam, and cooling (MWh)

0

Total non-fuel energy consumption (MWh) [Auto-calculated]

1,976.43

Country/area

Chile

Consumption of electricity (MWh)

356.3

Consumption of heat, steam, and cooling (MWh)

0

Total non-fuel energy consumption (MWh) [Auto-calculated]

356.3

Country/area

China

Consumption of electricity (MWh)

42,790.46

Consumption of heat, steam, and cooling (MWh)

1,053.66

Total non-fuel energy consumption (MWh) [Auto-calculated]

43,844.12

Country/area
Czechia

Consumption of electricity (MWh)
93.72

Consumption of heat, steam, and cooling (MWh)
734.93

Total non-fuel energy consumption (MWh) [Auto-calculated]

828.65

Country/area
Finland

Consumption of electricity (MWh)
100,887.09

Consumption of heat, steam, and cooling (MWh)
58,409.11

Total non-fuel energy consumption (MWh) [Auto-calculated]

159,296.2

Country/area
France

Consumption of electricity (MWh)
2,486.72

Consumption of heat, steam, and cooling (MWh)
0

Total non-fuel energy consumption (MWh) [Auto-calculated]

2,486.72

Country/area
India

Consumption of electricity (MWh)

556.82

Consumption of heat, steam, and cooling (MWh)

0

Total non-fuel energy consumption (MWh) [Auto-calculated]

556.82

Country/area

Indonesia

Consumption of electricity (MWh)

1,710.25

Consumption of heat, steam, and cooling (MWh)

0

Total non-fuel energy consumption (MWh) [Auto-calculated]

1,710.25

Country/area

Italy

Consumption of electricity (MWh)

305.65

Consumption of heat, steam, and cooling (MWh)

0

Total non-fuel energy consumption (MWh) [Auto-calculated]

305.65

Country/area

Poland

Consumption of electricity (MWh)

3,097.38

Consumption of heat, steam, and cooling (MWh)

6,734.53

Total non-fuel energy consumption (MWh) [Auto-calculated]

9,831.91

Country/area

Portugal

Consumption of electricity (MWh)

4,298.32

Consumption of heat, steam, and cooling (MWh)

0

Total non-fuel energy consumption (MWh) [Auto-calculated]

4,298.32

Country/area

Spain

Consumption of electricity (MWh)

411.7

Consumption of heat, steam, and cooling (MWh)

0

Total non-fuel energy consumption (MWh) [Auto-calculated]

411.7

Country/area

Sweden

Consumption of electricity (MWh)

42,391.02

Consumption of heat, steam, and cooling (MWh)

21,981.6

Total non-fuel energy consumption (MWh) [Auto-calculated]

64,372.62

Country/area

Thailand

Consumption of electricity (MWh)

1,772.49

Consumption of heat, steam, and cooling (MWh)

0

Total non-fuel energy consumption (MWh) [Auto-calculated]

1,772.49

Country/area

United States of America

Consumption of electricity (MWh)

26,021.2

Consumption of heat, steam, and cooling (MWh)

0

Total non-fuel energy consumption (MWh) [Auto-calculated]

26,021.2

Country/area

United Kingdom of Great Britain and Northern Ireland

Consumption of electricity (MWh)

622.8

Consumption of heat, steam, and cooling (MWh)

0

Total non-fuel energy consumption (MWh) [Auto-calculated]

622.8

C-CG8.5

(C-CG8.5) Does your organization measure the efficiency of any of its products or services?

	Measurement of product/service efficiency	Comment

Row 1	Yes	Improving energy and resource efficiency is one of the focus areas in our R&D work. We are measuring and improving the efficiency of our products and services against average products and services in the market and that way offering energy efficient products for our customers.

C-CG8.5a

(C-CG8.5a) Provide details of the metrics used to measure the efficiency of your organization's products or services.

Category of product or service
Industrial machinery

Product or service (optional)
OptiConcept M board and paper machine (mid wide)

% of revenue from this product or service in the reporting year
2.4

Efficiency figure in the reporting year
223

Metric numerator
megawatt hour (MWh)

Metric denominator
metric ton of product

Comment
OptiConcept M is a modular paper machine concept for sustainable papermaking. OptiConcept M's operating profitability is based on the concept's overall efficiency – energy- and resource-efficient processes and high-speed production. This smart paper machine concept combines the advantages of standardization with modular tailoring. The modular processes and solutions, set within optimally fixed machine widths, allow the designing of individual papermaking lines for customers' varying needs and targets.

OptiConcept M's energy efficiency is achieved by taking into account all the surrounding processes and systems, such as the machine controls. With OptiConcept M our customer can achieve up to 30% lower energy consumption compared to average production lines. In addition, 30% saving in fresh water consumption and up to 430,000 kg less CO2 emissions.

This mid wide paper machine is more efficient than conventional paper machines, as it uses 27% less electricity (223 kWh/t vs 283 kWh/t) and 100% less gas (0 m3/t vs 4,8 m3/t).

Category of product or service

Heating & cooling systems

Product or service (optional)

Dryer fan modules

% of revenue from this product or service in the reporting year

0.3

Efficiency figure in the reporting year

68

Metric numerator

%

Metric denominator

Not applicable

Comment

New circulation air fan impellers developed, tested and taken into use 2019. Reduced costs due to higher air flow, less modules needed. Reduced energy consumption and running costs. High total efficiency, Fan efficiency up to 68 %.

Category of product or service

Power generation equipment

Product or service (optional)

Biomass boiler technology: With CFB and BFB boilers

% of revenue from this product or service in the reporting year

6

Efficiency figure in the reporting year

90

Metric numerator

%

Metric denominator

Not applicable

Comment

With CFB and BFB boilers, fossil fuels can be replaced with renewables in continuously varying proportions. Our multifuel solutions offers fuel flexibility and high efficiency. With these boilers, customers have the possibility to maximize use of low-carbon fuels, thus reduced CO2 emissions.

Energy efficiency figure defined here represents boiler fuel efficiency (efficiency from fuel to steam), which is typically 90% (EN code).

Category of product or service

Industrial machinery

Product or service (optional)

Pulp cooking fiber line

% of revenue from this product or service in the reporting year

6

Efficiency figure in the reporting year

5,000

Metric numerator

liter

Metric denominator

metric ton of product

Comment

We guarantee the efficiency and performance of all our main process islands in a pulp mill. We give guarantees for various parameters such as power, steam, water and chemical consumption as well as the number of effluent streams. Typically guarantees are verified in a 48-hour or longer test runs at the mills.

For example, in our state-of-the-art cooking and fiber line process we have guaranteed very low water consumption of 5 m3/ADT pulp (ADT = Air Dried Ton).

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

Description

Waste

Metric value

42,750

Metric numerator

tonnes of total waste

Metric denominator (intensity metric only)

Net sales: 3935 MEUR (2021), 3,740 MEUR (2020)

% change from previous year

3.6

Direction of change

Decreased

Please explain

Change on previous year for absolute waste amounts was a decrease of 3.6% ((44330-42750) / 44330*100). Relative to net sales, our waste intensity in 2021 also decreased. Valmet's reporting for 2021 included the acquisitions made in 2020. Please note: Waste amounts can also vary year to year depending on when waste collection occurs.

C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

	Investment in low-carbon R&D	Comment
Row 1	Yes	Valmet's mission is to convert renewable resources into sustainable results. The aim of our research and development work is to create new technologies, products and services that address customer needs and help respond to some of the most important global megatrends: enhancing the efficient use of raw materials, water and energy, promoting the use of renewable raw materials and reducing emissions. Most if not all of R&D work is linked to high end low carbon products or services. At Valmet we measure efficiency of our technology and products by comparing them to average product in the market. That way we can develop and offer our customer most energy and material efficient products and technologies in the market, which enable also transition towards carbon neutrality. The actual efficiency of our product is mostly bound to our customer and their process parameters. Use phase of Valmet's technologies is an important part of Valmet's Climate program launched in 2021. Most of Valmet's value chain's carbon footprint comes from the use phase of its technologies. By 2030, our target is to enable 100 percent carbon neutral production for all our pulp and paper customers by developing new process technologies. Through R&D, we are also improving the energy efficiency of our current offering by 20 percent.

C-CG9.6a

(C-CG9.6a) Provide details of your organization's investments in low-carbon R&D for capital goods products and services over the last three years.

Technology area

Renewable energy

Stage of development in the reporting year

Full/commercial-scale demonstration

Average % of total R&D investment over the last 3 years

81 - 100%

R&D investment figure in the reporting year (optional)

Comment

Development activities of biomass conversion technologies in the Pulp and Energy business line have focused on cost-efficient and sustainable solutions for large and mid-size pulp mills as well as for growth areas such as dissolving pulp production. In boiler technology, the targets are to reduce environmental impact, improve efficiency, lower costs and extend the fuel portfolio.

In biomass conversion Valmet's research and development focus is on the use of biomass in energy production and as a raw material for end products. The target is to enable new revenue streams for our customers and the creation of environmentally sustainable solutions.

During last three years, Valmet has introduced several new technologies to the market, including a pyrolysis solution for bio-oil production, a gasifier for solid biomass and waste and BioTrac biomass pretreatment system for production of bioethanol. All these technologies are being demonstrated in full-size industrial or pilot customer plants.

Technology area

Energy efficient heating and cooling systems

Stage of development in the reporting year

Pilot demonstration

Average % of total R&D investment over the last 3 years

81 - 100%

R&D investment figure in the reporting year (optional)

Comment

For example; new high efficiency circulation air fan impellers developed, tested and taken into use 2019. Resulting reduced energy consumption and running costs.

Stage of development: Energy efficient heating and cooling systems technology is at the pilot demonstration-stage, but also these types of projects are on other development stages. Valmet R&D has 4 stages of development: feasibility, developing & piloting, prototyping & demonstrating and after launching.

Technology area

Other energy efficient products or efficiency drivers

Stage of development in the reporting year

Pilot demonstration

Average % of total R&D investment over the last 3 years

81 - 100%

R&D investment figure in the reporting year (optional)

Comment

Example 1: Kappa QX -analyzer for pulp and paper sector
Developed to meet customer's growing process control and quality control expectations, improve commissioning ramp-up and availability plus cut the customer installation costs and increase energy, chemical and raw material savings.
Stage of development: Kappa QX technology is at the applied pilot demonstration-stage, but also these type of projects are on other development stages. Valmet R&D has 4 stages of development: feasibility, developing & piloting, prototyping & demonstrating and after launching.

Example 2: New Recovery Ash analyzer for recovery boilers. A solution developed for cost optimization between recovery boiler cleanability (=mill availability), make-up chemical costs and recovery boiler steam and electricity generation. With this solution, customer can reach energy, chemical and raw material savings.

Example 3: Service packages developed for loop seal heat exchangers which enable shift to renewable or sustainable raw materials or fuels.

Example 4: Valmet's Waste to energy CFB boiler solution, enabling highest possible energy efficiency. This project is in launch phase. Our technology produces very efficient combustion, which results in extremely good environmental performance. It also offers electrical efficiency that can be as high as in biomass-fired power plants.

Example 5: Valmet stepped into a new business in textile recycling by delivering key technology for Renewcell's new textile recycling plant in Sundsvall, Sweden. It will be

the world's first commercial-scale textile recycling plant of its kind.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

valmet-gri-supplement-2021.pdf

Page/ section reference

See p. 8, GRI 305-1 (indicators that have been assured are identified with ‘x’ in the Assurance column of the GRI content index in Valmet GRI Supplement 2021 in pages 4–10 (the “Selected Information”).

See p. 25 for GRI 305-1 and GRI 305-2: Greenhouse gas (GHG) emissions (Scope 1 and 2)

See also p. 43-44 Independent Limited Assurance Report: 'Selected Information' and 'Standard and level of assurance'.

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach

Scope 2 location-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

valmet-gri-supplement-2021.pdf

Page/ section reference

See p. 8, GRI 305-2 (indicators that have been assured are identified with ‘x’ in the Assurance column of the GRI content index in Valmet GRI Supplement 2021 in pages 4–10 (the “Selected Information”).

See p. 25 for GRI 305-1 and GRI 305-2: Greenhouse gas (GHG) emissions (Scope 1 and 2 (location based and market based))

See also p. 43-44 Independent Limited Assurance Report: 'Selected Information' and 'Standard and level of assurance'.

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

Scope 2 approach

Scope 2 market-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

valmet-gri-supplement-2021.pdf

Page/ section reference

See p. 8, GRI 305-2 (indicators that have been assured are identified with ‘x’ in the Assurance column of the GRI content index in Valmet GRI Supplement 2021 in pages 4–10 (the “Selected Information”).

See p. 25 for GRI 305-1 and GRI 305-2: Greenhouse gas (GHG) emissions (Scope 1 and 2 (location based and market based))

See also p. 43-44 Independent Limited Assurance Report: 'Selected Information' and 'Standard and level of assurance'.

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

C10.1c

(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope 3 category

Scope 3: Purchased goods and services
Scope 3: Upstream transportation and distribution
Scope 3: Business travel
Scope 3: Downstream transportation and distribution
Scope 3: Use of sold products

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

valmet-gri-supplement-2021.pdf

Page/section reference

See p. 8, GRI 305-3 (indicators that have been assured are identified with ‘x’ in the Assurance column of the GRI content index in Valmet GRI Supplement 2021 in pages 4–10 (the “Selected Information”).

See p. 25 for GRI 305-3: Other indirect greenhouse gas (GHG) emissions (Scope 3)

See also p. 43-44 Independent Limited Assurance Report: 'Selected Information' and 'Standard and level of assurance'.

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C6. Emissions data	Year on year change in emissions (Scope 1)	ISAE 3000	See page 25 (GRI 305-1 and GRI 305-2)and see pages 43-44 in Valmet's GRI supplement 2021 at https://www.valmet.com/globalassets/investors/reports--presentations/annual-reports/2021/valmet-gri-supplement-2021.pdf 1
C6. Emissions data	Year on year change in emissions (Scope 2)	ISAE 3000	See page 25 (GRI 305-1 and GRI 305-2)and see pages 43-44 in Valmet's GRI supplement 2021 at https://www.valmet.com/globalassets/investors/reports--presentations/annual-reports/2021/valmet-gri-supplement-2021.pdf 1

C4. Targets and performance	Year on year emissions intensity figure	ISAE 3000	See page 25 (GRI 305-1 and GRI 305-2)and see pages 43-44 in Valmet's GRI supplement 2021 at https://www.valmet.com/globalassets/investors/reports--presentations/annual-reports/2021/valmet-gri-supplement-2021.pdf 1
C4. Targets and performance	Progress against emissions reduction target	ISAE 3000	See pages 43-44 in Valmet's GRI supplement 2021 at https://www.valmet.com/globalassets/investors/reports--presentations/annual-reports/2021/valmet-gri-supplement-2021.pdf 1
C6. Emissions data	Year on year change in emissions (Scope 3)	ISAE 3000	See page 25 (GRI 305-1 and GRI 305-2 and GRI 302-3)and see pages 43-44 in Valmet's GRI supplement 2021 at https://www.valmet.com/globalassets/investors/reports--presentations/annual-reports/2021/valmet-gri-supplement-2021.pdf 1
C8. Energy	Energy consumption	ISAE 3000	See page 23 (GRI 302-1) and see pages 43-44 in Valmet's GRI supplement 2021 at https://www.valmet.com/globalassets/investors/reports--presentations/annual-reports/2021/valmet-gri-supplement-2021.pdf 1

1 valmet-gri-supplement-2021.pdf

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

No, and we do not anticipate being regulated in the next three years

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

No

C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Objective for implementing an internal carbon price

Navigate GHG regulations
Change internal behavior
Drive energy efficiency
Drive low-carbon investment
Identify and seize low-carbon opportunities
Supplier engagement

GHG Scope

Scope 1
Scope 2
Scope 3

Application

We have set ambitious CO2 reduction targets and concrete actions for the whole value chain by 2030. To achieve the targets we are using an internal price on carbon to calculate financial impacts of different actions and also in different climate scenario scenarios covering Scopes 1, 2 and 3. Internal carbon price is applied for assessing and managing carbon-related risks and opportunities within own operations, procurement and technology & R&D, e.g, for driving energy efficiency investments, identifying low-carbon opportunities (Opp1) and engaging suppliers.

We are using internal carbon price to navigate in GHG regulations and e.g., evaluate the possible increase in operational costs in case of carbon pricing mechanisms . Applying a carbon price helps to change behaviour as it increases cost-sensitive behaviour of employees. We also use it for providing our customers infomation on CO2 emissions and their price between baseline and Valmet solution to evaluating investment paybacks.

Actual price(s) used (Currency /metric ton)

54

Variance of price(s) used

Valmet uses differentiated and evolutionary pricing in different market areas across the entire company.

The carbon price used to evaluate financial impact of CO2 for customers, when comparing existing technology with Valmet's low carbon technology alternative: E.g. actual price used for European investments in 2021 was 54EUR/tCO2. Market carbon price used varied between 4-60EUR/tCO2 globally (based on International Carbon Action Partnership (ICAP)).

The market carbon price used to evaluate financial impact of CO2 for supply chain and own operations varied between 6-340 EUR/tCO2 globally (based on International Energy Agency (IEA) and The Network for Greening the Financial System (NGFS) estimates in +1.5 and +4 degree scenario in 2030).

Type of internal carbon price

Shadow price

Impact & implication

We have set ambitious CO2 reduction targets and concrete actions for the whole value chain by 2030. The internal price on carbon has impacted decisions to invest in energy efficiency improvements, buy renewable energy and low carbon products, and offer low-carbon technologies to customers to further support Climate program implementation.

E.g. In 2021, our locations renewed lighting, distribution rooms, heat recovery, air ventilation and other operations to be more energy efficient. In Sweden, we executed energy management audits for all locations to identify future efficiency actions. Several studies are ongoing for the installation of solar energy in our facilities. We have also explored the options for purchasing carbon neutral district heating in the rest of our main locations in Finland and Sweden, similar to Jyväskylä and Järvenpää in Finland, which have been purchasing carbon neutral district heating since 2016. At the end of the year, 20 percent of Valmet's global electricity consumption was CO2 free.

E.g. Valmet applied internal carbon price in assessing and managing the risk of EU's Carbon Border Adjustment Mechanism by using carbon price as the CBAM charge will be based on the EU ETS allowance price (Risk 1). Depending on the climate scenario, the financial impact will be significant as the EU ETS carbon price can vary from 34 EUR to 340 EUR per ton of CO2 in 2030 in Europe.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers

Yes, our customers/clients

Yes, other partners in the value chain

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Engagement & incentivization (changing supplier behavior)

Details of engagement

Run an engagement campaign to educate suppliers about climate change
Provide training, support, and best practices on how to make credible renewable energy usage claims
Climate change performance is featured in supplier awards scheme

% of suppliers by number

1

% total procurement spend (direct and indirect)

30

% of supplier-related Scope 3 emissions as reported in C6.5

50

Rationale for the coverage of your engagement

Purpose of this supplier engagement is to get all the relevant suppliers globally to engaged to achieve Valmet's supply chain CO2 reduction targets and deliver sustainable supply chain commitments.

Valmet Climate program includes CO2 reduction target (-20% by 2030) for supply chain. To be able to reach the target we are engaging selected key and other relevant suppliers to support sustainable practices and reduce CO2 emissions in our supply chain. Valmet has a sustainability engagement program with targets, KPIs and follow-up mechanisms for selected suppliers.

Valmet has a global supplier base with some 17,000 active suppliers, including around 100 key suppliers, in more than 50 countries. Key suppliers are suppliers, which are supply business critical components (such as steel) to Valmet, have significant spend by coverage or high energy consuming purchase category or have been identified as potentially becoming business critical suppliers to Valmet. As Valmet's supplier base is extensive, one of Valmet's targets is to support the selected key supplier to meet the level of sustainability expected. They are critical for Valmet for many reasons, but in terms of CO2 emissions and volume they are very important partners. Valmet has also identified high CO2 emitting suppliers to be engaged. These high intensive suppliers are mainly raw material providers. Altogether these suppliers represent 1% of suppliers by number and 30% of total spend and cause more than 50% of Valmet's Scope 3 category 1 (C.6.5 Purchased goods and services) emissions.

Valmet is engaging these suppliers to educate, provide training and set climate targets. Also are collecting information about their maturity level realted to climate change mitigation and their energy and CO2 reporting readiness. Hoping to be able to gather climate change and carbon information annually from suppliers in the future.

Valmet wants to show to our suppliers how invested we are in them, and how much we want to support them in their sustainability and mitigation activities against climate change. Valmet wants to further develop sustainable supply chain and deepen the

cooperation with these suppliers. We plan also engaging suppliers, which are struggling to comply with our climate related supplier requirements (C12.2a) to support them.

Impact of engagement, including measures of success

Measures of success:
To measure the success of the supplier sustainability engagement program, Valmet will set up CO2 reduction targets and KPIs in cooperation with the key suppliers . Valmet continues to implement the program and action plans and monitor the progress of the targets and actions taken to reduce CO2 emissions. Valmet measures success by the amount of reduced CO2 emissions (KPI) in the supply chain targeting of reducing 20%. We are also using KPI: % of engaged supplier per year, with objective to reach 100% of selected suppliers by 2025. By the end of 2021, Valmet had engaged 7 suppliers, CO2 impact will be visible closer to 2030.

Impact of climate-related supplier engagement:
Valmet assesses that around 4% of the environmental impacts of Valmet's entire value chain take place in supply chain, and therefore by setting CO2 reduction targets for its suppliers, Valmet has a positive environmental impact. Valmet will receive specific measurements of the impact once the targets have been set and follow up is started in Valmet globally. Potential CO2 impact can be significant in the long term, e.g. as Valmet's steel suppliers represent more than 50% of Scope 3 cat 1 emissions (of which around 40% from China). Valmet has estimated that if 100 most CO2 intensive suppliers (of which 15 is from China) globally would reduce their emissions by 35% by 2030, then Valmet would reach its Climate Program -20 % CO2 reduction target for supply chain. E.g., one of those 7 already engaged suppliers, is a Chinese steel supplier, with around 6% of Valmet's Scope 3 cat 1 emissions. This supplier will implement actions to reduce CO2 emissions, such as increase the share of recycled steel from 20% up to 35% and the use of renewable electricity from 35% up to 45%. Valmet will provide guidance and tools to support the engaged suppliers in calculating their CO2 emissions and estimating the potential CO2 reduction of implemented actions.

Comment

Type of engagement

Information collection (understanding supplier behavior)

Details of engagement

Collect climate change and carbon information at least annually from suppliers

% of suppliers by number

1

% total procurement spend (direct and indirect)

30

% of supplier-related Scope 3 emissions as reported in C6.5

50

Rationale for the coverage of your engagement

Valmet Climate program includes CO2 reduction target (-20% by 2030) for supply chain. To be able to reach the target we need also primary data for that.

Valmet has a global supplier base with some 17,000 active suppliers, including 100 key suppliers and other relevant supplier (e.g. in terms of CO2 intensity) in more than 50 countries. These selected suppliers (1% of suppliers by number) are supply business critical components (such as steel) to Valmet, have significant spend (around 30% of total spend) by coverage or high energy consuming purchase category (more than 50% of Scope 3 cat 1 - Purchased goods and services emissions (C.6.5)). As Valmet's supplier base is extensive, one of Valmet's targets is to support the selected suppliers to meet the level of sustainability expected and to reduce CO2 emissions in our supply chain. They are critical for Valmet for many reasons, but in terms of CO2 emissions (especially Chinese raw material suppliers) and volume they are very important partners. Valmet wants to show to our suppliers how invested we are in them, and how much we want to support them in their sustainability and mitigation activities against climate change. Valmet wants to further develop sustainable supply chain and deepen the cooperation with these suppliers.

As a part of Valmet's supplier engagement program we also are aiming to collect information about their CO2 reporting readiness, in addition to educating, providing training and setting climate targets. Hoping to be able to gather supplier spesific information annually from suppliers in the future. Currently our CO2 calculation is spend-based and therefore we want to increase the percentage of primary data to improve data quality for Scope 3 Purchased goods and services calculations and further improve Climate program target progress monitoring.

In 2021, we continued to analyze our most CO2 emitting suppliers based on the Scope 3 supplier related calculations (C.6.5 Purchased goods and services) and collect dta by sending suppliers a questionnaire related to their energy use and current CO2 emission level to gather carbon information for future CO2 reduction targets setting.

Impact of engagement, including measures of success

Purpose of this supplier engagement is to get all the relevant suppliers globally to engaged to be able to collect information about their maturity level related to climate change mitigation and their energy and CO2 reporting readiness.

Measures of success
Valmet measures successs of the information collection with KPI: % of CO2 emissions calculated using data collected from suppliers, Target: 50% of CO2 emissions calculated with primary data by 2030. The maturity level varies a lot mong our suppliers so the progress takes time. Currenly the coverage of primary data in C.6.5 Purchased goods and services is 0. Valmet is actively working on this issues and investing on CO2 reporting tool to support also supplier spesific reporting.

Impact of climate-related supplier engagement
Currently the selected supplier repesent more than 50% of Valmet's C.6.5 Purchased goods and services emissions. Valmet assesses that around 4% of the environmental impacts of Valmet's entire value chain take place in supply chain, and therefore by setting CO2 reduction targets for its suppliers, Valmet has a positive environmental impact. Valmet will receive specific measurements of the impact once the targets have been set and follow up is started in Valmet globally. Potential CO2 impact can be significant in the long term, e.g. as Valmet's steel suppliers represent more than 50% of Scope 3 cat 1 emissions (of which around 40% from China). The most impact to the data quality would be made by engaging with these Chinese suppliers and start gathering data directly from them. By the end of 2021 Valmet engaged one Chinese supplier to be able to undestand the maturity of the climate reporting and support the supplier if needed to be able to report CO2 emissions annually to Valmet.

Also Valmet uses the collected information to further evaluate its most emitting suppliers and to improve the accuracy and data quality of its CO2 calculations. Valmet will set up CO2 reduction targets and KPIs in cooperation with the suppliers and continue the work annually and monitor the progress of the targets and actions taken to reduce CO2 emissions.

Comment

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement & Details of engagement

Education/information sharing
Run an engagement campaign to educate customers about the climate change impacts of (using) your products, goods, and/or services

% of customers by number

1.5

% of customer - related Scope 3 emissions as reported in C6.5

50

Please explain the rationale for selecting this group of customers and scope of engagement

We have estimated that 95 percent of the environmental impact in Valmet's value chain is caused when our customers use of our technologies over their entire life cycles. Valmet has around 3,000 customers globally and has identified around 40 key customers based on their innovativeness and operational excellence. Altogether we have engaged around 1.5% (40/3,000) of them by the end of 2021. These key customers represent approximately 50% of Valmet's Scope 3 cat 11 emissions (C.6.5

Use of sold products).

As part of Sustainability360º Agenda and Climate program we want to further increase our understanding of our key customer´s climate targets, other sustainability needs and drivers, expectations and business potential. In addition to the opportunity to tell our key customers our full scope CO2 reduction and environmentally efficient offering, we want also promote our role as the enabler of carbon neutral production and to be the preffered technology, automation and service partner for supporting our customers in reaching their ambitious climate targets.

In addition to educating our customers to use our technology the most efficicient way, Valmet focuses heavily on RDI as it's crucial in terms of mitigating climate change. Valmet's main method of engagement is to conduct in-depth interviews and have frequent R&D meetings and also intensive innovation collaboration with our customers. Customers' needs guide Valmet´s R&D that focuses to enhance the use of energy and resources, and promote renewable materials. Results have been encouraging with individual action plans in place with each customer based on their needs.

Impact of engagement, including measures of success

Impact of the engagement:
Due to the 95% of the value chain CO2 footprint, the climate-related impact of the customer engagement is the most significant. Most of our key customers have ambitious climate targets and they want to reduce their Scope 1 & 2 emissions, i.e. reduce Valmet's Scope 3 cat 11 emissions. Based on Valmet's CO2 calculations the key customers' CO2 emissions in 2021 were around 50,000,000 tCO2, so reducing the use phase emissions by increasing the use of renewable energy and improving energy efficiency, e.g., by 50%, would reduce Valmet's value chain CO2 impact as such by 25%.

Measures of success:
KPI: orders received (OR) from new products and services. Valmet’s new products and services reduce CO2 emissions, water and raw material consumption and waste, while increasing energy efficiency. These new products and services supports the work of reducing emissions during use phase of Valmet's technologies.Valmet monitors the market demand for more environmentally efficient technologies by monitoring the share of OR from new products and services.
Target: Valmet’s annual target is to have at least 25 % of OR coming from new products and services. In 2021 the OR from new products was 22% (1,054 MEUR) of all orders received at Valmet. Although the percentage wise we did not reach the target in 2021 but the revenue increased by 6% from 2020.

As a part of Valmet's customer engagement strategy,in 2021 we continued Valmet’s Innovation Pathways training program (8th training). The training is built around customers’ real-life challenges and problems, and it's designed to boost innovation and cooperation with key customers.The targets we have set for the program include a tangible business impact through an improved innovation culture, the cases worked with and innovations created, a deeper understanding of customer needs and business logic,

even stronger R&D cooperation with our key customers, and active internal networking and cooperation. In 2021, program focused on climate-related challenges and opportunities raised by one of Valmet's key pulp customers. The three main topics we worked on concerned improved resource efficiency, replacing fossil fuels, and reducing emissions.

C12.1d

(C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.

Valmet has a strategic approach to sustainability and climate-related issues, and the Valmet's Climate Program and Sustainability360º agenda takes a comprehensive approach to sustainability and climate-related matters at Valmet. Valmet's Climate Program and Sustainability agenda is communicated through the organization to all Valmet employees.

Other relevant partners in the value chain for Valmet are own employees. Own employees are defined as all employees that are under Valmet or its subsidiaries payroll. In order to truly reduce global emissions, Valmet has focused the engagement of own employees, since they are the ones who conduct the daily work and forward the Valmet's mission our customers and suppliers. Own employees are part of Valmet's Climate Program and Sustainability Agenda, which includes climate-related matters, such as climate-related engagement strategy.

Crusial part of Valmet's employees climate-related engagement strategy are internal trainings: in 2018 Valmet launched and implemented a sustainability e-learning, which is mandatory for all white-collar employees. The e-learning is one method of engagement and consists of various sustainability related information, incl. climate-related information, in three modules, which are targeted for different Valmet employee roles. The purpose of the e-learning is to engage and educate Valmeteers about sustainability. We have been measuring the success of the engagement by monitoring the e-learning completion rate since. By the end of 2021, 80 % of white-collar employees had completed the first module.
In 2022 we launched Climate Program training to give Valmeteers, especially R&D, sales, procurement and HSE personnel, more insights on climate change and circular economy, the impacts to our business environment, and the actions we and our customers are taking to decarbonize the entire pulp and paper industry. The training consists of three modules: 'Fundamentals of climate change and circular economy', 'Valmet's Climate program – 'Forward to a carbon neutral future' and 'Sustainability targets and focus areas our customers have to reduce greenhouse gas emissions and other environmental impacts'.

Another way of engaging own employees is through various internal communications methods, such as the global intranet. We run annual surveys to engage employees to take part of the climate discussion. Valmet has an external reporting portal for its stakeholders for collecting feedback on and managing events related to health, safety, environment (HSE) and continuous improvement (CI) in all Valmet operations. The tool is also used for collecting innovation ideas for R&D purposes. In 2021, we started collecting ideas regarding the climate program and how to reduce CO_2 emissions in our own operations, in the supply chain or during the use phase of our technologies.

C12.2

(C12.2) Do your suppliers have to meet climate-related requirements as part of your organization's purchasing process?

Yes, climate-related requirements are included in our supplier contracts

C12.2a

(C12.2a) Provide details of the climate-related requirements that suppliers have to meet as part of your organization's purchasing process and the compliance mechanisms in place.

Climate-related requirement

Complying with regulatory requirements

Description of this climate related requirement

Sustainability is at the core of Valmet's business operations. Valmet promotes sustainable development throughout its value chain and expects its suppliers to operate in the same manner. Valmet requires that all its suppliers comply with the sustainability (incl. climate) requirements, which are the is the starting point for entering into and maintaining all business relationships with Valmet.

The supplier is required, at a minimum:
-to comply with all applicable national laws and regulations regarding environmental management, as well as acknowledge changes in them

Valmet's Sustainable supply chain (SSC) policy is integrated to the purchasing process and is relevant part of the purchasing contract with Valmet. Valmet actively follows and evaluates its suppliers' compliance with the policy and may ask its suppliers to complete a sustainability self-assessment. If the supplier does not comply with the policy, Valmet reserves the right to terminate the contract with the supplier without prejudice to any other rights, whether under contract or at general law, including already placed and future orders. In most cases Valmet retainand engage the suppliers, conducts on-site audit with 3rd party if identified as a non-compliant.

% suppliers by procurement spend that have to comply with this climate-related requirement

100

% suppliers by procurement spend in compliance with this climate-related requirement

68

Mechanisms for monitoring compliance with this climate-related requirement

Supplier self-assessment
On-site third-party verification

Response to supplier non-compliance with this climate-related requirement

Retain and engage

Climate-related requirement

Climate-related disclosure through a non-public platform

Description of this climate related requirement

Sustainability is at the core of Valmet's business operations. Valmet promotes sustainable development throughout its value chain and expects its suppliers to operate in the same manner. Valmet requires that all its suppliers comply with the sustainability (incl. climate) requirements, which are the is the starting point for entering into and maintaining all business relationships with Valmet.

The supplier is required, at a minimum:
-to monitor, report, and strive to reduce greenhouse gas emissions from its operations and value chain and to provide data if requested

Valmet's Sustainable supply chain (SSC) policy is integrated to the purchasing process and is relevant part of the purchasing contract with Valmet. Valmet actively follows and evaluates its suppliers' compliance with the policy and may ask its suppliers to complete a sustainability self-assessment. If the supplier does not comply with the policy, Valmet reserves the right to terminate the contract with the supplier without prejudice to any other rights, whether under contract or at general law, including already placed and future orders. In most cases Valmet retainand engage the suppliers, conducts on-site audit with 3rd party if identified as a non-compliant.

% suppliers by procurement spend that have to comply with this climate-related requirement

100

% suppliers by procurement spend in compliance with this climate-related requirement

68

Mechanisms for monitoring compliance with this climate-related requirement

Supplier self-assessment
On-site third-party verification

Response to supplier non-compliance with this climate-related requirement

Retain and engage

Climate-related requirement

Waste reduction and material circularity

Description of this climate related requirement

Sustainability is at the core of Valmet's business operations. Valmet promotes sustainable development throughout its value chain and expects its suppliers to operate in the same manner. Valmet requires that all its suppliers comply with the sustainability (incl. climate) requirements, which are the is the starting point for entering into and maintaining all business relationships with Valmet.

The supplier is required, at a minimum:
-to strive towards continually reducing the use of raw materials and minimizing waste

Valmet's Sustainable supply chain (SSC) policy is integrated to the purchasing process and is relevant part of the purchasing contract with Valmet. Valmet actively follows and evaluates its suppliers' compliance with the policy and may ask its suppliers to complete a sustainability self-assessment. If the supplier does not comply with the policy, Valmet reserves the right to terminate the contract with the supplier without prejudice to any other rights, whether under contract or at general law, including already placed and future orders. In most cases Valmet retainand engage the suppliers, conducts on-site audit with 3rd party if identified as a non-compliant.

% suppliers by procurement spend that have to comply with this climate-related requirement

100

% suppliers by procurement spend in compliance with this climate-related requirement

68

Mechanisms for monitoring compliance with this climate-related requirement

Supplier self-assessment
On-site third-party verification

Response to supplier non-compliance with this climate-related requirement

Retain and engage

Climate-related requirement

Other, please specify

Reducing the use of energy and raw materials as well as minimizing emissions to air

Description of this climate related requirement

Sustainability is at the core of Valmet's business operations. Valmet promotes sustainable development throughout its value chain and expects its suppliers to operate in the same manner. Valmet requires that all its suppliers comply with the sustainability (incl. climate) requirements, which are the is the starting point for entering into and maintaining all business relationships with Valmet.

Valmet Climate program includes CO2 reduction target (-20% by 2030) for supply chain. To be able to reach the target we require our suppliers to reduce their emissions too.

The supplier is required, at a minimum:
-to strive towards continually reducing the use of energy and raw materials as well as minimizing emissions to air

Valmet's Sustainable supply chain (SSC) policy is integrated to the purchasing process and is relevant part of the purchasing contract with Valmet. Valmet actively follows and evaluates its suppliers' compliance with the policy and may ask its suppliers to complete a sustainability self-assessment. If the supplier does not comply with the policy, Valmet reserves the right to terminate the contract with the supplier without prejudice to any other rights, whether under contract or at general law, including already placed and future orders. In most cases Valmet retainand engage the suppliers, conducts on-site audit with 3rd party if identified as a non-compliant.

% suppliers by procurement spend that have to comply with this climate-related requirement

100

% suppliers by procurement spend in compliance with this climate-related requirement

68

Mechanisms for monitoring compliance with this climate-related requirement

Supplier self-assessment
On-site third-party verification

Response to supplier non-compliance with this climate-related requirement

Retain and engage

C12.3

(C12.3) Does your organization engage in activities that could either directly or indirectly influence policy, law, or regulation that may impact the climate?

Row 1

Direct or indirect engagement that could influence policy, law, or regulation that may impact the climate

Yes, we engage directly with policy makers
Yes, we engage indirectly through trade associations

Does your organization have a public commitment or position statement to conduct your engagement activities in line with the goals of the Paris Agreement?

Yes

Attach commitment or position statement(s)

See Valmet's Annual Review p. 56-57 "Valmet's Climate program is aligned with the Paris Climate Agreement's 1.5-degree pathway"

valmet-annual-review-2021.pdf

Describe the process(es) your organization has in place to ensure that your engagement activities are consistent with your overall climate change strategy

Valmet supports new EU climate targets of cutting emissions by 55% by 2030 and being carbon neutral by 2050. Valmet's Climate program is aligned with Paris Agreement and it is integrated to its strategy.

Valmet's Corporate Relations function is resposible for coordinating Valmet's positions and lobbying activities, which main tasks is to bring information about relevant policy and legislation into the company's strategic and business decisions, and to engage in an active dialogue with authorities and decision-makers about key issues in the pulp, paper, automation and energy sectors. As a first choice, Valmet contributes to the decision-making procedures through our association network, but when needed, also via direct contacts with decision-makers.

To ensure Valmet cooperates with associations that meet its values and standards, associations and organizations need to meet with Valmet's association criteria, which is consistent with Valmet's strategy.

C12.3a

(C12.3a) On what policy, law, or regulation that may impact the climate has your organization been engaging directly with policy makers in the reporting year?

Focus of policy, law, or regulation that may impact the climate

Mandatory climate-related reporting

Specify the policy, law, or regulation on which your organization is engaging with policy makers

EU's Sustainable Finance Taxonomy

Policy, law, or regulation geographic coverage

Regional

Country/region the policy, law, or regulation applies to

Europe

Other, please specify

European Union

Your organization’s position on the policy, law, or regulation

Support with minor exceptions

Description of engagement with policy makers

As a first choice, we contribute to the decision-making procedures through our association network, but when needed, also via direct contacts with decision-makers.

We have actively contributed to the renewable energy discussion via trade associations to promote our positions as part of their collective views. Also in our own direct lobbying activities (incl. in the management overheads). Valmet pays membership fees to our trade associations but we don't have visibility on how the money is allocated for different policy fields and initiatives, nor – in the case of national associations – further to.

Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation

We support EU's Sustainable Finance Taxonomy proposals, however we have actively contributed to the discussion on possible criteria for the "Manufacture of machinery, equipment and solutions enabling substantial contribution to circular economy","Manufacture of machinery, equipment and data solutions enabling substantial contribution to pollution prevention and control" and "Provision of data-driven solutions enabling to prolong asset's lifetime, provide value chain material and product information, or enable product designers to make a substantial contribution to circular economy".

For Sustainable Finance and the Taxonomy to be a success, they need to be fit for purpose. Their success depends on the ease with which they can be used, their relevance for investors as part of overall investment decisions, and quality of the Taxonomy classification.

Have you evaluated whether your organization's engagement is aligned with the goals of the Paris Agreement?

No, we have not evaluated

Focus of policy, law, or regulation that may impact the climate

Renewable energy generation

Specify the policy, law, or regulation on which your organization is engaging with policy makers

Revision of EU's Renewable Energy Directive (REDII)

Policy, law, or regulation geographic coverage

Regional

Country/region the policy, law, or regulation applies to

Europe

Other, please specify

European Union

Your organization's position on the policy, law, or regulation

Support with minor exceptions

Description of engagement with policy makers

In 2022 EU Parliament's Environment Committee has recommended to scale back of burning forest biomass to produce energy. The key recommendation urges that primary

woody biomass to produce energy and heat no longer receive government subsidies under the EU's revised Renewable Energy Directive (RED) and no longer to be counted toward EU member states' renewable energy targets. Currently, biomass accounts for 60% of the EU's renewable energy portfolio.

Bioenergy plays a significant role in climate change mitigation, in improving the security of supply of energy, and in creating jobs and well-being. Bioenergy needs to play an important role in the future renewable energy mix. Only bioenergy that is sustainably produced and used should be classified as carbon neutral. We want to secure scientifically based and transparent criteria related to bioenergy and technologies for producing bioenergy that is coherent with other existing legislation. The directive was only recently changed, and the new rules have been applied as from the beginning of 2021. Any larger changes would create investment uncertainty and would act negatively towards attaining the EU's climate targets. Valmet have contributed to the preparatory work through our association network and directly with scientific advice.

As a first choice, we contribute to the decision-making procedures through our association network, but when needed, also via direct contacts with decision-makers. We have actively contributed to the renewable energy discussion via trade associations to promote our positions as part of their collective views. Also in our own direct lobbying activities (incl. in the management overheads). Valmet pays membership fees to our trade associations but we don't have visibility on how the money is allocated for different policy fields and initiatives, nor – in the case of national associations – further to.

Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation

We support the proposal, however we have actively communicated the importance of continuing of having biomass in the future renewable energy mix. Bioenergy is the main source of renewable energy in the EU, with a share of almost 60%, thus any larger changes would create investment uncertainty and would act negatively towards attaining the EU's climate targets.

Have you evaluated whether your organization's engagement is aligned with the goals of the Paris Agreement?

No, we have not evaluated

Focus of policy, law, or regulation that may impact the climate

Emissions trading schemes

Specify the policy, law, or regulation on which your organization is engaging with policy makers

EU's Carbon Border Adjustment Mechanism (CBAM)

Policy, law, or regulation geographic coverage

Regional

Country/region the policy, law, or regulation applies to

Europe

Other, please specify

European Union

Your organization's position on the policy, law, or regulation

Oppose

Description of engagement with policy makers

In 2021 we monitored, reviewed, and assessed EU's Carbon Border Adjustment Mechanism (CBAM). Carbon pricing related regulation will most likely have a big impact on Valmet from upstream and direct operation perspective and increase cost of raw materials, such as steel.

In 2021 Valmet's Corporate Relation function was heavily involved in the discussion on the CBAM. As a first choice, we contribute to the decision-making procedures through our association network, but when needed, also via direct contacts with decision-makers. We have actively contributed to the renewable energy discussion via trade associations to promote our positions as part of their collective views. Also in our own direct lobbying activities (incl. in the management overheads). Valmet pays membership fees to our trade associations but we don't have visibility on how the money is allocated for different policy fields and initiatives, nor – in the case of national associations – further to.

Valmet will participate the discussion on the scrutiny of the proposal and the internal evaluation will continue until the legislative process is finalized. There is still large number of uncertainties related to the regulation thus Valmet continues to monitor and assess the impacts in 2022.

Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation

Valmet supports EU climate targets of cutting emissions by 55% by 2030 and being carbon neutral by 2050. The current ETS system to mitigate carbon leakage, i.e. free allocation of emissions allowances, has worked well and should be maintained. The Commission's proposal of CBAM would increase production costs of steel intensive technologies in the EU to a level that would not allow for competitive pricing in the EU or global markets.

We do not support European Commission's proposal to change the carbon leakage mechanism to another one, as the proposal would raise the costs of manufacturing in the EU to a level that would make it difficult to manufacture products competitively for any market. The current free allowance allocation system has worked well and enables competition.

Have you evaluated whether your organization's engagement is aligned with the goals of the Paris Agreement?

No, we have not evaluated

Focus of policy, law, or regulation that may impact the climate

Renewable energy generation

Specify the policy, law, or regulation on which your organization is engaging with policy makers

Revision of EU's Energy Efficiency Directive (EED)

Policy, law, or regulation geographic coverage

Regional

Country/region the policy, law, or regulation applies to

Other, please specify

European Union

Your organization's position on the policy, law, or regulation

Support with major exceptions

Description of engagement with policy makers

In 2021 we monitored, reviewed, and assessed EU's Revision of EU's Energy Efficiency Directive (EED). In the revision, the European Commission proposes changing the sustainability criteria of biomass through EU's Energy Efficiency Directive (EED).

In 2021 Valmet's Corporate Relation function was heavily involved in the discussion on the EED. As a first choice, we contribute to the decision-making procedures through our association network, but when needed, also via direct contacts with decision-makers. We have actively contributed to the renewable energy discussion via trade associations to promote our positions as part of their collective views. Also in our own direct lobbying activities (incl. in the management overheads). Valmet pays membership fees to our trade associations but we don't have visibility on how the money is allocated for different policy fields and initiatives, nor – in the case of national associations – further to.

Valmet will participate the discussion on the scrutiny of the proposal and the internal evaluation will continue until the legislative process is finalized. Valmet continues to monitor and assess the impacts in 2022.

Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation

Valmet supports EU climate targets of cutting emissions by 55% by 2030 and being carbon neutral by 2050. Achieving these climate goals will require substantial changes to existing EU energy legislation, including much deeper and faster improvements in energy efficiency. As a result, the 'fit for 55' legislative package adopted by the Commission in 2021 includes a substantial revision of the EED.

The European Commission proposes changing the sustainability criteria of biomass through EED in a way, which would ban biomass and waste co-combustion in new power plants and use only natural gas as an secondary fuel.

Valmet does not support European Commission's proposal, as it makes no sense from the climate, environment, nor the withdrawal from the Russian fossil fuel dependency point of view. Sorted waste should be continued to use as a secondary fuel in co-combustion with biomass, due to the reasons of availability and price of biomass. Otherwise the investments to bioenergy would decrease significantly in Europe, especially in the Nordics, which do not support the initial climate targets.

Have you evaluated whether your organization's engagement is aligned with the goals of the Paris Agreement?

No, we have not evaluated

C12.3b

(C12.3b) Provide details of the trade associations your organization engages with which are likely to take a position on any policy, law or regulation that may impact the climate.

Trade association

Other, please specify

The Confederation of European Paper Industries (Cepi)

Is your organization's position on climate change consistent with theirs?

Consistent

Has your organization influenced, or is your organization attempting to influence their position?

We are not attempting to influence their position

State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)

Cepi is the pan-European association representing the forest fibre and paper industry. Through its 18 national associations, Cepi gathers 495 companies operating more than 900 pulp and paper mills across Europe producing paper, cardboard, pulp and other bio-based products. Cepi 2050 'Investing in Europe for Industry Transformation - 2050 Roadmap to a low-carbon bioeconomy' outlines the industry's vision to advance the sector's transformation in Europe through value creation and decarbonisation.

Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)

25,000

Describe the aim of your organization's funding

Sustainability is at the core of Valmet´s strategy and business operations. Our technological solutions enable our customers to improve their sustainability performance by increasing the energy and materials efficiency of their industrial processes and reducing emissions and water consumption. Our services business helps extend the life

cycle of our customers' processes.

Valmet is a Cepi partner and regularly exchanges views related to policies and legislation under preparation, the R&D needs, digitalisation and decarbonisation of the pulp and paper sector. With partner status, Valmet cannot formally participate in the formation of positions, but we exchange information, arguments and positions whenever necessary. In 2021 Valmet's partner fee was 25,000 EUR.

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?

No, we have not evaluated

Trade association

Other, please specify

Technology Industries of Finland

Is your organization's position on climate change consistent with theirs?

Consistent

Has your organization influenced, or is your organization attempting to influence their position?

We have already influenced them to change their position

State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)

Technology Industries of Finland is committed to the Finnish government's target of achieving a carbon-neutral Finland in 2035. Our low-carbon roadmap examines the technologies and actions required in the technology industry and offers companies the tools to reach this target. Technology Industries of Finland is committed to mitigating climate change and they share the Paris Agreement objective to pursue efforts to keep the global temperature increase to 1.5°C. Sustainable value creation is one of the guiding principles of their strategy.

The association wishes to promote clean technologies and energy efficiency as part of efforts to reach climate targets.

Overall Valmet's position on climate change is fairly consistent with Technology Industries of Finland, but e.g., Valmet does not always agree on ways to reduce emissions. Thus Valmet has active dialogue with the association and is one of the most active members in opinion formation.

Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)

145,000

Describe the aim of your organization's funding

Sustainability is at the core of Valmet´s strategy and business operations. Our technological solutions enable our customers to improve their sustainability performance by increasing the energy and materials efficiency of their industrial processes and reducing emissions and water consumption. Our services business helps extend the life cycle of our customers' processes.

As a member, Valmet is in constant dialogue with the association, e.g. in the fields of energy, environment, climate, transport, research & innovation and finance policies.

We do not make payments or donations to political parties or individual politicians. Valmet's largest contributions are membership fees (In 2021 145,000 EUR to Technology Industries of Finland) to our trade associations. Valmet´s primary influencing channels are trade associations. Valmet participates actively in their position drafting work. If Valmet viewpoint is not aligned with that of trade federations, then Valmet may lobby independently.

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?

No, we have not evaluated

Trade association

Other, please specify

Bioenergy Association of Finland

Is your organization's position on climate change consistent with theirs?

Consistent

Has your organization influenced, or is your organization attempting to influence their position?

We have already influenced them to change their position

State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)

The association wishes to promote the conditions for use of bioenergy as part of efforts to reach climate targets.

Valmet is in constant dialogue with the association and is one of the most active members in opinion formation.

Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)

13,000

Describe the aim of your organization's funding

Sustainability is at the core of Valmet´s strategy and business operations. Our technological solutions enable our customers to improve their sustainability performance

by increasing the energy and materials efficiency of their industrial processes and reducing emissions and water consumption. Our services business helps extend the life cycle of our customers' processes.

As a member, Valmet is in constant dialogue with the association, e.g. in the fields of energy, environment, climate, transport, research & innovation and finance policies, and is one of the most active members in opinion formation.

We do not make payments or donations to political parties or individual politicians. Valmet's largest contributions are membership fees (In 2021 13,000 EUR to Bioenergy Association of Finland) to our trade associations. Valmet´s primary influencing channels are trade associations. Valmet participates actively in their position drafting work. If Valmet viewpoint is not aligned with that of trade federations, then Valmet may lobby independently.

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?

No, we have not evaluated

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication

In mainstream reports, incorporating the TCFD recommendations

Status

Complete

Attach the document

valmet-financial-statements-2021.pdf

Page/Section reference

Valmet's Financial Statement 2021, see 'Disclosure of non-financial information' pages 10-16

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

Publication
In mainstream reports

Status
Complete

Attach the document
valmet-annual-review-2021.pdf

Page/Section reference
Valmet's Annual review 2021 see pages 2-3, 7, 12-13, 37-43, 46-47, 54-57, 65-66

Content elements
Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

Publication
In voluntary sustainability report

Status
Complete

Attach the document
valmet-gri-supplement-2021.pdf

Page/Section reference
Valmet's GRI Supplement 2021, pages 13, 16, 18-19, 21, 23-29, 43-44 (assurance report)

Content elements
Governance
Strategy
Risks & opportunities
Emissions figures

Emission targets
Other metrics

Comment

Publication
In voluntary communications

Status
Complete

Attach the document

Valmet's TCFD report (valmet.com).pdf

Page/Section reference
Since 2020, Valmet have been developing its climate-related financial disclosures and implementing the Task Force on Climate-related Financial Disclosures (TCFD) reporting recommendations to increase reporting of climate-related financial information. See pages: 1-12

Content elements
Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

C15. Biodiversity

C15.1

(C15.1) Is there board-level oversight and/or executive management-level responsibility for biodiversity-related issues within your organization?

	Board-level oversight and/or executive management-level responsibility for biodiversity-related issues
Row 1	No, but we plan to have both within the next two years

C15.2

(C15.2) Has your organization made a public commitment and/or endorsed any initiatives related to biodiversity?

	Indicate whether your organization made a public commitment or endorsed any initiatives related to biodiversity
Row 1	No, but we plan to do so within the next 2 years

C15.3

(C15.3) Does your organization assess the impact of its value chain on biodiversity?

	Does your organization assess the impact of its value chain on biodiversity?
Row 1	No, but we plan to assess biodiversity-related impacts within the next two years

C15.4

(C15.4) What actions has your organization taken in the reporting year to progress your biodiversity-related commitments?

	Have you taken any actions in the reporting period to progress your biodiversity-related commitments?
Row 1	No, we are not taking any actions to progress our biodiversity-related commitments, but we plan to within the next two years

C15.5

(C15.5) Does your organization use biodiversity indicators to monitor performance across its activities?

	Does your organization use indicators to monitor biodiversity performance?	Indicators used to monitor biodiversity performance
Row 1	No, we do not use indicators, but plan to within the next two years	

C15.6

(C15.6) Have you published information about your organization's response to biodiversity-related issues for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Report type	Content elements	Attach the document and indicate where in the document the relevant biodiversity information is located
No publications		

C16. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

Valmet's Climate program which includes ambitious CO_2 emission reduction targets and concrete actions for the whole value chain, including customers' use of our technologies concerning carbon neutral production and further enhanced energy efficiency. Valmet has a full scope offering for CO2 emissions reduction and environmental efficiency including process technologies, automation and services.

Valmet wants to be that enabler and support our customers in reaching their climate targets. Valmet's R&D work is driven by customer needs. As a result of this work, we have continuously improved our products and services and brought new innovations to market.

Our long-term vision is to develop solutions that take the industry to the next level, including mills that can produce pulp, paper and other bio-products without emissions and with minimum water consumption, and new high-value end products utilizing bio-based raw materials. We develop new ways to utilize the Industrial Internet and advanced technologies to use indoor navigation and augmented reality for production facilities.

Focus 1 Ensure advanced and competitive technologies and services:

Valmet's focus on R&D work is currently on cost-efficient, modularized and standardized solutions with the right technology scope. An excellent example is the OptiConcept M, a modular paper and board machine concept for mid markets.

Focus 2 Enhance raw material, water and energy efficiency:

We combine process technology, automation and services to reduce raw material, water and energy consumption. Efficiency is one of the cornerstones in the design of any new production line or power plant.

Focus 3 Promote renewable materials:

We develop solutions to replace fossil materials with renewable ones. In Pulp and Energy business line, development has focused on cost-efficient and sustainable solutions for pulp mills as well as for growth areas such as dissolving pulp production. In boiler technology, the targets are to reduce environmental impact, improve efficiency, lower costs and extend the fuel portfolio.

In biomass conversion Valmet's R&D focus is on the use of biomass in energy production and as raw material for end products. The target is to enable new revenue streams for our customers and create environmentally sustainable solutions.

Low carbon products defined here include services that optimize resource efficiency and product lifetime, which Valmet offers for our customers.

In 2022 Valmet launched a new R&D and innovation project, Beyond Circularity, which improves Valmet's readiness to support the green transition in Valmet's customer industries based on the Valmet's Technology vision 2030 and Climate program. The project aims at further strengthening Valmet's R&D work in order to develop process technologies, automation

and services for utilizing renewable materials and recycled, waste and side streams. Valmet will invest 40 MEUR into the project during the upcoming four-year period to execute on its technology vision and climate program and generate growth. To support Valmet in achieving these ambitious project aims, Valmet will start building an ecosystem that is aimed at attracting partners, universities, research institutes and customers to participate in making the green transition a reality within the pulp and paper industry.

C16.1

(C16.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	President and CEO	Chief Executive Officer (CEO)

SC. Supply chain module

SC0.0

(SC0.0) If you would like to do so, please provide a separate introduction to this module.

Sustainable Supply Chain

Ensuring a sustainable supply chain is one of Valmet's material topics. We have integrated sustainability into our procurement and supply chain processes, and our target is to continuously enhance our supply chain management and our value chain’s transparency. Valmet has some 20,000 active direct suppliers from more than 50 countries with different sustainability risk levels. There are several potential sustainability risks that may occur in the complex supply chain, and we thus systematically work to ensure responsible business practices throughout our global supply chain. Our ambition is to improve and develop the sustainability of our suppliers’ operations and to further strengthen our cooperation with them.

Our target is to continuously enhance our supply chain management and the transparency of our value chain. We want to ensure that we operate responsibly throughout the value chain, and that the materials and components we procure are in compliance with relevant local and global regulations and standards. Valmet has established processes to evaluate and manage the sustainability of its suppliers’ operations in a globally aligned manner and continues that work according to its Sustainability360º agenda.

Global supplier network

Valmet has an extensive supplier network including around 20,000 active direct suppliers in over 50 countries. However, over half of our purchases come from Finland and Sweden when measured by supplier spend. 72% of Valmet’s direct purchases come from low sustainability risk countries. Our main purchases consist of metals-based products and components, electronics as well as different services.

Sustainability criteria for suppliers

Valmet's Sustainable Supply Chain Policy applies to all suppliers globally. The policy addresses Valmet´s requirements for its suppliers regarding business ethics, compliance, human rights and labor rights, occupational health and safety, environmental management and sustainability in products and services. We expect all our suppliers to comply with the principles defined in the policy; it is the starting point for all business relationships with Valmet. The policy also acts as a basis for supplier evaluations, self-assessments and sustainability audits.

Supply chain risk management

In its global supplier selection process, Valmet assesses a wide range of topics ranging from management practices, financial and operative performance to ethical business practices, human and labor rights, occupational health and safety, environmental management and product safety. Valmet's supplier sustainability risk assessment concept enables the assessment of suppliers by country of purchase, and by the purchasing category. The aim is to assess the potential negative indirect impacts and risks related to human rights, labor practices, ethical business practices, environmental performance and health and safety. As a part of Valmet's sustainable supply chain action plan 2019-2021, Valmet's target is to have 100% of new direct supplier screened on sustainability by the end of 2021. Valmet has made systematic progress towards the target, reaching 94% of all new direct suppliers screened on sustainability by the end of 2020 (2020:92%, 2019: 99%, 2018: 84%, 2017: 73%).

Environmental impacts of value chain

Valmet strives to develop the transparency and traceability of its entire value chain from sourcing of raw materials to recycling of our products. It is estimated that Valmet's supply chain accounts for approximately four percent (4%) of the environmental impact of its value chain.

SC0.1

(SC0.1) What is your company's annual revenue for the stated reporting period?

	Annual Revenue
Row 1	3,935

SC1.1

(SC1.1) Allocate your emissions to your customers listed below according to the goods or services you have sold them in this reporting period.

Requesting member

International Paper Company

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

Emissions in metric tonnes of CO2e
1,000,000

Uncertainty (±%)
30

Major sources of emissions
Scope 3 category 11 use of sold products (Valmet's total CO2 emissions in 2021: 100,781,000 tCO2). Allocating 1% to International Paper Company would be 1,000,000 tCO2.

Verified
No

Allocation method
Allocation based on the market value of products purchased

Market value or quantity of goods/services supplied to the requesting member
40,000,000

Unit for market value or quantity of goods/services supplied
Currency

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
Allocation is based on customer's share of net sales. International Paper Company's share of Valmet's net sales was 1% in 2021.

Requesting member
Vale SA

Scope of emissions
Scope 3

Allocation level
Company wide

Allocation level detail

Emissions in metric tonnes of CO2e
45,000

Uncertainty (±%)
30

Major sources of emissions

Scope 3 category 11 use of sold products (Valmet's total CO2 emissions in 2021: 100,781,000 tCO2). Allocating 0.05% to Vale SA would be around 45,000 tCO2.

Verified

No

Allocation method

Allocation based on the market value of products purchased

Market value or quantity of goods/services supplied to the requesting member

1,700,000

Unit for market value or quantity of goods/services supplied

Currency

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Allocation is based on customer's share of net sales. Vale's share of Valmet's net sales was around 0.04% in 2021.

Requesting member

WestRock Company

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

Emissions in metric tonnes of CO2e

1,600,000

Uncertainty (±%)

30

Major sources of emissions

Scope 3 category 11 use of sold products (Valmet's total CO2 emissions in 2021: 100,781,000 tCO2). Allocating 1.6% to WestRock would be around 1,600,000tCO2.

Verified

No

Allocation method

Allocation based on the market value of products purchased

Market value or quantity of goods/services supplied to the requesting member

65,000,000

Unit for market value or quantity of goods/services supplied

Currency

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Allocation is based on customer's share of net sales. WestRock's share of Valmet's net sales was 1.6% in 2021.

SC1.2

(SC1.2) Where published information has been used in completing SC1.1, please provide a reference(s).

Data includes Valmet's 2021 sold entire paper, board and tissue production lines, fossil-fired fluidizer bed boilers and lime kilns, during their expected lifetime (25 years). The CO2 calculation is based on Valmet's average product specific energy consumption and product specifications including delivered capacity and intended fuel mix. N2O and CH4 included from biomass combustion in pulp and energy production. CO2 emissions from electricity are calculated based on IEA (2020) country-specific emission factors. CO2 emissions from steam are calculated based on Fisher International installed base fuel mix data. Emission factors for fuels are based on IPCC, Defra and Tilastokeskus. IEA Scenario for current policies (STEPS) power sector emission intensity reduction (CAGR) is utilized in projecting the lifetime emissions for electricity and steam. Quantifying and projecting the future emissions from use of sold products involves a large number of assumptions and the actual emissions from use of sold products are largely dependent on choices made by our customers. For these reasons, the figure reported is an estimate to understand the magnitude of category 11 lifetime emissions, which are representing more than 95% of Valmet's value chain emissions.

Net sales and Scope 3 Cat 11 emissions have been verified and published in Valmet's annual reporting (GRI Supplement 2021 p. 25)

SC1.3

(SC1.3) What are the challenges in allocating emissions to different customers, and what would help you to overcome these challenges?

Allocation challenges	Please explain what would help you overcome these challenges
Other, please specify Valmet's current systems don't comply with allocating data by customer.	At the moment our sales system is based on projects and it does not allow us to filter data by customer. Valmet will develop this area to be able to serve it's customers better and to improve the data quality in the future.
Customer base is too large and diverse to accurately	We do not have the ability to track emissions by customer. We calculate use phase emissions (Scope 3 category 11) only selected scope, by biggest production lines, as Valmet has thousands of

track emissions to the customer level	products and thus unable to mapp and calculate use phase emissions on a customer or a product level.

SC1.4

(SC1.4) Do you plan to develop your capabilities to allocate emissions to your customers in the future?

Yes

SC1.4a

(SC1.4a) Describe how you plan to develop your capabilities.

Long term perspective would be system development to be able to meet the customers' requirements and that way serving our customers better and improving our own reporting.

SC2.1

(SC2.1) Please propose any mutually beneficial climate-related projects you could collaborate on with specific CDP Supply Chain members.

Requesting member

International Paper Company

Group type of project

New product or service

Type of project

New product or service that reduces customers operational emissions

Emissions targeted

Actions to reduce customers' operational emissions (customer scope 1 & 2)

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

Estimated payback

Other, please specify

Depends on the investment, but with increasing carbon prices the ROI would be rather short.

Details of proposal

We have estimated that 95% of Valmet environmental impact takes place in use phase of our technology. Our R&D focus is on improving energy and resource efficiency of our products and services but in order to further identify efficiencies in our downstream

value chain, we would suggest cooperation. Together we could better assess the needs, and reduce the life cycle carbon footprint of Valmet's technologies, which would also help reporting of these use phase emissions. Depending on the need of your mills, Valmet could propose technology alternatives to cut CO2 emissions and how to increase resource efficiency.

We would also propose to training cooperation. As Valmet has Innovation Pathways training program, which is built around customers' real-life challenges and problems, and it's designed to boost innovation and cooperation with key customers. The program includes a tangible business impact through an improved innovation culture, a deeper understanding of your needs and business logic, even stronger R&D cooperation with you as one of our key customer, and active cooperation. The three main topics we have worked on concerned improved resource efficiency, replacing fossil raw materials with renewable, and reducing life cycle footprint.

Requesting member

Vale SA

Group type of project

New product or service

Type of project

New product or service that reduces customers operational emissions

Emissions targeted

Actions that would reduce both our own and our customers' emissions

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

Estimated payback

Other, please specify

Depends on the investment, but with increasing carbon prices the ROI would be rather short.

Details of proposal

We have estimated that 95% of Valmet environmental impact takes place in use phase of our technology. Our R&D focus is on improving energy and resource efficiency of our products and services but in order to further identify efficiencies in our downstream value chain, we would suggest cooperation. Together we could better assess the needs, and reduce the life cycle carbon footprint of Valmet's technologies, which would also help reporting of these use phase emissions. Depending on the need of your mills, Valmet could propose technology alternatives to cut CO2 emissions and how to

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Requesting member

WestRock Company

Group type of project

New product or service

Type of project

New product or service that reduces customers operational emissions

Emissions targeted

Actions that would reduce both our own and our customers' emissions

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

Estimated payback

Other, please specify

Depends on the investment, but with increasing carbon prices the ROI would be rather short.

Details of proposal

We have estimated that 95% of Valmet environmental impact takes place in use phase of our technology. Our R&D focus is on improving energy and resource efficiency of our products and services but in order to further identify efficiencies in our downstream value chain, we would suggest cooperation. Together we could better assess the needs, and reduce the life cycle carbon footprint of Valmet's technologies, which would also help reporting of these use phase emissions. Depending on the need of your mills, Valmet could propose technology alternatives to cut CO2 emissions and how to increase resource efficiency.

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SC2.2

(SC2.2) Have requests or initiatives by CDP Supply Chain members prompted your organization to take organizational-level emissions reduction initiatives?

No

SC4.1

(SC4.1) Are you providing product level data for your organization's goods or services?

No, I am not providing data

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I understand that my response will be shared with all requesting stakeholders	Response permission
Please select your submission options	Yes	Public

The European Climate Pact Submission

Please indicate your consent for CDP to showcase your disclosed environmental actions on the European Climate Pact website as pledges to the Pact.

Yes, we wish to pledge to the European Climate Pact through our CDP disclosure

Please confirm below

I have read and accept the applicable Terms