

TCFD Compliance Table

Johnson Matthey complies with the TCFD disclosure recommendations fully within the Annual Report and Accounts.

Key to location references:

ARA = Annual Report and Accounts 2023

SPD = Sustainability Performance Databook 2023

Recommendation	Recommended Disclosure	Location
Governance	a.) Describe the board's oversight of climate-related risks and opportunities	ARA p.45-46
	b.) Describe management's role in assessing and managing climate-related risks and opportunities.	ARA p.45-46
Strategy	a.) Describe the climate-related risks and opportunities the company has identified over the short, medium and long term.	ARA p.46-50
	b.) Describe the impact of climate-related risks and opportunities on the company's businesses, strategy, and financial planning.	ARA p.46-50
	c.) Describe the resilience of the company's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	ARA p.46-50
Risk management	a.) Describe the company's processes for identifying and assessing climate-related risks	ARA p.51
	b.) Describe the company's processes for managing climate-related risks	ARA p.51
	c.) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the company's overall risk management	ARA p.51
Metrics & targets	a.) Disclose the metrics used by the company to assess climate-related risks and opportunities in line with its strategy and risk management process.	ARA p.52
	b.) Disclose Scope 1, Scope 2, and if appropriate Scope 3 greenhouse gas (GHG) emissions, and the related risks	ARA p.28, 48-50, 52
	c.) Describe the targets used by the company to manage climate-related risks and opportunities and performance against targets	ARA p.52

The following pages are extracted from the 2023 Annual Report and cover Johnson Matthey's TCFD compliance.

Task Force on Climate-related Financial Disclosures

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Introduction

Climate change is one of the most pressing threats facing our planet today. It is affecting our environment and poses a growing risk for people and businesses alike. We recognise that what we do at Johnson Matthey has impacts – both positive and negative. Our products and services help our customers to reduce greenhouse emissions and the new technologies we are designing will help further accelerate the transition to a low-carbon future. But the manufacturing and chemical processes we use have their own environmental impact, creating greenhouse gas emissions and using water.

Our company purpose is catalysing the net zero transition. Therefore, our strategy is shaped around the opportunities and the risks that our changing climate presents. We have set ourselves the target of achieving net zero by 2040 with a series of challenging short-term science-based targets (SBTs) on the 1.5°C pathway as well as an avoided GHG emissions target for benefits to our customers for 2030 (see page 24 for a full table of targets), to ensure we keep driving up the benefits of our products while reducing their environmental impact.

The disclosures in this report are consistent with the TCFD recommendations.

Governance

Given the nature of our business, and how closely aligned our strategy is to a warming world, climate-related risks and opportunities have been on the board's agenda for many years.

Role of the Board and its committees

The Board is responsible for setting and overseeing the implementation of the group's strategy, including the annual budget and detailed business plans. In doing so, it considers climate-related issues, including when approving requests for capital expenditure or new initiatives.

As a result of our internal board effectiveness review, the responsibilities of the Board and its committees in relation to climate-related issues and the broader sustainability agenda have been refined and clarified during the year.

The Societal Value Committee (SVC) is a meeting of the full Johnson Matthey board that focuses more closely on the governance of sustainability matters, including our response to climate change. The SVC meets four times a year, see pages 88-89 for more information about their work in 2022/23. The SVC has been driving the development and validation of roadmaps to deliver on our 2030 GHG reduction targets and the integration of carbon accounting into the company's budgeting and capital allocation exercises, to ensure the right resources were allocated to deliver on our objectives. Given how fast society's response to climate change is developing, the SVC receives papers on emerging issues related to climate at each meeting, such as legislation and stakeholders' expectations. During the year the Committee has invited external experts to get an 'outside-in' view on climate regulation, including Inflation Reduction Action in the US and Green Deal in Europe.

Together with the Nomination Committee, the Board ensures that, among the directors, it has the necessary sustainability and climate-related expertise.

 [For more details of our non-executive directors' skills and experience, see pages 76-77](#)

The Audit Committee monitors and assesses the level of assurance over TCFD and climate-related issues and performance metrics as we continue to develop our reporting in this area. The Audit Committee is also responsible for reviewing the effectiveness of internal control and risk management, which includes climate-related risk.

The Remuneration Committee set two climate-related targets within the group's Long-term Performance Share Plan (PSP) in early 2022. Our senior leaders and directors participate in this PSP. This clearly reflects our intent to contribute to an acceleration of the transition to a net zero world. The development of the sustainability roadmaps to our 2030 GHG reduction targets were also embedded in the GLT members' shared incentives for this year.





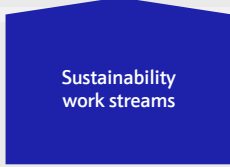
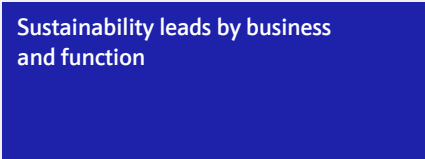
Role of management

The Board delegates responsibility for running the business to the Chief Executive Officer (CEO); this includes overall responsibility for climate-related issues. The CEO is supported by the Chief Sustainability Officer (CSO), who chairs the Sustainability Council which is made up of members from the GLT and the Sustainability Director who together, develop our sustainability vision, goals and targets.

The CSO is responsible for prioritising our sustainability agenda and threading all elements into our business, providing updates to the GLT on the steps taken to develop or implement our sustainability strategy, including key metrics, risks, opportunities and our roadmaps to net zero by 2040.

At a business / working level, there are work streams for advancing specific aspects of sustainability. See our governance structure for climate-related issues for more details.

Governance structure for climate-related issues

Level	Committee / forum	Attendees	Frequency	Objectives	
Board level		<ul style="list-style-type: none"> • Full board • CSO • External experts 	4 times a year	<ul style="list-style-type: none"> • Formal board governance committee on Sustainability • Gives direction and oversight of ESG strategy, goals, performance 	
GLT level		<ul style="list-style-type: none"> • CEO – responsible overall for climate-related issues • CSO • Other GLT members 	Monthly (CSO updates as required)	<ul style="list-style-type: none"> • Agree and formally approve global sustainability strategy and goals • Monitor roadmaps and ensure resources in place to deliver strategy and targets 	
			<ul style="list-style-type: none"> • Chaired by CSO • GLT members • Sustainability Director 	Quarterly	<ul style="list-style-type: none"> • Driving broader sustainability • Decide on adjustments to the sustainability programme and strategy • Monitor sustainability targets • Other ad hoc topics
Business / Working level		<ul style="list-style-type: none"> • Sustainability Director • Operations and Commercial sustainability leads • Sustainability initiative owners from global functions 	Bimonthly	<ul style="list-style-type: none"> • Build and agree roadmaps to targets • Ensure delivery of roadmaps • Discuss new and emerging topics • Ensure customer needs on sustainability are proactively met 	

Strategy

Our business strategy is based on our purpose of catalysing the net zero transition for our customers through enabling the necessary transitions in transport, energy, industry and the circular economy. Climate change offers us many business growth opportunities through our products and services, as well as some risks. The pace at which the world will adapt to the impacts of climate change is uncertain. So that we properly understand and are resilient to these uncertainties we maintain climate-change scenarios to frame the ambiguities in our long-term business strategy of an increasingly volatile and complex environment.

Climate scenarios for evaluating transition risks and opportunities

Our climate scenarios are used by all of our businesses as a common basis for planning, forecasting and stress testing their strategy and assumptions on growth. These scenarios, which project the impact of climate change on our operational and commercial performance, are essential in informing our strategic decisions, such as how we invest in R&D and assets, or which new products to develop. We also use climate scenarios to consider the resilience to changing weather patterns of our own operations, those of our strategic suppliers and our core supply routes.

Our three transition scenarios represent three global temperature rise pathways.

- Rapid transition scenario (aligned to 1.5°C) – net zero achieved globally by 2050, in line with the goal of the Paris Agreement to limit the world’s temperature rise to well below 2°C. This reflects swift and decisive action regarding policy interventions and decarbonisation commitments.
- Pragmatic evolution scenario (aligned to 2°C) – net zero achieved globally by 2080, which reflects a step-up in policy interventions and decarbonisation commitments compared with today, but not as decisive as under the rapid transition scenario.
- Slow transition scenario (aligned to 3°C) – net zero not achieved by 2100, reflecting a global lack of urgency on climate change with limited policy or legislative interventions.

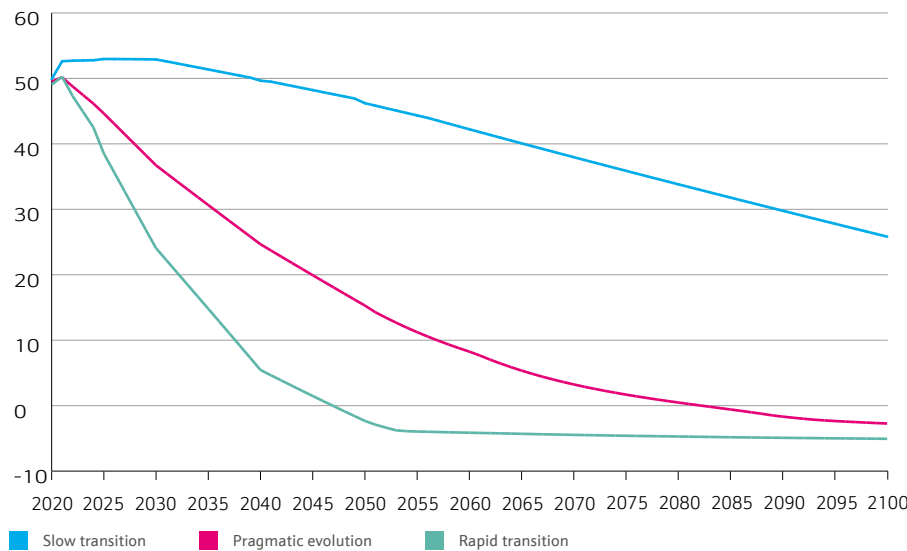
We developed our climate scenarios internally, with support from an external expert, reflecting the latest available research from the International Energy Agency (IEA). The IEA research we used included three scenarios: the Net Zero Emissions Scenario, the Announced Pledges Scenario, and the Stated Policies Scenario. Our methodology breaks down the different energy sources (electricity, hydrogen, gas, coal, oil, renewables, biomass and others)

and considers forecasts for each source by demand type: transport, buildings, industry, power and heat. We developed in-house forecasts for specific source / demand combinations close to our areas of expertise in automotive, chemicals, hydrogen and other industries, while ensuring that, at a macro level, we remained within IEA's forecasts.

We update our scenarios annually to reflect changes in external drivers, incorporating the latest from internationally recognised sources alongside our own forecasts. Our updates in the last year point towards an acceleration in demand for low-carbon hydrogen.

We model scenarios up to 2100 (see chart below), but look at shorter-term horizons, specifically 2030 and 2040, to inform our strategic and operational decisions. The table below details the main qualitative and quantitative assumptions we used for our 2040 scenarios. We use the pragmatic evolution scenario as our base case for our strategic planning.

Total anthropogenic emissions (GtCO₂/yr)



Climate scenarios for evaluating physical risks

Changing weather patterns as the climate warms may result in physical risks to our assets and supply chains. We have evaluated the exposure of all our assets and those of our strategic suppliers to these risks.

We used the Shared Socio-economic Pathways (SSPs), the latest climate change modelling scenarios from the Intergovernmental Panel on Climate Change (IPCC). The SSPs produce forward-looking climate data by running climate models driven by assumptions about future global GHG emissions, together with plausible future socio-economic development metrics (economic growth / GDP, demographics, land use and urbanisation), and incorporating the likely implementation of adaptation and mitigation measures.

We looked at three SSPs for the locations of all our own operations and those of our strategic suppliers. We considered four time horizons – 2020 (our baseline), 2030, 2040 and 2050 to identify the top hazards and how they are likely to change.

Scenario	Assumed temperature increase (relative to 1850-1900)
SSP 1-2.6	Best estimate of 1.7°C warming by 2041-2060, and 1.8°C by 2081-2100
SSP 2-4.5	Best estimate of 2.0°C warming by 2041-2060, and 2.7°C by 2081-2100
SSP 5-8.5	Best estimate of 2.4°C warming by 2041-2060, and 4.4°C by 2081-2100

SSP 5-8.5 is an extreme scenario that is unlikely to arise, but it is useful for stress testing. We use it to test the resilience of our most important sites.

Market Sector	Metric (2040)	Unit	Rapid transition	Pragmatic evolution	Slow transition
Global	Total primary energy demand	Exajoules (EJ)	500-550	600-650	700-750
	Renewables supply (excluding use of biomass)	% of total energy supply	c. 55%	c. 35%	c. 25%
Automotive	Global sales of zero-emissions vehicles	% of total automotive sales	c. 90%	c. 70%	c. 40%
	Global sales of fuel cell electric vehicles	% of total automotive sales	c. 20%	c. 15%	c. 10%
Hydrogen	Global hydrogen production	Mt p.a	350-400	200-250	150-200

Our climate-related transition risks and opportunities

Through our scenario work, we identified three distinct potential climate-related impacts, which represent both risks and opportunities for our business. We have added the first climate impact risk to our principal risks because it is of strategic importance to our business (see page 62).

We use our climate scenarios to evaluate these risks and opportunities in the short (0–3 years), medium (3–10 years) and long term (10+ years), in line with our usual business planning timescales. We believe the pragmatic evolution climate scenario is most likely to occur, so have used it as the base case for assessing our transition impacts, and the other two scenarios to stress test the sensitivity and resilience of our business plans.

Primary driver of impact	Opportunities (with time horizons)	Risks (with time horizons)	Management of impacts	Financial impacts (after management)	KPIs to monitor impacts
1. Changing customer demand for our products due to climate awareness					
<p>Regulation</p> <ul style="list-style-type: none"> Tightening GHG emissions standards for vehicles. Government incentives or taxation for energy production or use based on carbon footprint (e.g. IRA and ETS). Requirements for use of bio-based feedstocks. <p>Markets</p> <ul style="list-style-type: none"> Shifts in customer preferences. 	<p>Opportunities for new products in the medium and long term:</p> <ul style="list-style-type: none"> Sales of products & services to rapidly growing low-carbon hydrogen generation sector Products for hydrogen-powered vehicles (FCEV & ICE) and sustainable aviation fuels Low-carbon solutions for the chemicals industry Increasing regulations and the introduction of carbon taxes will accelerate growth in our new target markets – sustainable chemicals, sustainable fuels and clean energy (medium term) Sustained sales of existing products for internal combustion engine vehicles as tighter GHG emissions standards (Euro 7) demand state-of-the-art technology for exhaust pipe catalysts (medium term). 	<p>Without adaptation of our portfolio, there is a long-term risk that we may not have a financially viable future business model as society transitions away from fossil fuels.</p> <ul style="list-style-type: none"> Ability to invest and scale up rapidly to manufacture new products for new markets (short/medium term). Uncertainty in the rate of market evolution from existing to new technology options and penetration of hydrogen technologies affecting profitability (medium/long term). Reduced demand for existing autocatalyst products for ICE vehicles (long term). 	<p>We focus on managing our existing businesses effectively, while pivoting away from fossil fuels-based industries to ones based on clean hydrogen, sustainable chemicals and bio-based fuels.</p> <ul style="list-style-type: none"> We are closely monitoring the changing market environment drivers including evolving government policy on hydrogen, emissions standards, carbon taxation and incentives such as IRA. Updating our climate scenarios at least once a year to inform our strategic decisions. For our growth businesses we are investing in new production assets, forming long-term upstream and downstream strategic partnerships to enable us to play to our strengths to accelerate growth and maintain capital expenditure in line with market expectations e.g PlugPower & Fulcrum. For our maturing businesses, we have a plan to reduce our cost base to improve efficiency and cash flow. Divesting businesses not core to our growth strategy to simplify & focus. We keep investing in innovation to make sure we have products that differentiate us in all our markets. 	<p>Growth</p> <p>Accelerating profit growth coming from businesses related to the net zero transition.</p> <p>Clean Air remains on track to deliver our cash generation target of at least £4 billion by 2030/31 in base case scenario.</p> <p>Investments and Costs</p> <p>c. £0.4 billion of cumulative capital expenditures dedicated to businesses related to the net zero transition in 3 years 2022/23–2024/25.</p>	<p>Progress towards our 2030 sustainability targets for products and services:</p> <ul style="list-style-type: none"> Tonnes of GHGs avoided by customers using our products % Revenue and R&D and revenues aligned with SDG7 and SDG13 Economic activity aligned with EU taxonomy regulation – climate delegated act.

Primary driver of impact	Opportunities (with time horizons)	Risks (with time horizons)	Management of impacts	Financial impacts (after management)	KPIs to monitor impacts
2. Increasing demand for low-carbon manufacturing					
<p>Markets</p> <ul style="list-style-type: none"> Shift in customer preferences towards products with a low-carbon footprint. <p>Regulation</p> <ul style="list-style-type: none"> Carbon taxation mechanisms in countries of operation e.g. ETS. Emerging rules on recycled content of consumer goods and the need for companies to declare the carbon footprint of their products. 	<ul style="list-style-type: none"> Commercial advantage if we adapt our manufacturing plants to low-carbon operation faster than our competitors (short/medium term). Save future carbon taxation costs, which will reduce operating costs and give us price advantage as schemes become more widespread and expensive (short/medium term). As the world's largest recycler of secondary PGMs, we could benefit from the increased demand for goods with low-carbon and/or recycled critical raw material content (short/medium term). 	<p>Medium-term risk that we cannot transition our operations for net zero at the correct pace to meet customer demand of low-carbon products.</p> <ul style="list-style-type: none"> Loss of customers and failure to attract new customers due to reputational damage if we do not transition fast enough to cleaner energy solutions in our operations (medium/long term). Greater capital required to upgrade our assets and site infrastructure to transition to low-carbon manufacturing (medium term). Inability to access the alternative renewable energy sources needed to reduce natural gas use in our operations (medium/long term). Loss of competitive advantage due to increased costs to us and our suppliers of goods and logistics due to carbon taxation on raw materials and fossil-fuel derived energy (medium term). 	<ul style="list-style-type: none"> We have set challenging 2030 GHG reduction targets in line with the 1.5°C pathway and published roadmaps to decarbonise our manufacturing operations. We use an internal carbon price for our capital investment decisions and the Board consider sustainability reviews of all investment decisions £5million and above to help us make the right choices for decarbonising our operations for net zero in the long term. We review global carbon pricing trends annually and have embedded carbon price forecasts into our three- and ten-year planning cycles. Monitor trends in customer requests for product carbon footprint, Life-Cycle analysis (LCA) and recycling information. 	<p>Exposure to direct carbon taxation on our manufacturing operation is not forecast to be material in our 3 year viability period, see page 70.</p>	<p>Progress towards our 2030 sustainability targets for products and services:</p> <ul style="list-style-type: none"> Scope 1, 2 and 3 GHG emissions % recycled PGM content in our products Number of customer requests for low-carbon and recycled content in products Current and forecast direct exposure to carbon taxation in 2030 for our operations.
3. Increasing stakeholder expectations of corporate climate policy and performance					
<p>Reputation</p> <ul style="list-style-type: none"> Increased concerns or negative feedback from stakeholders. <p>Legal</p> <ul style="list-style-type: none"> Exposure to litigation. 	<ul style="list-style-type: none"> Developing and delivering robust climate policy will increase our long-term business resilience, attracting shareholders and employees aligned with our values. Delivering our net zero commitment and science-based targets will help us demonstrate sustainability leadership, and increase our profile with new customers and shareholders. 	<ul style="list-style-type: none"> Investors, employees and wider society are scrutinising companies' sustainability commitments ever more closely. Failing to meet their expectations could damage our reputation, losing us customers, making it difficult to attract and retain staff, and ultimately increasing the risk of shareholder action (medium/long term). Our climate policy, net zero ambitions and sustainability targets do not keep up with stakeholder expectations. Our plans for meeting these commitments are not deemed sufficiently detailed or credible. We fail to meet these commitments. 	<p>We continue to monitor and manage the expectations of our stakeholders as follows:</p> <ul style="list-style-type: none"> SVC and Sustainability Council monitor our governance of climate-related issues at every meeting. Close monitoring of the latest case law and developments in climate litigation. Developing and monitoring net zero roadmaps to 2040. This year we have increased the ambition in our Scope 1, 2 & 3 targets to be in line with 1.5°C pathway and SBTi Net Zero standard. Maintaining regular dialogue with investors. Market scanning and benchmarking of targets to ensure our climate-related policies and commitments meet the highest expectations. 	<p>Reputational risk is not easily quantified.</p>	<p>How we score on leading ESG platforms:</p> <ul style="list-style-type: none"> CDP Investor score DJSI, Sustainalytics and MSCI climate scores Progress towards our 2030 sustainability targets for GHG emissions.

Our climate-related physical risks and opportunities

Changing weather patterns as the climate warms may result in physical risks to our assets and supply chains. They could damage our sites and disrupt production, leading to loss of sales and increased costs, as well as posing risks to our employees. They could also hamper our access to strategic raw materials through supply chain disruption, either at our suppliers' sites or in transit. These physical risks can be grouped into two categories:

- Acute, which are extreme events such as tropical cyclones, thunderstorms, severe flooding events, droughts, heatwaves and wildfires.
- Chronic, which are gradual changes like rising sea levels that damage coastal property, or sustained changes to temperature and rainfall.

Primary driver of impact	Opportunities (with time horizons)	Risks (with time horizons)	Management of impacts	Financial impacts (after management)	KPIs to monitor impacts
4. Disruption to our operations resulting in damage to or loss of assets, increased costs and harm to our employees.					
Physical risks (acute and chronic). Increased frequency, severity and variability of extreme weather events and natural disasters.	Competitive advantage by improving our business resilience and controls through diligent climate-related screening of assets, and integration with business continuity plans (medium term).	Damage to our key sites, equipment or stock from severe weather (wind, rain and drought) if any increased risk is not effectively mitigated, leading to disruption of supply to our customers (medium term). Insurance of our sites could become inadequate or more expensive if a site is at very high risk of weather-related disruption (medium term). Increased employee EHS incidents if sites not adapted to increased risk of heat wave.	Our ten most important manufacturing sites identified as being located in areas with increasing risk from high rainfall are undergoing deep-dive assessments of their resilience and implementing mitigation as required, please see case study on page 51. Integration of weather-related risks in business continuity plans and follow-up action plans. Climate change assessment considered as part of due diligence for new investments for growth. We use the WRI tool to monitor where clean water availability could be at risk in the long-term, see page 46. We regularly review the type and limit of insurance available for climate risks to our portfolio.	High level analysis of our ten most critical locations shows that there is no material financial impact from climate change risks on the quantifiable hazards (flood and windstorm in the medium term).	Proportion of physical asset value exposed to a climate change related high or very high hazard levels by 2030: Number of sites in water-stressed areas. Amount of water consumed in areas or high or extremely high baseline water stress.
5. Disruption to our supply chain (upstream and downstream) hampering our access to strategic raw materials (including metals) and products, and increasing costs.					
Physical risks (acute and chronic). Increased frequency, severity and variability of extreme weather events and natural disasters.	Engaging with our suppliers to help them manage climate risks to their sites could enhance our relationships with them and save us money (medium term). Increase in business resilience through more diligent and frequent screening of our suppliers' assets (e.g. through integration with business continuity plans) (medium term)	Disruption of supply of key raw materials risks our ability to deliver goods on time to customers, resulting in loss of sales and future business and damage to our reputation (medium term). Insurance cover of suppliers is inadequate, and uncertainty over the future level of increased risk responsibility that will be assumed by suppliers and / or JM relating to climate risks, or if physical risks should be transferred (medium term, three to ten years).	Climate risk is integrated into our principal risk management structure and Supplier Partnering framework (SRM). We undertake quarterly reviews of the risks identified, supplier remediation plans and alignment with company and category strategies. We work with strategic suppliers to integrate specific climate mitigating actions where high risks are identified to improve their resilience or we switch to alternative partners for high-risk delivery routes (short / medium term). We ensure that the type and limit of our suppliers' insurance is in line with our own risks and external obligations (medium term). We continue to develop a diversified supply portfolio, with emphasis on dual sourcing at supplier and site levels.	No issues identified in the last year.	Number of weather-related supply chain disruptions.

Risk management

All our climate-related risks are subject to our global enterprise risk management process, which provides a systematic approach of understanding, evaluating and addressing all identified risks (see page 62 for more information).

Identifying climate-related risks

Over the last year we continued to review and evaluate our climate-related risks against industry best practice, peer benchmarking and risks identified by business leads and subject matter experts as well as new and emerging risks.

We believe our climate-risks are in line with industry and legislative expectations. During the year, we have not identified any new climate-related risks but we have combined two risks which were previously reported separately as we recognised they were strongly interconnected with both being influenced by pricing and carbon markets.

Assessing those risks

Our enterprise risk framework provides the tools and guidance to our businesses on how to assess all risk types. The framework allows the comparison of risks using the metrics of likelihood, time horizon and financial impact to determine most material risks to our business.

During the year climate risks have been approached with renewed focus through evaluating potential impact and velocity – immediacy of impact. Use of this extra metric has allowed the determination of which climate risks pose most immediate material impact to our operations. This evolution from a reactive to a proactive strategic approach is essential for maturing our assessment and integration of climate risk mitigation into our business strategy.

We also use external third parties to evaluate physical climate risks at our locations and those of our suppliers. Following on from our assessment in 2021, in 2022 we began to carry out detailed site resilience assessments on our top ten highest risk manufacturing locations. We will continue this throughout 2023 to determine the requirements for areas we need to focus on in the short, medium and long term.

Integrating those risks

Through our enterprise risk framework, climate-related risks and opportunities are integrated into our strategic decision making. Climate change considerations are part of how we operate, and climate is included in our bottom-up operational risk management process, providing a clear view of climate-related risks across the organisation.

Managing those risks

The Sustainability Council oversees our sustainability strategy, including managing our climate-related risks. These risks may have a direct or indirect impact on our principal risks and are therefore managed alongside and integrated within our principal risk process.

To drive consistency, each of our climate risks has been assigned a risk owner and sponsor as per our principal risk approach. These individuals are senior stakeholders who are accountable for reviewing, monitoring and assessing the magnitude of the risk as well as overseeing the implementation of appropriate mitigations.

All of our principal risks are reviewed formally, twice a year, by the GLT and the Board.

In the coming year, we aim to develop detailed mitigation plans for each identified climate risk with distinct intermediary goals.

 [For more information on our risk management approach, please see pages 62-69](#)



Preparing for weather-related issues at our sites

Last year, we completed a global review of our assets to assess the degree of exposure to physical climate risks and identify the high-risk sites. This year, we selected one of those high-risk sites, in the UK, and worked with a 3rd party to conduct a more detailed climate change risk assessment. The assessment covered the site, buildings and processes, and assessed the likely impact from climate change now and in future years. The climate risk assessment identified several climate hazards, and a total of 31 risks.

The highest risks were associated with surface-water flooding and damage from high winds. Several measures for adaption and mitigation have since been implemented at the site, which address those high-priority risks, and the lower-priority risk actions have been incorporated into the ongoing site maintenance plans. Further rollout of these climate change risk assessments will be planned at strategic sites this year.

Metrics and targets

The metrics and targets we use to help us manage our climate risks and opportunities effectively are shown below. They were identified in climate-impact tables on pages 48-50 and their values are summarised here. Our Scope 1, 2 and 3 GHG emissions targets have been submitted to the Science-based Targets initiative for independent verification that they are consistent with the UN Paris agreement on climate change's 1.5°C pathway, and a full breakdown of performance in all categories over the last four years can be found on page 28.

Metric description	Climate-related risk	Target type	Baseline year	Baseline value	2030 target	2022/23 progress	More on page
Tonnes GHGs avoided by customers when using our technologies ¹	1	Absolute	2020/21	200,932 ²	50 million	848,643	25
% sales aligned with SDG7 and SDG13	1	Intensity	2020/21	6.1%	No target	8%	22
% R&D spend aligned with SDG7 and SDG13	1	Intensity	2020/21	22.3%	No target	19.2%	22
Total Scope 1 and Scope 2 GHG emissions (market-based) (tonnes CO ₂ e) ¹	2,3	Absolute	2019/20	417,818 ²	242,334	363,686	25
Scope 3 GHG purchased goods and services (tonnes CO ₂ e)	2,3	Absolute	2019/20	3,433,660 ²	1,991,523	2,495,475	25
% recycled PGM content in our products	2	Intensity	2021/22	70.1%	75%	69.2%	29
Potential exposure to carbon taxation in 2030	2	Intensity	2021/22	not disclosed	no target	not disclosed	70
CDP climate score	3	Absolute	2019/20	B	A	B	23
% physical asset value exposed to high weather-related hazard by 2030	4	Intensity	2020/21	35%	no target	35%	50
Water consumed in regions of high baseline water stress (m ³)	4	Absolute	2020/21	406,037 ²	no target	399,174	30
Number of supply chain disruptions due to severe weather	5	Absolute	2020/21	not disclosed	0	0	50

1. Metrics are linked to long-term Performance Share Plan (PSP) for senior directors

2. Rebaselined to remove divested businesses, please see page 222 for more information

Internal carbon pricing (ICP)

Last year, we introduced a shadow carbon price to our capital investment business case assessment process, as recommended by the Bank of England. The intention is that this will incentivise us to reach net zero by ensuring all investments are made in the context of a low-carbon world where the price of carbon is higher than it is today. Although the ICP is not a real cost of the investment, it demonstrates what the impact would be of carbon taxation forecast for 2030 and beyond, and we use it to evaluate and compare potential investments.

We have implemented the ICP for Scope 1 and 2 emissions for the asset when operational. The intention is to extend this to Scope 3 (raw material and supply chain impacts emissions) in the future. We chose not to apply ICP to emissions related to the development of the project itself, such as equipment manufacture, or to construction-related emissions, since such emissions are both short term and generally minor in relation to the overall life of the asset. The price applied in 2022/23 was £100/tonnes CO₂e, with sensitivity analysis conducted at £50/tonnes CO₂e and £150/tonnes CO₂e.