Welcome to your CDP Climate Change Questionnaire 2021

C0. Introduction

C0.1

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

Johnson Matthey is a leader in sustainable technologies. Today, some 84.7% of the group's sales represent products and services which provide sustainability benefits through their positive impact on the environment, resource efficiency or our health, as determined by their alignment with four of the UN SDGs. Are sales and R+D efforts are aligned to good health and wellbeing (UNSDG 3), affordable and clean energy (UN SDG 7), responsible consumption and production (UN SDG 12) and climate action (UN SDG 13)
Our business is divided into four sectors for reporting purposes, based around the four different applications of our products:
1. Clean Air Sector - catalysts for gasoline and diesel powered vehicles, including hybrids, trucks buses, non-road machinery and stationary equipment
2. Efficient Natural Resources Sector - Catalyst Technologies and additives, licenses process technology and services to the chemical and oil & gas industry; precious metal marketing, distribution, refining and recycling services to a wide variety sectors from chemicals to jewellery; Advanced Glass pastes and enamels primarily for the automotive industry
3. Health Sector - Leading provider of complex chemistry solutions to generic and innovator pharmaceutical companies; develops and manufactures active pharmaceutical ingredients (APIs) for a variety of treatments
4. New Markets Sector - provides battery materials for automotive applications and battery systems for a range of non automotive applications; fuel cell technologies for automotive and stationary applications; Medical Device Components and advanced catalysts derived from precious metals to the pharmaceutical and agricultural chemicals markets
We have operations in over 30 countries and employ around 13,500 people worldwide.
Our latest annual integrated report can be found at https://matthey.com/-/media/ara-21/files/jm-ar21-secured.pdf
For more information about Johnson Matthey, see our corporate website : www.matthey.com

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
Reporting year	April 1, 2020	March 31, 2021	

C0.3

(C0.3) Select the countries/areas for which you will be supplying data.

Argentina
Australia
Brazil
Canada
China
China, Hong Kong Special Administrative Region
Finland
Germany
India
Israel
Japan
Malaysia
Mexico
Netherlands
North Macedonia
Poland
Republic of Korea
Russian Federation
South Africa
Sweden
Switzerland
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.

GBP

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

C-CH0.7

(C-CH0.7) Which part of the chemicals value chain does your organization operate in?

Row 1

Bulk organic chemicals

Bulk inorganic chemicals

Other chemicals

Specialty chemicals

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
Director on board	The Societal Value Committee (SVC) is our Board subcommittee with responsibility for ensuring we meet all our Sustainability commitments, including our science-based GHG reduction targets for 2030 and net zero commitment for 2040. The chair of the SVC is a non-executive director on the Board. The SVC meets three times per year and reviews the governance of all aspects of climate change across JM, include implementing the TCFD recommendation Annual Report 2021: Page 86, 107 and 112.

C1.1b

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

Frequency with which climate-related issues are	Governance mechanisms into which	Please explain

a scheduled agenda item	climate-related issues are integrated	
Scheduled – all meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies 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	Our business strategy is all about transitioning to selling only products that support the net zero world and thus the Board review climate-related issues at every meeting. Specifically we are growing our battery materials business for electric vehicles and fuel cell + electrolyser business for the hydrogen economy. During the year, the board also set up the Societal Value committee, which is a board subcommittee dedicated to reviewing progress towards our Sustainability goals three times a year. Other aspects of climate-related strategy are scheduled for review throughout the year. For more information on other aspects of climate-related strategy were reviewed at board meetings during FY2020/21 please see pages 112-115 Annual Report 2021

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
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly

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).

The JM board is our highest governance committee. Below this is the GMC (Group Management Committee) chaired by the CEO. This GMC manages climate related matters on behalf of the company. They are advised by the Group Strategy director, Chief EHS and Operations Officer and the Group Assurance and Risk director . Issues such as climate related risks and opportunities, reporting frameworks, best practice in goal setting, benchmarking, policy development and JM's own goals are reviewed by this committee and

action plans agreed. The Sustainability Council is chaired by the Chief EHS and Operations Officer who is accountable for all our sustainability goals and targets (including our operational carbon footprint targets) and reports directly to the CEO. The Chief EHS and Operations Officer is a member of the Group Management committee

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	Individual senior directors have financial incentives for the management of individual objectives for delivering on our climate-related strategy. Specifically the CEO had an objective in 2020/21 to enable delivery of our growth in battery materials for electric vehicles and the hydrogen economy. This is core to us realising our climate -related opportunities.

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 inventivized	Comment
All employees	Non-monetary reward	Efficiency project	All JM employees are incentivized through the JM employee annual awards. 2 categories of awards allow employees to enter projects / programmes which give operational improvements, energy and carbon savings : (i) Protecting People and Planet and (ii) Innovating and improving: operations
Chief Executive Officer (CEO)	Monetary reward	Other (please specify) climate-related business strategy	The CEO had an objective in 2020/21 to enable delivery of our growth in battery materials for electric vehicles and the hydrogen economy. This is core to us realising our climate -related opportunities. Annual report 2021 page 155.

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	3	This time frame is aligned with our other business strategy reviews.
Medium-term	3	10	This time frame is aligned with our other business strategy reviews.
Long-term	10	30	This time frame is aligned with our other business strategy reviews.

C2.1b

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

All risks are scored using a standardised scoring methodology (1-5), which operates on two levels:
1. Principal risk level
2. Operational business risk level

Both of these methodologies require risk to be scored on both financial and strategic level.

Operational business risks identified at strategic sites are the only ones that meet the criteria to be included in response to W1.4.
We have 8 (out of 53) sites that are classified as "strategic " because their failure could have a substantive financial impact on the business.

We define strategic suppliers as those suppliers of raw material that are critical to the operation of our strategic products.

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

Our risk process is designed to support everyone, at all levels of the business, in identifying and
managing risks.
We specifically separate our risk identification efforts into risks within the organisation, and external risks; we assess combinations of both on delivery of our strategic outcomes. External risks specifically include environmental and climate change risks; our internal risks assess our operations risk, and our procurement risks which include energy. The central Group Assurance and Risk team acts as an advisory function and provides independent challenge and review. Each of our business functions also participates in the process, identifying relevant risks that may prevent them achieving their objectives and describing these in terms of cause and consequence. These are scored using a variety of impact measures taken from our risk library, including financial, operational, reputational and people factors. We are in progress of enhancing consistency of our risk identification process and have been implementing risk universe connecting various levels of risk identification and clarifying accountabilities.
Controls for each relevant risk are described and assessed. Each risk, at every level, has a designated owner
who is responsible for ensuring the described controls are effective and efficient. We have introduced the concept of group's risk appetite during the course of 2020 and we will continue improving our understanding of desired risk tolerances. We continually review the level of risk throughout the business and complete a formal submission every six
months for reporting purposes (as illustrated in our risk framework opposite).

Climate change is incorporated into our risk management process as a driver of certain principal risks, especially
'Future growth', 'Environment, health and safety', 'Supply failure' and 'Existing Market Outlook'. We recognise that
effective management of climate change risks are crucial
to deliver our growth strategy and inspire confidence from
our stakeholders. The rate and extent of change of our key
markets in response to climate change is the subject of
extensive scenario planning and we are further analysing
the validity of a stand alone risk for this area.

Risk 1- Existing Market Outlook: In this principal risk we assess impacts on our business as a result of changes in our chosen key markets, climate change transition being a significant driver of this.
Risk 2- Future Growth: Under this principal risk we assess impacts on our business due to awareness of climate change. This includes both impacts on production costs and attractiveness of our products to the market due to climate-related legislation. (tax incentives and vehicle emissions standards)
Risk 4- Environment, Health and Safety: In this principal risk we consider our scope 1 and scope 2 GHG emissions and operational water risks.
Risk 5 - Supply Failure: Here we consider the impact of climate change on our key suppliers' ability to maintain high quality supply of raw materials to us at agreed prices.
More information on our risk process and the substantive risks our business faces can be found on pages 88 - 96 of Annual Report 2021.

We are currently enhancing our enterprise risk management structure to facilitate the implementation of a Governance, Risk and Compliance (GRC) tool which will support visibility of our processes, controls and risks and are developing JM's risk universe. This will provide a structure and connect the mitigations and controls required within the risk assessments. This will ensure that there are no gaps in our controls coverage. Climate change will be embedded within the risk universe framework providing clear line of sight of climate related risks across JM. The climate change category has been aligned with TCFD recommendations to provide coverage over both transitional (policy and legal, market, technology, reputation) and physical (acute, chronic) climate risks.

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	The central Group Assurance and Risk team provides a risk library of issues to all businesses to work through and consider at each 6 monthly review. Impact of current regulation is one of the topics in the Risk library.
Emerging regulation	Relevant, always included	The central Group Assurance and Risk team provides a risk library of issues to all businesses to work through and consider at each 6 monthly review. Potential impact of emerging regulation is one of the topics in the Risk library.
Technology	Relevant, always included	The central Group Assurance and Risk team provides a risk library of issues to all businesses to work through and consider at each 6 monthly review. Changes in technology and customer/market demands for different technology is one of the topics in the risk library.
Legal	Relevant, always included	The central Group Assurance and Risk team provides a risk library of issues to all businesses to work through and consider at each 6 monthly review. Changes in technology and customer/market demands for different technology is one of the topics in the risk library.
Market	Relevant, always included	The central Group Assurance and Risk team provides a risk library of issues to all businesses to work through and consider at each 6 monthly review. Changes in technology and customer/market demands for different technology is one of the topics in the risk library.
Reputation	Relevant, always included	The central Group Assurance and Risk team provides a risk library of issues to all businesses to work through and consider at each 6 monthly review. Changes in technology and customer/market demands for different technology is one of the topics in the risk library.
Acute physical	Relevant, always included	The central Group Assurance and Risk team provides a risk library of issues to all businesses to work through and consider at each 6 monthly review. Changes in technology and customer/market demands for different technology is one of the topics in the risk library.
Chronic physical	Relevant, always included	The central Group Assurance and Risk team provides a risk library of issues to all businesses to work through and consider at each 6 monthly review. Changes in technology and customer/market demands for different technology is one of the topics in the risk library.

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?

Downstream

Risk type & Primary climate-related risk driver

Emerging 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

A significant tightening of legislation regulating GHG emissions from vehicles could adversely affect group sales and profitability. For example, introduction of legislation to phase out or ban internal combustion engines (ICE) powered
cars over time, in favour of lower emissions alternatives could have a significant impact on JM's sales of emission control catalysts for light duty vehicles. Sentiment around emissions and proposals to ban ICE vehicles for light duty vehicles are currently being debated by governments at both regional and national level in parts of Europe and Asia. Individual OEMs are also setting dates after which they will no longer manufacturer cars powered by petrol or diesel. These dates tend to be in the mid to late 2030s and 2040s. This is beginning to reduce demand for these products in Europe & China. Emissions legislation is also expected to tighten in other core markets, including North America.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

1,375,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The potential financial impact figure given is the highest possible eventual annual loss of sales in the long term, if we do nothing to mitigate the risk; included in the number is 100% of our revenue from light duty vehicle catalyst sales in Europe and Asia in FY2020/21.

Our business strategy assumes diesel share of the market in Europe will gradually decline to around 25% of total light duty vehicles and 20% of cars by 2025, driven by tightening legislation as part of the EU Green Deal (e.g. EUROVII). At this level of decline, we do not expect any significant impact on profits.

For more information about this risk read our capital markets day 2019 presentation on page 40-46..
https://matthey.com/-/media/files/investors/cmd-2019-full-final-final.pdf?la=en&hash=DF92CAB54FB19B08FB4969B0ABAC903A0F266250

And our "Future Growth Risk" Annual Report 2021 page 92

Cost of response to risk

100,000,000

Description of response and explanation of cost calculation

We have 2 strategic responses to this risk:
(1) We will continue to develop world-leading emissions control technology for ICE vehicles that enable manufacturers to increase the fuel economy and decrease their tailpipe emissions for CO2, whilst meeting ever stricter particulate and NOx emissions standards, top maximise our profits from this business in the medium term.
(2) We are developing and commercialise world-leading, cost-competitive, high performance cathode materials for electric vehicle batteries that will enable OEMS to transition the passenger car fleet to zero emission vehicles (BEVs) in the medium
Our first commercial plant in Konin, Poland is expected to start production in 2022 and supply platforms in production in 2024. This plant will have an initial capacity of 10,000 metric tonnes, with potential for expansion to 100,000 metric tonnes.
Plans for our next plant are underway; this facility will be located in Vaasa, Finland, and will have approximately three times the capacity of our plant in Poland. Both plants will

be entirely powered with renewable electricity, and will supply the European market. We expect to spend £280M in related capital expenditures by 2022, in line with annoucements made in our Capital Markets Day in 2019.

We invest approximately £100m OPEX annually in R&D to develop new catalyst technologies for vehicle exhaust systems and battery materials aimed at meeting demand for tightening emissions legislation globally.. THis is included as our "cost of response to risk"

The CAPEX Investment has NOT been included in the "Cost to response risk" number, as it is not annualised as a cost in our financial accounts in the same way as R&D expenditure.

For more information about this capital investment & R&D expenditure see Annual Report 2021 page 54 and 59 and capital markets day 2019 presentation slide 63 https://matthey.com/-/media/files/investors/cmd-2019-full-final-final.pdf?la=en&hash=DF92CAB54FB19B08FB4969B0ABAC903A0F266250

Comment

This is Principal Risk #2 is our Corporate Risk Register Annual Report 2021 page 92

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Downstream

Risk type & Primary climate-related risk driver

Market

Changing customer behavior

Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Company-specific description

Johnson Matthey is a world leader in refining of precious metals and trading precious metals. Currently over half of all precious metals in the marketplace goes into vehicle emissions control systems. Therefore, as demand for petrol and diesel powered vehicles drops in favour of battery-powered electric vehicle in the long term, growth in the quantity of platinum, palladium & rhodium being returned for secondary refining will slow and eventually decline. (Growth is expected in the medium term, as more emissions control catalyst enter the End of Life/recycling market). As demand for fuel cell vehicles and green hydrogen generation rises, demand for platinum and the minor metals will increase again, whereas demand for palladium and rhodium may decrease. Therefore we expect to see a change in feedstocks and demand of our refining services

Time horizon

Long-term

Likelihood

Unlikely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

479,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The financial impact figure is total current revenues from our refining business and thus the highest theoretical possible impact on our business if there were to no longer be a market for refining pgm services because there is no demand for refining of automotive catalysts . It is the Domesday scenario where there is no market for precious metal recycling in the long term. In FY2019/20 Johnson Matthey made sales of £479 million from pgm services.

Cost of response to risk

50,000,000

Description of response and explanation of cost calculation

Our strategy to mitigate the long-term possibility loss of refining business from reduced demand for PGMs in the light duty vehicle sector is two fold:
1. Promote alternative uses for platinum group metals (PGM) in the Clean Energy sector, particularly hydrogen fuel cells for automotive application (hydrogen-powered vehicles use significantly more PGM per vehicle than current ICE vehicles). and in process catalysts that will enable the transition to a hydrogen economy.
2. Upgrade our refineries so they operate more efficiently and profitably, able to handle a diverse range of secondary feeds containing PGM to promote recycling and the Circular Economy for all platinum containing goods,. including those that are not economical today.
3.Invest in capacity for refining of base metals that are found in batteries from electric vehicles - nickel, cobalt and lithium

We spend approximately £50million annually on R&D in Corporate Research , Efficient Natural Resources Sector and Alternative Powertrain Business to diversify our product and services offering in support of these goals.

During 2019 we also committed to capital investing £100m over three years to upgrade one of our refineries to ensure it runs more efficiently and reliably, improving returns in the medium term and £15m to double our manufacturing capacity for fuel cell components for hydrogen economy. This capital investment is not included in the "Cost of response to risk" number, as it is a long term investment that depreciates over a long time period in our financial accounts, rather than being an annualised cost.

For more information about our R&D expenditure see Annual Report 2021 page 59

Comment

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Acute physical

Increased severity and frequency of extreme weather events such as cyclones and floods

Primary potential financial impact

Decreased revenues due to reduced production capacity

Company-specific description

Failure of Significant Site: Potential risks include a disruptive event such as heavy snowfall, hurricane, flood or earthquake, or other weather-related events. The consequences associated with this risk include the impact on our ability to manufacture goods and satisfy customer demand.

Time horizon

Short-term

Likelihood

About as likely as not

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

2,500,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The estimated financial implication given in answer to this question is the level of retention or deductible, before transfer to insurance, for the risk of physical damage to manufacturing assets and for loss of sales due to an unexpected failure of one of our largest manufacturing facilities.

Cost of response to risk

5,000,000

Description of response and explanation of cost calculation

We have insurance to cover interruptions to production due to extreme weather events and also permanent loss
of a facility. For permanent loss of a facility, we would look to replace the capacity with an associated
£200M insured loss of sales.
This annual cost of the insurance cover is what is included in the "cost of response to risk" given in this answer.
We have also assessed changes to medium-long term precipitation patterns relative to regional demand and how they could impact on the availability of water for our manufacturing operations in different parts of the world.

In 2016 we conducted a new survey using the World Business Council for Sustainable Development (WBCSD) Global Water Tool™ (version 1.3). All our manufacturing sites were included in the assessment. Of the 66 principal sites surveyed, 15 were identified as being in regions of extreme water stress. Our water usage at most of these is very low, however there are four sites that are mains connected and are close to using the available supply per capita: Taloja, India; Brimsdown, UK. We are prioritising water efficiency projects at these sites.

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

BATTERY MATERIALS FOR ZERO EMISSION CARBON AUTOMOTIVE VEHICLES
Additional greenhouse gas and pollutant legislation (e.g. Euro VII, CARB 2027), fuel economy regulations, the creation of "low emission zones" and "clean city" strategies are all likely to encourage the growth of the electric or hybrid vehicle market over the next decade. As an example, the UK announced a ban on sales of petrol and diesel car by 2030. A number of European cities are also discussing legislation to ban diesel vehicles from their city centres and incentivising use of electric and hybrid vehicles, which is accelerating growth in this market.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

100,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

This is a highly competitive market and share price sensitive issue, so the figure given here should be taken only as an order of magnitude estimation. We expect the ultra high energy density cathode materials market for electric vehicles to be 500ktonnes - 1800 ktonnes by 2030, with associated sales of $15billion to $54 billion. The estimated value per vehicle to Johnson Matthey will be higher than the current value per vehicle for the autocatalysts market. Therefore we are targeting increased profits of £100m+ for this opportunity.

Cost to realize opportunity

550,000,000

Strategy to realize opportunity and explanation of cost calculation

We expect the full cost to commercialisation of eLNO to be c.£550m. This is a total project cost comprising investment in our pilot plant, application centre, first commercial plant in Poland, research and development, and management costs. Our second commercial plant, to be located in Vaasa, Finland will have a nameplate capacity of 30kT and will be in addition to the c.£550m cost to commercialisation. We expect our Finnish plant to have a lower capital intensity, moving towards a level which is comparable with other European plants1.

1. Based on Bain benchmarking of competitor's European plants, giving average capital costs of c.$15k per tonne

https://matthey.com/-/media/files/investors/announcement-fy-2020-21.pdf?la=en&hash=031F4E960197E4E1DDB18D1478F3B3CDB1137804

https://matthey.com/-/media/files/investors/results/half-year-results-for-the-six-months-ended-30th-september-2020.pdf?la=en&hash=EE38A2B0638B5DD2B81783B02847EF0BB34D33A9

For more information on this opportunity see Annual Report 2021 page 54

Comment

Identifier

Opp2

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

FUEL CELLS FOR LOW CARBON STATIONARY AND AUTOMOTIVE APPLICATONS
Fuel cell technology for transport applications, especially cars, remains an important opportunity for Johnson Matthey and major car companies have reaffirmed their interest in fuel cell powertrains as part of a balanced portfolio of electric vehicles. We have continued to develop technology for automotive membrane electrode assemblies and our products have been well received by car companies, providing cost and performance characteristics in line with their needs. The European Commission's new goal of 95 grams of carbon dioxide per kilometer (g/km) as an average for all new vehicles sold in Europe from 2020 is likely to aid the commercialisation of fuel-cell powered vehicle.

Time horizon

Long-term

Likelihood

More likely than not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

200,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Subject to how the market evolves, over the medium term we are currently on track to deliver revenues of around £200m by 2025.
https://matthey.com/-/media/files/investors/announcement-fy-2020-21.pdf?la=en&hash=031F4E960197E4E1DDB18D1478F3B3CDB1137804

Our Fuel Cells sales grew strongly in FY2020/21 (+41%) at £41m, with 2GW of capacity on stream and further expansion planned. Today, our fuel cells are powering several

hundred commercial vehicles and buses in China. We also announced a multi-million pound deal and joint development agreement with SFC Energy, a global leader in hydrogen and direct methanol fuel cells, to supply at least 400,000 membrane electrode assemblies.

Cost to realize opportunity

15,000,000

Strategy to realize opportunity and explanation of cost calculation

We work in joint development programs with our key customers (including automotive OEMs) to develop technology suitable for commercialisation. Investment in the technology through internal R&D programs and CAPEX investment in the manufacturing capability of the business, by Johnson Matthey plc, continues on a yearly basis.

Last year we spent £15M on expanding our fuel cell manufacturing facilities in UK and China. Further CAPEX expenditure is planned for major capacity expansion but it is not yet public domain information.

Comment

Identifier

Opp3

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

Other opportunities arising from Climate Change for JM include the development of Blue and Green Hydrogen solutions, fuelled by the shift towards low emission energy sources, in the industry and mobility sectors. JM is well-positioned to develop these solutions, leveraging its expertise in reforming processes, catalysts and sorbents. JM's Low Carbon Hydrogen process is world leading for producing blue hydrogen, reducing

CO2 emissions by over 95%, but also offering the highest feedstock efficiency with lower capital expenditure. This solution is ready for deployment, and has already been used in the development of two major UK hydrogen projects, HyNet and Acorn.
In parallel, we identified opportunities around low carbon solutions, to help customers decarbonise their operations, by transitioning our Catalyst Technologies portfolio towards net zero solutions (e.g. carbon capture, new flowsheets with decarbonised feedstocks). We did not include revenue estimates in the time frame provided, as the details are commercially sensitive.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

This is a new market for us and we have not yet publicly disclosed to our investors the size of the market opportunity that we are targeting,

Cost to realize opportunity

Strategy to realize opportunity and explanation of cost calculation

This is a new market for us and we have not yet publicly disclosed to our investors the size of our investment in this market opportunity,

Investment in clean hydrogen technologies through internal R&D programs and CAPEX investment continues on a yearly basis. For instance, we announced new green hydrogen capacity for the production of catalyst coated membranes, located in JM's cutting-edge plant of Swindon, UK. The development will enable tens of megawatts of green hydrogen production, with the ability to scale-up to multi-gigawatt production with market growth.

Comment

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization's strategy and/or financial planning?

Yes

C3.1b

(C3.1b) Does your organization intend to publish a low-carbon transition plan in the next two years?

	Intention to publish a low-carbon transition plan	Intention to include the transition plan as a scheduled resolution item at Annual General Meetings (AGMs)	Comment
Row 1	Yes, in the next two years	No, we do not intend to include it as a scheduled AGM resolution item	We have already published details of our strategy to transition our product portfolio to those supporting the low carbon economy in our Annual Report 2021 - page 19 -20. We also announced our commitment to net zero by 2040 and preliminary activities to ensure we achieve our science-based GHG reduction targets for 2030 on page 67. We will build on these over the next couple of years, as well as enhance our reporting of our plans in line with the recommendation of TCFD. We have no immediate plans to schedule discussion of our low carbon transition plans at our AGM - which is due to be held this month. We will listen to our shareholders and include it in future years if we sense their is substantial demand for us to do so.

C3.2

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

Yes, quantitative

C3.2a

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

Climate-related scenarios and models applied	Details
2DS	Johnson Matthey runs a detailed, yearly planning and budgeting process for management purposes. As part of this process we explore the evolution of our major markets. We consider potential pathways to meet the 1.5-2C climate change target, netzero legislation and specific country / city restrictions. As an organisation whose activities span automotive, chemicals and raw materials we believe we are well placed to understand legislative evolution and its impact on technology, customer demand and the timing of market evolution (incl., the introduction of disruptive technology). For JM we use these pathways to consider how our own products and services into these markets will need to evolve along with the investments required to meet future customer demand. Our insights also inform customer and legislator discussions around what transitions and scale of change may be possible and over what timeframes

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	Annual report 2021 page 19-20 , 24 -25 Our vision for a "Cleaner, Healthier world" drives our strategy and mirrors society's need to manage the four transitions – in transport, energy, decarbonising chemicals production and the circular economy – that will help us achieve a more sustainable future. We have set 3 strategic aims. The first is : "Invest in growth areas targeted at climate change and circularity" Battery Materials represents an important new area of growth for us; we continue to see considerable interest in our eLNO battery materials portfolio from new customers and we are moving into more advanced stages of testing with existing customers. The construction of our first commercial plant in Poland is progressing well and plans for

		a second plant in Finland are now under way. And because we want to set new standards in sustainability, both plants will run entirely on renewable electricity from the moment they start production. We're also developing our hydrogen technologies. Fuel cells (which use hydrogen) is an industry that we know very well. But the conversation has accelerated in the past five years and we now have supply contracts with numerous fuel cell players including Doosan and SFC Energy. Fuel cells have massive potential to help decarbonise our transport, especially long distance trucks. To that end, we've doubled our manufacturing capacity in the UK and China giving an overall capacity of 2GW and we are already working on the next set of major expansion plans. And hydrogen more broadly has a crucial role to play not only in fuel cells but in decarbonising our energy systems alongside big, hard-to-abate industries like chemicals. Indeed, without hydrogen it will be impossible for the world to reach net zero. Johnson Matthey has a key role to play here. Already a market leader in 'grey' hydrogen production (from fossil fuels) technology, we're now commercialising at scale 'blue' hydrogen technology that uses less natural gas and can reduce carbon dioxide emissions by over 95%. And we're advancing new 'green' hydrogen production (made via water electrolysis using renewable energy). .
Supply chain and/or value chain	Yes	We are aware that climate risks impact the operations of our suppliers as much, if not more, than our own operations. We published our full scope 3 carbon footprint for the first time in our Annual Report 2021 (page 67 -68) and disclosed that >90% of our GHG footprint is embedded in our raw material supply chains. Therefore, we have set a science-based GHG reduction target to reduce our upstream scope 3 GHG emission from purchase goods and services by 20% by 2020 -2030. We monitor our suppliers' environmental performance through our supplier relation management due diligence activities and advise them of our requirements to minimise GHG emissions through our Supplier code of Code, which is published on www.matthey.com.

Investment in R&D	Yes	Our R&D programs are what enable us to deliver our strategy for a cleaner, healthier world. In 2020/21 we invested £194 million in R&D and 19% of that spend was directly on development of products that directly support the low carbon economy (see Annual Report 2021 page 59). We are especially focussed on developing new cathode materials for the next generation of electric vehicles, catalyst technologies to enable the production of clean hydrogen and next generation fuel cell catalyst and electrochemical membrane assemblies. We are also using our R&D expertise to enable the chemical industry to switch to alternative feedstocks, to support a lower carbon future. For example, our expertise in the generation, purification and chemical modification of syngas opens the door to renewable feedstocks, efficient manufacturing and low carbon technologies. Syngas is a mixture of hydrogen, carbon monoxide and carbon dioxide, produced by converting any carbon containing material into a gaseous form. Syngas traditionally comes from coal or natural gas, but now things like municipal solid waste or renewable biomass can be used to make syngas. Through our R&D partnership with BP, we developed and scaled up a process based on Fischer Tropsch (FT) technology to economically convert synthesis gas generated from waste into waxes suitable for the production of diesel and jet fuel. Compared with conventional fixed bed tubular reactors, the new system reduces capital expenditure by around 50% and enables the FT process to be economically scaled down to a size suitable for waste and / or biomass gasification. (Annual Report 2020 page 21)
Operations	Yes	Realisation of the impact climate change could have on the world caused us to set our first operational carbon footprint reduction target as early as 2006. We met our first target

		and have continued to expand our ambition ever since. In April 2021 we committed to net zero by 2040 and set a science-based GHG reduction targets in line with the Business Ambition for 1.5C. We have committed to our 33% absolute reduction in scope 1 + 2 GHG emissions by 2030, even as we grow our business. In further support this goal we also have a target to increase the amount of mount of renewable electricity we procure to 60% by 2025 (Annual Report 2021 page 67 -68)

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 Capital expenditures Capital allocation Acquisitions and divestments	During 2020 we undertook a substantial business review to identify the magnitude of climate related risk and opportunities for JM's products over the next decade. Our largest transition risk is the rate at which the automotive powertrains will transition from internal combustion engine vehicles to battery electric and fuel cell vehicles. We are carefully managing the transition as tighter regulations for vehicle tailpipe emissions are debated to ensure we maintain a profitable business in autocatalysts for as long as the market requires these products. At the same time we are developing our new businesses in high performance cathode active materials for electric vehicles, membrane electrode assembly components for fuel cell vehicles and technology for hydrogen production used to power those vehicles, in order to be prepared for the transition at whatever pace it occurs. We are also investing in a broader portfolio of low carbon solutions linked to clean energy, decarbonising chemicals production and circularity Our largest capital expenditures are about delivering on this strategy to transition our products portfolio to those that enable a transition to a low carbon world. During 2020/21 we invested £358million in our low carbon businesses.

		For more information on our capital expenditure program and support of the Net Zero economy, see Annual Report 2021 and our Capital Markets Day presentation 2019 available at https://matthey.com/-/media/files/investors/cmd-2019-full-final-final.pdf?

C3.4a

(C3.4a) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

For more information see our Annual Report 2021 pages 86 -87, where our TCFD disclosure can be found.

C4. Targets and performance

C4.1

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

Both absolute and intensity targets

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) (or Scope 3 category)

Scope 1+2 (market-based)

Base year

2020

Covered emissions in base year (metric tons CO2e)

391,459

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year
2030

Targeted reduction from base year (%)
33

Covered emissions in target year (metric tons CO2e) [auto-calculated]
262,277.53

Covered emissions in reporting year (metric tons CO2e)
388,904

% of target achieved [auto-calculated]
1.9778378432

Target status in reporting year
New

Is this a science-based target?
Yes, we consider this a science-based target, but it has not been approved by the Science-Based Targets initiative

Target ambition
Well-below 2°C aligned

Please explain (including target coverage)
We have signed up to the Business Ambition for 1.5C and are now going through the process of getting our target approved by SBTi.

Target reference number
Abs 2

Year target was set
2021

Target coverage
Company-wide

Scope(s) (or Scope 3 category)
Scope 3: Purchased goods & services

Base year
2020

Covered emissions in base year (metric tons CO2e)
3,859,969

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2030

Targeted reduction from base year (%)

20

Covered emissions in target year (metric tons CO2e) [auto-calculated]

3,087,975.2

Covered emissions in reporting year (metric tons CO2e)

3,139,540

% of target achieved [auto-calculated]

93.3205681186

Target status in reporting year

New

Is this a science-based target?

Yes, we consider this a science-based target, but it has not been approved by the Science-Based Targets initiative

Target ambition

2°C aligned

Please explain (including target coverage)

We have signed up to the Business Ambition for 1.5C and are now going through the process of getting our target approved by SBTi.

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

2018

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based)

Intensity metric

Metric tons CO2e per metric ton of product

Base year

2017

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

3.83

% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure

100

Target year

2025

Targeted reduction from base year (%)

25

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

2.8725

% change anticipated in absolute Scope 1+2 emissions

25

% change anticipated in absolute Scope 3 emissions

0

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

3.4

% of target achieved [auto-calculated]

44.908616188

Target status in reporting year

Replaced

Is this a science-based target?

No, but we are reporting another target that is science-based

Target ambition

Please explain (including target coverage)

This intensity target for 2025 has now been replaced by a more ambitious science-based absolute reduction target for 2030.

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
2019

Target coverage
Company-wide

Target type: absolute or intensity
Absolute

Target type: energy carrier
Electricity

Target type: activity
Consumption

Target type: energy source
Renewable energy source(s) only

Metric (target numerator if reporting an intensity target)
Percentage

Target denominator (intensity targets only)

Base year
2019

Figure or percentage in base year
24

Target year
2025

Figure or percentage in target year
60

Figure or percentage in reporting year
31

% of target achieved [auto-calculated]

19.4444444444

Target status in reporting year

Underway

Is this target part of an emissions target?

This target is in addition to our emissions target, but it is there to support and accelerate our progress towards our 2030 targets for scope 1 + 2 emissions reduction.

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain (including target coverage)

100% of our electricity use across all our operations is included in this target, whether generated on site or purchased through national grids.

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	1	25,400
To be implemented*	0	0
Implementation commenced*	1	13,200
Implemented*	3	560
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 production processes

Wastewater treatment

Estimated annual CO2e savings (metric tonnes CO2e)

100

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

22,760

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

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Reduction in temperature settings at a wastewater treatment plant in germany

Initiative category & Initiative type

Energy efficiency in buildings

Lighting

Estimated annual CO2e savings (metric tonnes CO2e)

180

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

37,500

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

28,000

Payback period

1-3 years

Estimated lifetime of the initiative

6-10 years

Comment

Fitting of LED lighting at sites in Malaysia and the USA

Initiative category & Initiative type

Energy efficiency in production processes
Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)

280

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

0

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

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Reduction in metal content in manufactured process in Germany led to less carbon emission in preparing the metal salt ingredient

C4.3c

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

Method	Comment
Dedicated budget for low-carbon product R&D	Within our R&D portfolio, we have multiple projects which address low carbon opportunities including, battery materials, fuel cells, carbon capture & storage, making chemicals from bio feedstocks, materials for solar PV. These are described in more detail on Annual Report 2021 page 58-59. We also have a KPI which we track to identify % R&D spend which is dedicated to supporting UN SDG13 climate action. In FY2020/21 19% of our R&D budget was directly at SDG13 and a further 3% at accelerating the clean energy transition SDG7.

Internal incentives/recognition programs	We run an annual JM awards competition which all employees are eligible to enter. The categories are aligned with our values and awards are given for outstanding contribution to each - there are two categories which are relevant to reduction in energy and associated carbon emissions are considered: "Protecting people and Planet" and "Innovating and improving" our operations or our products. These are described in more detail on Annual Report 2019 page 74-75 and in summary on Annual report 2021 page 32
Compliance with regulatory requirements/standards	We are fully compliant with our obligations for energy efficiency and emissions reduction . These include EU-ETS and UK regulations e. UK CCA (Climate Change Agreements) , ESOS (Energy Savings Opportunities Scheme)..
Partnering with governments on technology development	Multiple research projects with UK/EU funding bodies to investigate low carbon technology solutions e.g. working on projects sponsored by the UK government's Faraday Battery Challenge for the development of improved battery materials for transport. https://www.gov.uk/government/news/future-electric-vehicles-new-faraday-battery-challenge-funding

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation

Group of products

Description of product/Group of products

JOHNSON
MATTHEY
OFFERS
TECHNOLOGY
SOLUTIONS
TO AVOID THE
USE OF FOSSIL

FUELS IN THE TRANSPORTATION SECTOR AND COMBINED HEAT AND POWER, BACKUP POWER SECTOR.
We deliver battery cathode materials and fuel cell components for electric and hybrid vehicles, and stationary energy storage applications.
We have developed bestin-class lithiumbased cathode materials.
Batteries in electric vehicles save GHGs if the electricity used to charge them is more efficient than the combustion engine they are replacing. In cases where renewable electricity is used, the vehicle can become emission free.
We are also a world leader in fuel cell technology for generating low carbon power via hydrogen production.
Where the hydrogen has

been generated from a low carbon source, or where electricity generation becomes more efficient by use of a fuel cell than by burning fossil fuels, GHG emissions are saved.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

The EU Taxonomy for environmentally sustainable economic activities

% revenue from low carbon product(s) in the reporting year

1.46

Comment

Estimated 210,988 tonnes avoided CO2 emissions are based on the use of Johnson Matthey's battery materials for automotive applications, as sold in FY 2020/21. Comparisons have been made against equivalent vehicles operating with an internal combustion engine only. Calculations were made using Johnson Matthey's in-house methodology. Estimated avoided emissions are based on the use of Johnson Matthey's fuel cell components for distributed power generation, using natural gas as the source fuel, as sold in FY 2020/21. This excludes any emission savings due to heat recovery. CO2 savings have been calculated using the methodology recommended by the US EPA CHP Partnership, in conjunction with its Emissions & Generation Resource Integrated Database (eGRID). The displaced grid electricity is based on the national average for fossil fuel output rates over the 2020 calendar year.

Level of aggregation

Product

Description of product/Group of products

JOHNSON MATTHEY OFFERS SERVICES TO ENABLE THE REDUCTION OF NITROUS OXIDE EMISSIONS IN NITRIC ACID PRODUCTION PLANTS. Johnson Matthey supplies pelletised nitrous oxide abatement catalysts through co-operation with Yara International ASA. This is not a Johnson Matthey manufactured product, but a product Johnson Matthey markets and installs on behalf of Yara International ASA. For

more information please see: https://matthey.com/products-and-services/precious-metal-products/nitrious-oxide-abatement-catalyst

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Addressing the Avoided Emissions Challenge- Chemicals sector

% revenue from low carbon product(s) in the reporting year

0.02

Comment

Estimated avoided emissions are based on Johnson Matthey's installations of nitrous oxide abatement catalyst, as operating in FY 2020/21 were 11473642 tonnes . Calculations were made using the ACM0019 Case 2 methodology of the Clean Development Mechanism, United Nations Framework Convention on Climate Change (UNFCCC).

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start

April 1, 2016

Base year end

March 31, 2017

Base year emissions (metric tons CO2e)

228,778

Comment

Scope 2 (location-based)

Base year start

April 1, 2016

Base year end

March 31, 2017

Base year emissions (metric tons CO2e)

286,294

Comment

Scope 2 (market-based)

Base year start
April 1, 2016

Base year end
March 31, 2017

Base year emissions (metric tons CO2e)
239,711

Comment

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

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)
203,930

Comment
This number is 2.4% higher than 2019/20. During the year we commissioned replacement CHP engines at our Royston facility following two reporting years of no CHP operation. This led to an increase in our scope 1 emissions.

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

C6.3

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

Reporting year

Scope 2, location-based

227,381

Scope 2, market-based (if applicable)

184,974

Comment

We buy 30% of renewable electricity from the grid so our market-based emissions are lower than our location-based emissions.

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

Metric tonnes CO2e

3,139,540

Emissions calculation methodology

A hybrid methodology was used to calculate emissions associated with Purchased goods & services. For the precious metals that are the core ingredient of the majority of

our products we use carbon footprint information developed and published in partnership with members of the International Platinum Association. It is a Cradle-to-Gate LCA carried out and 3rd party assured to the requirements of the ISO14040 and ISO14044 standards. For the remainder of our Purchased goods and services, we used a mass-based approach wherever global emissions factors could be identified within EcoInvent v3.5. If mass information and/or emissions factors could not be identified, we used Avieco Ltd/s proprietary Environmentally-Extended Input-Output (EEIO) database. EEIO analysis estimates the emissions resulting from the production and upstream supply chain activities of sectors and products in the economy. The Multi-region input-output data and matching environmental satellite accounts are sourced from EORA Global Supply Chain database. This database is widely cited and used by organisations such as the European Commissions, the IMF and the World Bank amongst others.

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

66

Please explain

66% of our purchased goods and services GHG emissions come from raw materials where we were able to obtain a bespoke carbon footprint from our suppliers.

Capital goods

Evaluation status

Relevant, calculated

Metric tonnes CO2e

266,513

Emissions calculation methodology

For estimating the carbon footprint of our large capital projects we used Aviecos Ltd's proprietary Environmentally-Extended Input-Output (EEIO) database for the construction sector. Emissions are calculated for all Property/Plant/Equipment capital expenditure listed in our financial accounts for the reporting year. EEIO analysis estimates the emissions resulting from the production and upstream supply chain activities of sectors and products in the economy. The Multi-region input-output data and matching environmental satellite accounts are sourced from EORA Global Supply Chain database. This database is widely cited and used by organisations such as the European Commissions, the IMF and the World Bank amongst others.

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

0

Please explain

In future we will aim to build a more accurate and personalised picture by working closely with our construction contractors to obtain bespoke carbon footprints for construction materials and capital equipment direct from our suppliers. Accurate

information of this type is difficult to obtain, especially when carrying out construction projects in developing nations.

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

Evaluation status

Relevant, calculated

Metric tonnes CO2e

40,515

Emissions calculation methodology

Our Scope 3 emissions for electricity distribution and transmission losses are calculated using the methodology outlined in the GHG Protocol corporate standard 2015 revision, www.ghgprotocol.org. For all facilities outside of the US, we use national carbon intensity factors related to the consumption of grid electricity in 2016 made available in the 2020 edition of the world CO2 emissions database of the International Energy Agency. They were purchased under licence in November 2020 for sole use in company reporting. For US facilities we use regional carbon factors published by the Environmental Protection Agency in January 2020, eGRID data 2019. For Well-to-tank carbon footprint of purchased fuels and steam, we use Defra emissions factors. For well-to-tank factors for fuels and steam we used Defra conversion factors https://www.gov.uk/government/publications/greenhouse-gasreporting-conversionfactors-2020.

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

100

Please explain

All data used to calculate this category is taken from energy bills.

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

37,859

Emissions calculation methodology

Where weight and distance data were available, per shipment, Scope 3 emissions associated with Upstream Transportation and Distribution were calculated using Defra emissions factors for freighting goods https://www.gov.uk/government/publications/greenhouse-gasreporting-conversionfactors-2019. For the remaining emissions we used a Avieco Ltd's proprietary Environmentally Extended Input-Output database for the logistics sector. EEIO analysis estimates the emissions resulting from the production and upstream supply chain activities of sectors and products in an economy. The Multi-region input-output data and

matching environmental satellite accounts are sourced from EORA Global Supply Chain data base. This database is widely cited and used by organisations such as the European Commission, the IMF and the World Bank amongst others.

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

100

Please explain

All data used to calculate this category: weight, distance, mode of transportation, cost of individual shipments , was reported by our 3rd party logistics couriers.

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO2e

5,273

Emissions calculation methodology

For the carbon footprint of waste handled by third-parties, we used Defra emission factors for waste disposal by type and treatment method. https://www.gov.uk/government/publications/greenhouse-gasreporting-conversionfactors-2020

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

46

Please explain

We were able to obtain a bespoke carbon footprint from our suppliers for 46% of waste generated in operations GHG emissions.

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO2e

67

Emissions calculation methodology

The carbon footprint of our business travel was calculated according to the GHG Protocol Corporate Accounting Standard. Air travel emissions are reported directly to us by our travel agent partners. Remaining emissions are calculated using Defra emissions factors https://www.gov.uk/government/publications/greenhouse-gasreporting-conversionfactors-2020 for rail, private vehicle, taxi and public transportation.

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

0

Please explain

The vast majority of our business travel emissions our calculated for us by our travel agent partners, who track carbon footprint for us for every booking; the remainder comes from mileage driven in taxis and private vehicles which is logged by employees. However, due to the impact of covid-19, air and rail travel was negligible during this reporting period and business travel emissions were primarily from private vehicles and taxi travel.

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO2e

29,957

Emissions calculation methodology

The carbon footprint of employee commuting was calculated according to the GHG Protocol Corporate Accounting Standard. The distance and method of travel was reported by employees through a global commuting survey in 2020 using estimated fuel efficiency and Defra emissions factors https://www.gov.uk/government/publications/greenhouse-gasreporting-conversionfactors-2019. 17% of the 2020 workforce were accounted for in this survey and emissions were scaled to represent JM's total workforce in 2020.

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

0

Please explain

All data for this category was collected direct from employees using a global employee commuting survey.

Upstream leased assets

Evaluation status

Relevant, calculated

Metric tonnes CO2e

602

Emissions calculation methodology

For Upstream Leased Assets, the carbon footprint was calculated using CIBSE benchmarks for to calculate kWh/yr of electricity consumed. Defra emissions factors https://www.gov.uk/government/publications/greenhouse-gasreporting-

conversionfactors-2020 and IEA scope 1 and 2 electricity conversion factors https://www.iea.org/reports/world-energy-balances-overview were used.

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

0

Please explain

The floor area of leased assets is recorded internally. In the future we will aim to build a more accurate picture using electricity bills from asset lessors.

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Please explain

All downstream transportation and distribution over which we have any control has been included in our upstream transportation and distribution calculations.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Please explain

Our products are not subject to energy-intensive downstream processing. As solid supported catalysts, they are typically manually inserted into metallic containers, which are then either held together with clamps or welded closed.

Use of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

1,057,318

Emissions calculation methodology

For Use of Sold Products emissions, we used revenues including PGMs and Avieco Ltd's proprietary Environmentally-Extended Input-Output database to calculate emissions for JM’s product families with limited applications. EEIO analysis estimates the emissions resulting from the production and upstream supply chain activities of sectors and products in an economy. The Multi-region input-output data and matching environmental satellite accounts are sourced from EORA Global Supply Chain data base. This database is widely cited and used by organisations such as the European Commission, the IMF and the World Bank amongst others. JM Product families with diverse applications were excluded as we have no control or oversight of their use.

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

0

Please explain

As a B to B company it is extremely difficult to identify how our products contribute to GHG emissions of end users and consumers. Our principal market is supplying small components to the automotive sector. By both mass and financial allocation they contribute <1% the total GHG emissions of a vehicle.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Please explain

We receive a very high percentage of our precious metal-containing products back to our own factories at End-of-Life. We then recycle them internally, and the emissions associated with this activity are thus included in our Scope1+2 reporting. Most exceptions to this rule are from our pharmaceutical and medical components businesses where the products are either consumed or remain in the body until death.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

We do not have any downstream leased assets.

Franchises

Evaluation status

Not relevant, explanation provided

Please explain

We do not have any franchises.

Investments

Evaluation status

Relevant, calculated

Metric tonnes CO2e

1,302

Emissions calculation methodology

For Investment emissions, we used JM’s revenues generated by our investments and a Avieco Ltd's proprietary Environmentally-Extended Input-Output database to calculate emissions in the Energy and Chemicals sectors. EEIO analysis estimates the emissions

resulting from the production and upstream supply chain activities of sectors and products in an economy. The Multi-region input-output data and matching environmental satellite accounts are sourced from EORA Global Supply Chain database. This database is widely cited and used by organisations such as the European Commission, the IMF and the World Bank amongst others.

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

100

Please explain

Revenues are reported to us by the relevant investment entities and joint ventures. This is used to calculate their carbon footprint.

Other (upstream)

Evaluation status

Not relevant, explanation provided

Please explain

We do not believe we have anything that fits this category.

Other (downstream)

Evaluation status

Not relevant, explanation provided

Please explain

We do not believe we have anything that fits this category.

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

0.0000248

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

388,904

Metric denominator

unit total revenue

Metric denominator: Unit total

15,673,000,000

Scope 2 figure used

Market-based

% change from previous year

7.8

Direction of change

Decreased

Reason for change

Our absolute carbon footprint dropped by 1.4% during the year, whilst our Revenues increased by 7.5%. 75% of our revenues comes from precious metal trading and thus they tend to be higher when metal prices are high, which they have been during 2020. Thus we don't believe the "Revenue" is a useful denominator to use to track our carbon efficiency of our manufacturing operations, Instead we use "Sales excluding precious metals" and tonnes product sold as more accurate denominators to track the change in the extent of our production activities. These metrics are reported below. During the year our energy demand (GJ) decreased by 3% due mainly to a reduction in output due to the Global Pandemic.

Intensity figure

3.423

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

388,904

Metric denominator

unit of production

Metric denominator: Unit total

113,623

Scope 2 figure used

Market-based

% change from previous year

7.8

Direction of change

Increased

Reason for change

Our product output dropped by 8% this year, whereas our absolute scope 1 + 2 emission dropped by only 0.6%. This because during the pandemic the energy efficiency of our operations was lower due to disruption of plant operation and customer demand for products. We also used more gas and less renewable electricity overall during the year.

Intensity figure

99.1

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

388,904

Metric denominator

Other, please specify

million GBP sales excluding precious metals revenues

Metric denominator: Unit total

3,922

Scope 2 figure used

Market-based

% change from previous year

5.5

Direction of change

Increased

Reason for change

Our product sales dropped by 5% this year, whereas our absolute scope 1 + 2 emission dropped by only 0.6%. This because during the pandemic the energy efficiency of our operations was lower due to disruption of plant operation and customer demand for products. We also used more gas and less renewable electricity overall during the year.

C7. Emissions breakdowns

C7.1

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

Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	175,195	IPCC Fifth Assessment Report (AR5 – 100 year)
N2O	25,413	IPCC Fifth Assessment Report (AR5 – 100 year)
CH4	241	IPCC Fifth Assessment Report (AR5 – 100 year)
HFCs	3,081	IPCC Fifth Assessment Report (AR5 – 100 year)

C7.2

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

Country/Region	Scope 1 emissions (metric tons CO2e)
United Kingdom of Great Britain and Northern Ireland	66,634
Europe, the Middle East, Africa and Russia (EMEAR)	22,653
Americas	73,810
Asia, Australasia	40,833

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)
Clean Air Sector	54,024
Efficient Natural Resources Sector	132,261
Health Sector	9,555
New Markets Sector	7,101
Corporate	989

C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4

(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.

	Gross Scope 1 emissions, metric tons CO2e	Comment
Chemicals production activities	186,285	These are scope 1 emissions from the combined facilities of our Clean Air and Efficient Natural Resources sectors. These are the sectors of our business where we manufacture industrial and automotive catalysts, which are classified as "speciality chemicals" in CH0.7.

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)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh)
United Kingdom of Great Britain and Northern Ireland	34,871	3,969	150,883	137,352
Europe, the Middle East, Africa and Russia (EMEAR)	95,025	92,809	176,972	15,853
Americas	46,010	30,874	139,606	6,871
Asia, Australasia	51,475	57,322	81,982	10,982

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)
Clean Air Sector	146,729	132,787
Efficient Natural Resources Sector	58,507	37,682
Health Sector	11,587	8,606
New Markets Sector	9,311	5,899
Corporate	1,247	0

C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7

(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Chemicals production activities	205,236	170,469	These are scope 2 emissions from the combined facilities of our Clean Air and Efficient Natural Resources sectors. These are the sectors of our business where we manufacture industrial and automotive catalysts, which are classified as "speciality chemicals" in CH0.7.

C-CH7.8

(C-CH7.8) Disclose the percentage of your organization's Scope 3, Category 1 emissions by purchased chemical feedstock.

Purchased feedstock	Percentage of Scope 3, Category 1 tCO2e from purchased feedstock	Explain calculation methodology
Other (please specify) organically derived feedstocks	0	We do not purchase any chemical feedstocks of the types listed, we are a speciality chemical company that principally uses metals and minerals as its raw materials

C-CH7.8a

(C-CH7.8a) Disclose sales of products that are greenhouse gases.

	Sales, metric tons	Comment
Carbon dioxide (CO2)	0	We do not sell any greenhouse gases
Methane (CH4)	0	We do not sell any greenhouse gases
Nitrous oxide (N2O)	0	We do not sell any greenhouse gases
Hydrofluorocarbons (HFC)	0	We do not sell any greenhouse gases
Perfluorocarbons (PFC)	0	We do not sell any greenhouse gases
Sulphur hexafluoride (SF6)	0	We do not sell any greenhouse gases
Nitrogen trifluoride (NF3)	0	We do not sell any greenhouse gases

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	4.805	Increased	1.2	We fully commissioned and started operating the combined heat and power plant at our large site in Royston. This led to an increase in our scope 1 emissions. Overall emissions for scope 1+2 fell by 2555 tons or 0.6% from our 2019/20 level.
Other emissions reduction activities	560	Decreased	0.14	Energy efficiency projects as detailed in C4.3
Divestment	2,177	Decreased	0.56	Two businesses were sold as going concerns mid year
Acquisitions	0	No change	0	
Mergers	0	No change	0	
Change in output	4,623	Decreased	1.19	The Covid pandemic reduced our overall output by 4623 tonnes. This

				was due to a reduction in our scope 2 emissions. Taken with the increase in Scope 1 emissions as we fully utilised our Royston site CHP, this led to Our overall emissions for scope 1+2 falling by 2555 tonnes or 0.6% from our 2019/20 level.
Change in methodology	0	No change		
Change in boundary	0	No change		
Change in physical operating conditions	0	No change		
Unidentified	0	No change		
Other				

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

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	No
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)	HHV (higher heating value)	0	762,526	762,526
Consumption of purchased or acquired electricity		170,867	347,266	518,133
Consumption of purchased or acquired steam		0	31,235	31,235
Consumption of self-generated non-fuel renewable energy		190		190
Total energy consumption		171,058	1,141,026	1,312,084

C-CH8.2a

(C-CH8.2a) Report your organization's energy consumption totals (excluding feedstocks) for chemical production activities in MWh.

	Heating value	Total MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	675,728
Consumption of purchased or acquired electricity		435,465
Consumption of purchased or acquired steam		31,185
Consumption of self-generated non-fuel renewable energy		120
Total energy consumption		1,142,498

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	Yes
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	Yes

C8.2c

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

Fuels (excluding feedstocks)

Natural Gas

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

671,364

MWh fuel consumed for self-generation of electricity

2,130

MWh fuel consumed for self-generation of heat

641,844

MWh fuel consumed for self-cogeneration or self-trigeneration

27,390

Emission factor

0.0511

Unit

metric tons CO2e per GJ

Emissions factor source

Greenhouse gas reporting: conversion factors 2020, from UK Department for Business, Energy and Industrial Strategy, https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020

Comment

Fuels (excluding feedstocks)

Diesel

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

34,399

MWh fuel consumed for self-generation of electricity

5,711

MWh fuel consumed for self-generation of heat

28,688

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.0668

Unit

metric tons CO2e per GJ

Emissions factor source

Greenhouse gas reporting: conversion factors 2020, from UK Department for Business, Energy and Industrial Strategy, https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020

Comment

Fuels (excluding feedstocks)

Petrol

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

23,745

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

23,745

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.0637

Unit

metric tons CO2e per GJ

Emissions factor source

Greenhouse gas reporting: conversion factors 2020, from UK Department for Business, Energy and Industrial Strategy, https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020

Comment

Fuels (excluding feedstocks)

Liquefied Natural Gas (LNG)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

3,792

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

3,792

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.0513

Unit

metric tons CO2e per GJ

Emissions factor source

Greenhouse gas reporting: conversion factors 2020, from UK Department for Business, Energy and Industrial Strategy, https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020

Comment

Fuels (excluding feedstocks)

Liquefied Petroleum Gas (LPG)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

18,486

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

18,486

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.0596

Unit

metric tons CO2e per GJ

Emissions factor source

Greenhouse gas reporting: conversion factors 2020, from UK Department for Business, Energy and Industrial Strategy, https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020

Comment

Fuels (excluding feedstocks)

Fuel Oil Number 1

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

10,739

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

10,739

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.0744

Unit

metric tons CO2e per GJ

Emissions factor source

Greenhouse gas reporting: conversion factors 2020, from UK Department for Business, Energy and Industrial Strategy, https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020

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	35,421	35,421	190	190
Heat	727,104	727,104	0	0
Steam	0	0	0	0
Cooling	0	0	0	0

C-CH8.2d

(C-CH8.2d) Provide details on electricity, heat, steam, and cooling your organization has generated and consumed for chemical production activities.

	Total gross generation (MWh) inside chemicals sector boundary	Generation that is consumed (MWh) inside chemicals sector boundary
Electricity	31,253	31,253
Heat	642,344	642,344
Steam	0	0
Cooling	0	0

C8.2e

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

Sourcing method

Power purchase agreement (PPA) with on-site/off-site generator owned by a third party with no grid transfers (direct line)

Low-carbon technology type

Solar

Country/area of consumption of low-carbon electricity, heat, steam or cooling

United States of America

MWh consumed accounted for at a zero emission factor

6,871

Comment

Sourcing method

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

Low-carbon technology type

Biomass

Country/area of consumption of low-carbon electricity, heat, steam or cooling

United Kingdom of Great Britain and Northern Ireland

MWh consumed accounted for at a zero emission factor

137,277

Comment

Sourcing method

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

Low-carbon technology type

Nuclear

Country/area of consumption of low-carbon electricity, heat, steam or cooling

United States of America

MWh consumed accounted for at a zero emission factor

40,964

Comment

Sourcing method

Green electricity products (e.g. green tariffs) from an energy supplier, not supported by energy attribute certificates

Low-carbon technology type

Hydropower

Country/area of consumption of low-carbon electricity, heat, steam or cooling

Sweden

MWh consumed accounted for at a zero emission factor

6,675

Comment

Sourcing method

Green electricity products (e.g. green tariffs) from an energy supplier, not supported by energy attribute certificates

Low-carbon technology type

Wind

Country/area of consumption of low-carbon electricity, heat, steam or cooling

Germany

MWh consumed accounted for at a zero emission factor

9,173

Comment

C-CH8.3

(C-CH8.3) Does your organization consume fuels as feedstocks for chemical production activities?

No

C9. Additional metrics

C9.1

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

Description

Energy usage

Metric value

41.6

Metric numerator

total energy used during the year in GJ

Metric denominator (intensity metric only)

tonnes of JM manufactured product sold

% change from previous year

5

Direction of change

Increased

Please explain

Out total energy consumed during the year decreased by 3%, but our tonnes of manufactured products sold decreased by 8% in the same period. This was due to changes in our product portfolio and some factories running a reduced capacity due to covid-19 restrictions in the first quarter of the year; our factories are less energy efficient when running at reduced capacity

C-CH9.3a

(C-CH9.3a) Provide details on your organization's chemical products.

Output product

Specialty chemicals

Production (metric tons)

101,928

Capacity (metric tons)

101,928

Direct emissions intensity (metric tons CO2e per metric ton of product)

1.83

Electricity intensity (MWh per metric ton of product)

4.58

Steam intensity (MWh per metric ton of product)

0.306

Steam/ heat recovered (MWh per metric ton of product)

0

Comment

Production capacity is confidential and highly dependent on the product mix.

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	We heavily invest in developing catalysts which enable our partners in the chemical sector to use renewable feedstocks to product bulk chemicals. See Annual Report 2021 page 5 through13.

C-CH9.6a

(C-CH9.6a) Provide details of your organization's investments in low-carbon R&D for chemical production activities over the last three years.

Technology area	Stage of development in the reporting year	Average % of total R&D investment over the last 3 years	R&D investment figure in the reporting year (optional)	Comment
Bio technology	Pilot demonstration	≤20%		Alternative feedstocks for a sustainable future:.

				We have projects at all the listed stages of development in this area. For information see our Annual Report 2020 page 21 "The world is calling out for sustainable manufacturing and new ways to produce the chemicals and fuels we need. Our expertise in the generation, purification and chemical modification of syngas opens the door to renewable feedstocks, efficient manufacturing and low carbon technologies. Syngas is a mixture of hydrogen, carbon monoxide and carbon dioxide, produced by converting any carbon containing material into a gaseous form. JM technology is used to turn these gasified feedstocks into a wide range of useful materials such as ammonia, methanol, methane and waxes. JM has been doing this for years and has a bounty of expertise in the catalysts and processes. Syngas traditionally comes from coal or natural gas, but now things like

				municipal solid waste or renewable biomass can be used to make syngas. Through our partnership with BP, we introduced a process based on Fischer Tropsch (FT) technology to economically convert synthesis gas generated from such feedstocks into waxes suitable for the production of diesel and jet fuel. Its modular design enables low risk scale up and simple operation, while the catalyst gives high productivity and selectivity. The unique design of stacked catalyst carriers cleverly manages heat transfer and pressure drop. Compared with conventional fixed bed tubular reactors, the new system reduces capital expenditure by around 50% and enables the FT process to be economically scaled down to a size suitable for waste and / or biomass gasification."

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

Johnson Matthey - EHS assurance statement FY202021 - Long version FINAL 19052021 issued.pdf

Page/ section reference

Scope 1 emissions are found in the table at the foot of page two of the attachment

Relevant standard

ISAE 3410

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 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

Johnson Matthey - EHS assurance statement FY202021 - Long version FINAL 19052021 issued.pdf

Page/ section reference

Scope 2 emissions are found in the table at the foot of page two of the attachment

Relevant standard

ISAE 3410

Proportion of reported emissions verified (%)

100

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

Johnson Matthey - EHS assurance statement FY202021 - Long version FINAL 19052021 issued.pdf

Page/ section reference

Scope 2 emissions are found in the table at the foot of page two of the attachment

Relevant standard

ISAE 3410

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.

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
C4. Targets and performance	Year on year emissions intensity figure	ISAE3410 Limited assurance	C4.1b target Int 1: Our operational carbon intensity (scope 1 + 2 per tonnes product) has been 3rd party verified for the last 4 years. All 4 years of data are displayed on the assurance certificate on page 2. 1
C5. Emissions performance	Year on year change in emissions (Scope 1)	ISAE3410 Limited assurance	Our scope 1 emissions has been 3rd party verified for the last 4 years. All 4 years of data are displayed on the assurance certificate on page 2. 1
C5. Emissions performance	Year on year change in emissions (Scope 1 and 2)	ISAE3410 Limited assurance	Our scope 2 emissions has been 3rd party verified for the last 4 years. All 4 years of data are displayed on the assurance certificate on page 2. 1
C8. Energy	Energy consumption	ISAE3410 Limited assurance	The following data required for C8.2 are all shown on our 3rd party assurance certificate on page 3: Total energy consumption, Total natural gas consumption, Total electricity consumption, Total

			non-renewable energy consumption, Non-renewable fuels purchased and consumed, Non-renewable electricity purchased, Steam / heating / cooling and other energy (non-renewable) purchased, Total renewable energy purchased or generated, Percentage renewable electricity consumed 1
C4. Targets and performance	Progress against emissions reduction target	ISAE3410 Limited assurance	C4.2a target: % renewable electricity consumed is show on the assurance certificate on page 3 1

[1]Johnson Matthey - EHS assurance statement FY202021 - Long version FINAL 19052021 issued.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)?

Yes

C11.1a

(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.

EU ETS

UK carbon price floor

C11.1b

(C11.1b) Complete the following table for each of the emissions trading schemes you are regulated by.

EU ETS

% of Scope 1 emissions covered by the ETS

10.8

% of Scope 2 emissions covered by the ETS

0

Period start date

January 1, 2020

Period end date

December 31, 2020

Allowances allocated

10,526

Allowances purchased

8,705

Verified Scope 1 emissions in metric tons CO2e

20,672

Verified Scope 2 emissions in metric tons CO2e

0

Details of ownership

Facilities we own and operate

Comment

We had a number of surplus credits (2212) that we used this year at our UK site (Johnson Matthey plc) to reduce the amount we purchased from 10,917 to 8705

C11.1c

(C11.1c) Complete the following table for each of the tax systems you are regulated by.

UK carbon price floor

Period start date

January 1, 2020

Period end date

December 31, 2020

% of total Scope 1 emissions covered by tax

0

Total cost of tax paid

0

Comment

We have two sites in the UK with CHP that are normally subject to CPS tax under the Carbon floor scheme. One CHP was offline for improvement works and has not restarted in 2020 so we did not pay any tax during the year for this plant. The Other CHP was updated during 2019 with new modern engines. This CHP is now defined as Good Quality CHP under the CHP QA scheme and its therefore no longer subject to any taxation

C11.1d

(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

The Sustainability Council, which reports directly to the Group Management Committee, is responsible for our strategy regards Emission Trading Schemes. It is their responsibility to monitor all existing and forthcoming schemes globally and keep track of which JM sites might be affected by them.

Our strategy for compliance within these schemes is, first & foremost, to reduce our GHG emissions. We will then make up any shortfall between verified emissions and allowances allocated in the most cost-effective way possible.

Our science-based targets to reduce our GHG emissions by 2030 supports this strategy. Our quantitative targets is:
33% reduction in absolute scope 1 + 2 GHG emissions 2020 -2030

We laso have a target to increase % renewable electricity we use to 60% by 2025 (from 24% in 2019)

Each site is responsible for its own plan as to how to achieve these targets, and presents their plan to the GMC for approval on an annual basis.

1. We aim to reduce energy consumption through many avenues including installing more efficient equipment and improving the efficiency of our chemical processing. We have many projects running concurrently throughout our sites at any one time towards this objective.

2. Our Royston site is the only one large enough to participate in EU-ETS in the UK. We have a Combined Heat and Power plant on site producing a large proportion of the site's power needs and it consumes the majority of the Royston site's natural gas. This plant is part of the CHP Quality Assurance scheme which incentivises efficient electrical production. The CHP plant is Fully Qualified under the CHPQA. From April 2016 we switched to using zero carbon grid electricity at this site, and are now using our on-site CHP generators (which are natural gas powered) less often. This will substantially reduce our carbon emissions from the site in the year ahead.

3. We also use Climate-Change Agreements (CCAs) to minimise our commitment to EU-ETS. The Royston and Brimsdown sites have agreed to reduce their energy consumption by 11.8% between 2008 -2020 under a Climate Change Agreement (CCA)

4. To make up any shortfall between our allocation and verified emissions, we purchase EUAs on the open market, when prices are favourable.

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?

No, but we anticipate doing so in the next two years

C12. Engagement

C12.1

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

Yes, our suppliers

Yes, our customers

C12.1a

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

Type of engagement

Information collection (understanding supplier behavior)

Details of engagement

Other, please specify

We launch our new supplier code of conduct in March which requires our suppleirs to share climate change and carbon information with us on request,. we have begun to request this information from our strategic customers.

% of suppliers by number

% total procurement spend (direct and indirect)

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

100

Rationale for the coverage of your engagement

We have begun to collect climate commitments and GHG emissions information from our strategic suppliers as part of our supplier relationship management program , focussing first on those raw materials which we know to make the highest contribution to

our scope 3 GHG footprint. As reported in question C6.5 66% of our scope 3 GHG footprint for purchased goods and services is calculated using supplier data. We also obtain GHG footprint information from our logistics providers, waste disposal providers and business travel services providers, However, we do not yet track our success in securing bespoke GHG footprint information from our suppliers as a % of procurement spend. As we have over 30,000 suppliers it is not sensible to use "% supplier by number" as a metric.

Impact of engagement, including measures of success

Many of our strategic suppliers are mining companies in developing nations and talking with them about the importance of the carbon footprint of their metals and minerals to the end product, which in our case is often a product designed for use in the low carbon economy, is driving investment in renewable energy. They now know that is it is an important part of their offering for competitive advantage. we have secured some promises from strategic suppliers to drive towards carbon neutral raw materials in the next decade,

Comment

C12.1b

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

Type of engagement

Collaboration & innovation

Details of engagement

Other, please specify

We collaborate with our customers to design products for the low carbon world, including sustainable fuels and zero emission (electric) vehicles.

% of customers by number

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

100

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

The customer-related emissions that we report in C6.5 are from products which are supplied to the automotive sector for use in ICE vehicles. We collaborate with OEMs to enable them to design lower carbon vehicles for the future,; these may be ICE or hybrid vehicles with better fuel efficiency, hydrogen powered or electric vehicles.
we are also collaborating with many other customers to design products for the net zero world with whom we do not have a downstream scope 3 footprint to report in C6.5 For

example: https://matthey.com/en/news/2021/fischer-tropsch-technology-rsc-award-win and https://matthey.com/en/news/2021/plug-partner-electrolyser-tech

% customer by number is not a suitable metric for a large multinational.

Impact of engagement, including measures of success

The impact of our engagment is products that accelerate the transition to a net zero world including electric vehicles, green hydrogen. fuel cells, sustainable fuels

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

Trade associations

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association

International Platinum Association

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The IPA is committed to understanding the impact that the precious metal mining and recycling industry has on climate change. It has carried out full LCA studies and published the results of the carbon footprint of these metals.
it has recently published a GHG footprint from primary and secondary platinum group metals for the first time; Johnson Matthey is fully participated by providing production data to this project. For more information see: https://ipa-news.de/index/sustainability/pgms-in-the-life-cycle.html

The IPA seeks to encouraging recycling of all used precious metals in the most climate-friendly manner possible.

How have you influenced, or are you attempting to influence their position?

Johnson Matthey is has a representative on the Board of the IPA and on their Sustainability Committee.

Trade association

The Hydrogen Council

https://matthey.com/news/2018/johnson-matthey-joins-the-hydrogen-council-as-steering-member

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Hydrogen has the potential to play a significant role in the energy transition. Hydrogen's high energy density and the fact it allows the clean, long-term storage and transportation of large volumes of energy, make it a viable option in a low carbon society.

Tougher legislation, climate change and an increasing demand for sustainable solutions are accelerating investment in the commercialisation of hydrogen solutions. As such, the Hydrogen Council and its members share the ambition that hydrogen will enable many of the new energy demands that will emerge over the coming decades.

How have you influenced, or are you attempting to influence their position?

Our CEO attends the steering committee of the Hydrogen Council.
Afterward the September 2018 meeting in a press release he he said, "JM has a great heritage in catalysts and technologies for the large scale production of hydrogen. With the conversation around carbon capture, utilisation and storage (CCUS) now expanded to include hydrogen, we have the technology to enable the TWh of clean hydrogen that will be required to make a difference. And with JM's investments in fuel cell development, we understand the strengths and weaknesses of the various technologies and can share our expertise with other Council members."

https://matthey.com/news/2018/jms-chief-executive-attends-global-hydrogen-leaders-forum

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

We hold a central register of all trade association memeberships and have named senior managers and directors responsible for our memberships of each trade associations. We

review our memberships of trade associations annually against our own vision and values, when the membership fees are due. We will cancel membership of any organisation that is not consistent with our own code of conduct or climate change strategy.

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

JM-AR21-SECURED.pdf

Page/Section reference

pages 66-68 for GHG emissions targets, figures and performance analysis
p86 -87 for TCFD report including climate governance summary, risks & opportunities
pages 266 for 5-year scope 1 + 2 emissions figures.
267 for scope 3 emissions figures.
p24-25 for Strategy (and p18-20)

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

C15. 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.

C15.1

(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Chief Executive Officer	Chief Financial Officer (CFO)