

Welcome to your CDP Climate Change Questionnaire 2020

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 87% 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 the UN SDGs.

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 15,000 people worldwide.

Our latest annual integrated report can be found at <https://matthey.com/investors/report-archive/annual-report-2020>

C0.2

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

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	April 1, 2019	March 31, 2020	Yes	1 year

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
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
Chief Executive Officer (CEO)	Our CEO is the executive director on the Board who is responsible for all matters relating to Environment, Health & Safety. He also chairs the Group Management's Environment, Health and Safety (EHS) Leadership committee which has responsibility for creating a positive EHS culture across the company and monitoring performance against all environmental KPIs, which include targets for CO2 reduction. Annual Report 2020: Page 87. The sustainability director is accountable for all our sustainability goals and targets (including our operational carbon footprint targets) and reports directly to the CEO.

C1.1b

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

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – some meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action	Our Sustainability KPIs to 2025 are scheduled for review once a year by the Board at the summer meeting. Other aspects of climate-related strategy are scheduled for review throughout the year. The most significant aspect of our climate-related strategy is our capital investment in battery materials

	Reviewing and guiding risk management policies Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues	manufacturing to enable zero emissions (electric) vehicles and this has been monitored closely by the Board during FY2019/20. For more information on other aspects of climate-related strategy were reviewed at board meetings during FY2019/20 please see pages 83-84 Annual Report 2020
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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	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 and the Chief Financial officer is a member of this committee. They are advised by the Group Strategy director and the Group Assurance and Risk director who both report directly to the Chief Financial Officer. 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 Group Management's Environment, Health and Safety (EHS) Leadership subcommittee has responsibility for creating a positive EHS culture across the company and monitoring performance against all environmental KPIs, which include operational targets for CO2 reduction. This committee is chaired by the CEO. The Sustainability director reports directly to the CEO.

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 for climate-related issues, as part of their personal performance plans.

C1.3a

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

Entitled to incentive	Type of incentive	Activity incentivized	Comment
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 Sustainability Officer (CSO)	Monetary reward	Emissions reduction target	The Sustainability director is incentivised annually to achieve progress towards all our Sustainability goals for 2025. Goal 3 is to achieve a 25% reduction in operational carbon footprint per mass product sold from a 2017 baseline.

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
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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 Corporate 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 any 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.

Controls for each 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 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 'Failure of operations'. 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 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.

Risk 9 - Failure of Operations: under this risk we assess the impact of changing weather patterns, availability of water and the probably of extreme weather impacts causing a disruption to production.

More information on our risk process and the substantive risks our business faces can be found on pages 67 - 75 of Annual Report 2020.

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 Corporate 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 Corporate 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 Corporate 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 Corporate 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 legal matters is one of the topics in the Risk library.
Market	Relevant, always included	The central Corporate 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 market demands for our products due to external issues, such as climate change, is one of the topics in the risk library.
Reputation	Relevant, always included	The central Corporate Assurance and Risk team provides a risk library of issues to all businesses to work through and consider at each 6 monthly review. The reputational risk implications of not responding appropriately to world issues, such as climate change is one of the topics in the risk library.

Acute physical	Relevant, always included	The central Corporate Assurance and Risk team provides a risk library of issues to all businesses to work through and consider at each 6 monthly review. Acute physical risks to business continuity, such as extreme weather events, is one of the topics in the risk library.
Chronic physical	Relevant, always included	The central Corporate Assurance and Risk team provides a risk library of issues to all businesses to work through and consider at each 6 monthly review. Longer term physical risks to business continuity, such as changing weather patterns, 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. This is beginning to reduce demand for these products in Europe & China.

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)

1,427,000,000

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 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 FY2019/20.

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. At this level of decline, we do not expect any significant impact on profits. We estimate every 1% point decline in diesel sales in favour of electric vehicles below 25% would impact our gross profit by approximately £4 million, before any cost mitigation.

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 2020 page 71

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 NO_x emissions standards, top maximise our profits from this business in the medium term.

(2) Develop 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

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.

Additionally, in support of item (2) we have committed to invest a cumulative £350m capital investment to get to first commercial production of our portfolio of ultra-high energy density battery material, eLNO. Our first commercial plant in Konin, Poland will have the capacity for up to 10,000 tonnes per year of battery materials for electric vehicles, and purchased land sufficient to support a phased expansion to 100,000 tonnes per year as the market demand grows. Commercial production is expected to start in 2022 and we expect to be on automotive platforms by 2024.

This 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 2020 pages 19-21

Comment

This is Principal Risk #2 in our Corporate Risk Register Annual Report 2020 page 71

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, demand for

recycling on precious metals platinum, palladium & rhodium (pgm) refining services could decline. (Growth is expected in the medium term, as more emissions control catalyst enter the End of Life/recycling market). On the other hand, if demand for fuel cell powered (hydrogen powered) vehicles, which contain more platinum per vehicle than current diesel and petrol-powered vehicles increases, then demand could increase, as could other demands for PGM catalysts in the hydrogen economy.

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)

389,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The financial impact figure is the highest possible impact on our refining business in the long term without any intervention. It assumes no market for precious metal recycling in the long term. In FY2019/20 Johnson Matthey made sales of £389 million from pgm services, an increase of 38% on the previous year.

PGM services is part of our Efficient Natural Resources sector. Our Business strategy to 2025 assumes that a 10% reduction in pgm price in the future will lead to a reduction of in the region of £5 million in operating profit for this sector, without any mitigation strategy.

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..

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 this capital investment & our R&D expenditure see Annual Report 2020 pages 19-21

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)

50,000,000

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 highest estimated annual loss of sales due to an unexpected failure of one of our largest manufacturing facilities before any mitigation plan is put in place.

Cost of response to risk

15,000,000

Description of response and explanation of cost calculation

We have insurance to cover short term interruptions to production due to extreme weather events and most of our manufacturing facilities are duplicated in more than one country of the world and so in the short term production could be moved to other sites to meet essential demand.

For permanent loss of a facility, we would look to replace the capacity elsewhere by re-building over 3 years, with an associated £50M loss of operating profit and the requirement to work through a working capital uplift.

This annual insurance cover is what is included in the "cost of management" 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; Yantai, China; New Mexico, US; 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

AUTOMOTIVE CATALYSTS FOR TRUCKS/HEAVY-DUTY DIESEL VEHICLES:
Johnson Matthey is the world leader in catalyst technology for heavy duty diesel (HDD). We won the Queen's award for Enterprise for inventing and then bringing to market the first HDD emissions control systems and remain well-placed to meet this challenge. This technology enables diesel manufacturers to move to lower CO2 emitting engines without an increase in acid gases (NOx).
New and tighter legislation is already on the statute books across the globe for the next decade and higher demand for HDD vehicles is forecast, particularly in Asia. The new China VI and India VI legislation will impose dramatically higher technical demands on the emission control systems required to produce cleaner exhaust emissions. We expect it to triple the sales value per vehicle for Johnson Matthey.

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)

500,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Johnson Matthey's sales to heavy, duty diesel (HDD) market in Asia in 2018 were £111million. The total Asian HDD market is expected to grow to over £2billion beyond 2020. If Johnson Matthey maintains a 30% market share, as it does cross automotive catalyst markets globally, this will yield £600 million in sales for JM, approximately a £0.5bn uplift in value of this business from FY2019/20.

Cost to realize opportunity

200,000,000

Strategy to realize opportunity and explanation of cost calculation

We won the Queen's award for Enterprise for inventing and then bringing to market the first HDD emissions control systems and remain well-placed to meet this challenge. This technology enables diesel manufacturers to move to lower CO2 emitting engines without an increase in acid gases (NOx).

During 2019/20 our new catalyst manufacturing facility in Poland came on line and we began constructions of additional manufacturing facilities in China and India to support this future growth in HDD business.

In FY2019/20 we had £200 million capital expenditure remaining on completing the build of our new manufacturing facilities in our Clean Air business, in China, India and Poland.

For more information on this opportunity see Annual Report 2020 page 14. 20 (small port zeolites) and page 56 (HDD Catalyst) and Capital Markets Day 2019 presentation slides 36 -50 at <https://matthey.com/-/media/files/investors/cmd-2019-full-final-final.pdf?la=en&hash=DF92CAB54FB19B08FB4969B0ABAC903A0F266250>

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 through access to new and emerging markets

Company-specific description

BATTERY MATERIALS FOR ZERO EMISSION CARBON AUTOMOTIVE VEHICLES
Additional national greenhouse gas regulations, 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. In 2014 the European Commission has set a goal of 95 grams of carbon dioxide per kilometer (g/km) as an average for all new vehicles sold in Europe from 2020. This is expected to significantly increase the number of battery powered vehicles manufactured in this timeframe. A number of European cities are 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 beyond 2025.

Cost to realize opportunity

350,000,000

Strategy to realize opportunity and explanation of cost calculation

In 2016 we licensed key high nickel intellectual property for battery cathode materials and in October we announced we had developed a new best-in-class high energy cathode material called eLNO. In October 2018 we publicly announced that we would be investing £200m CAPEX from mid 2018 to scale-up, through demo, pilot and full production scale our novel patented high energy cathode material eLNO. At our Capital Markets Day in October 2019 we announced further investment such that our total committed investment in eLNO is now expected to be around £350m.

We broke ground on our first commercial plant in Konin, Poland for the first 10,000 metric tonnes which has the potential for expansion to 100,000 metric tonnes. We are on track to start production in 2022 and supply platforms in production in 2024.

For more information on this opportunity see Annual Report 2020 page 19, 21 and 32 and Capital Markets Day 2019 presentation slides 58 - 65 at <https://matthey.com/-/media/files/investors/cmd-2019-full-final-final.pdf?la=en&hash=DF92CAB54FB19B08FB4969B0ABAC903A0F266250>

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 through access to new and emerging markets

Company-specific description

FUEL CELLS FOR LOW CARBON STATIONARY AND AUTOMOTIVE APPLICATIONS
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)

100,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Sales in Fuel Cells grew 23% to £33 million and we delivered good operating profit growth driven by increased demand for both non-automotive and automotive applications in Asia. Today, our fuel cells are now powering several hundred commercial vehicles and buses in China.

We estimate that £100m + is the incremental revenue opportunity for Johnson Matthey based on growth in fuel cell end markets and hydrogen as an energy vector in the next decade. The details behind this calculation are confidential because they are commercially sensitive.

Cost to realize opportunity

15,000,000

Strategy to realize opportunity and explanation of cost calculation

Johnson Matthey Fuel Cells Ltd was formed in 1999. The company has world class R&D and fuel cell manufacturing facilities and scientists. 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.

We invest capital in line with market demand and have committed circa £15 million to double our production capacity in the UK and China.

For more information on this opportunity see Annual Report 2020 page 19, 33 and 60.

Comment

C3. Business Strategy

C3.1

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

Yes

C3.1a

(C3.1a) Does your organization use climate-related scenario analysis to inform its strategy?

Yes, quantitative

C3.1b

(C3.1b) 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

	<p>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</p>
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C3.1d

(C3.1d) 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	<p>Our strategy is "to use our world class science to solve customers' complex problems, creating long term value for our shareholders and a cleaner, healthier planet for everyone". Core to our strategy is helping the world address its impact on climate change. This means developing products and services that enable a transition to a low carbon world, in the energy and mobility sectors, as well as across other industries.</p> <p>Historically our product portfolio has been dominated by emissions controls catalysts for the automotive sector, for petrol and diesel powered vehicles, Now we are shifting our portfolio to supplying high performance battery materials and fuel cells to enable the next generation of electric vehicles and the hydrogen economy. Work on our first commercial plant in Poland is underway, whilst we continue to validate our eLNO product with a number of automotive manufacturers.</p> <p>The plant is expected to be on stream in 2022 and supplying automotive OEM platforms in production in 2024. Our total investment to first commercial production will amount to circa £350 million.</p> <p>In parallel we have developed a strategy to support the global shift to net zero in the energy sector, through solving the problems of generating clean hydrogen</p>

		<p>and enhancing the efficiency of fuel cell applications in use. During 2019 the board considered further ways to develop JM's position across the hydrogen value chain by demonstrating ways in which the company's hydrogen production and fuel cells technologies could be used. The board also reviewed the strategy of the Fuel Cells business, discussed in detail the fuel cells roadmap and approved £15m CAPEX investment to double the capacity of our fuel cell manufacturing operations in the UK and China. AR2020 page 19 and 32-33</p>
<p>Supply chain and/or value chain</p>	<p>Evaluation in progress</p>	<p>We are aware the climate risks impact the operations of our suppliers as much, if not more, than our own operations. They are evaluated in our business under Principal Risk #5 "Supply Failure" (Annual Report 2020 page 72). We monitor our suppliers' environmental performance through our due diligence activities to ensure adherence to our Supplier code of Code. Our JM Supplier Code of Conduct is available in multiple languages on our website. We expect all our suppliers to comply with this code as a condition of contracting. In response to increasing risks of Supply Failure due to climate change, during the year we have been updating our Supplier Code of Conduct to incorporate more aspects of sustainability, particularly GHG management criteria. We plan to launch this revised code during 2020 and, with it, a broader, more robust supplier due diligence programme (Annual Report 2020 page 49).</p> <p>During FY2019/20 we have also completed our first comprehensive assessment of the scope 3 carbon footprint of our operations, which is reported for the first time in section C6.5 of this CDP disclosure, It has become apparent that 94% of our GHG emissions are embedded in our value chains, and especially in the raw materials that we purchase. We are now considering what goals we can set to reduce this footprint going forward, in support of the</p>

		<p>world's Net Zero agenda and plan to set a science-based scope 3 target in the next 2 years.</p>
<p>Investment in R&D</p>	<p>Yes</p>	<p>Our R&D programs are what enable us to deliver our strategy for a cleaner, healthier world. In 2019/20 we invested £199 million in R&D, including £23 million of capitalised R&D, which represents around 5% of our annual sales. Climate change awareness has shifted our strategy to developing products and services that enable a transition to a low carbon world, therefore this is where we focus our R&D expenditure.</p> <p>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.</p> <p>Recently, we have acquired silicon based anode material intellectual property from 3M and will now use our R&D skills to to maximise it benefits by combining it with our leading cathode materials.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Compared with conventional fixed bed tubular reactors,</p>

		<p>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)</p>
Operations	Yes	<p>Realisation of the impact climate change on the world caused us to set our first operational carbon footprint reduction target as early as 2006. Over the next 10 years we successful halved the scope 1 + 2 carbon intensity of our global manufacturing operations per unit sales. In 2017 we set a follow on goal to reduce our operations carbon intensity by a further 25%, and are on target to achieve this in advance of our 2025 deadline. To further support this goal in January 2020 we set a target to increase the amount of mount of renewable electricity we procure to 60% by 2020, from a 2019 baseline of 24%. (Annual Report page 38)</p> <p>During FY2019/20 we have completed our first comprehensive assessment of the scope 3 carbon footprint of our operations, which is reported for the first time in this CDP disclosure, We are now considered what goals we can set to reduce this footprint going forward, in support of the world's Net Zero agenda.</p>

C3.1e

(C3.1e) 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	Capital expenditures	<p>Our largest capital expenditures are about delivering on our strategy to transition our products portfolio to those that enable a transition to a low carbon world.</p> <p>Our total investment committed to first commercial production of our leading next generation cathode material for electric vehicles (eLNO) will amount to circa £350 million. Beyond this scale up is likely to be phased as we math capacity to demand.</p>

		<p>There is increasing momentum around the significant role that hydrogen will play in enabling the energy transition to a clean, low carbon economy and during FY2019/20 we announced £15m committed investment in fuel cells technology to double manufacturing capacity</p> <p>For more information on our capital expenditure program and support of the Net Zero economy, see Annual Report 2020 page 19, 63 and pages 32-33. and our Capital Markets Day presentation 2019 available at https://matthey.com/-/media/files/investors/cmd-2019-full-final-final.pdf?la=en&hash=DF92CAB54FB19B08FB4969B0ABAC903A0F266250</p>
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C3.1f

(C3.1f) 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 2020 pages 46 -47, 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?

Intensity target

C4.1b

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

Target reference number

Int 1

Year target was set

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)

3.17

% of target achieved [auto-calculated]

68.9295039164

Target status in reporting year

Underway

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Please explain (including target coverage)

In order to set Science-based targets it has been essential to first quantify the scope 3 inventory of our business, as we know scope 3 is more than 70% of our total carbon footprint. We have done this during the year and are now considering what revised scope 1, 2 and 3 targets will be suitable for our business, that will meet the SBTi criteria and enable us to contribute further to Net Zero.

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

26

% of target achieved [auto-calculated]

5.555555556

Target status in reporting year

New

Is this target part of an emissions target?

This target is in addition to our scope 1 + scope 2 carbon intensity target. Progress against this target will help us to achieve the other target.

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain (including target coverage)

C4.3

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

Yes

C4.3a

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

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	0
To be implemented*	1	6,000
Implementation commenced*	0	0
Implemented*	2	12,894
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

Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)

1,407

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

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

250,000

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

20,000

Payback period

<1 year

Estimated lifetime of the initiative

3-5 years

Comment

Process equipment modifications to enable a reduction in operating temperature in the furnaces at one of our precious metals refineries. This reduces emissions by reducing natural gas usage.

Initiative category & Initiative type

Low-carbon energy consumption
Solid biofuels

Estimated annual CO2e savings (metric tonnes CO2e)

11,847

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

300,000

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

0

Payback period

<1 year

Estimated lifetime of the initiative

1-2 years

Comment

5 more of our UK facilities were switched onto a renewable electricity contract, where grid electricity is procured with RECs (Renewable Electricity Certificates), generated from biofuel.

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 2020 page 20 -21
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.
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) CRC (Carbon Reduction Commitment) , 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, stationary
energy storage
applications. We
have developed
best-in-class
lithium-based
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, 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?

Low-carbon product

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

Climate Bonds Taxonomy

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

1.66

Comment

Estimated 225221 tonnes avoided CO2 emissions are based on the use of Johnson Matthey's battery materials for automotive applications, as sold in FY 2019/20. 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 2019/20. 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 2019 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/nitrous-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

0.03

Comment

Estimated avoided

emissions are

based on Johnson

Matthey's

installations of

nitrous oxide

abatement catalyst,

as operating

in FY 2019/20 were 9790206 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)

199,125

Start date

April 1, 2019

End date

March 31, 2020

Comment

Past year 1

Gross global Scope 1 emissions (metric tons CO₂e)

220,317

Start date

April 1, 2018

End date

March 31, 2019

Comment

This number is 2% lower than the number we reported last year, due to a small data error uncovered after reporting last year. The re-statement has been third party verified and is shown on this year's assurance certificate.

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

252,757

Scope 2, market-based (if applicable)

192,334

Start date

April 1, 2019

End date

March 31, 2020

Comment

Past year 1

Scope 2, location-based

277,861

Scope 2, market-based (if applicable)

202,813

Start date

April 1, 2018

End date

March 31, 2019

Comment

These numbers are 2% and 6% higher respectively than the numbers we reported last year, due to a small data error uncovered after reporting last year. The re-statement has been third party verified and is shown on this year's assurance certificate.

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

5,158,771

Emissions calculation methodology

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 Avieco Ltd's

proprietary Economic Input-Output database. 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

73

Please explain

73% of our purchased goods and services greenhouse gas 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

222,797

Emissions calculation methodology

For estimating the carbon footprint of our large capital projects we used a Avieco Ltd's proprietary Economic Input-Output database for the construction sector. Emissions are calculated for all 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 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

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 footprint constructions materials and capital equipment direct from our suppliers. Accurate information of this type is very difficult to obtain, especially when carrying our construction projects in developing nations.

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

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

48,875

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 2019 edition of the world CO2 emissions database of the International Energy Agency. They were purchased under licence in November 2019 for sole use in company reporting. For US facilities we use regional carbon factors published by the Environmental Protection Agency in January 2019, eGRID data 2018. 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-2019>

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 logistic Couriers.

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

1,678

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-2019>

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

0

Please explain

All records of waste disposed (mass and disposal method) were collected internally.

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

9,015

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-2019> for rail, private vehicle, taxi and public transportation.

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

94

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 and taxis. which is logged by employees.

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

33,644

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 commuting survey in 2014 using estimated fuel efficiency. 8% of the 2014 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 an employee commuting survey. In the future we aim to build a more up-to-date picture of employee commuting habits through a global survey.

Upstream leased assets

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

5,094

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-2019> 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 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

721,787

Emissions calculation methodology

For Use of Sold Products emissions, we used revenues including PGMs and a 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

10,997

Emissions calculation methodology

For Investment emissions, we used JM's share of operating profit 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 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

Operating profit is reported to us by the relevant investment companies 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

0.0000269

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

391,459

Metric denominator

unit total revenue

Metric denominator: Unit total

14,577,000,000

Scope 2 figure used

Market-based

% change from previous year

32

Direction of change

Decreased

Reason for change

Our absolute carbon footprint dropped by 7% during the year, whilst our Revenues increased by 36%.

71% 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 2019. 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" as a more accurate denominator to track the change in the extent of our production activities. This metric is reported below.

During the year our energy demand (GJ) decreased by 6% due to energy efficiency improvement projects in our manufacturing facilities. The remaining absolute decrease is due to us switching more of our electricity contracts to zero carbon sources.

Intensity figure

93.9

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

391,459

Metric denominator

Other, please specify
million GBP sales excluding precious metals

Metric denominator: Unit total

4,170

Scope 2 figure used

Market-based

% change from previous year

7

Direction of change

Decreased

Reason for change

Our absolute carbon footprint dropped by 7% during the year, whilst our "sales excluding precious metals" dropped by 1%.

During the year our energy demand (GJ) decreased by 6% due to energy efficiency improvement projects in our manufacturing facilities. The remaining absolute decrease is due to us switching more of our electricity contracts to zero carbon sources.

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	177,503	IPCC Fifth Assessment Report (AR5 – 100 year)
CH4	948	IPCC Fifth Assessment Report (AR5 – 100 year)
N2O	19,734	IPCC Fifth Assessment Report (AR5 – 100 year)
HFCs	940	IPCC Fourth Assessment Report (AR4 - 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	59,669
Europe, the Middle East, Africa and Russia (EMEAR)	20,598
Americas	83,598
Asia, Australasia	35,260

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	51,331
Efficient Natural Resources Sector	133,323
Health Sector	8,281
New Markets Sector	5,371
Corporate	819

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 CO ₂ e	Comment
Chemicals production activities	184,654	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 CO ₂ e)	Scope 2, market-based (metric tons CO ₂ e)	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	40,406	3,761	0	0
Europe, the Middle East, Africa and Russia (EMEAR)	100,849	97,560	0	0
Americas	54,981	35,803	0	0
Asia, Australasia	56,521	55,210	0	0

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	162,785	139,093
Efficient Natural Resources Sector	66,346	39,262
Health Sector	13,012	7,272
New Markets Sector	9,191	6,707
Corporate	1,423	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	229,131	178,355	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
---------------------	--	---------------------------------

Specialty chemicals	0	None of the scope 3 emissions we have disclosed in C6.5 come from purchased chemical feedstocks.
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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	11,487	Decreased	2.9	An additional 5 sites were included on the UK Renewable energy contract from the year before.
Other emissions reduction activities	1,407	Decreased	0.4	Project in one of our PGM Refineries to optimise furnace operating temperatures
Divestment	8,885	Decreased	2.3	Our Riverside Pharmaceutical manufacturing plant in the US was shut down.

Acquisitions	0	No change	0	no acquisitions of operating plants this year.
Mergers	0	No change	0	no mergers this year.
Change in output	9,892	Decreased	2.5	This reflects reduced output due to market conditions across the group.
Change in methodology	0	No change	0	No changes in methodology.
Change in boundary	0	No change	0	No changes in boundary conditions
Change in physical operating conditions	0	No change	0	no change in physical operating conditions
Unidentified	0	No change	0	No unidentified changes
Other	0	No change	0	Nothing to report under 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	767,732	767,732
Consumption of purchased or acquired electricity		145,090	408,681	553,771
Consumption of purchased or acquired steam		0	33,402	33,402
Consumption of self-generated non-fuel renewable energy		390		390
Total energy consumption		145,480	1,209,815	1,355,295

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)	692,387
Consumption of purchased or acquired electricity		470,534
Consumption of purchased or acquired steam		33,271
Consumption of self-generated non-fuel renewable energy		114
Total energy consumption		1,196,306

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

685,163

MWh fuel consumed for self-generation of electricity

3,053

MWh fuel consumed for self-generation of heat

674,612

MWh fuel consumed for self-cogeneration or self-trigeneration

7,498

Emission factor

0.0511

Unit

metric tons CO2e per GJ

Emissions factor source

Greenhouse gas reporting: conversion factors 2019, from UK Department for Business, Energy and Industrial Strategy,
<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019>

Comment

Fuels (excluding feedstocks)

Diesel

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

25,475

MWh fuel consumed for self-generation of electricity

681

MWh fuel consumed for self-generation of heat

24,794

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.068

Unit

metric tons CO₂e per GJ

Emissions factor source

Greenhouse gas reporting: conversion factors 2019, from UK Department for Business, Energy and Industrial Strategy,
<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019>

Comment

Fuels (excluding feedstocks)

Petrol

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

20,898

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

20,898

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.065

Unit

metric tons CO₂e per GJ

Emissions factor source

Greenhouse gas reporting: conversion factors 2019, from UK Department for Business, Energy and Industrial Strategy,
<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019>

Comment

Fuels (excluding feedstocks)

Liquefied Natural Gas (LNG)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

4,853

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

4,853

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.0512

Unit

metric tons CO₂e per GJ

Emissions factor source

Greenhouse gas reporting: conversion factors 2019, from UK Department for Business, Energy and Industrial Strategy,
<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019>

Comment

Fuels (excluding feedstocks)

Liquefied Petroleum Gas (LPG)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

19,869

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

19,869

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 2019, from UK Department for Business, Energy and Industrial Strategy,
<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019>

Comment

Fuels (excluding feedstocks)

Fuel Oil Number 1

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

6,419

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

6,419

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.0743

Unit

metric tons CO2 per GJ

Emissions factor source

Greenhouse gas reporting: conversion factors 2019, from UK Department for Business, Energy and Industrial Strategy,
<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019>

Comment

Fuels (excluding feedstocks)

Fuel Oil Number 2

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

5,055

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

5,055

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.0743

Unit

metric tons CO2e per GJ

Emissions factor source

Greenhouse gas reporting: conversion factors 2019, from UK Department for Business, Energy and Industrial Strategy, <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019>

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	11,720	11,720	488	488
Heat	756,500	756,500	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	7,549	7,549
Heat	684,967	684,967
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/region of consumption of low-carbon electricity, heat, steam or cooling

United States of America

MWh consumed accounted for at a zero emission factor

7,118.01

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/region 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

137,973

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

United States of America

MWh consumed accounted for at a zero emission factor

48,945

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

39.6

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

10

Direction of change

Increased

Please explain

Our total energy consumed during the year decreased by 6%, but our tonnes of manufactured products sold decreased by 13% in the same period. This was due to changes in our product portfolio and some factories running at a reduced capacity due to COVID-19 restrictions in the final 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)

112,491

Capacity (metric tons)

112,491

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

1.73

Electricity intensity (MWh per metric ton of product)

4.52

Steam intensity (MWh per metric ton of product)

0.3

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 2020 page 21 and page 33.

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
-----------------	--	---	--	---------

<p>Bio technology</p>	<p>Pilot demonstration</p>	<p>≤20%</p>	<p>36,000,000</p>	<p>Alternative feedstocks for a sustainable future:.</p> <p>We have projects at all the listed stages of development in this area. For information see our Annual Report 2020 page 21</p> <p>"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.</p>
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				<p>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."</p>
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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 FY201920 (full) vAV v2.pdf

Page/ section reference

Assurance for Scope 1 GHG emissions is given on page 2

Relevant standard

ISAE 3410

Proportion of reported emissions verified (%)

100

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 Plc - 2019 AE Final VOS - 20200320.pdf

Page/ section reference

14 for verified scope 1 emissions of 17350 tonnes GHG

Relevant standard

European Union Emissions Trading System (EU ETS)

Proportion of reported emissions verified (%)

9

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 FY201920 (full) vAV v2.pdf

Page/ section reference

Data and Assurance Scope 2 GHG emissions (market method) is given on page 2 of attached assurance statement

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 FY201920 (full) vAV v2.pdf

Page/ section reference

Scope 2 location based details given on page 2 of attached assurance certificate

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.

Scope 3 category

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

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 FY201920 (full) vAV v2.pdf

Page/section reference

Assurance for Scope 3 GHG emissions for transmission & distribution losses from grid electricity procurement is shown on page 2 of attached assurance statement. This is part of the "Fuel and Energy-related" Scope 3 category given in answer to question C6.5.

Relevant standard

ISAE 3410

Proportion of reported emissions verified (%)

42

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 3 years. All 3 years of data are displayed on the assurance certificate on page 2.
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 3 years. All 3 years of data are displayed on the assurance certificate on page 2.
C5. Emissions performance	Year on year change in emissions (Scope 2)	ISAE3410 Limited assurance	Our scope 1 emissions has been 3rd party verified for the last 3 years. All 3 years of data are displayed on the assurance certificate on page 2.
C8. Energy	Energy consumption	ISEA 3000 limited assurance	The following data required for C8.2 are all shown on our 3rd party assurance certificate on pages 2 and 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
C4. Targets and performance	Progress against emissions reduction target	ISAE3000	C4.2a target: % renewable electricity consumed is show on the assurance certificate on page 3.

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

8.7

% of Scope 2 emissions covered by the ETS

0

Period start date

January 1, 2019

Period end date

December 31, 2019

Allowances allocated

10,050

Allowances purchased

7,300

Verified Scope 1 emissions in metric tons CO₂e

17,350

Verified Scope 2 emissions in metric tons CO₂e

0

Details of ownership

Facilities we own and operate

Comment

The verification certificate is attached to question 10.1

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, 2019

Period end date

December 31, 2019

% 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 2019 so we did not pay any tax during the year for this plant. The Other CHP was recently updated 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 EHS Leadership Committee, 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 target to reduce our Emissions is encompassed in our Sustainable Business goals to 2025 strategy supports this strategy. Our quantitative targets is:
"To Reduce the carbon footprint of our own operations by 25% per unit production " by 2025 from a 2017 baseline.

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 and CRC.
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, and we do not currently 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 customers

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

Joint development programs with automotive customers to discover new emission control catalysts that enable the reduced vehicle tailpipe emissions

% of customers by number

64

% 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

We run joint development programs with all our automotive customers. In these programs we design new formulations of emissions control catalysts that work in tandem with their engine management systems in such a way that it allows them to clean up the emissions of NOX and particulate whilst also improving the fuel economy of the vehicle. This requires highly complex science and intricate control of the engine and is what allows legislators to introduce new tougher CO2 standards for vehicle fleets.

Impact of engagement, including measures of success

Over 30% of all passenger cars contain an emissions control catalyst designed and manufactured by Johnson Matthey. In Europe we have a 65% market share in light duty vehicles. Over 10 years (2008 -2018) average tailpipe CO2 emissions from passenger cars have decreased from 153.5 g/km to 120.4 g/km in Europe. New cars sold in 2018 were on average 14 % more efficient than those sold in 2010. (2019 has not yet been published by EEA). Similar decreases have been recorded in other parts of the world.

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.

<https://ipa-news.com/index/sustainability/>

it has recently commissioned an update to this study and Johnson Matthey is fully participating in the project. 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 memberships 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

 annual-report-and-accounts-2020.pdf

Page/Section reference

pages 46 -48 for TCFD disclosure
page 38 for emissions goals and targets
page 32 -33 for climate change opportunities
page 67 - 75 for Risk register

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

This report can also be found on our website at www.matthey.com

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 Executive Officer (CEO)