

Welcome to your CDP Climate Change Questionnaire 2019

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-2019>

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
Row 1	April 1, 2018	March 31, 2019	No

C0.3

(C0.3) Select the countries/regions 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 consolidation approach to your Scope 1 and Scope 2 greenhouse gas 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 2019: Page 109 The company director responsible for all our sustainability goals and targets (including our operational carbon footprint target) 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	Th 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. For more information on which aspects

	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	of strategy were reviewed at board meetings during FY2018/19 please see pages 11 Annual Report 2019 https://matthey.com/investors/report-archive/annual-report-2019
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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 Financial Officer (CFO) 1	Both assessing and managing climate-related risks and opportunities	Half-yearly

1 The Chief Executive officer chairs and leads a committee called the Group Management Committee. This has responsibility for the executive management of the group's business. Recommends strategic & operating plans to the board.

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.

C1.3

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

Yes

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).

Who is entitled to benefit from these incentives?

All employees

Types of incentives

Recognition (non-monetary)

Activity incentivized

Energy reduction project

Comment

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

C2. Risks and opportunities

C2.1

(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.

	From (years)	To (years)	Comment
Short-term	0	3	This time frame is aligned with our other business strategy reviews.
Medium-term	3	10	This time frame is aligned with our other business strategy reviews.

Long-term	10	30	This time frame is aligned with our other business strategy reviews.
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C2.2

(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.

Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

C2.2a

(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying and assessing climate-related risks.

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Six-monthly or more frequently	>6 years	All risks, whether they are identified at the most senior level or throughout the business, are described, analysed and reported using a standard framework. Risks 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. Our Risk process is described in full on pages 91 - 93 of our Annual Report 2019. https://matthey.com/investors/report-archive/annual-report-2019

C2.2b

(C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks.

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).

We have two substantive risks that relate to climate change:

Risk 1: "Existing Market Outlook" Under this substantive risk category we assess legislative 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.

Risk 9: "Failure of Operations": under this substantive risk category 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 91-97 of Annual Report 2019.

C2.2c

(C2.2c) Which of the following 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.
Upstream	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. Upstream (supply chain continuity) are a crucial part of the topics considered in the risk library.
Downstream	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. Downstream (factors influencing customer demand for our products) are a crucial part of the topics considered in the risk library.

C2.2d

(C2.2d) Describe your process(es) for managing climate-related risks and opportunities.

Each risk has an owner in the business - a senior manager or director who is considered most relevant to identify whether the risk processes are appropriately implemented.

The risk owner is required to identify current controls and score likelihood and impact rating of the risk every 6 months. They then determine whether further mitigations are required to reduce the risk and report back to the central Risk Assurance team.

We have two substantive risks that relate to climate change:

Risk 1: "Existing Market Outlook" This is a substantive risk in the transitional risks category - we assess legislative 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 and is especially relevant to our products for the automotive industry, where climate concerns is causing a shift from diesel/gasoline powered vehicles to battery electric vehicles. More detail about this risk and how we manage it is given in answer to question C2.3a- Risk 1

Risk 9: "Failure of Operations": This is in the substantive physical risk category. We assess the impact of changing weather patterns, availability of water and the probably of extreme weather impacts causing a disruption to production at each of our 8 substantive manufacturing locations.

More information on these substantive risks can be found on pages 91-97 of Annual Report 2019.

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?

Customer

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Mandates on and regulation of existing products and services

Type of financial impact

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 (currently £1.4bn per year). Sentiment around emissions and proposals to ban ICE vehicles for light duty vehicles are currently reducing 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)

1,392,000,000

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 FY2018/19.

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. For more information about this risk read our Annual Report 2019 on page 45-46 and our capital markets day 2017 presentation on page 22.

<https://matthey.com/-/media/files/investors/presentations/capital-markets-day-2017-presentation.pdf?la=en&hash=373153886FEA898DB4995B47034441C9264DBA3A>

Management method

We continue to aggressively invest in new catalyst technology and battery material technology to meet demand for these products for manufacture of the cleaner vehicles that tightening emissions legislation in Europe is demanding.

We have committed to invest £200m CAPEX (starting from mid 2018) to build new manufacturing facilities for 10,000 tonnes per year of Battery Materials, for electric vehicles and purchased land sufficient to support phased expansion to 100,000 tonnes per year as the market demand grows. Commercial production is expected to start in FY2021/22. <https://matthey.com/news/2019/johnson-matthey-achieves-two-major-milestones-in-commercialisation-of-eLNO>.

We also invest approximately £100m 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.

We expect that as sales of automotive catalysts decline, sales of components for electric vehicles will increase. Our risk modelling assumes a 6% penetration of pure battery electric vehicles (BEVs) by 2025. We estimate every 1 percentage point increase in market penetration above 6% would impact gross profit by about £7m.

Cost of management

200,000,000

Comment

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Customer

Risk type

Transition risk

Primary climate-related risk driver

Technology: Substitution of existing products and services with lower emissions options

Type of financial impact

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).

If on the other hand, fuel cell vehicles, which contain more platinum per vehicle than current ICE technology increases, then demand could increase.

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)

281,000,000

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 FY2018/19 Johnson Matthey made sales of £281 million from pgm services, an increase of 11% 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.

Management method

Our long term strategy in the "Efficient Natural Resources sector of our business aims to diversify beyond its historical focus on pgm services. Efficient Natural Resources Market is aiming for leading growth from:

- Focused investment in R&D to maintain and extend technology leadership
- Outperforming in selected, high growth segments

- Increased efficiency to enhance performance
- Extending capabilities into adjacent markets, geographies and technologies.

We spent £40million in FY2018/19 on R&D in Efficient Natural Resources Sector to diversify our product and services offering in the long term. we also committed to £100m over three years to upgrade one of our refineries to ensure it runs more efficiently and reliably, improving returns in the medium term.

Cost of management

40,000,000

Comment

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Physical risk

Primary climate-related risk driver

Acute: Increased severity of extreme weather events such as cyclones and floods

Type of financial impact

Increased insurance claims liability arising from climate-related impacts

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.

Management method

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.

Cost of management

15,000,000

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?

Customer

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Type of financial impact

Increased revenue through demand for lower emissions 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)

600,000,000

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 market in 2018 were £141million and the market share was 50%.. The total 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.

Strategy to realize opportunity

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 2017 our new catalyst manufacturing facilities in Shanghai and Germany came on line to support increased demand for our heavy duty diesel products. We remain well-placed to meet this challenge through investment in R&D and new facilities.

Cost to realize opportunity

162,000,000

Comment

In FY2017/18 we spent £82 million on completing the build of our new manufacturing facilities in our Clean Air business, principally the new manufacturing facilities in Germany and Shanghai. We also spent £80 million in R&D across our automotive catalyst businesses,

Identifier

Opp2

Where in the value chain does the opportunity occur?

Customer

Opportunity type

Products and services

Primary climate-related opportunity driver

Development of new products or services through R&D and innovation

Type of financial impact

Better competitive position to reflect shifting consumer preferences, resulting in increased revenues

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

Long-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.

Strategy to realize opportunity

Johnson Matthey Battery Technologies which specialises in the design, development and manufacture of integrated battery systems was formed in 2013, following the

acquisition of Axion Ltd in October 2012..Our focus is on the development of battery materials for highly demanding applications such as for the automotive sector. A combination of further acquisitions of specialist technology (two in 2015/16) and investment in internal R&D has grown the business such that sales in 2017 increased by 23% on the previous year. In 2016 we licensed key high nickel intellectual property and in October we announced we had developed a new best-in-class high energy cathode material called eLNO. In October 2017 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. We expect the material to be fully commercialised and on automotive platforms from FY2022/23 onwards.

Cost to realize opportunity

200,000,000

Comment

In October 2017 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. We expect the material to be fully commercialised and on automotive platforms from FY2022/23 onwards.

Identifier

Opp3

Where in the value chain does the opportunity occur?

Customer

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of lower-emission sources of energy

Type of financial impact

Returns on investment in low-emission technology

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

We estimate that £100m + is the incremental revenue opportunity for Johnson Matthey based on 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.

Strategy to realize opportunity

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 are targeting specific markets, customer and geographical opportunities to overcome barriers to widespread commercialisation and adoption this technology faces.

Cost to realize opportunity

10,000,000

Comment

We spend about £10m per year in R&D and CAPEX to realise the opportunity in fuel cell technology. The business itself is now profitable.

C2.5

(C2.5) Describe where and how the identified risks and opportunities have impacted your business.

Impact	Description
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Products and services	Impacted for some suppliers, facilities, or product lines	All the risks and opportunities identified in C2.3 & C2.4 relate to our products and services.
Supply chain and/or value chain	Not yet impacted	We have not yet identified any material climate-related issues that are related to our current supply chains. We monitor "Sourcing of Strategic Materials" as one of our material issues for our businesses but the primary substantive risks identified there cannot be said to be climate-related. For more information about this Risk, please see page 94 of Annual Report 2019.
Adaptation and mitigation activities	Not yet impacted	It is not clear how "adaptation and mitigation activities" are relevant to the Risks and Opportunities identified in this section.
Investment in R&D	Impacted	Our R&D investment activities are inherently aligned with our strategic aims. Our strategic activities are aligned with the UN Sustainable Development Goals (SDGs). One of those SDGs is SDG13 "Climate Action" . Our R&D investment is aligned with developing enabling technologies for low carbon transportation (batteries and autocatalysts) and catalysts to enable the chemical production industry to use less resources (energy or renewable feedstocks). Approximately 85% of our total R&D expenditure is targets towards the risks and opportunities outlined in this section. Our R&D expenditure is explained in more details on pages 45-47 of our Annual Report 2019
Operations	Impacted for some suppliers, facilities, or product lines	Our business operations are divided into four sectors. Changing our manufacturing facilities in order to produce commercial volumes of the low carbon products identified in this section affects three of these sectors, which together represent 92% of Group operating profits. Separately, extreme weather events and water risk/stress are considered for some of our manufacturing site locations and are a part of considerations within the broader risk of "failure of significant sites".
Other, please specify		

C2.6

(C2.6) Describe where and how the identified risks and opportunities have been factored into your financial planning process.

Relevance	Description
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Revenues	Impacted	The possible effect on revenues for both risks and opportunities has been outlined in answer to all questions in C2.3 and C2.4. Market sensitives do not allow any more detailed disclosure.
Operating costs	Impacted for some suppliers, facilities, or product lines	The quantification of impact on operating costs of a new product line always factored in but it cannot be quantified to CDP because it is highly confidential. It is confidential because it directly impacts on pricing strategies for the products at different manufacturing volumes.
Capital expenditures / capital allocation	Impacted	All types of capital are impacted when planning to access the kind of business opportunities we are targeting in our New Markets Sector. All of these are taken into account during Strategy development and risk assessment of new opportunities. Natural capital ,Human capital, Social capital, Manufactured capital and Financial capital. Where significant financial capital expenditures have been made in response to the identified risks and opportunities, they have been disclosed to CDP. in C2.4 & C2.5. Our largest CAPEX expenditures in recent years have all been related to the Opportunities in our Clean Air, Alternative Powertrain and Resource Efficiency businesses. Due consideration is given to many factors related to sustainability when making a major capital investment. These include access to energy, water, transport & logistics and geographic factors (such as flood potential).
Acquisitions and divestments	Impacted	In relation to the reported Risks and Opportunities Acquisitions and Divestments have only been made in the Batteries for electric vehicles business in recent years. These are detailed in C2.4a
Access to capital	Not impacted	Johnson Matthey is a large multinational company in the FTSE100 with a healthy balance sheet. It does not have any significant issues with access to capital. See Annual Report 2019 financial accounts.
Assets	Impacted	The impact on existing assets is always taken into account when assessing risk and opportunities. These data are confidential.
Liabilities	Not yet impacted	Our most significant liability is our post employment benefits payments to our employees (pensions). These are regularly assessed and quantified in our annual report. In as much as Climate-related matters (risk and opportunities) impact the health of Johnson Matthey's profitability at the highest level, they are assessed and publicly disclosed annually.
Other		

C3. Business Strategy

C3.1

(C3.1) Are climate-related issues integrated into your business strategy?

Yes

C3.1a

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

Yes, quantitative

C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b

(C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b) Indicate whether your organization has developed a low-carbon transition plan to support the long-term business strategy.

Yes

C3.1c

(C3.1c) Explain how climate-related issues are integrated into your business objectives and strategy.

i. A company-specific explanation of how business objectives and strategy have been influenced by climate-related issues;

Johnson Matthey's Strategy is "to use our world class science to solve customer complex problems. this creates long term value for our shareholders and a cleaner, healthier world" as described in our Annual Report 2019 page 14 -21 : <https://matthey.com/investors/report-archive/annual-report-2019>

Johnson Matthey runs a detailed, yearly planning and budgeting process for management purposes. As part of this process we explore the evolution of our major markets. We consider potential pathways to meet the 1.5-2C climate change target, netzero legislation and specific country / city restrictions. As an organisation whose activities span automotive, chemicals and raw materials we believe we are well placed to understand legislative evolution and its impact on technology, customer demand and the timing of market evolution (incl., the introduction of disruptive technology). For JM we use these pathways to consider

how our own products and services into these markets will need to evolve along with the investments required to meet future customer demand. Our insights also inform customer and legislator discussions around what transitions and scale of change may be possible and over what timeframes

How our strategy is helping to shaping a new global era of clean energy is described in more detail in on pages 45 -47

Our priority is to be a world leader in selling technology that enables to world to transition to low emission and low carbon transportation:

1. We are a global leader in emissions control technology for diesel powered vehicles that help automakers meet ever tightening CO2 emissions legislation globally, as well as standards for other criteria pollutants (CO, NOx, PM)
2. We are strategically committed to break out growth in the production of battery materials, that will enable superior performance for the next generation of electric vehicles, with IP to support the introduction of market leading cathode technology.
3. We are a world leader in producing PEM fuel cell technologies in support of the transition to a hydrogen economy.

ii. Explanation of whether your business strategy is linked to an emissions reductions target or energy reduction target;

Our Business strategy is aligned with the Sustainable Development Goals (SDGs). We have identified 6 SDGs which are supported by our business strategy, one of which is Goal 13: Climate Action. More information about this alignment can be found in our Annual Report 2019 on page 24-25.

We have six quantitative targets for 2025 which are linked to the SDGs and two of them are GHG emissions reductions target linked to SDG goal 13 - Climate Action. Our six goals for 2025 are summarised on pages 24 -25 and their associated quantitative targets are tabulated on page 238.

JM's Goal 5b includes 2 quantitative KPIs to double the impact our products have on reducing the greenhouse gas emissions of our customer. We measure:

- i) the tonnes of GHGs removed by our products in use by our customers
- ii) the tonnes of GHGs avoided by our customers, when they use our new products, compared to the industry standard.

More about these KPIs and our methodology can be found in Annual Report 2019- pages 44 and 236.

JM's Goal 3 is where we monitor the GHGs of our own operations. We have set a target to reduce the tonnes of greenhouse gases produced by our facilities per tonne product sold by 25% by 2025, from a 2017 baseline. Annual Report 2019 - page 53.

iii. What have been the most substantial business decisions made during the reporting year that have been influenced by the climate change driven aspects of the strategy (e.g. investment, location, procurement, mergers and acquisitions (M&A), research and development (R&D). Both the business decision and the aspect of climate change that has influenced the business decision must be made clear in the answer. If there are none to report, this should be stated;

We have committed to invest £200m CAPEX (starting from mid 2018) to build new manufacturing facilities for 10,000 tonnes per year of Battery Materials for electric vehicles and purchased land sufficient to support phased expansion to 100,000 tonnes per year as the market demand grows. Commercial production is expected to start in FY2021/22.

. Our press release in March 2019 states:

"Johnson Matthey (JM), the global leader in science that makes the world cleaner and healthier, announces two major strategic developments in the commercialisation of eLNO®, its portfolio of market-leading ultra-high energy battery cathode materials:

- Site in Poland secured for construction of commercial plant, with room for significant expansion.
- Supply of lithium-containing raw materials secured via a long term supply agreement with Nemaska Lithium Inc. for the supply of lithium hydroxide over ten years to match expanding demands of commercial production.

These two important developments will enable JM to meet customers' commercial scale requirements for eLNO. They demonstrate that JM is on track with its plans to start commercial production in 2021/22 and to be supplying platforms in production in 2022/23, both of which are in line with our strategy for break out growth in Battery Materials. "

The full press release can be found at:

<https://matthey.com/news/2019/johnson-matthey-achieves-two-major-milestones-in-commercialisation-of-eLNO>.

C3.1d

(C3.1d) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenarios	Details
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2DS	<p>Johnson Matthey runs a detailed, yearly planning and budgeting process for management purposes. As part of this process we explore the evolution of our major markets. We consider potential pathways to meet the 1.5-2C climate change target, netzero legislation and specific country / city restrictions. As an organisation whose activities span automotive, chemicals and raw materials we believe we are well placed to understand legislative evolution and its impact on technology, customer demand and the timing of market evolution (incl., the introduction of disruptive technology). For JM we use these pathways to consider how our own products and services into these markets will need to evolve along with the investments required to meet future customer demand. Our insights also inform customer and legislator discussions around what transitions and scale of change may be possible and over what timeframes</p>
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C-AC3.1e/C-CE3.1e/C-CH3.1e/C-CO3.1e/C-EU3.1e/C-FB3.1e/C-MM3.1e/C-OG3.1e/C-PF3.1e/C-ST3.1e/C-TO3.1e/C-TS3.1e

(C-AC3.1e/C-CE3.1e/C-CH3.1e/C-CO3.1e/C-EU3.1e/C-FB3.1e/C-MM3.1e/C-OG3.1e/C-PF3.1e/C-ST3.1e/C-TO3.1e/C-TS3.1e) Disclose details of your organization's low-carbon transition plan.

In 2018 we announced six new Sustainable Business KPIs to 2025. Two of these KPI support our ambitions to transition to low carbon operation, both for ourselves and our customers: One goal covers our ambition to transition our own operations to low carbon operation and the second captures our ambition to transform our product portfolio to one that is focussed on low carbon products that are desired by markets wishing to see a global transformation to the low carbon economy.

Goal 3 = "Reduce our greenhouse gas emissions from our own operations per unit production output by 25%"

Goal 5 = "Double the positive impact that JM's products make to a cleaner, healthier world" with separate measures to double the "Number of tonnes of greenhouse (GHGs) gas removed by our products" and "Number of tonnes of greenhouse (GHGs) gas avoided by our products in use".

More information about these KPIs can be found on page 44 and 53 respectively of our Annual Report 2019

<https://matthey.com/investors/report-archive/annual-report-2019>

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

Scope

Scope 1 +2 (market-based)

% emissions in Scope

100

Targeted % reduction from base year

25

Metric

Metric tons CO₂e per metric ton of product

Base year

2017

Start year

2018

Normalized base year emissions covered by target (metric tons CO₂e)

3.8

Target year

2025

Is this a science-based target?

No, and we do not anticipate setting one in the next 2 years

% of target achieved

93

Target status

Underway

Please explain

% change anticipated in absolute Scope 1+2 emissions

25

% change anticipated in absolute Scope 3 emissions

0

C4.2

(C4.2) Provide details of other key climate-related targets not already reported in question C4.1/a/b.

C4.3

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

Yes

C4.3a

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

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	0
To be implemented*	0	0
Implementation commenced*	1	11,245
Implemented*	1	33,711
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 type

Low-carbon energy purchase

Description of initiative

Nuclear

Estimated annual CO2e savings (metric tonnes CO2e)

33,711

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

0

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

0

Payback period

<1 year

Estimated lifetime of the initiative

1-2 years

Comment

Since April 2018, all our manufacturing sites in the Pennsylvania, USA have been purchasing zero carbon electricity from nuclear power, under a PPA. The quantified change is the different in market-based carbon footprint of this electricity compared to the previous year, when the sites were supplied with electricity derived from fossil fuel generation, as is standard in the state of Pennsylvania.

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 2019 page 36-39
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

1.96

Comment

Estimated 216098 tonnes avoided CO2

emissions are based on the use of Johnson Matthey's LFP materials for automotive applications, as sold in FY 2018/19.

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 2018/19.

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 2018
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

0.04

Comment

Estimated avoided emissions are based on Johnson Matthey's installations of nitrous oxide abatement catalyst, as operating in FY 2018/19. 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 Scope 1 and Scope 2 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)

223,566

Start date

April 1, 2018

End date

March 31, 2019

Comment

C6.2

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

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

C6.3

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

Reporting year

Scope 2, location-based

272,309

Scope 2, market-based (if applicable)

190,600

Start date

April 1, 2018

End date

March 31, 2019

Comment

C6.4

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

No

C6.5

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

Purchased goods and services

Evaluation status

Relevant, not yet calculated

Explanation

We have previous reported information in this category from cradle to gate studies of our principle products (4035759 tonnes CO₂ reported in FY2017/18) . However, this basis for this study is now 5 years old and our portfolio has grown during this time So we are currently updating the information and plan to report again next year.

Capital goods

Evaluation status

Relevant, not yet calculated

Explanation

We have not yet calculated the carbon footprint our capital goods.

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

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

22,126

Emissions calculation methodology

Emissions associated with electricity transmission and distribution losses are calculated using location-based emissions factors, purchased and used under license from IEA in November 2018..

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

100

Explanation

All our electricity usage information (in GJ or kWh) is obtained directly from our suppliers and taken from bills.

Upstream transportation and distribution

Evaluation status

Not relevant, calculated

Metric tonnes CO₂e

500

Emissions calculation methodology

Cradle-to-Gate LCA studies of key products have been carried out according to the requirements of the ISO 14040 and ISO 14044 standards. The carbon footprints were calculated using the IPPC 2007 GWP 100a v1.02 method in SimaPro. The EcoInvent 2.2 database in SimaPro was used to describe the carbon footprint of transportation of raw materials.

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

0

Explanation

We have calculated the transportation footprint for our key raw materials for ~50% of our products and found it to be about 0.02% of the total Scope 3 carbon footprint of each of our products. Therefore, we do not consider their transportation and distribution of raw materials to be material in our scope 3 carbon footprint

Waste generated in operations

Evaluation status

Not relevant, calculated

Metric tonnes CO₂e

200

Emissions calculation methodology

Cradle-to-Gate LCA studies of key products have been carried out according to the requirements of the ISO 14040 and ISO 14044 standards. The carbon footprints were calculated using the IPPC 2007 GWP 100a v1.02 method in SimaPro. The EcoInvent 2.2 database in SimaPro was used to describe the carbon footprint of transportation of raw materials.

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

0

Explanation

We have calculated the production waste footprint of 40% of our key products and found it to be about 0.01% of the total Scope 3 carbon footprint of the products. Therefore, we do not consider production waste to be material in our scope 3 carbon footprint

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

7,832

Emissions calculation methodology

GHG Protocol Corporate Accounting Standard; 2011-12 data provided for JM employee business travel in 2012.

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

0

Explanation

We collected data on business travel by employees in 2012 and found it to be only 0.2% of our Scope 3 emissions. Therefore we do not consider it material to our Carbon footprint and have discontinued collecting the data every year. Whilst our operations have grown in size since, it is still likely not material compared to our carbon footprint of direct raw materials. Notwithstanding this, we are currently putting place a method to collect this information centrally in [partnership with our business travel services providers and hope to report updated figures next year.

Employee commuting

Evaluation status

Not relevant, calculated

Metric tonnes CO₂e

90

Emissions calculation methodology

2015 UK Defra Guidance/ DECC's GHG Conversion Factors for Company Reporting of emissions from transportation from <https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting> were used to convert miles travelled by different forms of transport into a carbon footprint. The employee commuting footprint was based on results of a travel survey at our largest site in the UK, where 13% of JM employees work. 80% employees reported they came by car; 5% by train and 15% walked/cycled. The number was then scaled up to represent 100% JM employee commuting - assuming commuting habits are similar all JM sites cross the globe. This is unlikely to be the case in detail, but we estimate that it will be an over-estimate, as employees tend to travel longer distances to work in the UK than they do at our other locations.

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

0

Explanation

We collected travel information direct from employees, via an in-house survey - not from suppliers.

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Explanation

We don't have any upstream leased assets.

Downstream transportation and distribution

Evaluation status

Not relevant, calculated

Metric tonnes CO₂e

200

Emissions calculation methodology

Cradle-to-Gate LCA studies of key products have been carried out according to the requirements of the ISO 14040 and ISO 14044 standards. The carbon footprints were calculated using the IPCC 2007 GWP 100a v1.02 method in SimaPro. The EcoInvent 2.2 database in SimaPro was used to describe the carbon footprint of transportation of products.

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

0

Explanation

We have calculated the transportation footprint of several of our key products and found it to be less than 0.01% of the total Scope 3 carbon footprint. Therefore, we do not consider their transportation to be material in our carbon footprint.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Explanation

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

250,000,000

Emissions calculation methodology

Calculations of annual CO₂ savings from JM products "in use" in CDM/JI projects were calculated and third-party verified according to the CDM methodology for CER allocation. The impact of catalysts on GHG emissions from a vehicle was measured directly in our engine test facilities. Every vehicle will emit a slightly different mix of GHGs from its engine depending on the fuel used, engine type, car weight and driving style of the driver. . Typically our catalyst are converting unburnt hydrocarbons and carbon monoxide in vehicle exhaust into carbon dioxide. This cleans the air but increased the CO₂ footprint of the vehicle exhaust slightly. We have taken an average engine out exhaust gas mixture from a mid-size passenger vehicle and assumed 100% conversion of the unburnt hydrocarbons and carbon monoxide by the exhaust emissions control system.

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

0

Explanation

This is a partial disclosure. We have so far completed "in-use" LCA studies on approximately 45% of our product portfolio, by sales revenues. Some of JM's products are designed specifically to save GHGs being emitted to atmosphere (e.g. N₂O abatement catalysts). Our automotive catalysts create some CO₂ whilst they are destroying other environmentally harmful gases and particulates eg. acid gases or photochemical smog in the engine out exhaust gas mixture.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Explanation

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

Explanation

We do not have any downstream leased assets

Franchises

Evaluation status

Not relevant, explanation provided

Explanation

We do not have any franchises

Investments

Evaluation status

Not relevant, explanation provided

Explanation

We do not generally make investments outside the boundaries of our own business. Manufacturing in joint ventures is included in our scope 1+2 carbon footprint.

Other (upstream)

Evaluation status

Not relevant, explanation provided

Explanation

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

Other (downstream)

Evaluation status

Not relevant, explanation provided

Explanation

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

C6.7

(C6.7) Are carbon dioxide emissions from biologically sequestered 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

0.0000385

Metric numerator (Gross global combined Scope 1 and 2 emissions)

414,165

Metric denominator

unit total revenue

Metric denominator: Unit total

10,745,000,000

Scope 2 figure used

Market-based

% change from previous year

11

Direction of change

Decreased

Reason for change

Our absolute carbon footprint dropped by 7% during the year, whilst revenues increased by 5%.

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

NOTE: The way our revenue is calculated has materially changed this year. In Fy2017/18 review was originally reported as £14,122million, but has been re-stated to £10,274million, a drop of 27%. Our re-stated intensity figure for Fy2017/18 is 0.0000403 tonnes/GBP revenue.

Intensity figure

2.94

Metric numerator (Gross global combined Scope 1 and 2 emissions)

414,165

Metric denominator

metric ton of product

Metric denominator: Unit total

141,218

Scope 2 figure used

Market-based

% change from previous year

13

Direction of change

Decreased

Reason for change

Our absolute carbon footprint dropped by 7% during the year, whilst production output increased by 6%. During the year our energy intensity (GJ per tonnes product) decreased by 6% due to energy efficiency improvement projects in our manufacturing facilities. the remaining 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	196,212	IPCC Fifth Assessment Report (AR5 – 100 year)
CH4	2,033	IPCC Fifth Assessment Report (AR5 – 100 year)
N2O	24,486	IPCC Fifth Assessment Report (AR5 – 100 year)
HFCs	815	IPCC Fifth Assessment Report (AR5 – 100 year)

C7.2

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

Country/Region	Scope 1 emissions (metric tons CO2e)
United Kingdom of Great Britain and Northern Ireland	60,730
Europe, the Middle East, Africa and Russia (EMEAR)	21,326
Americas	105,096

Asia, Australasia	36,413
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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	49,440
Efficient Natural Resources Sector	148,569
Health Sector	17,690
New Markets Sector	7,251
Corporate	617

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

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

	Gross Scope 1 emissions, metric tons CO2e	Comment
Chemicals production activities	198,009	These are scope 1 emissions from the combined facilities of our Clean Air and Efficient Natural Resources sectors. These are the sectors of our business where we manufacture industrial and automotive catalysts, which are classified as "speciality chemicals" in CH0.7.

C7.5

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

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
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United Kingdom of Great Britain and Northern Ireland	51,222	11,245	183,349	133,975
Europe, the Middle East, Africa and Russia (EMEAR)	104,270	94,897	170,605	11,334
Americas	64,679	33,309	174,646	79,501
Asia, Australasia	52,139	51,149	81,482	178

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 emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Clean Air Sector	178,575	135,638
Efficient Natural Resources Sector	64,922	40,175
Health Sector	16,278	7,360
New Markets Sector	10,536	7,426
Corporate	1,998	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	243,497	175,813	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 "specialty chemicals" in CH0.7.
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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. We have not yet calculated our scope 3, category 1 CO2 emissions from purchased raw materials.

C-CH7.8a

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

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

C7.9

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

Decreased

C7.9a

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

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
--	--	---------------------	------------------------------	----------------------------

Change in renewable energy consumption	3,860	Decreased	0.9	Increased use of solar power at 1 plant. Purchasing of 100% grid renewable energy contract with RECs at another plant.
Other emissions reduction activities	33,711	Decreased	7.6	The majority of this emissions reduction was the results of switching to a zero carbon grid electricity contract (PPA for nuclear electricity) in the Pennsylvania region of USA.
Divestment	271	Decreased	0.1	Divestment of 2 small manufacturing plants during the year.
Acquisitions	0	No change	0	No acquisitions of operational plants during the year.
Mergers	0	No change	0	No mergers
Change in output	29,209	Increased	6.6	Production output changed by 6.6% during the year, based on tonnes of product sold across the group. If the energy mix had stayed the same as last year, this would have resulted in a 29,209 tonnes increase in scope 1+ scope 2 (market-based) carbon footprint.
Change in methodology	0	No change	0	No change in methodology
Change in boundary	0	No change	0	No change 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	22,711	Decreased	5.1	change in location based carbon intensity factors for grid electricity globally

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 undertakes this energy-related activity
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 MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	0	813,201	813,201
Consumption of purchased or acquired electricity		152,100	450,080	602,180
Consumption of purchased or acquired steam		0	12,888	12,888

Consumption of self-generated non-fuel renewable energy		488		488
Total energy consumption		152,588	1,276,169	1,428,757

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)	708,745
Consumption of purchased or acquired electricity		509,589
Consumption of purchased or acquired steam		12,518
Consumption of self-generated non-fuel renewable energy		129
Total energy consumption		1,230,981

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

724,383

MWh fuel consumed for self-generation of electricity

5,186

MWh fuel consumed for self-generation of heat

709,706

MWh fuel consumed for self-cogeneration or self-trigeneration

9,491

Comment

Fuels (excluding feedstocks)

Diesel

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

30,264

MWh fuel consumed for self-generation of electricity

472

MWh fuel consumed for self-generation of heat

29,792

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Fuels (excluding feedstocks)

Petrol

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

19,887

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

19,887

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Fuels (excluding feedstocks)

Liquefied Natural Gas (LNG)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

3,190

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

3,190

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Fuels (excluding feedstocks)

Liquefied Petroleum Gas (LPG)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

20,833

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

20,833

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Fuels (excluding feedstocks)

Fuel Oil Number 1

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

7,113

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

7,113

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Fuels (excluding feedstocks)

Fuel Oil Number 2

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

7,532

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

7,532

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

C8.2d

(C8.2d) List the average emission factors of the fuels reported in C8.2c.

Diesel

Emission factor

0.0688

Unit

metric tons CO₂e per GJ

Emission factor source

Greenhouse gas reporting: conversion factors 2018, from UK Department for Business, Energy and Industrial Strategy,
<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2018>

Comment

Fuel Oil Number 1

Emission factor

0.07453

Unit

metric tons CO₂e per GJ

Emission factor source

Greenhouse gas reporting: conversion factors 2018, from UK Department for Business, Energy and Industrial Strategy,
<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2018>

Comment

Fuel Oil Number 2

Emission factor

0.07453

Unit

metric tons CO₂e per GJ

Emission factor source

Greenhouse gas reporting: conversion factors 2018, from UK Department for Business, Energy and Industrial Strategy,

<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2018>

Comment

Liquefied Natural Gas (LNG)

Emission factor

0.0511

Unit

metric tons CO₂e per GJ

Emission factor source

Greenhouse gas reporting: conversion factors 2018, from UK Department for Business, Energy and Industrial Strategy,
<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2018>

Comment

Liquefied Petroleum Gas (LPG)

Emission factor

0.05958

Unit

metric tons CO₂e per GJ

Emission factor source

Greenhouse gas reporting: conversion factors 2018, from UK Department for Business, Energy and Industrial Strategy,
<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2018>

Comment

Natural Gas

Emission factor

0.0511

Unit

metric tons CO₂ per GJ

Emission factor source

Greenhouse gas reporting: conversion factors 2018, from UK Department for Business, Energy and Industrial Strategy,

<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2018>

Comment

Petrol

Emission factor

0.06494

Unit

metric tons CO2e per GJ

Emission factor source

Greenhouse gas reporting: conversion factors 2018, from UK Department for Business, Energy and Industrial Strategy, <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2018>

Comment

C8.2e

(C8.2e) 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	15,637	15,637	488	488
Heat	798,052	798,052	0	0
Steam	0	0	0	0
Cooling	0	0	0	0

C-CH8.2e

(C-CH8.2e) 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	15,636	15,636
Heat	699,181	699,181
Steam	0	0

Cooling	0	0
---------	---	---

C8.2f

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

Basis for applying a low-carbon emission factor

Contract with suppliers or utilities (e.g. green tariff), supported by energy attribute certificates

Low-carbon technology type

Wind

Region of consumption of low-carbon electricity, heat, steam or cooling

Europe

MWh consumed associated with low-carbon electricity, heat, steam or cooling

145,118

Emission factor (in units of metric tons CO₂e per MWh)

0

Comment

Basis for applying a low-carbon emission factor

Power Purchase Agreement (PPA) with energy attribute certificates

Low-carbon technology type

Solar PV

Region of consumption of low-carbon electricity, heat, steam or cooling

North America

MWh consumed associated with low-carbon electricity, heat, steam or cooling

6,494

Emission factor (in units of metric tons CO₂e per MWh)

0

Comment

Basis for applying a low-carbon emission factor

Power Purchase Agreement (PPA) with energy attribute certificates

Low-carbon technology type

Nuclear

Region of consumption of low-carbon electricity, heat, steam or cooling

North America

MWh consumed associated with low-carbon electricity, heat, steam or cooling

73,001

Emission factor (in units of metric tons CO₂e per MWh)

0

Comment

C-CH8.3

(C-CH8.3) Disclose details on your organization's consumption of feedstocks for chemical production activities.

Feedstocks

No consumption of fossil fuel feedstocks for chemical production activities

Total consumption

Total consumption unit

Inherent carbon dioxide emission factor of feedstock, metric tons CO₂ per consumption unit

Heating value of feedstock, MWh per consumption unit

Heating value

Comment

Johnson Matthey manufactures catalysts for the chemicals industry; it does not manufacture chemicals. Therefore it does not use any feedstocks for chemicals production that could be classified as fuels.

C-CH8.3a

(C-CH8.3a) State the percentage, by mass, of primary resource from which your chemical feedstocks derive.

	Percentage of total chemical feedstock (%)
Oil	0
Natural Gas	0
Coal	0
Biomass	0
Waste	0
Fossil fuel (where coal, gas, oil cannot be distinguished)	0
Unknown source or unable to disaggregate	0

C9. Additional metrics

C9.1

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

Description

Energy usage

Metric value

36.4

Metric numerator

GJ

Metric denominator (intensity metric only)

tonnes of JM manufactured product sold

% change from previous year

6

Direction of change

Decreased

Please explain


Our total energy consumption has increased slightly. However, our production output has increased by 7% in the same period. Therefore the energy intensity of our operations has decreased by 6%

C-CH9.3a

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

Output product

Specialty chemicals

 We do not make any of the chemical products listed. There doesn't seem to be a "speciality chemicals" option or "other" option this year

Production (metric tons)

126,898

Capacity (metric tons)

126,898

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

1.56

Electricity intensity (MWh per metric ton of product)

4.019

Steam intensity (MWh per metric ton of product)

0.099

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

0

Comment

C-CH9.6

(C-CH9.6) Disclose your organization's low-carbon investments for chemical production activities.

Investment start date

April 1, 2018

Investment end date

March 31, 2019

Investment area

R&D

Technology area

Product redesign

Investment maturity

Applied research and development

Investment figure

120,000,000

Low-carbon investment percentage

81 - 100%

Please explain

Our Gross R&D expenditure across Efficient Natural Resources sector and Clean Air section in FY2018/19 was £120million. The vast majority of R&D activities carried out in Efficient Natural Resources Sector are to design new catalysts & processes that will enable our customers to either run their chemical plants more energy efficiently (i.e. more carbon efficiently). The vast majority of R&D activities carried out in Clean Air sector is to design new higher performing catalysts that will enable our customers (the car manufacturers) to design lower emission and lower CO2 vehicles.

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 and/or Scope 2 emissions and attach the relevant statements.

Scope

Scope 1

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 - 2018 AE Final VOS 20190228.pdf

 Johnson Matthey Assurance Statement_Carbon Smart_2019_05_22 v2.0 (002).pdf

Page/ section reference

CarbonSmart statement page 2 - "Scope 1"

Relevant standard

ISAE 3410

Proportion of reported emissions verified (%)

100

Scope

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 Assurance Statement_Carbon Smart_2019_05_22 v2.0 (002).pdf

Page/ section reference

page 2 - "Scope 2 (location based)"

Relevant standard

ISAE 3410

Proportion of reported emissions verified (%)

100

Scope

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 Assurance Statement_Carbon Smart_2019_05_22 v2.0 (002).pdf

Page/ section reference

page 2 - "Scope 2 (market based)"

Relevant standard

ISAE 3410

Proportion of reported emissions verified (%)

100

C10.1b

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

Scope

Scope 3- at least one applicable category

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Attach the statement

 Johnson Matthey Assurance Statement_Carbon Smart_2019_05_22 v2.0 (002).pdf

Page/section reference

page 2 - Scope 3 greenhouse emissions from electricity transmission and distribution losses

Relevant standard

ISAE 3410

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?

 Johnson Matthey Assurance Statement_Carbon Smart_2019_05_22 v2.0 (002).pdf

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C4. Targets and performance	Year on year emissions intensity figure	ISAE3410 Limited assurance	Our operational carbon intensity has been 3rd party verified for both this year and last year. This is 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 for both this year and last year are detailed on our 3rd party assurance statement - page 2.
C5. Emissions performance	Year on year change in emissions (Scope 2)	Limited assurance. ISAE3410	Our Scope 2 (location based and market-based) emissions for both this year and last year are detailed on our 3rd party assurance statement - page 2.

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

Other carbon tax, please specify

UK Carbon Reduction Commitment

C11.1b

(C11.1b) Complete the following table for each of the emissions trading systems in which you participate.

EU ETS

% of Scope 1 emissions covered by the ETS

4.2

Period start date

January 1, 2018

Period end date

December 31, 2018

Allowances allocated

7,351

Allowances purchased

2,095

Verified emissions in metric tons CO₂e

9,446

Details of ownership

Facilities we own and operate

Comment

The verification certificate is attached to question C10.1

C11.1c

(C11.1c) Complete the following table for each of the tax systems in which you participate.

UK carbon price floor

Period start date

January 1, 2018

Period end date

December 31, 2018

% of 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. However both were switched off for a significant upgrade for the whole of 2018 and so we did not pay any tax during the year.

Other carbon tax, please specify

Period start date

January 4, 2018

Period end date

March 31, 2019

% of emissions covered by tax

0.7

Total cost of tax paid

61,780

Comment

C11.1d

(C11.1d) What is your strategy for complying with the systems in which you participate or anticipate participating?

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 provide information in column 5

% of customers by number

% Scope 3 emissions as reported in C6.5

0

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

We have thousands of customers, large and small. We do not believe it is relevant to calculate "% customers by number" to describe those we work with on projects to combat climate change. We work with most of the world's OEMs on emissions control systems. we work with several on the world's largest chemicals manufacturers too, as shown by the examples below.

Impact of engagement, including measures of success

We work in close partnership with a number of the automotive manufactures (OEMs) to develop new products that will reduce the impact of climate change per vehicle - such as high performance emissions control catalysts for exhausts of ICE vehicles, and high performance cathode materials for battery electric vehicles or fuel cell vehicles. We also work with a number of customers to design new industrial catalysts that enable the use of biofeeds and waste feeds to create chemicals, that would previously have been be manufactured from fossil fuels. for examples see out website.:

<https://matthey.com/news/2018/jm-and-bp-license-waste-to-fuels-technology-to-fulcrum-bioenergy>

<https://matthey.com/news/2018/hydrogen-refuelling-station-launches-at-johnson-matthey-swindon>

<https://matthey.com/news/2019/bp-partners-with-virent-and-johnson-matthey>

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

Chemical Industry Association (CIA)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The CIA's position statement on climate change and UK chemical industry can be found at: <https://www.cia.org.uk/LinkClick.aspx?fileticket=4cajq1pF4l4%3d&portalid=0>

CIA opinions and actions:

- There should be early repeal of the UK-only Carbon Price Floor to ensure a level EU playing field.
- We need UK and EU Energy markets to work in an integrated and competitive way. Energy policy should be market based, free from interference in price setting with independent economic regulation of natural monopoly networks.
- A secure and affordable balance needs to be struck in the generating mix to address the high electricity prices faced by consumers. Sources of low carbon energy should be developed at least cost to consumers and compete for market share.
- The UK should maintain its competitive gas market and reduce its import dependency. We should urgently pursue the environmentally safe development of unconventional gas. This

could provide a secure, UK source of chemical feedstock (raw material) as well as fuel. • Energy sources and markets should be connected in a cost effective way and work freely while avoiding policy distortions. Network costs should be reduced to the EU average. We need free and fair access to the EU's single energy market post-Brexit. • The Energy Intensive Industry (EII) package needs to be maintained and extended to compensate or exempt more businesses from rapidly rising climate policy impacts on electricity prices. • Decarbonisation targets need to be realistic, recognise investment cycles and avoid caps on energy use that prevent growth. • Revisions for Phase 4 of the EU Emissions Trading Scheme need to fully address the risk of production and investment leakage from the EU. • In the light of a hard Brexit, the UK policy mix needs to be rationalised and replace with a single route to 100% exemptions. There should be an effective but lower cost alternative to EU ETS. • And the Chemical Industry Decarbonisation and Energy Efficiency Roadmap Action Plan should be implemented. This includes actions to: increase clustering, support investment in energy efficient technologies, remove of barriers to harnessing waste and bio-resources, fund development of innovative low carbon technologies and deliver an approach to Industrial carbon capture and storage

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

We response to CIA member consultations on the topics relating to climate change matters.

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 attended the most recent steering committee of the Hydrogen Council. Afterwards 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 have senior managers and directors responsible for our memberships of all 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

Status

Complete

Attach the document

 JM_AR2019 final.pdf

Page/Section reference

For strategy & climate change opportunities Annual Report 2019 pages 45-47 and 14-21

For risk Annual Report 2019 page 93-97

For emissions targets and figures Annual Report 2019 pages 53; 56-57

Content elements

Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

C14. 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.

C14.1

(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.

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