Centrica response: CDP Climate Change Questionnaire 2019

C0. Introduction

C0.1

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

About us - Centrica is an international energy and services company focused on satisfying the changing needs of our customers. We supply energy and services to over 25m customer accounts mainly in the UK, Ireland and North America, through strong brands such as British Gas, Direct Energy and Bord Gáis Energy, supported by around 15,000 engineers and technicians. Our areas of focus for growth are Energy Supply, Services, Connected Home, Distributed Energy & Power and Energy Marketing & Trading.

Following our strategic review in 2015 and the transformation of our business to focus on our customers, we have divested or decommissioned the majority of our power generation assets, placed our Exploration & Production assets into a joint venture and ceased gas storage at our Rough storage facility. As a result, we will continue to focus our CDP response and be scored under the Electric Utilities module.

Our impact on climate change - Our direct carbon emissions under scope 1 include those from sources we own or control such as power generation, gas production and storage as well as emissions arising from our property, fleet and travel. Indirect carbon emissions under scope 2 arise from electricity purchased and consumed across our offices and assets. Scope 3 emissions are those we do not produce but are the result of products and services we provide, such as electricity and gas sold to customers from wholesale markets alongside products and services purchased to run our business.

Why reducing our impact on climate change is important to us - Climate change is one of the greatest global challenges facing society. The implications are far-reaching and the energy sector is at the forefront of the need to respond. We believe that decarbonisation is increasingly being driven by decentralisation, digitisation and increased customer control. This changing energy landscape, coupled with our capabilities as a leading

energy and services company with a strategy based on a world moving to a lower carbon future, enables us to play a key role in shaping the energy transition while supporting national and international carbon reduction targets.

Ambitions to tackle climate change – We have introduced 2030 Responsible Business Ambitions which set out 15 goals that give meaning to our overarching goal of "helping you run your world in ever more sustainable ways". Supporting the United Nation's Sustainable Development Goals and aiming to address some of the most challenging issues facing society, our Ambitions will help tackle climate change, build a more skilled and inclusive workforce, innovate to make our customers' lives easier and make our communities stronger. We will do this by focusing on delivering for our customers, enabling all our customers to use energy more sustainably and building the workforce of the future – all of which will help us to create stronger communities.

We are reducing our impact on climate change by focusing on three key areas:

1. **Helping our customers reduce emissions in line with Paris goals** – With over 90% of our carbon emissions arising from customer consumption, the greatest contribution we can make in tackling climate change is to help our customers reduce emissions by 25% by 2030. We cannot do this alone, but we will play an important role by directly targeting a 3% reduction through our products and services while indirectly reducing emissions by enabling a cleaner energy system and influencing energy policy. Prior to this ambition, we calculate that we have already helped customers save over 35mtCO2e since 2008.
2. **Enabling a decarbonised energy system** – By 2030, we want to have delivered 7GW of flexible, distributed and low carbon technologies which is equivalent to over 10% of current UK peak demand, while providing system access and optimisation services. This will be achieved through activities such as installing and managing technologies and services like battery storage, solar, Combined Heat and Power (CHP), demand-side response, peaking plants and providing a route-to-market alongside Power Purchase Agreements for renewables.
3. **Reducing our own emissions in line with Paris goals -** Having moved from an asset-based business to a customer-focused energy and services company, we emit 80% less carbon than we did a decade ago. We are now focused on driving efficiency within our business through technology, innovation and cultural change in order to reduce our internal carbon footprint by 35% by 2025. We have additionally committed that by 2030, our global emissions will be reducing in line with Paris and we will develop a path to net zero by 2050.

We also understand the wider role we can play in mitigating climate change in supply chains and across our communities. For example, we work collaboratively with partners to raise and maintain high environmental standards in our supply chain and engage communities via dedicated projects and campaigns to help them use energy more sustainably.

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	January 1, 2018	December 31, 2018	No

C0.3

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

Belgium
Canada
Denmark
France
Germany
Hungary
Ireland
Israel
Italy
Netherlands
Norway
Romania
Singapore
Sweden
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.

Equity share

C-EU0.7

(C-EU0.7) Which part of the electric utilities value chain does your organization operate in? Select all that apply.

Row 1

Electric utilities value chain

Electricity generation

Other divisions

Smart grids / demand response
Battery storage
Micro grids
Gas extraction and production

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)	Centrica's Group Chief Executive has overall responsibility for the business' climate related issues, as they are responsible for setting Group objectives and strategy to be approved by the Board, including those related to climate change. Specifically, the CEO personally sponsored the development of our 2030 Climate Change Ambitions. Through their membership of the Board and attendance at the Board Safety, Health, Environment, Security and Ethics Committee (SHESEC), the CEO ensures that issues associated with climate change are represented consistently at the highest level. Our CEO also chairs the HSES sub-committee, which meets 4 times annually and which has delegated authority to set objectives, targets and policies for managing issues related to climate change including the design and performance against our climate change target and ambitions.
Director on board	The Chairman of the Board SHESEC additionally has oversight for climate-related issues through their role as committee chair. The Chairman of the SHESEC is an independent Non-Executive Director and is therefore well-placed to oversee the adequacy and effectiveness of internal controls and risk management systems relating to climate change, through their leadership of the committee which scrutinises these matters.

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 – all meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding business plans Monitoring implementation and performance of objectives Monitoring and overseeing progress against goals and targets for addressing climate-related issues	Centrica has a governance structure which follows best practice, through which the Board has group-wide oversight of climate related issues. The Board Safety, Health, Environment, Security and Ethics Committee (SHESEC), meets 4 times annually to review the effectiveness of internal controls and risk management relating to climate change. Progress in meeting our 2030 Climate Change Ambitions is reviewed quarterly, by SHESEC, using a dashboard of key performance indicators (KPI) relating to our near and long-term climate change targets and ambitions. The SHESEC Chairman provides a report to the Main Board following each meeting; the Board considers climate performance generally and against targets following each meeting, and climate strategy annually in line with the frequency at which this is discussed by SHESEC. The Board reviews the recommendations and reports provided by the SHESEC, and other Board committees, Climate Change is a categorised risk area, managed through our Enterprise Risk Management process feeding into these board meetings. Climate risks are reported to business Risk Assurance and Control Committees (RACC) four times annually to evaluate and challenge material risks, risk appetite and the adequacy of mitigating controls and assurance. The Group Risk Profile is then reported to the GERACCC (Group Ethics, Risk, Assurance, Control and Compliance Committee), chaired by the Group Chief Executive before submission to the joint Board Audit/SHESEC Committee to ensure Board challenge

		and oversight. A more detailed report is delivered to SHESEC annually by the Group Head of Environment and then reviewed by the committee providing an update on climate-related strategy, risks, opportunities and overall progress against our climate change ambitions 2030. Performance against, and continued suitably of, climate goals and targets is also reviewed. The Board & Executive have dedicated annual meetings to review and develop strategy. At the annual Board Planning Conference, the external environment and strategic plans are examined, including longer term risks relating to market, competition, technology, and policy aspects, all of which are influenced by climate change

C1.2

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

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	Quarterly
Other, please specify Safety, Health, Environment, Security and Ethics Committee	Both assessing and managing climate-related risks and opportunities	Quarterly
Other, please specify Health, Safety, Environment & Security Sub-Committee	Both assessing and managing climate-related risks and opportunities	Quarterly

C1.2a

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

The Health, Safety, Environment and Security (HSES) Committee is a sub-committee of the Centrica Executive Committee (CEC) and is chaired by the Group Chief Executive. The HSES Committee has authority delegated by the CEC to set objectives, targets and policies for managing issues related to climate change. The HSES Committee meets four times a year and at each meeting will: review and set as appropriate HSES policies, standards and governance arrangements, promote HSES performance and monitor and report on the effectiveness and operation of HSES management systems and controls, including risk and opportunity management. Climate change forms part of the remit of the Environment function within the HSES department and therefore will be considered in an integrated manner through the review of these elements of HSES performance. The organisations performance on climate change is reviewed at each meeting including a review of progress against all climate KPI and targets including our 2030 Climate Change Ambitions. Additionally, an environmental deep-dive is undertaken with the Committee annually where greater detail is provided and reviewed and any proposals for approval or emerging issues are typically discussed.

The HSES committee membership comprises of the Group Chief Executive, Chief Executive Centrica Consumer, Chief Executive Centrica Business, Director Technology & Engineering, Group General Counsel & Company Secretary, and Group HSES Director. The Managing Director of Centrica Storage Limited, HSES Directors for the business units and relevant Group HSES functional heads will also attend as appropriate, including the Group Head of Environment. This ensures appropriate technical climate change expertise is present as well as adequate representation for all areas of the business at a senior level.

As the committee which sets the overall direction, tone from the top and performance expectations for HSES in Centrica, it is responsible for the management of issues related to climate change. As Chairman of the HSES Committee, the Group Chief Executive is ultimately accountable for ensuring that the committee is effective in discharging these duties.

Furthermore, the Executive Committee complete ad-hoc strategic reviews, looking at key topics which present opportunities or threats. Recent examples include the future of mobility which identified the growth potential of electric vehicles and led to the establishment on Centrica Mobility Ventures. Decarbonisation policy and decarbonisation of heat in the UK have also been assessed and led to the formation of a cross-business low-carbon heat working group to shape Centrica’s response to this risk and opportunity.

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?

Environment/Sustainability manager

Types of incentives

Monetary reward

Activity incentivized

Emissions reduction target

Comment

Delivery of selected Centrica and Business Unit specific environment plans is incentivised and may include reductions in carbon emissions.

Who is entitled to benefit from these incentives?

Other, please specify

UK Home Industry Development team

Types of incentives

Monetary reward

Activity incentivized

Efficiency project

Comment

Incentives are provided to ensure we meet our Energy Company Obligation (ECO) targets for improving domestic energy efficiency, and to ensure we do so in the most cost-effective way possible.

Who is entitled to benefit from these incentives?

Other, please specify

Power Generation operation teams

Types of incentives

Monetary reward

Activity incentivized

Efficiency target

Comment

Power generation incentive targets are a combination of business profit and individual performance measures. Individual performance targets are determined by employee role and may include combined-cycle gas turbine (CCGT) efficiency and compliance with the EU Emissions Trading System (EU ETS).

Who is entitled to benefit from these incentives?

Facilities manager

Types of incentives

Monetary reward

Activity incentivized

Emissions reduction target

Comment

Facility Managers are incentivised specifically for environmental targets on energy and waste. They are additionally incentivised to achieve carbon targets through gain share incentives, whereby the individual can share the cost benefits.

Who is entitled to benefit from these incentives?

Other, please specify

Nominated suppliers or employees

Types of incentives

Recognition (non-monetary)

Activity incentivized

Supply chain engagement

Comment

Employees in Centrica can nominate colleagues who have supported the responsible procurement agenda. This can be related to supporting ethical site inspections and/or contributed to closing a corrective action plan, addressing non-compliance from labour to environmental sustainability. It can also be due to supporting the supplier in completing a sustainability assessment.

Additionally, we have created a recognition for suppliers based on their responsible procurement credentials which can relate to their environmental sustainability performance. Again, this recognition can be linked to a supplier ‘s improved sustainability performances compared to previous years or if the supplier is a thought leader in sustainability including excelling at carbon, water management or other issues. Company sector is also taken into consideration when giving these types of recognitions. This recognition is sponsored by our Chief Procurement Officer (CPO).

Who is entitled to benefit from these incentives?

Other C-Suite Officer

Types of incentives

Monetary reward

Activity incentivized

Emissions reduction project

Comment

Centrica's Consumer CEO (who oversees energy supply and services for Centrica's c.25 million domestic customer accounts, as well as Whitegate power station in Ireland.) has the delivery of an agreed Responsible Business Ambitions Plan for Centrica's Consumer division included in their objectives. A critical component of this plan is the Climate Change ambitions which include emissions reduction targets, with 2022 and 2030 milestones, for both Centrica's internal carbon footprint and our customers' carbon emissions.

Their performance against this objective, including delivery of the climate change ambitions, will form part of the evidence submitted to the Remuneration Committee for consideration in determining Annual Incentive Plan awards. It will also form part of the standard performance conversations that they have with their manager (Group CEO).

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	1	We consider short-term risks & opportunities (R&O) to be those with the potential to be realised in the immediate term, i.e. 1-year time period. Such R&O would be considered at the annual Board Planning Conference, where strategic plans for the

			year ahead are determined. Climate R&O over this timescale are also integrated into the group enterprise risk management process.
Medium-term	1	3	Our Group-wide Enterprise Risk process looks over a period of up to 3 years and will include relevant climate risks as part of our assessment of principal risks that have the potential to impact our strategy. Climate R&O over this timescale are integrated into the group enterprise risk management process.
Long-term	3	20	Longer term external trends are monitored and reviewed annually through our strategic planning processes, including our annual Board Planning Conference. Additionally, the Board explored climate-related risk and opportunity as part of our 2015 strategic review, which included market trend analysis out to 2035, including future changes in oil and gas markets and changing trends in demand and consumer behaviour, influenced by macro-trends such as decarbonisation. Additionally, following the report from the Task Force on Climate-related Financial Disclosures, we have started to undertake forward-looking scenario analyses out to 2050 to enhance our long-term planning and risk assessment on climate change. Ad-hoc reviews, looking at key topics which present risks & opportunities are also undertaken. Many of these relate to climate related topics. Recent examples include the future of mobility, decarbonisation policy in the UK, decarbonisation outlook in the US and decarbonisation of heat in the UK.

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	Business Units and Group Functions review the internal and external environment for new and emerging risks or changes to risks that could impact the delivery of our strategy at least quarterly, through the enterprise risk management process. Climate change is a categorised risk area and short and medium-term climate-related risks will be reviewed and assessed through this process on a quarterly basis, in accordance with our Group Enterprise Risk Management Policy. Long-term risks on a 3 year or more time horizon are considered annually, through the emerging risks process and our strategic planning process.

C2.2b

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

Identifying our principal risks and developing strategies to mitigate them is essential to delivering our strategy. Ultimately, the Board, Safety, Health, Environment, Security and Ethics Committee (SHESEC) and Centrica Executive Committee (CEC) are responsible for identifying and prioritising business risks. Meetings occur throughout the year to continually evaluate the Group strategy in relation to the external economic, competitive, regulatory and policy context, including climate change risks.

Climate change is a categorised risk area, managed through our enterprise risk management processes, which addresses risks over the short and medium-term horizons (0-3 years). Considering its nature, Climate Change is also assessed annually as an 'emerging risk' over a longer period out to 20 years. Climate-related risks are also identified and assessed under other Principal Risks as appropriate across our Risk Universe, reflecting how climate change affects many aspects of our business and the external environment. Each identified risk from asset to company level, together with related controls, is consistently assessed and reported according to Our Approach to Enterprise Risk. Risks that threaten the business undergo robust assessment and form the basis of our annual viability statement.

At a company level, the Health, Safety, Environment and Security (HSES) Committee, a sub-committee of the CEC, sets objectives, targets and policies for managing risk in relation to HSES, which includes climate change. Risks reported to the HSES committee are monitored, discussed and agreed quarterly by SHESEC. The SHESEC is authorised by the Board to review the effectiveness of identifying and managing environmental risks that could materially affect performance and reputation. As part of the business planning process, the CEC review the strategy annually against key risks in the external environment, market landscapes, operating strategies and plans as well as any investment or future regulation.

Business units (BU) and Group Functions are confronted with risks that could impact the Group's assets, liabilities, finances and reputation; these are identified, assessed and subject to quarterly reporting, monitoring and challenge. Risks are reported to the relevant BU or function's Risk, Assurance and Control Committee to evaluate, challenge and advise on material risks, whether we are within risk appetite and consider the adequacy of mitigating controls and assurance.

Risks are prioritised by assessing potential impacts alongside the likelihood of materialisation. A 1-6 impact and 1-8 likelihood scale is used with the overall rating (1-48) the product of impact by likelihood. The impact score is derived using several criteria including HSES, Regulatory, Reputation and Financial impact. Further statistical modelling, scenario planning and commercial analyses are carried out where applicable. Risks related to or influenced by climate change are assessed alongside other business risks and thus the significance of climate-related risks relative to other business risks are determined via this process.

Substantive financial and strategic risks are also determined using the risk scoring process outlined above. Financial impact is scored on a scale of 1-6 from minor to very high and is derived through consideration of lifetime or in-year operating cash flow impact. The scoring thresholds will vary depending on the size of the business unit to which the risk relates. Risk ratings are represented on a risk heat map and ranked as low, moderate or high according to the overall risk rating. The top risks for each BU or function are reported to Group Risk and each of these risks is allocated to one of the 16 Principal Risks. The 16 Principal Risks encompass the Group's Risk Universe and they are listed and described in the Annual Report. Each Principal Risk is then rated using the same 1-48 scoring based on the reported risks. A risk with an impact score of 6 or above for any impact criteria would automatically be categorised as a high score according to the heat map and would therefore be classified as a priority, or substantive, risk. If impact score is 4-5, and the likelihood is high enough the risk will also be considered substantive. The ratings of the Principal Risks is reported to the Group Ethics, Risk, Assurance, Control and Compliance Committee.

Risks over a long-term (3 years or more) time horizon are assessed annually as emerging risks via our Board strategic planning process annually. At the annual Board Planning Conference, the external environment and strategic plans are examined, including market, competitive, technology and

policy aspects. All of these are influenced by climate change and thus the long-term impact of climate-related risks and opportunities on the business is considered through this process. The Board Planning Conference informs the Group's strategy and annual plans for the following year.

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	As an energy company, we are subject to many regulatory requirements relating to climate change, including the EU Emissions Trading Scheme (ETS), Energy Savings Opportunity Scheme (ESOS) and Energy Company Obligation (ECO). Due to the significance of such regulations to our business, we closely monitor and assess risks associated with any changes through their inclusion in our enterprise risk management (ERM) process. This would usually be raised by our Legal, Regulatory, Ethics and Compliance, Health, Safety and Environment and Corporate Affairs Functions and discussed under our "Legal, Regulatory and Ethical Standards Compliance" and 'Political and Regulatory Intervention' Principal Risks under which climate change sits. For example, current uncertainty over the ramp up of required obligations under the new ECO scheme, and the cost implications of Trustmark (a Government endorsed quality standards scheme), could have negative financial implications for our business in the final year of the scheme (2021/22).
Emerging regulation	Relevant, always included	Due to the long-term nature of investments in the energy sector, new regulations have the potential to impact the economics of our projects and hinder investment and thus we continually monitor, review and assess proposed and incoming regulatory change as part of our ERM framework to mitigate and manage potential impacts on our business. Emerging regulation is monitored on an ongoing basis by our Legal and Regulatory, Ethics and Compliance, Health, Safety and Environment and Corporate Affairs Functions and is usually discussed under our "Political and Regulatory Intervention" Principal Risk. For example, Centrica plans to invest £700m in our Distributed Energy & Power (DE&P) business over 2015-2020 and uncertainty over UK regulations, such as flexible generation incentives for distributed generation (which can encourage small scale renewables as well as enabling technology which supports intermittent centralised renewables), could potentially put this investment at risk, therefore it is vital that legislative changes relevant to climate change and with the potential to impact this investment are identified at an early stage and the required mitigations implemented.

Technology	Relevant, always included	The need to develop new technologies and innovate is vital to meeting our purpose of satisfying the changing needs of our customers. Decarbonisation is a significant driver of technology development within the energy sector and vice versa, including distributed energy products and services, such as demand response and energy optimisation. New technology presents both risks and opportunities to our business and the external market is highly competitive and changing. These risks are regularly assessed through our ERM process to ensure competitive threats are identified and that we are focused on designing new product offerings which are attractive to customers. For example, consideration of the risks associated with the intermittency of renewable energy generation and the electrification of sectors such as heat or mobility is helping to inform our investment in distributed energy and power solutions, such as battery storage, EV charging and demand response.
Legal	Relevant, always included	Failure to comply with our legal obligations in relation to climate change is a key risk to our business, as Safety, Compliance and Conduct is a core strategic priority for Centrica, as set out in our strategy. There is a wide range of climate-related legislation that is applicable to the energy sector, including the EU ETS, Energy Savings Opportunity Scheme (ESOS), and ECO and the effectiveness of our processes to identify and manage compliance with this legislation is regularly assessed and reported quarterly by our Legal and Regulatory, Ethics and Compliance Function through our ERM process. This would usually be discussed under our “Legal, Regulatory and Ethical Standards Compliance” Principal Risk. For example, failure to deliver our obligations under ECO to improve domestic energy efficiency and invest in reducing heating costs for vulnerable customers could lead to enforcement action, including fines to compensate for consumer detriment. As a consequence, we delivered ECO2/2t months ahead of the September 2018 deadline to mitigate this risk. We plan the same for the next deadline which will be in March 2022. With a long scheme such as ECO3 we also ensure we phase delivery over the period.
Market	Relevant, always included	Our strategy has been informed by analysis of key market trends, which includes changing consumer behaviour due to factors such as energy efficiency and climate change, leading to reduced energy usage volumes per customer. With a significant proportion of our total revenue coming from energy supply, the risk from reduced demand is that our revenue will also reduce. Given that we have identified decarbonisation as a key market trend influencing the energy sector, this is closely monitored through our ERM process, within our “Strategy Delivery” and “External Market Environment” Principal Risks, to ensure we are successfully responding to external drivers and delivering on our strategy.
Reputation	Relevant, always included	The risk of damage to our brand, trust and reputation due to failure to manage our impact on society including climate change could have a negative impact on consumer sentiment. Our strategy is focused on satisfying the changing needs

		of our customers and managing reputational impacts is therefore vital to the delivery of this, and is regularly assessed and reported by our Corporate Affairs Function and assessed quarterly through our ERM process, within our “Brand, Trust and Reputation” Principal Risk. Reputation is also assessed as one of the impact criteria on our Risk Assessment Matrix and so can form part of the scoring for any risk. For example, due to our joint venture Spirit Energy’s 25% stake in Cuadrilla’s Bowland shale gas license, there is a risk of adverse media attention, or campaign or pressure group focus, due to stakeholder concern over the potential discordance of this activity with UK climate change targets. We actively engage with climate change bodies and NGOs to offer our perspective and share our approach to being a good corporate citizen.
Acute physical	Relevant, always included	Acute climate risks, such as extreme weather events, pose a number of challenges to our operations and assets, due to the potential for disruption to critical processes and/or infrastructure, as well as the potential for increased customer demand for our services. For example, flooding, snow and ice events impact our employees’ ability to travel to work safely and may drive an increased demand for domestic heating engineer callouts at the same time, placing pressure and safety risks on our workforce. As a consequence, we regularly assess weather risks through our ERM process to ensure the continued resilience of our business to these events. These assessments are conducted within our “Customer Service”, “Health, Safety, Environment and Security” and “Information Systems and Security” Principal Risks and reported quarterly to the GERACCC, SHESEC and Audit Committee.
Chronic physical	Relevant, sometimes included	Long-term changes to weather patterns present both risks and opportunities for our business. Given the long-term nature of these trends and global scale of impact, such risks are considered through our annual strategic planning processes. While the possibility of milder winters will lead to a reduction in energy demand for heating, warmer summers will create increased demand for cooling during the day and night, which could lead to significant changes in patterns of demand – both of these impacts will affect our supply revenue through for instance, struggling to meet the pattern of demand, or an overall reduction in supply required and a corresponding fall in supply revenue. In order to help manage this we have diversified the products and services we provide to offset the potential fall in energy consumption, we offer time-of-use tariffs, smart thermostats and other energy management tools. Changes to weather patterns causing global uncertainties are considered by our Group Fundamentals and Demand Forecasting teams and are assessed and reported as part of our “External Market Environment” Principal Risk to the GERACCC and Audit Committee.

Upstream	Relevant, always included	Upstream risks are considered through the assessment of a number of the risk areas outlined above, including emerging legislation, market and physical risks. Additional upstream risks that are also regularly assessed through our ERM process include those relating to energy supply and our supply chain. As we procure the majority of the power we sell from third parties and globally trade gas, the increased potential for weather uncertainty and temperature extremes may create energy supply risks through commodity price volatility, presenting challenges in relation to potential financial losses, therefore these risks are closely monitored by our Group Financial Risk Function and reported quarterly as part of our “Financial Market” Principal Risk to the GERACCC and Audit Committee. Our two upstream businesses, Centrica Storage and Spirit Energy, are exposed in terms of revenue, and our downstream supply operations are exposed in terms of operating costs.
Downstream	Relevant, always included	Downstream climate risks include those associated with the supply of energy and services to our customers, and include risks relating to customer service, reputation and the resilience of our processes. We have identified a number of fundamental trends which are influenced by climate change and are driving the energy landscape, including decentralisation and decarbonisation of the energy system, which underpins our strategic move away from centralised generation assets to distributed and low-carbon generation technology. If we fail to adapt quickly enough to these trends and provide customers with new products and services to meet demand, there is a risk that we may not deliver our strategy. As a consequence, these risk types are included in our ERM process, within our “Strategy Delivery” and “Customer Service” Principal Risks. Look to ensure you’re determining how they’re included. The risks around changes in customer behaviour and falling energy consumption are included under our “External Market Environment” Principal Risk. All these risks are assessed and reported on a quarterly basis to the GERACCC and Audit Committee.

C2.2d

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

The most material risks derived through the risk assessment process, including High Impact/Low Likelihood risks, are reported to the Group Ethics, Risk, Assurance, Control and Compliance Committee (GERACCC), to ensure a clear understanding of our risk profile, in the context of our risk appetite, and the effectiveness of controls, which are informed by related assurance activity. The risks are categorised by the group Risk Function based on the BU registers prior to going to the GERACC. The GERACCC is chaired by the Group Chief Executive, with membership comprising of the Centrica Executive Committee (CEC). The CEC's set of prioritised risks are categorised as either: risks requiring standards (RRS), risk requiring judgement (RRJ) and external risks, which determines whether a risk will be mitigated, transferred, accepted or controlled. A RRS is a risk with negative impacts that we control through Standards and Management Systems (therefore is either mitigated, transferred or controlled by the standard or system implemented), while a RRJ is a risk that we choose to take to execute our business strategy, for example to capitalise on an identified opportunity (a risk that is accepted). An external risk is a risk that requires a focus on scenario and contingency planning with little or no ability to reduce likelihood, for example extreme weather (a risk that may be partially mitigated or is otherwise accepted). Opportunities are identified in the annual Board strategic planning process. At the annual Board Planning Conference, the external environment and strategic plans are examined, including market, competitive, technology and policy aspects. All of these are influenced by climate change and thus the long-term impact of climate-related risks and opportunities on the business is considered through this process. The Board Planning Conference informs the Group's strategy and annual plans for the following year.

With respect to climate change, the physical risk of the increasing intensity and/or frequency of extreme weather events impacting our operations has been identified via our enterprise risk management process at both an asset and group level and is classed as an external risk, due to the fact we are unable to influence the likelihood of this occurring. Management efforts to control the risk are therefore focused on reducing the impact for our business, through business continuity planning and the design of our assets to mitigate negative impacts. In the example of our power generation and gas production assets, this is managed through the consideration of flooding and other weather risks in the design of assets. Additionally, in our E&P joint venture we maintain our infrastructure to regulatory requirements and ISO standards, which include the requirement to assess environmental loading, which embeds the assessment of impact of climate change into the risk assessment. Each business decides the management approach and control and this is reviewed by the GERACC/CEC.

An example of a transitional climate risk managed through this process is the risk of policy and regulatory changes impacting the profitability or viability of our assets, due to changing policies in relation to carbon emissions. Regulatory risk is identified at both an asset and group level through our ERM process and is categorised as either a RRS or a RRJ depending on the particular policy issue. A specific example is uncertainty over the Capacity Market and Contracts for Difference (CfD) mechanisms in the UK, which are key investment instruments for low carbon power generation. Clarity over these mechanisms is key to providing the stable investment climate required to enable business to make long-term investment decisions. Mitigations include engagement with political parties, regulatory authorities and other influencers, such as climate change NGOs, to contribute our views and ensure we are aware of upcoming changes and their impact. Where appropriate, we assess scenarios and potential responses. Each business decides the management approach and control and this is reviewed by the GERACC/CEC.

Following the GERACCC, the Audit Committee, a sub-committee of the Board, receives the updated paper which includes a CEC-approved assessment of our principal risks, risk ownership and the adequacy of associated controls. These reports, supplemented by management discussions, enable the Audit Committee to monitor performance and ensure remedial action is taken if significant failings or weaknesses are identified, or we are operating outside our risk appetite.

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?

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

Reduced revenue from decreased production capacity (e.g., transport difficulties, supply chain interruptions)

Company- specific description

The main physical threats from climate change to our assets and operations are from the increased intensity and frequency of severe weather events and other changes to weather patterns. The key risk associated with these events is the decrease in revenue from disruption to output any affected generation and production assets would experience.

Climate change is leading to increased intensity and frequency of severe weather events, such as prolonged and heavy rainfall in the UK, increasing frequency of extreme wind and wave action as well as greater intensity of hurricanes in America. As a result, our business could be at risk from asset damage, impacting availability and performance as well as higher insurance premiums. This risk applies to our gas-fired power stations, exploration and production assets and stake in the UK nuclear fleet.

Structural damage to onshore or offshore infrastructure could cause a major accident, injury or loss of primary containment, as well as financial loss due to physical damage to assets. It could also lead to cessation of business operations. The risks to our business on individual assets differs widely depending on the age of the infrastructure and location. We identify our risks and manage them putting the appropriate mitigation in place. The risk of aging infrastructure in the North Sea is a focus for the UK regulator and Spirit Energy ensures compliance with any legal

requirements.

For example, flooding in 2008 disrupted output at our Brigg power station for a short duration. Coastal flooding is also a risk for all of our coastal-based assets, such as our Morecambe and Easington gas receiving facilities. For instance, our Kings Lynn Power Station, located in a flood zone 3 (as defined by the Environment Agency), is at risk of localised flooding impacting the sub-basement and machinery spaces which would require a full shut down. In the event of localised flooding where sub-basement and machinery spaces are at risk, plants will follow implemented full shut down procedures

Time horizon

Current

Likelihood

Unlikely

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

1,300,000

Potential financial impact figure – minimum (currency)

-

Potential financial impact figure – maximum (currency)

-

Explanation of financial impact figure

Weather-related risks such as flooding can have a significant financial impact on our power stations, particularly in the event of a prolonged shutdown due to loss of production and thus operating revenue. The potential financial impact is dependent on which facility is affected, whether nuclear or gas fired, and the condition of the market at the time the power station was switched off. An indication has been provided of the potential financial impact utilising the example of a shutdown of a nuclear power station (likely to represent the highest impact) due to a severe weather event for 1 working week. This would cost approximately £1.3m in lost revenue for a five-day period (£260k per day) based on our 20% equity share.

Management method

When designing, constructing and operating power stations, we always consider flood risk and implement required preventative and mitigating measures. For example, a current project in development in UK&I determined that an underground attenuation tank should be included in the drainage design to prevent flood damage. Additionally, design phase management methods in 2018 necessitated Brigg power stations engines being raised a metre to decrease the likelihood of damage from flooding.

For nuclear plants, safety case reviews are undertaken regularly which look to improve resilience to severe weather events. For instance, Dungeness B plant was taken offline following assessment of the implications of the Fukushima disaster, improvements included flooding analysis, and subsequent perimeter flood barrier and defence strengthening. The upgrades were designed to improve the protection from a one in 1,000-year weather event to one in 10,000 years.

In E&P we maintain our assets to regulatory and ISO standards, which include the requirement to assess environmental loading embedding the assessment of impact of climate change into the risk assessment.
Around £13m, or £2.6m based on our 20% equity share, was invested before the end of 2014 to improve nuclear flood defence resilience.

Management costs for flood and severe weather risk were incorporated into initial build costs and ongoing risk management budgets for our gas power stations, thus cannot be explicitly quantified.

Cost of management

2,600,000

Comment

Around £13m, or ~£2.6m based on our 20% equity share, was invested before the end of 2014, to improve nuclear power flood defence resilience.

Management costs for flood and severe weather risk were incorporated into initial build costs and ongoing risk management budgets for our gas fired power stations, thus cannot be explicitly quantified.

Flood risk assessments are undertaken for our gas terminals and an adverse weather preparedness plan is in place to manage emergency situations. An adverse weather policy for offshore operations indicates the controls to be implemented in response to specific weather parameters such as high winds.

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

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

Write-offs, asset impairment, and early retirement of existing assets due to policy changes

Company- specific description

Long term investments

It is well-understood by policymakers that businesses plan over a time horizon longer than the political cycle, but long-term policymaking to support these decisions has proven to be difficult in practice. In the UK a lack of clarity from Government on decarbonisation policies required to meet climate change commitments makes investment decisions more difficult.

Government has now closed its long-standing support mechanism for large scale renewable capacity via the Renewables Obligation, leaving the Contract for Difference (CfD) regime as the enduring support mechanism for low carbon generation. The Feed-in-Tariff (FiT) regime for small scale renewable capacity has also closed.

A five-year review of electricity market reform policies, including CfDs and the capacity market is taking place.UK Government has indicated that it will not be seeking radical review of these policies, but early clarity around any changes will be important for potential investors.

Proposed changes to network charging arrangements will also have a significant impact on the commercial attractiveness of high efficiency, decentralised generation, which is necessary to deliver the system flexibility required to support higher investment in intermittent renewables. Uncertainty here damages investor confidence, it extends the payback period for Centrica's Distributed Energy & Power propositions which will discourage potential customers.

A further risk is associated with the capacity market suspension. In particular, the risk of the EC not providing state aid approval for the scheme in a timely fashion or a no-deal Brexit resulting in the process needing to be restarted domestically with the CMA. All of that will damage the economics of new and existing generation and slow investment in the new technologies needed to decarbonise our power sector.

A five-year review of electricity market reform policies, including CfDs and the capacity market is due imminently. Government has indicated that it will not be seeking radical review of these policies, but early clarity around any changes will be important for investors.

The risk this poses to Centrica is that our long-term investments in large-scale assets, such as peaking gas-fired plants, may be at risk, should policy changes to favour renewables mean that these assets are no longer utilised.

Time horizon

Long-term

Likelihood

About as likely as not

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)

160,000,000

Potential financial impact figure – minimum (currency)

-

Potential financial impact figure – maximum (currency)

-

Explanation of financial impact figure

This maximum figure represents our investment in peaking gas generation plants to date, which could be at risk if policy changes mean these assets are no longer required.

Management method

Over 2018 we continued to engage with Government and regulators to support a stable investment climate and encourage the provision of long-term investment signals where possible.

We believe Ofgem has an important role in not constraining innovation and should focus on delivering predictable regulation and high quality, well-evidenced regulatory decisions. Fiscal policy is one of the most powerful tools for encouraging greater investment in the UK. By providing a stable and competitive tax regime, with targeted incentives for key sectors, the Government can boost investment and help industries grow. Our engagement with policy-makers continued to support and reinforce these position over 2018.

We will be working closely with Government in responding to its 5-year review of electricity market reform policy, through written responses to consultations and through direct engagement with officials

Our Responsible Business Ambitions, contain the ambition to have enabled 7GW of distributed, flexible and low-carbon generation by 2030. These generation technologies will only be delivered with adequate flexibility markets to enable the decarbonisation of the electricity grid.

Management costs are dependent on the level of activity in any given year. We estimate the total employee costs for management of these uncertainties to be in the region of £40k per year.

Cost of management

40,000

Comment

These uncertainties impact investment in both conventional and low carbon generation, as renewable deployment and carbon tax rates affect electricity market prices and therefore decisions on new investments and existing asset life extensions.

Further Government clarity around key investment instruments (CfDs and the capacity market) is awaited and will form part of the Government's upcoming review of both policies. The time horizon on carbon tax is similar and we await longer term clarity from Government in the 2019 Budgets. We will engage with policy-makers and government consultations on these matters where appropriate.

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Physical risk

Primary climate-related risk driver

Chronic: Changes in precipitation patterns and extreme variability in weather patterns

Type of financial impact

Increased operating costs (e.g., inadequate water supply for hydroelectric plants or to cool nuclear and fossil fuel plants)

Company- specific description

Reduced accuracy of demand forecasting

Physical changes related to climate change could reduce the accuracy of being able to forecast grid-wide demand, creating imbalance of energy supply to the grid.

Electricity cannot easily be stored at scale (due to a lack of suitable pump storage locations in the UK and the current prohibitive cost of batteries globally) and in the UK, the National Grid matches generation with customer demand for each second of every day. Being able to forecast customer demand accurately is key to making the most efficient decisions. Any mismatch between customer demand and what we have bought is subject to a cost. If Centrica did not buy enough electricity to meet our customers' needs in advance, an extra cost would almost certainly be incurred based upon the last minute and short balancing actions made by National Grid.

Extreme weather can impact our customer demand, making it less predictable and variable and thus increasing the mismatch between generation, demand and costs. The extreme weather in March 2018 in the UK & Ireland from polar continental air mass ('Beast from the East'), caused significant variance between actual and forecast consumption, leading to significant additional costs for Centrica and ultimately consumers.
The US also had a number of nor'easters in March 2018 that impacted the Northeast and record cold in April affected the Upper Midwest (both impacting consumption). In the summer, excessive heat and wildfires torched the West. Hurricane Florence in the Carolinas and Hurricane Michael in the Florida Panhandle. The wildfires did not impact consumption to a great extent, but the weather that caused the fires (late summer hot and dry) were a bigger factor. These events are expected to become more frequent.

This risk applies to our consumer and business gas and electricity supply businesses in the UK, Ireland and North America, which must manage this risk on an ongoing basis on behalf of our customers to ensure that we procure enough energy to meet demand. As the largest energy supplier in the UK, extreme weather events pose a particular risk to our business due to the large volumes of energy we must supply.

Time horizon

Short-term

Likelihood

About as likely as not

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

-

Potential financial impact figure – minimum (currency)

0

Potential financial impact figure – maximum (currency)

180,000,000

Explanation of financial impact figure

The potential cost of managing an imbalance can exceed £500k per day, depending on underlying accuracy and prevailing market conditions, therefore the potential impact is estimated on an annual potential for this.

During an extreme cold spell our peak load could increase by up to 10% - therefore the cost relates to the need to procure additional energy that this would require. This is included as a range from £0 as it will be proportional, from zero, to a maximum anticipated impact based upon

weather.

Management method

In the UK we have engaged with the Met Office to ensure that the seasonal and diurnal changes that can be expected as a result of climate change are reflected in the ‘seasonal normal’ temperatures used in the long-term demand forecasting process.

We take regular advice from our meteorologist on weather impacts and use real time system margin information, to optimise our forecast. We also factor in outage reports from network operators in our daily review of our forecast.

Over 2017 and 2018 we developed our forecasting capabilities to enable more frequent forecasting of demand. We are working towards being able to use weather forecasts refreshed hourly to provide the most up to date demand forecast possible. Previously, we only used four weather updates each day.

The majority of our actions to mitigate the reduced accuracy with which we are able to forecast demand due to climate change, are part of business-as-usual risk mitigation, which is estimated to cost us in excess of £100k per annum.

Cost of management

100,000

Comment

The majority of our actions to mitigate the reduced accuracy with which we are able to forecast demand due to climate change, are part of business-as-usual risk mitigation.

Identifier

Risk 4

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Market: Changing customer behavior

Type of financial impact

Reduced demand for goods and/or services due to shift in consumer preferences

Company- specific description

Falling energy consumption

UK energy consumption has been falling since 2005, driven by improved energy efficiency and changing customer behaviour as a result of greater environmental awareness, alongside reaction to price changes and economic downturn. By using less of what we sell, this could impact our profitability.

The 2016 National Energy Efficiency Data-Framework (NEED) report, which studies underlying nation-wide customer consumption patterns and is commissioned by BEIS, shows that installing a new efficient condensing boiler leads to an annual median reduction in gas consumption of 8.3% while cavity wall insulation leads to a saving of 8.4%. Since 2009, British Gas customers have reduced their underlying energy consumption by approximately 6% for gas and 12% for electricity.

Smart technology will also reduce demand for energy. In a recent sample of customers with smart meters, we saw dual fuel customers reduce consumption by around 3.1% on average.

The decline in consumption in the North American markets in which we operate is more gradual than seen in the UK and varies across states. This is due to lower wholesale gas prices from indigenous shale reserves, weather variations and market factors.

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)

700,000,000

Potential financial impact figure – minimum (currency)

-

Potential financial impact figure – maximum (currency)

-

Explanation of financial impact figure

Continuing reduction in gas and electricity consumption will impact Centrica's profits. Assuming that 25% of demand reduces (roughly in line with the Paris agreement recommendations of 25% emissions reduction by 2030) and based on 2018 disclosed figures, energy supply revenue would reduce by c25%, which is c£5bn. Using the average supply gross margin's disclosed in the 2018 ARA (UKB and Ireland), gross margin earned on supply activities is c14%, indicating a gross margin reduction of c£700m per annum.

Management method

Our shift in focus towards energy services is helping to reduce our reliance on revenue from energy supply. We are focused on putting our customers in control of their energy and see this as a growth area for our business and a chance to lead the sector in giving customers what they want.

We are leading the national roll-out of smart meters in GB, having installed over 6.8m in homes and businesses by the end of 2018. To further develop our leadership capabilities in cutting-edge products, we established a global Connected Home business in 2015.

Building on this, we also established a new global DE&P business in 2015, to put customers in control over their energy and reduce their use. In 2017 we acquired REstore, Europe's leading demand response aggregator to expand our capabilities and in 2018 we acquired Vista Solar, a United States based solar engineering, procurement and construction (EPC) company.

In 2018, we completed solar installations totalling over 54.9MWp for residential and commercial customers.

Cost of management

1,200,000,000

Comment

We expect to invest £1.2bn in our Connected Homes and DE&P businesses to develop our product service offerings during 2015-20, in order to shift our focus towards energy services and diversify our business.

Identifier

Risk 5

Where in the value chain does the risk driver occur?

Direct operations

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

Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description

UK energy efficiency mandates

In the UK, there is a risk that we fail to meet our legal obligations under ECO, which requires energy suppliers, including Centrica, to reduce heating costs for vulnerable and low-income households by funding installation and heating measures

In addition to the risk of enforcement action, which would include an initial investigation into breach and if guilty then penalty taking into account factors such as consumer detriment, costs avoided by the company and any mitigating or aggravating action., there is also the reputational damage of not meeting our target as well as the risk that forecasted costs for delivery are exceeded.

Uncertainty surrounding ECO3 delivery

The latest phase of ECO is called ECO3. The scheme started in December 2018, 2 months late, following a regulatory hiatus. The scheme marks another step-change in ECO being solely targeted at low income and fuel poor households with restriction on heating measures.

The supply chain is taking time to adapt to the new rules and industry delivery to date has been slow. BEIS is aware of the concerns and monitoring closely.

Difficulty delivering ECO could have the effect of increasing bills for our customers. Investment in projects that may be cancelled or changed may also have negative financial implications for our business as make achieving our required ECO targets more difficult, with potentially increased delivery costs and a higher likelihood of failure to meet our obligations which would result in a fine.

Time horizon

Current

Likelihood

About as likely as not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

-

Potential financial impact figure – minimum (currency)

15,000,000

Potential financial impact figure – maximum (currency)

25,000,000

Explanation of financial impact figure

Failure to comply with ECO requirements could risk enforcement action which can lead to fines designed to compensate for consumer detriment. For example in 2014, British Gas agreed to pay £11.1m to help vulnerable customers following failure to deliver the Carbon Emissions Reductions Target (CERT) and Community Energy Saving Programme (CESP), by the 2012 deadline. We completed the shortfall in 2013.

The financial penalty imposed on Centrica for failing to meet our targets would be a portion of the government Impact Assessment figure attributed to us. This figure represents our financial obligation under ECO, based on market share, which was ~£180m. It would likely be the financial equivalent whatever ECO measures we failed to deliver plus a fine which we would expect to be in the £15-25m range.

Management method

ECO delivery

We have just started the new scheme which runs for just over 3 years

We have developed a portfolio of well established ECO partners delivering our ECO measures, this was expanded and updated in 2018. These include a wide range of bilateral partners, both large managing agents and direct smaller installers, with national coverage to effectively manage cost and delivery risk. Without having established, and continuing to expand and manage, this portfolio, guaranteeing delivery of our ECO measures would be both incredibly difficult and unpredictable.

We work closely with the heating and insulation industry and with Government and the regulator to develop policy and and best practice in order to increase cost effectiveness of delivery.

Our direct fixed costs for managing compliance and policy with respect to ECO is circa £3.6m per annum.

Cost of management

3,600,000

Comment

This figure will vary across years

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?

Direct operations

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of supportive policy incentives

Type of financial impact

Returns on investment in low-emission technology

Company-specific description

Support for new technologies

Legislation to provide financial support for microgeneration, coupled with a reduction in technology costs, have helped grow a substantial market for distributed energy technologies.
Decentralised technology, using a combination of embedded generation, storage, energy efficiency and demand side response measures, will play a key role in helping the UK keep energy affordable and secure while meeting our carbon reduction commitments. Through regulatory support there are some accessible incentives and subsidies available. These help encourage decentralised energy and better management of the grid, providing opportunities for our Distributed Energy & Power (DE&P) business, our customers and wider society. The opportunities for

DE&P is that sales of their technology will likely increase with market incentives providing increased revenue opportunities for our customers. The subsidy regime for micro-generation tech has changed since Aug 2015. For solar, Feed-in-Tariffs (FITs) have been substantially reduced and withdrawn. However, we still believe there are opportunities for solar, particularly for industrial and commercial customers.

The Renewable Heat Incentive (RHI) supports renewable heat tech, such as biomass heating, for domestic and non-domestic markets. Though the changes proposed are likely to create a contraction in the biomass market due to reductions in the level of subsidy available, there will still be possible renewable heat opportunities, on which we could seek to capitalise. We note that funding for the RHI is due to end in 2020/21 and is subject to the Government's 2019 spending review process.

Smart meters also provide potential commercial opportunities for our business. They can enable the creation of new propositions, increase customer satisfaction and provide opportunities for engagement on energy efficiency services. In the US, the introduction of smart meters in certain States have enabled Direct Energy to provide customers with new products. Prepayment plans help customers manage their energy consumption, enabling an average 10% reduction in electricity usage. Time-of-use plans also cut overall demand on the grid at peak periods, reducing the need to turn on additional fossil fuel power plants.

Time horizon

Current

Likelihood

Likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

2,000,000,000

Potential financial impact figure – minimum (currency)

-

Potential financial impact figure – maximum (currency)

-

Explanation of financial impact figure

We are targeting £1bn of revenue for our DE&P and Connected Home business respectively by 2022, therefore the potential financial impact provided represents this total revenue, which we believe is our most substantive opportunity with respect to investment in new technology.

Strategy to realize opportunity

Our global DE&P business is revolutionising the traditional centralised way of generating and supplying energy. We also investigate and invest in emerging products such as battery storage. We aim to test and improve products to reduce costs which increase potential market adoption and carbon savings. Towards this in 2017, we acquired REstore, a leading demand response aggregator and Neas Energy, a leader of energy management and revenue optimisation services for decentralised third-party owned assets and in 2018 we acquired Vista Solar, a United States based solar engineering, procurement and construction (EPC) company.

By the end of 2018, British Gas led the industry on smart meter deployment, having installed 6.8m in homes and businesses. In 2018, we also expanded our range of Connected Home products and the geographies in which we sell them. For example, products now include smart plugs and lights, allowing customers in the UK, Ireland and North America to control usage remotely.

In North America using smart meters, we created TOU products and reward customers in Texas who reduce energy use during peak periods. Hive received official ENERGY STAR certification in 2018 for its Hive Thermostat (the trusted, government-backed symbol for energy efficiency), and also received ENERGY STAR certification for Hive smart bulbs.

The £144m cost represents the sum of capital investments made in 2018 to support our growth in the DE&P and Connected Home businesses.

Cost to realize opportunity

144,000,000

Comment

Figure to vary annually.

Identifier

Opp2

Where in the value chain does the opportunity occur?

Customer

Opportunity type

Products and services

Primary climate-related opportunity driver

Shift in consumer preferences

Type of financial impact

Increased revenue through demand for lower emissions products and services

Company-specific description

Changing consumer behaviour is an increasing factor in the market for low carbon products and services. Concern about climate change and rising energy costs in the UK has focused attention on reducing energy consumption while weather events across the US have raised awareness for consumers and businesses around their energy use and environmental footprint.

Our global Connected Home and DE&P businesses are striving to give customers what they want – more control, choice and the ability to lower their energy bills and carbon emissions. Additionally, for businesses energy resilience is of growing concern as they face increased uncertainty due to extreme weather events.

In the UK, smart meters and smart-enabled propositions are influencing consumer behaviour. A recent sample of customers with smart meters found customers reduced their dual fuel consumption by around 3.1% on average. We expect this figure to rise to ~5% with info available through apps & online, which provide smart meter customers useful insights into their energy consumption. Our leadership position in the

mandated smart meter roll-out is helping enhance customer experience and retention, with 7/10 customers with smart meters more satisfied than with their previous standard meters.

Increasing the customer benefits from smart-enabled propositions will lead to increased revenue for our Consumer and Business divisions through increased product sales both in the UK and globally. In North America, we have created new product offerings by combining energy supply with smart thermostats that provide customers with the ability to control and learn about their energy usage. We also continue to expand the range of smart-enabled products, such as TOU, which improve customer retention while reducing demand on the grid during peak periods.

In 2018 we expanded the Hive family of products in North America and Ireland, including the Hive active thermostat with air-conditioning.

Through our DE&P business, we are giving large-scale energy users the opportunity to operate, monitor and optimise their energy. DE&P has over 5500 contracted sites in 13 countries across insight, optimisation and solutions. The use of distributed generation and storage technologies is set to grow substantially, with forecasts suggesting that distributed generation could grow from a 2% global market share to 12% during 2014-30.

Time horizon

Current

Likelihood

Likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

2,000,000,000

Potential financial impact figure – minimum (currency)

-

Potential financial impact figure – maximum (currency)

-

Explanation of financial impact figure

Our Connected Home gross revenue grew 57% in 2018, reflecting increasing demand for our products. In 2018, our DE&P business had a revenue of £207m, up from £179m in 2017.

We are targeting a revenue of £1bn by 2022 for our two core growth businesses of DE&P and Connected Home. The combined revenue target for these businesses is used as the opportunity figure.

Strategy to realize opportunity

In 2015, Centrica reshaped its business to build new capabilities for the future by establishing global Connected Home and DE&P businesses, to deliver cutting-edge products and services that satisfy the changing needs of our customers. This built on our acquisition of AlertMe, the UK-based energy management products and services company. As part of our DE&P business in 2016, we expanded our capabilities by acquiring ENER-G, an established supplier and operator of CHP solutions and Neas Energy, a provider of enhanced energy optimisation for decentralised assets. In 2017 we also acquired REstore for £59m, Europe's leading demand response aggregator and in 2018 we acquired Vista Solar, a United States based solar engineering, procurement and construction (EPC) company.

We expect to invest £1.2bn during 2015-20 in our Connected Home and DE&P businesses to develop our product and service offerings for customers.

By the end of 2018, we had installed over 6.8m smart meters in GB through our in-house metering business.

In the US, we offer TOU products to incentivise consumers to shift usage to off-peak periods and we bundle our energy with control-based tools including smart thermostats, that enable customers to reduce energy use by around 10%.

In 2018, we completed solar installations totalling over 54.9MWp for residential and commercial customers.

Cost to realize opportunity

1,200,000,000

Comment

The annual component of this £1.2bn figure will vary across the 2015-2020 period.

Identifier

Opp3

Where in the value chain does the opportunity occur?

Direct operations

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

Growth in electric vehicle services

In the UK, a third of all pollutants in city air comes from transport. This has led to a push for vehicles with zero tail pipe emissions, such as electric vehicles (EVs), which are driven by decarbonisation, air emission regulations, city air quality strategies and Government incentives relating to tax amongst others. The UK government has pledged to have zero diesel/petrol new car sales by 2040. There are currently 206K

plug-in cars and 8500 electric vans in the UK with more being registered each month. We have installed over 17k charging points for our custoemrs to date in the UK where there are currently 22.5k public charge points.

The UK is experiencing an EV boom, demonstrated by vehicle sales reaching a 12-year high and market share expanding to over 4.2%. It is predicted this expansion will continue. Through the Clean Energy Ministerial 30@30 campaign, the UK and US have agreed to ensure at least 30% of new vehicle sales will be EVs by 2030.

Our Centrica mobility venture, Centrica UK home and Centrica business Solutions teams have seized the opportunity to facilitate the provision of EVs by making it possible for users to charge the vehicles electric battery via specialised charging points. We have electricians that can install, commission and maintain these charge points in private, public or workplace locations. These teams are already well established and have grown with the market size, ensuring we can seize opportunities and drive growth in this area.

Workplaces and public sites often do not have sufficient spare electricity capacity to host new electric vehicle chargers so a new meter connection is required from the grid to ensure supply. Our New Connections and Metering business is well positioned to undertake these activities. Additionally our Centrica Business Solutions team can assist with the distributed energy and power solutions with local generation such as CHP's solar & battery storage – these work well in conjunction with localised vehicle charging.

There are additional opportunities within the Electric Vehicle Industry value chain that Centrica IS exploring. such as part purchase of the management system Driivz which enables smart charging, dynamic load balancing, driver payments and in development fleet specific solutions

Time horizon

Current

Likelihood

More likely than not

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

2,000,000

Potential financial impact figure – minimum (currency)

-

Potential financial impact figure – maximum (currency)

-

Explanation of financial impact figure

We are realising revenues of around £2m annually for our charging infrastructure installation business (Centrica Mobility Ventures).

We have therefore opted to use this as the potential financial impact. This should increase with sector growth.

Strategy to realize opportunity

Centrica Mobility Ventures is focused on exploring material margin capture opportunities in the emerging electric vehicles and broader mobility space. We are focusing on three key segments of the EV market – automotive OEMs, fleets and property – whose current and likely future needs align to Centrica's core capabilities around energy supply, solutions and optimisation; infrastructure provision and management; insurance products and services. We are also partnering with other organisations to tackle some of the larger challenges that will be faced by corporate and consumer EV users as EVs are deployed at scale. Examples we are involved with include:

Optimise Prime: consortium-led, the world's largest trial of commercial electric vehicle charging, focusing on the implications of charging electric fleets and private hire vehicles on the electricity network.

Mobile EV Charging Feasibility Study: Centrica has agreed to play a key role as a supporting partner for a mobile EV charging study examining the practical realities of setting up a mobile EV charging service in Westminster.

We are the preferred supplier of charging points for several large fleet and car operators and suppliers. This will increase leads in parallel with car sales.

Between 2013-2018, we have invested £12.4m (Opex and cost of goods sold). In addition the Optimise Prime scheme requires around £18 million, including £1.6M from Centrica. Combined we have calculated the cost to realise as £14m.

Cost to realize opportunity

14,000,000

Comment

The business is a start-up and remains relatively small. Further detail on the examples provided;

Optimise Prime: Optimise Prime is a consortium-led trial funded by UK customer bills via Ofgem's Network Innovation Competition programme. The project is the world's largest trial of commercial electric vehicle charging, focusing on the implications of charging electric fleets and private hire vehicles on the electricity network. This project is significant due to its scale, but also in preparation for the mass adoption of EVs expected in the coming decade.

Mobile EV Charging Feasibility Study: Centrica has agreed to play a key role as a supporting partner for a mobile EV charging feasibility study funded by Innovate UK. This feasibility study will examine the practical realities of setting up a mobile EV charging service in Westminster, which has the highest EV penetration per capita of any London borough and almost no private parking for residents.

C2.5

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

	Impact	Description
Products and services	Impacted	Decarbonisation is driving significant change for the energy sector. In responding to these trends, we have identified both risks and opportunities relating to our products and services. Falling energy consumption due to increased energy efficiency and changing consumer behaviour could impact

		the profitability of our energy supply business and is considered a principal risk. We are responding to this by putting 'satisfying the changing needs of our customers' at the heart of our strategy. Correspondingly, there is an opportunity to provide new products and services to meet these changing needs. For example, the distributed generation and connected home products and services which we have identified as focus areas for long-term growth, driving the creation of our global Connected Home and Distributed Energy and Power (DE&P) businesses. We are targeting £1bn of revenue for each of these business areas by 2022, therefore expect this to be a significant source of future growth. We are increasing our investment in Connected Home and Distributed Energy & Power to £1.2bn over 2015-2020 in order to respond to these changes and ensure we are meeting emerging customer needs to better control their energy usage.
Supply chain and/or value chain	Impacted	The trends we have outlined in relation to the decarbonisation and decentralisation of energy are also impacting our customers. For example, analysis undertaken by the UK Department for Business, Energy and Industrial Strategy indicates that improving the efficiency of their operations, including energy costs, is a priority for businesses. We estimate that distributed energy solutions could in time save UK business 10-20% on their energy costs, equating to a £2-4 billion saving and our investment in our DE&P business is helping customers to turn energy into an opportunity, increasing their resilience and improving operational efficiency – this is therefore a significant opportunity. We have not currently identified any substantive risks to our supply chain related to climate change.
Adaptation and mitigation activities	Impacted for some suppliers, facilities, or product lines	For our power generation and exploration and production assets, we have identified risks relating to the increasing frequency and intensity of extreme weather events, such as flooding. Whilst these risks currently remain unlikely, the impacts of such events can be significant. For example, in 2008 our Brigg power station

		was closed for a short duration due to flooding, leading to reduced output and impacting profitability. To mitigate these risks, flood and extreme weather risks assessments are undertaken to ensure preparedness for such events. As Central Power Generation (CPG) is no longer core to our strategy, the financial significance of this risk to our business has reduced in significance, for example the CPG business contributed ~2% to Centrica's 2018 revenue. As we decrease the number of power generation and exploration and production assets we own and operate the costs associated with implementing mitigation measures correspondingly decreases.
Investment in R&D	Impacted	In responding to the opportunities we have identified for our DE&P and Connected Home businesses, we are shifting investment from our asset to customer-facing businesses to develop new products and services for our customers and have fundamentally repositioned Centrica. We are increasing our investment in Connected Home and Distributed Energy & Power to £1.2bn over 2015-2020 in order to support this new strategic direction and ensure we are meeting emerging customer needs to better control their energy usage and supply new and flexible technologies. An example of the pioneering technology and energy systems we are developing is the on-going 2018 Hackney (UK) trial enabling pier to pier trading of excess residentially generated renewable energy via blockchain through our Innovations business in partnership with other experts in this area.
Operations	Impacted	Risks and opportunities influenced by climate change have the potential to impact our operations in a number of ways, as long-term trends in the supply and demand for our products and services have the potential to change substantively. For example, changes in both short-term weather patterns and long-term climate have the potential to impact energy usage, impacting our ability to accurately forecast demand. Any mismatch between customer gas and electricity demand and what we have bought is subject to a cost, which can exceed £500K per day at current prices.

Other, please specify	We have not identified any risks or opportunities	No other impacts to report.

C2.6

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

	Relevance	Description
Revenues	Impacted	As outlined in our risk and opportunities (R&O) disclosure, climate-related R&O have the potential to lead to both negative and positive impacts on our revenues. Decreased revenues may occur due to a reduced demand for energy, driven by improved efficiency and/or changing consumer behaviour. For example, currently dual fuel customers in the UK with smart meters reduce their consumption by 3.1% on average. Increased revenues may be realised from our focus areas for growth, in distributed energy generation and connected home products, which help customers to control and understand their energy usage. We are increasing our investment in Connected Home and Distributed Energy & Power to £1.2bn over 2015-2020 in order to respond to these changes and ensure we are meeting emerging customer needs to better control their energy usage. We are targeting an annual revenue of £1 billion for each of our growth businesses, DE&P and Connected Home, by 2022
Operating costs	Impacted for some suppliers, facilities, or product lines	Where climate-related R&O are influencing our direct operations, this has the potential to impact operating costs. Managing risks influenced by climate change may lead to increased operating costs in some areas of our business, including through the reduced accuracy of energy demand forecasting, due to increase weather and climate variability. Risk mitigation to predict and manage demand are estimated to cost our business in excess of £100K per annum.
Capital expenditures / capital allocation	Impacted	In responding to the macro-trends driving the energy transition, including R&O relating to the decentralisation of energy due to low carbon technologies, we are fundamentally repositioning our business. As a result, we are shifting capital allocations from our asset businesses, including Central Power Generation and

		Exploration and Production to our customer-facing businesses, including DE&P and Connected Home. From 2015-2020, we expect to commit an additional £1.2 billion of operating and capital resources to our growth focus areas and correspondingly are reducing our resource allocation to our asset portfolio by about £1.2 billion over this period
Acquisitions and divestments	Impacted	In response to the key trends that are driving the energy transition, we have materially repositioned our portfolio through a number of divestments and acquisitions. This shift in strategy reflects our belief that the energy system is in transition, in part due to climate change. Over 2016-18 we invested £300m in incremental investments to support growth in our customer-facing businesses, including for instance the acquisition of REstore in 2017 for £59m, Europe's leading demand response aggregator, helping energy markets to become more flexible and efficient and in 2018 we acquired Vista Solar, a United States based solar engineering, procurement and construction (EPC) company. Following our strategic review in 2015, we have divested many of our large scale, centralised gas fired power assets in NA and the UK. Our portfolio now comprises almost entirely of small, peaking plants. Additionally, we divested 31% of our Exploration and Production business and placed our remaining 69% into the joint venture Spirit Energy. We are increasing our investment in Connected Home and Distributed Energy & Power to £1.2bn over 2015-2020 in order to respond to these changes and ensure we are meeting emerging customer needs to better control their energy usage.
Access to capital	Not impacted	We do not currently anticipate that R&O influenced by climate change will impact our access to capital. Our business strategy positions us to play an important long-term role in enabling the low carbon transition through helping customers cut their carbon emissions, decarbonising the energy system and reducing our own carbon emissions.

Assets	Impacted for some suppliers, facilities, or product lines	R&O influenced by climate change, including both changes in long-term climate averages and the increased intensity and/or frequency of extreme weather events, have the potential to negatively impact our exploration and production (E&P) and power generation assets. Whilst the impacts of previous events such as flooding at our Brigg power station in 2008 have not been substantive, the magnitude of the impact will depend on the severity of the event and the specific asset impacted. Revenue is impacted by the ability to operate, and we plan for a certain amount of scheduled and unscheduled shut-downs of assets. This planning is proportional to the likelihood of an event occurring. For our E&P and power generation asset portfolio this is low in relation to physical damage or impairment of assets directly linked to weather and other acute or chronic physical climate specific effects. The financial impact from physical climate risks could be significant, for example a shutdown at a nuclear power station would cost approximately £1.3m per day, or £260K based on our 20% equity share. This loss of revenue would be proportional to the significance of the event, for example a catastrophic event would be equivalent to the loss of anticipated revenue across the remaining lifetime of an asset.
Liabilities	Not yet impacted	As an energy company, we are subject to a number of regulatory obligations due to the costs of government environmental and energy efficiency policies. For example, the Energy Company Obligation (ECO), the latest phase of which, ECO3, runs until March 2022. This phase started in December 2018, 2 months late, following a regulatory hiatus. The scheme marks another step-change in ECO being solely targeted at low income and fuel poor households with restriction on heating measures It is unclear what happens beyond March 2022. The UK Government will consult Autumn 2020 at the latest. The impact on our financial planning would come nearer scheme end (in 2022) when we will likely know if we are going to be subject to any penalties following non-compliance in delivery. Additionally, this may influence our financial planning if choose to spend more in 2021/22 to ‘carry-over’ to a future scheme if commercially advantageous.
Other	We have not identified any risks or opportunities	No other areas to disclose.

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, qualitative and 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. Strategic influence - The Board & Executive have dedicated annual meetings to review and develop strategy. Externalities assessed include market, competitive, technology, regulatory & policy aspects all of which are influenced by climate change. All Divisions attend these meetings and decisions are fed into business plans as appropriate.

In 2015 the Board undertook a strategic review resulting in the transformation of Centrica; moving from an asset-based business to a customer focused energy & services company. This shift reflects our belief that the energy system is in transition, due in part to climate change. Decarbonisation of the

energy system will increasingly be driven by trends such as decentralisation, digitisation & increased customer control in how energy is produced & used. We are investing £1.2bn in establishing Distributed Energy & Power (DE&P) & Connected Home BUs, which we believe will play a significant role in decarbonising the energy sector.

Furthermore, the Executive Committee complete ad-hoc strategic reviews, looking at key topics which present opportunities or threats. Recent examples include the future of mobility which identified the growth potential of electric vehicles and led to the establishment on Centrica Mobility Ventures. , Decarbonisation policy and decarbonisation of heat in the UK have also been assessed and led to the formation of a cross-business low-carbon heat working group to shape Centrica's response to this risk and opportunity.

ii. Reduction targets - National and international climate targets significantly influence our strategy. Our performance goals are embodied within our Climate Change Ambitions 2030, with three key focus areas; helping customers cut their carbon emissions in line with Paris, which influences our development of products and services to enable carbon reduction , decarbonising the energy system which provides direction to our business plans to deliver 7GW of flexible, distributed and low carbon technology by 2030 & reducing our own carbon emissions in line with Paris by 2030 and establishing plans for net zero by 2050. This target helps drives continual efficiency within our operations and influences our investment decisions

iii. Business decisions in 2018 - Climate change is driving innovation & technology advancement across the energy sector. In rsponse, we established Centrica Innovations, with £100m funding to identify, incubate & accelerate technologies that can help deliver products & services that meet our customers' needs and enable the low carbon transition. In 2018 key investments included in Driivz, an Israeli start-up that offers end-to-end software solutions for electric vehicle charging and in EtaGen, a California based startup developing a Linear Generator that offers businesses clean and flexible onsite power. We also created a dedicated Mobility Ventures team to develop global low carbon mobility solutions for consumers and businesses.
Further, we acquire a 50% stake in Barrow Green Gas, the UK's largest biomethane supplier who provides almost half of the green gas used by British homes and businesses. We enhanced our renewable offer to businesses and the public sector through the acquisition of Vista Solar, a leading Californian solar company.

All of these investments are in key growth areas for Centrica and demonstrate how climate-related issues are integrated into our business objectives and strategy.

iv. Policy and regulatory influence - Policies that encourage renewable power generation & discourage fossil fuel generation led to Centrica establishing a DE&P business. UK regulations on smart meters also influenced our decision to become a leader in delivering new smart technologies

and tariffs for homes and businesses to give them greater insight and control into how they use & save energy. The ban announced in 2018 on the sale of new petrol and diesel cars in the UK after 2040 has provide the confidence for us to establish Centrica Mobility Ventures.

vii. Strategic advantage - Expanding our Connected Home business enables us to differentiate Centrica beyond energy supply. We have sold over 3.3m products to help customers save time, money and carbon including 1.1m smart thermostats. This builds on our leadership position in the UK's mandated smart meter roll-out, having installed over 6.8m meters since 2009. Smart meters offer customers opportunity to reduce their energy use & provide us a platform to offer smart-enabled products. Our team of 15,000 engineers and technicians give us strategic advantage in installing energy efficient products and services, which we calculate has saved customers 35mtCO2e since 2008.

DE&P has significant growth potential & can help reduce climate impacts by revolutionising energy generation & consumption. We are giving large-scale energy users the ability to take control of their energy by providing end-to-end customer solutions, including flexible & local generation, battery storage, smart building management systems, & energy trading technologies. This helps them optimise their energy use, unlock new sources of revenue for growth & reduces emissions.

Viii – Paris Agreement - Paris was a turning point in the response to climate change which Centrica firmly supports. We believe the bottom-up set of commitments and the ratcheting mechanism will help drive forward the energy transition. This alongside other measures such as Carbon Budgets helps us invest with confidence in products & services that empower our customers to reduce their emissions through energy efficiency alongside greater choice & control over their energy.

Oil & Gas - With gas being a major source of heating and a back-up to intermittent renewables, it is widely accepted that it will play a transition role in the move to a lower carbon future. While gas remains an important part of the energy landscape, we will continue to trade gas and E&P will continue to play a non-core role in our portfolio operated separately by a joint venture, Spirit Energy.

Electricity - The ability to store and balance energy is vital for renewables to thrive and our strategy is to gain advantage from this. We are developing large-scale battery storage projects such as our 49MW Roosecote Battery, and creating 'virtual power plants', helping large-scale energy users reduce or shift demand to manage grid imbalance. This plays a crucial role in supporting renewables and reduces the need for fossil-fuelled back-up power plants. We provide services to renewable power generators to optimise the trading of their energy into markets across Europe and are leading in the advancement of smart and flexible markets to support decarbonisation and renewable growth through our Cornwall Local Energy Market trial.

C3.1d

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

Climate-related scenarios	Details
Other, please specify National Grid Future Energy Scenarios, Centrica central case drawing from IEA	We use long-term macro-trends across scenarios in our strategic planning. Numerous variables are influenced by climate change, such as commodity demand or the cost of carbon. Our major strategic review in 2015 covering all our businesses involved market trend analysis out to 2035, including future changes in global oil and gas markets and changing trends in demand and customer behaviour. We created our own central case to best reflect our diverse portfolio and markets but relevant sources such as the IEA were used for inputs such as primary energy demand, power market evolution, the demand for energy services and the impact of connected devices and the 'internet of things'. We ran 20-year scenarios (out to 2035) for all parts of the business as this provides the optimal balance between the desire to assess long term risks and opportunities and the precision of forecasts. The results were communicated to our shareholders and the markets in July 2015. High level conclusions included continued growth in primary energy demand, with the fastest growing contribution coming from renewables, nuclear and gas. Whilst we recognise that fossil fuels have a role in the near-term, we concluded that climate policies and advances in technology will be effective in decoupling energy growth from carbon emissions. We also anticipate a growth in the demand for distributed energy, energy services and connected devices which will disrupt many energy markets. The results greatly influenced our strategy and led to our Board overseeing a fundamental transformation of Centrica and all its businesses; moving the company from a centralised asset-based business towards a customer focused energy services company. This shift in strategy reflects our belief that the energy system is in transition, increasingly due to societies response to climate change. Following the strategic review, we have successfully divested or de-commissioned the majority of our centralised power generating assets and placed our oil and gas E&P assets into a joint venture. We are now recycling £1.2bn investment from these asset businesses into establishing market-leading customer facing businesses, such as Distributed Energy & Power (DE&P) and Connected Home. These will play a significant role in decarbonising the energy sector in an increasingly decentralised, democratised and digitised energy system.

Other, please specify National Grid Future Energy Scenarios	Following the report from the Task Force on Climate-related Financial Disclosures, we have started to undertake forward-looking scenario analyses out to 2050 to enhance our long-term planning on climate change. In 2018 we completed a detailed analysis of our UK business against four different UK scenarios including 2 degrees, using National Grid's Future Energy Scenarios these being the most relevant to our sector and primary market. This analysis enabled us to stress test the resilience of our strategic planning and business objectives under these scenarios and provided valuable insights into the range of risks and impacts associated with the energy transition on Centrica's UK businesses whilst also highlighting the significant opportunities and potential growth areas that Centrica is already engaged in through its new strategy. A overall conclusion was that our targeted growth businesses DE&P and Connected Home are resilient and indeed advantaged in a 2-degree scenario against our central case due to increased demand for storage, demand-side response, smart technologies, time-of-use tariffs and low-carbon mobility. These insights have led to further, more details strategic analysis in selected areas such as de-carbonising heat in the UK, the results of which be used in the development of our business plans and strategic response to this risk and opportunity. The analysis also identified the need to undertake further strategic analysis on the de-carbonisation of heat, a key challenge for the energy sector. This work has commenced and is on-going. Work has also now started on refreshing this work in 2019 and extending the analysis to our next key market, North America. where we will be assessing how climate change and societies response is influencing attributes such as customers' needs, competitor offerings and emerging business models

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.

The implications of climate change are far-reaching and the energy sector is at the forefront of the need to respond.

In 2015, we announced a new strategy focused on ‘satisfying the changing needs of our customers’ through energy supply and services. Our strategy is based on a world moving towards a low carbon future and should be considered our low carbon transition plan, positioning us to play a key role in enabling the energy transition.

From our analysis of long-term trends and scenarios, we believe decarbonisation of the energy system will be driven by three major trends; decentralisation, digitisation and increased customer control in how energy is generated, managed and used.

To enhance our resilience and competitiveness in this low carbon transition, we are investing £1.2bn to 2022, in establishing market-leading Distributed Energy & Power and Connected Home businesses. We also established Centrica Innovations, our £100m start-up investment incubator, to develop the energy solutions of tomorrow. Beyond 2022 we intend to grow these businesses and use our Innovations team to identify, incubate and launch new customer-focussed technologies that keep us at the forefront of technology advancements powering the energy transition.

Building on this, we recently introduced our Climate Change Ambitions setting ourselves the challenge of ‘enabling all our customers to use energy more sustainably’. To deliver on that mission, we have 3 focus areas; helping our customers reduce their emissions, enabling the wider energy system to decarbonise and reducing our own emissions.

We have set targets and ambitions out to 2030 in each of these focus areas, aligned to the objectives of the Paris Agreement.

We have committed to helping our customers reduce their emissions by 25% by 2030 (from 2015). We do not act in isolation and we cannot drive the required reductions alone, however we do act in three key ways; for example through direct action providing customers with energy insights and advice, energy optimisation services and low-carbon & flexible solutions. We are aiming to deliver at least 3% points of the challenge through these means.

For example, Centrica Business Solutions has created an integrated solutions platform which helps business customers better manage their energy use, through insights, using Panoramic Power sensors, optimisation through our demand side response (DSR) platform and generation or storage with solar or battery, effectively creating ‘virtual power plants’ reducing the need for fossil-fuelled back-up power plants.

For domestic customers, we have developed a suite of home energy management tools which allow them to take control of their energy like never before. A good example is our remote heating control Hive Active Heating, which enables up to 12% reduction in energy usage simply through greater

control. In total, we have sold over 3.3m Connected Home products, providing opportunities for customers to better manage their energy and save time, money and carbon.

We will deliver further reductions through helping customers indirectly by enabling the wider energy system to decarbonise, which in turn lowers the carbon intensity of the energy they consume. We also use our influence in engaging with government and policy makers to help establish the conditions required for de-carbonisation.

Secondly, if renewables are going to thrive then the ability to store and balance energy is vital. We are enabling the de-carbonisation of the wider electricity system and increasingly the gas system, by providing distributed, flexible and low-carbon solutions such as CHP, Batteries, Solar, DSR. We are targeting to have delivered at least 7GW of flexible, distributed and low-carbon technologies by 2030.

Additionally, as subsidies for renewables are phased out, Centrica provides the necessary financial structuring and route to market services for renewable asset owners and mid to long-term renewable Power Purchase Agreements for electro-intensive sectors.

We are also conscious that gas will only continue to have a role if it can decarbonise. In 2018 we acquired a 50% stake in Barrow Green Gas, which is the UK's largest supplier of biomethane.

Finally, having reduced our global carbon emissions by over 80% in the past decade, we have increased our efficiency target to reduce our 'Internal Carbon Footprint' by 35% by 2025, from 2015. This, along with our on-going shift in investment focus, will ensure our global emissions decline in line with Paris by 2030. We also recognise the IPCC 1.5°C special report and the imperative to reach net zero emissions by 2050. Therefore, we have committed by 2030 to have developed and announced our plans to reach next zero by 2050.

These Climate Ambitions 2030 are our performance objectives for our low carbon transition plan, designed to ensure we are not only resilient to, but can thrive in a decarbonised world.

C4. Targets and performance

C4.1

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

Absolute target

C4.1a

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

Target reference number

Abs 1

Scope

Other, please specify

Other: Scope 1+2 (location-based) + 3 (business travel)

% emissions in Scope

2

Targeted % reduction from base year

35

Base year

2015

Start year

2016

Base year emissions covered by target (metric tons CO2e)

91,380

Target year

2025

Is this a science-based target?

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

% of target achieved

26

Target status

Underway

Please explain

The target encompasses the internal carbon footprint of Centrica's core property, fleet and travel, spanning all brands and subsidiaries globally.

It is a sub-target of our global target detailed in Abs 1 and 2, and concentrates on areas where our employees have the greatest ability to influence a decline in emissions. This enables us to drive engagement on carbon reduction and benchmark operational performance against other businesses with similar impacts.

Although the percentage of emissions from our internal carbon footprint is immaterial compared to our total footprint, and is therefore not consistent with science-based targets, the management of these impacts remain important. The target empowers us to innovate and trial new technologies that aid our ability to provide market-leading products and services for customers, while engaging employees to improve understanding and stimulate the mitigation of adverse environmental impact.

The majority of carbon savings will come from reducing our property scope 1 and 2 emissions through energy efficiency measures, solar, distributed generation, storage and LED installations alongside business efficiencies. We will also target a reduction in scope 1 emissions from across our fleet and company cars via take-up of more efficient or electric/hybrid models as part of our ambition for all our fleet to be electric by

2030. We have publicly signed up to the EV100 initiative to demonstrate leadership in the electric vehicle transition.

Target reference number

Abs 2

Scope

Scope 1+2 (location-based)

% emissions in Scope

100

Targeted % reduction from base year

28

Base year

2015

Start year

2016

Base year emissions covered by target (metric tons CO2e)

2,083,227

Target year

2030

Is this a science-based target?

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

% of target achieved

73

Target status

Underway

Please explain

As part of our Responsible Business Ambitions, we have committed to reduce our global carbon emissions in line with Paris and ultimately aim to achieve net zero by 2050. This target represents our medium term 2030 milestone which is 15 years on from the 2015 base year. It encompasses 100% of our global scope 1 and 2 emissions (normalised for divestment & acquisitions) and we consider the target to be science-based, given it meets the CDP 2.1% year-on-year reduction criteria which we view to be best practice.

The reduction in our global emissions will be achieved through our continued shift away from carbon intensive assets towards lower carbon products and services. We will also continue to drive efficiencies across our operations including asset and customer-focused businesses. We will further reduce our property emissions via energy efficiency and low carbon measures such as solar, distributed generation, storage and LED installations alongside wider business efficiencies. An additional focus on driving down emissions from employee travel and fleet will be maintained and delivered through initiatives such as our ambition to convert all our fleet to electric/hybrid models by 2030 as well as encouraging employees into lower carbon company cars and utilising alternatives to travel with technology like video conferencing.

The target embodies our transition to a lower carbon enterprise and empowers us to innovate and trial new technologies that aid our ability to provide market-leading products and services for customers, while engaging employees on understanding and mitigating environmental impact.

Target reference number

Abs 3

Scope

Scope 1+2 (location-based)

% emissions in Scope

100

Targeted % reduction from base year

95.8

Base year

2015

Start year

2016

Base year emissions covered by target (metric tons CO2e)

2,083,227

Target year

2050

Is this a science-based target?

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

% of target achieved

20

Target status

Underway

Please explain

With the introduction of our Responsible Business Ambitions, we have committed to reduce our global carbon emissions in line with Paris and ultimately achieve net zero by 2050. This target represents our long-term target, 35 years from the 2015 base year. The target encompasses 100% of our global scope 1 and 2 emissions (normalised for divestment & acquisitions) and we consider it to be science-based, as it meets the CDP 2.1% year-on-year reduction criteria and fundamentally aims to achieve net zero by mid-century which we consider to be best practice and in line with a 1.5°C target.

We have been open and transparent that we do not yet have firm and grounded plans to deliver all of the emission reductions to achieve net zero, although we have committed to develop and publish these plans by 2030.

We know, however, that the vast majority of our net zero ambition will be achieved through a continued shift in investment away from carbon-intensive assets towards lower carbon, decentralised assets, coupled with an increasing focus on energy management and services delivered through integrated platforms enabled by digitalisation. We will also continue to focus on operational efficiency through innovation, technology and behavioural change.

C4.2

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

Target

Other, please specify

Deliver flexible, distributed and low carbon technology

KPI – Metric numerator

Capacity (GW) of flexible, distributed and low carbon technology delivered

KPI – Metric denominator (intensity targets only)

n/a

Base year

2015

Start year

2015

Target year

2030

KPI in baseline year

0

KPI in target year

7

% achieved in reporting year

42

Target Status

Underway

Please explain

Our ability to store and balance energy is vital to decarbonising the energy system by maximising renewable and low carbon energy. We have set a Responsible Business Ambition to enable the energy system transition, by targeting 7GW of flexible, distributed and low carbon technology by 2030. This will be delivered by providing technologies and services such as solar, batteries, demand-side-response and Combined Heat and Power (CHP). Our 7GW ambition is equivalent to over 10% of current UK peak demand.

Part of emissions target

n/a

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Target

Other, please specify

Help our customers reduce emissions

KPI – Metric numerator

% reduction in average customers energy related carbon emissions

KPI – Metric denominator (intensity targets only)

n/a

Base year

2015

Start year

2016

Target year

2030

KPI in baseline year

0

KPI in target year

3

% achieved in reporting year

51

Target Status

Underway

Please explain

Centrica was one of the first companies to report its global scope 3 emissions and we are now entering a new phase, where we have set a target to reduce our customers' emissions.

As part of our Responsible Business Ambitions, we want to help our customers reduce emissions by 25% by 2030 and towards this, we will directly target a 3% reduction by providing products and services that enable them to use energy more sustainably. This target therefore represents the direct portion of our delivery and will specifically be achieved through offerings such as energy insights from smart meters and remote sensors, optimisation services via technology like smart home heating controls and demand-side-response, alongside low carbon solutions including solar, batteries, heat pumps, CHP and electric vehicle charging.

We will aim to deliver much of the remaining portion of the 25% ambition through indirect initiatives. This involves enabling the wider energy system to decarbonise by delivering 7GW of flexible, distributed and low carbon technologies while influencing policy makers to create the conditions required for decarbonisation

Part of emissions target

n/a

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Target

Zero/low-carbon vehicle

KPI – Metric numerator

Electric Vehicles as a % of our total fleet

KPI – Metric denominator (intensity targets only)

n/a

Base year

2015

Start year

2015

Target year

2030

KPI in baseline year

0

KPI in target year

100

% achieved in reporting year

3

Target Status

Underway

Please explain

Centrica has led the way with early trials and schemes for electric vehicle (EV) adoption, having already completed well over a million miles with our EV fleet.

We are committed to further transitioning all of our fleet to EVs by 2030 where practicable and economically viable. This will be done in a targeted manner, focusing on maximising impact and introducing ultra-low emissions alternatives where EVs are not workable. And with a fleet of over 13,000 vehicles globally and British Gas having the third largest commercial fleet in the UK, this will make a material difference in decarbonising our emissions from travel.

To demonstrate our commitment, we have signed up to EV100, a global initiative that brings together forward-looking companies who want to accelerate the transition to EVs and make electric transport the new normal by 2030. As part of this group, we can importantly share our

learning and together, drive the transition forward.

Note: In line with EV100, we define EV as including Battery EV (BEV) and Plug-in Hybrid EV (PHEV).

Part of emissions target

n/a

Is this target part of an overarching initiative?

EV100

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	4	4,344
To be implemented*	9	2,040,220
Implementation commenced*	11	439
Implemented*	9	375,486
Not to be implemented	1	446

C4.3b

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

Initiative type

Energy efficiency: Building fabric

Description of initiative

Other, please specify

Insulation and upgrade of heating measures

Estimated annual CO2e savings (metric tonnes CO2e)

50,000

Scope

Scope 3

Voluntary/Mandatory

Mandatory

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

17,000,000

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

109,000,000

Payback period

4 - 10 years

Estimated lifetime of the initiative

>30 years

Comment

Energy Company Obligation (ECO)

In 2013, the UK Government introduced ECO which requires major energy suppliers to fund the installation of energy efficiency products, such as insulation and boilers, in order to reduce residential energy use and carbon emissions. In the 2018-22 obligation phase, measures will be directed towards fuel poor homes.

In 2018, we invested £109m* and installed more than 62,000 measures which we estimate will deliver total lifetime savings of 2mtCO2e**, equating to an annual saving of around 50,000tCO2e**.

*Costs include administration fees.

**Carbon savings include the following ECO components: CERO and the Heating Cost Reduction Obligation (HHCRO). HHCRO is reported to Ofgem in lifetime heating bill savings only and has been converted into lifetime annual carbon savings achieved to highlight the extent of the emissions saved through ECO including in-use factor.

Initiative type

Energy efficiency: Building services

Description of initiative

Building controls

Estimated annual CO2e savings (metric tonnes CO2e)

114,900

Scope

Scope 3

Voluntary/Mandatory

Voluntary

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

60,830,000

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

87,000,000

Payback period

1-3 years

Estimated lifetime of the initiative

Ongoing

Comment

Connected and smart products

Products like smart meters* and the Connected Home's Hive Active Heating, can generate carbon savings by giving customers greater understanding and control over their energy.

In 2018, we installed 1.4m smart meters in homes and businesses as part of the mandated smart meter roll-out. These installs are estimated to save around 100,000tCO2e by giving customers greater insight into their energy consumption and costs, enabling them to take action to reduce their use. By the end of 2018, we had installed 6.8m smart meters since 2009, which is more than any other energy supplier in the UK.

Our Hive connected home products give customers greater control over their energy. In particular, we have sold over 300,000 Hive Active Heating smart thermostats in 2018, providing customers with the ability to control their heating and hot water remotely from anywhere at any time. This makes customers' lives simpler and smarter while reducing potential for wasting energy by never having to heat an empty home. This is projected to save customers on average 14,900tCO2e a year.

*While the smart meter roll-out is a supplier mandated initiative, 'voluntary' has been selected for the overall row response. This is because

smart meters are only one aspect of our offering, coupled with the continued focus for growth on providing voluntary Connected Home products.

Initiative type

Low-carbon energy installation

Description of initiative

Solar PV

Estimated annual CO2e savings (metric tonnes CO2e)

60,969

Scope

Scope 3

Voluntary/Mandatory

Voluntary

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

8,120,000

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

66,800,000

Payback period

4 - 10 years

Estimated lifetime of the initiative

16-20 years

Comment

Solar products

In 2018, we completed solar installations totalling over 82MWp for residential and commercial customers. Annually, these products are expected to generate savings that total around 60,969tCO2e and more than £8m on energy bills. This total includes solar delivered via our fund for businesses with SolarCity, based on our 40% equity share.

Initiative type

Energy efficiency: Building services

Description of initiative

Combined heat and power

Estimated annual CO2e savings (metric tonnes CO2e)

18,350

Scope

Scope 3

Voluntary/Mandatory

Voluntary

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

15,147,090

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

145,000,000

Payback period

4 - 10 years

Estimated lifetime of the initiative

11-15 years

Comment

Combined Heat and Power (CHP) generators

In 2018, we installed 113 CHP generators. CHPs can cut carbon emissions by up to 25% and we calculate that during 2018, our installations reduced customer emissions by around 18,350tCO2e. We estimate the CHPs will also save nearly £15m on energy bills for customers.

Initiative type

Energy efficiency: Processes

Description of initiative

Other, please specify: Fleet and company cars

Estimated annual CO2e savings (metric tonnes CO2e)

4,763

Scope

Scope 1

Voluntary/Mandatory

Voluntary

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

2,511,100

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

1,200,000

Payback period

<1 year

Estimated lifetime of the initiative

6-10 years

Comment

Fleet and company cars

We continued to implement our global low carbon fleet roadmap in 2018, resulting in an 11% reduction that saved 4,763tCO2e.

This was in part driven by an 18% reduction in UK commercial fleet emissions. Savings were primarily made by replacing 115 vehicles with more efficient models, improving our first-time fix rates when servicing customers' homes and businesses and reducing the number of vehicles required to serve customers by 10%. Use of electric and hybrid vehicles have also helped lower emissions and we continued to progress towards our ambition for a 100% zero carbon enabled British Gas fleet by 2030. And as part of our EV100 commitment, we are committed to further transitioning our wider fleet to EVs where practicable and economically viable by 2030.
We calculate this has saved around £2.5m in 2018, based on the ratio of petrol and diesel used alongside the litres of fuel saved, and applied the average price per litre for the fuel type.

We also encouraged more employees into low emission company cars, including 480 employees driving electric and hybrid options. This has reduced our average tailpipe emissions by 8% to 94gCO2/km.

Initiative type

Energy efficiency: Processes

Description of initiative

Other, please specify: Air travel

Estimated annual CO2e savings (metric tonnes CO2e)

77

Scope

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

31,000

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

400,700

Payback period

4 - 10 years

Estimated lifetime of the initiative

16-20 years

Comment

Centrica property – Building Services projects including LED lighting

In pursuit of our internal carbon footprint target, we install energy efficient lighting and monitoring devices at key sites.

In the UK, LED lighting as well as a range of other initiatives such as zoning and boiler upgrades were delivered across our Cardiff, Leicester and Leeds offices as well as at our National Distribution Centre in Leicester. These improvements have resulted in an annual reduction of 77tCO2e and a saving of £31,000.

Initiative type

Energy efficiency: Building services

Description of initiative

Other, please specify: Air compressors

Estimated annual CO2e savings (metric tonnes CO2e)

125,000

Scope

Scope 3

Voluntary/Mandatory

Voluntary

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

18,000,000

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

300,000,000

Payback period

4 - 10 years

Estimated lifetime of the initiative

11-15 years

Comment

Nuclear equipment reliability programme

EDF Energy has substantially improved the operational performance of its nuclear power stations, of which we have had a 20% share since 2009. Increased operational performance has been achieved through a sustained focus on improving equipment reliability and operational excellence across its plants, processes and people.

Significant investments have been made to repair and replace unreliable parts while a preventative maintenance programme and world-class standards have been rolled-out to ensure the fleet runs smoothly. EDF have also delivered stronger training, governance and worker practices to ensure their people, partners and supply chain, fully understand and embody their high standards and practices.

These efforts have delivered an underlying reduction in unplanned capability loss factor (a measure of unplanned plant losses) from 14% to 11.7% in 2018, the equivalent of an improvement of 1.8TWh in 2018, generating a carbon saving of 0.63mtCO2e. Based on our 20% equity share, this equates to 0.13mtCO2e.

The methodology compares 2009 underlying UCLF to 2018UCLF, multiplies by 2018 maximum generation of 78TWh and then multiplies by the CCGT carbon intensity value (0.349kg/KWh).

Note; this includes both scope 1 and 3 reductions, we have entered as 3 which is the majority.

C4.3c

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

Method	Comment
Compliance with regulatory requirements/standards	Mandatory schemes We and many of our customers are required to comply with ECO, the CRC Energy Efficiency Scheme, the Energy Savings Opportunity Scheme (ESOS) and the EU Emissions Trading Scheme. We have used the platforms provided by legislation to underpin the strategic shift in our business towards becoming an energy services company, in addition to focusing on energy efficiency within our own operations.
Other other	Corporate strategy Core to our customer-facing business is our strategy to satisfy the changing needs of our customers through the provision of energy services and solutions, enabling the transition to a low carbon future. The business model for Centrica Consumer is focused on providing energy supply alongside in-home services, peace of mind, home energy

	management and home automation, giving customers the ability to secure greater control and insights that can reduce energy use, bills and carbon emissions. Likewise, our Centrica Business strategy is built around energy supply as well as wholesale energy, energy insight, energy optimisation and energy solutions, providing large-scale energy users such as commercial, public sector and industrial customers, with the ability to take control of their energy and use it more efficiently. All of this is delivered through strong customer-facing brands such as British Gas, Direct Energy, Hive and Centrica Business Solutions. Our commitment to enabling the transition to a low carbon future is backed by a commitment to invest £1.2bn in our Connected Home and Distributed Energy and Power businesses during 2015-20.
Dedicated budget for low-carbon product R&D	Dedicated budgets for technology and innovation R&D In 2015, we created a new global Connected Home business in which we will invest £500m during 2015-20. This investment will enable us to continue to develop innovative products and services that connect customers with their entire homes and help them to better manage their energy usage. Our Connected Home brand, Hive, was created in 2013 and has a dedicated R&D budget to expand its family of products which include smart thermostats, plugs, lights and cameras as well as window, door and motion sensors. We also set up Centrica Innovations, a new venture to ensure Centrica identifies opportunities and is aligned to new technology that will benefit our customers. As part of this, we will invest up to £100m between 2017-22 in innovative start-ups, giving us access to technology and entrepreneurial resources that will help satisfy the changing needs of our customers and enable the low carbon transition. We have people scanning key technology hubs around the world, such as in Seattle, Houston, London, Cambridge and Tel Aviv, putting us at the forefront of the latest innovations and integrating learning within the Group.
Dedicated budget for other emissions reduction activities	Dedicated budgets for low carbon technologies Our UK Home Industry Development team is responsible for fulfilling two key mandatory obligations placed on major UK energy suppliers - that of upgrading our customers to smart meters and delivering energy efficiency improvements under the Energy Company Obligation, which help reduce our scope 3 customer emissions. Our budget enables us to deliver energy efficiency obligations on time and in the most cost-effective way in order to minimise the cost per tonne of carbon saved.

Dedicated budget for energy efficiency	Internal carbon emission reduction targets By setting and publishing carbon reduction targets that have executive support, it has stimulated our investment and focus on delivering low carbon technologies that reduce our internal carbon footprint.

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

Energy efficiency measures

As part of our mandated delivery of the Energy Company Obligation (ECO), we delivered a variety of energy efficiency measures to reduce energy costs and lower emissions (scope 3). Core measures delivered include wall insulation, loft/room/roof insulation, underfloor insulation and energy efficient boilers.

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

Other, please specify: Deemed scores based on Reduced data Standard Assessment Procedure (RdSAP) methodology as set in ECO, with in-use factor overlay

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

0

Comment

The ECO scheme commenced in April 2013 and has been extended in recent years, with the current scheme period running from December 2018 to March 2022. Heating measures are now restricted and we anticipate that the most common measures delivered in this phase of the scheme, will be cavity and loft insulation. We have closed our delivery business in favour of using a third party model to fulfil our ongoing obligation and in 2018, more than 62,000 measures were installed which we estimate will deliver annual savings of around 50,000tCO2e.

While ECO enables valuable cost and carbon savings for the community, we do not currently generate revenue from the activity.

Level of aggregation

Product

Description of product/Group of products

Solar

We help customers reduce reliance on fossil fuels by investing in alternative renewable energy sources, such as solar energy (customers' scope 1 and 2).

In the UK and North America, we offered solar panels to commercial, industrial and public sector customers via our DE&P business, helping large-scale energy users generate and manage their energy more intelligently.

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

Other, please specify

Please see comment box

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

0.04

Comment

In 2018, solar installations totalled 82MWp which we estimate will save around 60,969tCO2e annually. This is well over double the volume we delivered in 2017 and includes installations via our Solar City fund for businesses where we have a 40% equity share. The increase largely reflects the continued expansion of solar as part of our Distributed Energy & Power (DE&P) offering.

Methodologies;

UK: Internal calculation method using average irradiance of 900kWh/kWp and using BRE Standard Assessment Procedure (SAP 2012) CO2 emissions factor for grid electricity of 0.35156 kg/kWh. 14.4p/kWh used for savings.

North America: Carbon savings calculated using average annual productivity per KWh and Environment Protection Agency (EPA) emission factors.

Level of aggregation

Group of products

Description of product/Group of products

Connected and smart products

Our global Connected Home products can reduce energy's impact on the environment by giving customers greater control over their entire home (customers' scope 1 and 2). From smart thermostats, lights, plugs and cameras to smart window, door and motion sensors, our Hive ecosystem of products and services can be controlled conveniently with just a few taps on the app, meaning customers never have to heat an empty home or light an empty room.

Smart meters support the Connected Home and help customers cut their carbon emissions by providing greater visibility over how much energy is being used and its costs in real-time. This empowers customers to take control of their energy and identify ways to reduce consumption (customers' scope 1 and 2).

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

Other, please specify

Please see comment box

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

0.65

Comment

Cumulatively, we have sold nearly 3m Connected Home products. This includes over 300,000 Hive Active Heating smart thermostats sold in 2018, enabling a growing number of customers to control their heating and hot water from anywhere at anytime. Based on an analysis into gas usage for customers with Hive Active Heating, we estimate that customers with the smart thermostat in 2018 were able to save an average of around 14,900tCO2e annually. Our analysis also shows that customers will save around £120 a year on their energy bill. To further grow our

capabilities, we are investing £500m between 2015-20 in our global Connected Home business.

We are leaders in the mandated smart meter roll-out and by the end of 2018, we had installed 6.8m in homes and businesses since 2009. We estimate that the 1.4m smart meters installed in 2018 will save around 100,000tCO2e annually. Our analysis of smart meter consumption is based on a sample of British Gas customers with smart meters and compares consumption before and after installation with comparable British Gas customers who have standard meters. In a recent sample of our residential customers with smart meters, we found credit customers had reduced their dual fuel consumption by around 3.1%, saving £34 on average per annum across gas and electricity.

Methodologies;

Avoided emissions for Connected Home products are calculated based on the volume of energy saved and its associated emissions, using recognised global standards.
Smart meters savings are based on British Gas methodology approved by the Department for Business, Energy and Industrial Strategy (BEIS).

Level of aggregation

Group of products

Description of product/Group of products

Time-of-use (TOU) and prepaid tariffs

For many years, Direct Energy has offered TOU products that incentivise customers to cut energy demand at peak times. This reduces strain on the grid and the need to turn on additional power stations to meet demand, avoiding associated carbon emissions from power generation (customers' scope 2). Similarly, prepayment tariffs have also shown a reduction in electricity consumption (customers' scope 1 and 2).

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

Other, please specify: North America EPA emission factors

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

1

Comment

We see our Direct Energy customers on the Free Saturdays/Sundays/Weekends/Evenings plans, shift 15% of their energy use each year to the free off-peak period when generation is typically more efficient in order to reduce emissions. In 2018, we also continued to offer a voluntary (opt-in) behavioural demand-response programme called Reduce Your Use Rewards, which has 42,000 pre-paid and 169,000 post-paid customers enrolled. Customers are incentivised to save 10% on monthly energy bills if they lower usage during peak hours in the afternoon on a weekday, over the course of a one-month period during Texas' hottest period. The programme works in partnership with the grid operator, ERCOT, who triggers the alert for customers to shift their energy usage.

Direct Energy's prepay tariff in Texas has additionally demonstrated a reduction in electricity consumption by an average of 9.6%, equating to a drop in demand of more than 100,000MWhs per year. We calculate that customers with prepayment plans in North America, could save around 7,685tCO2e each year.

Level of aggregation

Product

Description of product/Group of products

Panoramic Power

Our global Panoramic Power offering brings together wireless sensor technology and cloud-based analytics, to give businesses actionable insights into energy use. This intelligence helps optimise performance, deal with potential equipment failures before they happen and reduce energy inefficiencies which reduces costs and carbon emissions.

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

Other, please specify: Avoided emissions are calculated on the volume of energy saved and its associated emissions, using recognised global standards.

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

0.01

Comment

Over 17,000 Panoramic Power sensors were deployed in 2018. This brings our total to more than 70,000 sensors in use across 2,500 sites in over 50 countries. Together, the sensors collect around 18bn data points that can empower efficiencies. On average, we see Panoramic Power customers save around 10-20% on energy bills by reducing usage which can also lower emissions.

Level of aggregation

Product

Description of product/Group of products

Combined Heat and Power (CHP) generators

CHP enables the energy demands of commercial properties to be met in an efficient manner (customers' scope 1 and 2). The units generate electricity on site while capturing usable heat produced in the process, rather than drawing electricity off the grid and using a traditional gas boiler for the equivalent heat. This process can be significantly more efficient than most grids, and therefore comes with an associated carbon saving. CHP's also remove transition and distribution loses and can enable flexible grid services, supporting the transition to a low carbon energy mix.

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

Other, please specify: Avoided emissions are calculated by the difference between the direct emissions from the CHP units and the emissions associated with the use of electricity and gas required to produce an equivalent amount of energy using the replaced technologies.

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

0.26

Comment

In 2018, we installed 113 CHP units worldwide. The majority of these were in the UK, with additional activity in Belgium, Netherlands, Italy, North America and Ireland. We also have equity in and/or maintain over 1,100 units worldwide.

The generators are capable of cutting carbon emissions by up to 25% when compared to grid and boiler heat generation. We calculate that the CHPs we installed in 2018, delivered in year savings of around 18,350tCO2e.

Level of aggregation

Group of products

Description of product/Group of products

Energy Performance Contracts (EPC) / Optimisation Services

We provide bespoke advice, product installations and operational assistance that enhances the energy efficiency and control of large-scale energy users, which reduces costs and carbon emissions (customers' scope 1 and 2).

Improvements typically involve replacing industrial-sized boilers with more efficient versions and upgrading to LED lighting.

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

Other, please specify: Please see comment box

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

0.25

Comment

We guarantee customers with a certain level of financial and/or carbon savings over the length of the contracts which generally span up to 15 years. In the UK during 2018, our EPCs created annual savings of 7,500tCO2e.

Methodology;

Energy saving calculations vary depending on the technology and are calculated in kWh in the first instance. Financial savings are calculated using rates agreed in each contract and may include a price escalator/degradation. Carbon savings are calculated using agreed carbon rates, usually employing values published by DEFRA at the time of writing the Investment Grade Audit.

Level of aggregation

Product

Description of product/Group of products

Demand-side response

We control 1,183MW of flexible power under demand-side response contracts. Under these contracts, we manage the energy use of energy intensive customers by curtailing unnecessary usage at peak times and/or exporting electricity to the grid when its needed. This acts as a low-to-zero carbon frequency response mechanism and avoids having to start-up or ramp-up a marginal unit generator (typically gas fired turbine), which would be far more carbon intensive.

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

Other, please specify: Please see comment box

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

0.07

Comment

The 1,183MW of flexible power under management is spread across customers located in the UK, France, Germany and Belgium. In 2018, the flexible power we had under management increased by over 300MW compared to 2017 and demonstrates our growing focus in enabling grid flexibility.

We are undertaking work to quantify the carbon savings associated with flexible capacity under management.

Methodology;

GHG Project protocol. Involves comparing the intensity of the DSR flexible response offered by calculating the build and operating margins against equivalent services. This provides the carbon benefit to the wider ‘system/grid’ and not for each individual customer.

Level of aggregation

Product

Description of product/Group of products

Electric Vehicle (EV) charging points

To build the infrastructure needed to support the mass adoption of lower carbon transport, we have chosen to become a lead installer of EV charge points in the UK (customers' scope 1).

Installations are concentrated in locations where vehicles can utilise the charge points frequently, such as at commercial properties, motorway service stations and car manufacturers.

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

Other, please specify

Avoided emissions are calculated by comparing the carbon associated with the electricity used to charge a vehicle for a given distance, with the emissions associated with a similar class of petrol or diesel vehicle for the same distance.

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

0.02

Comment

We have installed around 17,000 EV charge points across the UK since 2013. In recent years, we have moved away from installing smaller charge points to focus on larger installations that can service more cars and in 2018, we added 70 of these larger charge points to the network. To support EV take-up, Centrica Business Solutions and UK Home have also introduced tariffs for EVs that give customers a cheaper and greener way to charge their vehicle during off peak hours. By 2022, the tariff is projected to save 24,500tCO2e.

With the UK's Road Zero strategy proposing a ban on the sale of petrol and diesel vehicles by 2040, EV-enablement is a growing focus for the UK and our business. To further maximise the adoption of EVs, Centrica Mobility Ventures tests and runs pilots of new products and services that can support EVs becoming more mainstream. For example, we are working to address the challenge of charging in areas where there is no private parking for residents, via our role as a supporting partner for a mobile charging feasibility study which is funded by Innovate UK and is expected to progress into a trial in 2019.

C-EU4.6

(C-EU4.6) Describe your organization's efforts to reduce methane emissions from your activities.

Reducing methane emissions is an important part of how we manage our energy assets. In doing so, we can not only reduce the impact on climate change but also ensure the safety of our people and assets.

Power Generation: Centrica's power stations have bespoke management systems in place with procedures for operation and maintenance which comprehensively incorporates hydrocarbon leak prevention, detection and mitigation. All power stations operate under a 14001:2015 certified management systems and have an accurate understanding of their aspects, impacts and the necessary requirements to monitor and prevent methane emissions. In addition to this, any locations where a leak is considered higher risk, we employ an autonomous, high accuracy methane leak detection system. When triggered, the system is set up to notify the control room immediately, so that the relevant area can be isolated and the leak stopped as soon as possible. Leaks can typically occur in the gas Above Ground Installation and gas turbines. In 2018, we experienced some minor leaks at our Brigg Power Station which were detected and fixed immediately. No other leaks were detected at any of our other power stations.

Exploration & Production and Storage: We have hydrocarbon reduction measures at all installations which we actively manage through a process safety framework. These measures include monitoring the integrity of subsea wells as well as active inspection and management of process equipment at offshore installations as well as onshore terminals. We focus efforts on improving Asset Integrity and incorporating management of small bore tubing, flexible hoses and bolted joints which are higher risk areas for leaks. Measuring methane release volumes is particularly difficult for fugitive emissions given their size and consequently, it is difficult to quantify improvements although we believe we are making continued progress in controlling emissions due the robust processes we have in operation. Although there are no regulations in place, Spirit Energy is participating in an industry-wide initiative in the Netherlands to identify practical and economic ways of reducing methane emissions from the Dutch oil and gas producers. It is hoped that this proactive and collaborative approach will improve identification of best available techniques (BATs) to achieve significant reductions in methane emissions, which can subsequently be shared across all Spirit Energy assets. As part of this collaboration, our Dutch assets have reviewed quantification methodologies of methane released, identified potential methane sources and we are currently using this information to develop a best-in-class methane reduction plan that can be imminently implemented. At our Centrica Storage Easington site, optical leak surveys using infra-red cameras, have been conducted. This enables us to visualise and pinpoint potential sources of fugitive emissions and guard against leaks. In 2019, a gas management improvement plan will be submitted to the Environment Agency as part of the Humber Gathering System Project permit variation. The plan identifies and implements opportunities to further reduce the amount of gas flared and vented, as well as further recovery of primary gas product.

C5. Emissions methodology

C5.1

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

Scope 1

Base year start

January 1, 2008

Base year end

December 31, 2008

Base year emissions (metric tons CO2e)

10,781,982

Comment

No change from previous submission

Scope 2 (location-based)

Base year start

January 1, 2008

Base year end

December 31, 2008

Base year emissions (metric tons CO2e)

113,098

Comment

No change from previous submission

Scope 2 (market-based)

Base year start

January 1, 2008

Base year end

December 31, 2008

Base year emissions (metric tons CO2e)

113,098

Comment

Market Based Scope 2 not calculated so Location based used as a proxy

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.

Defra Voluntary 2017 Reporting Guidelines
European Union Emission Trading System (EU ETS): The Monitoring and Reporting Regulation (MMR) – General guidance for installations
IPCC Guidelines for National Greenhouse Gas Inventories, 2006
IPIECA's Petroleum Industry Guidelines for reporting GHG emissions, 2nd edition, 2011
ISO 14064-1
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)

1,681,541

Start date

January 1, 2018

End date

December 31, 2018

Comment

n/a

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

Our default reporting is location-based; however, we also calculate the market-based figure.

C6.3

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

Reporting year

Scope 2, location-based

38,737

Scope 2, market-based (if applicable)

40,886

Start date

January 1, 2018

End date

December 31, 2018

Comment

For our operations we purchase power with supplier specific emissions in the Republic of Ireland and the UK. The supplier specific sources are lower than the national grid average for the countries. However, in some countries and where we are not the operator, such as our UK nuclear interests, we do not have supplier specific information and therefore apply the country residual mix. This has resulted in our market-based Scope 2 being slightly higher than our location based.

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?

Yes

C6.4a

(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.

Source

Fugitive and venting emissions from non-operated offshore assets. These emissions will include small quantities of natural gas that mainly consists of methane.

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

No emissions from this source

Relevance of market-based Scope 2 emissions from this source (if applicable)

No emissions from this source

Explain why this source is excluded

We do not currently collect fugitive and venting emissions from our UK offshore assets (gas and oil platforms) where we have an equity share but are not the operator.

This approach reflects the difficulty in obtaining this data and the immateriality of the data. We have previously estimated that excluded emissions are 0.1% of Centrica's scope 1 emissions and hence considered 'Not Relevant'

The non-operated offshore assets do not import electricity and hence the selection of 'No emissions from this source'

Source

Our oil and gas exploration and production business became an independent joint venture (Spirit Energy) at the beginning of 2018. As such, we no longer require them to report the immaterial emissions associated with their offices and fleet vehicles

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

Emissions are not relevant

Relevance of market-based Scope 2 emissions from this source (if applicable)

Emissions are not relevant

Explain why this source is excluded

The office and fleet emissions for Spirit Energy are immaterial (and therefore not relevant) in comparison to the terminal and platform emissions. By excluding the requirement for Spirit Energy to report these emissions, we have reduced the reporting burden of the independent company, while not changing the emissions materially. Based on 2018 values the exclusion equates to 0.04% of Centrica's footprint

C6.5

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

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO2e

3,273,857

Emissions calculation methodology

The Purchased Goods and Services emissions have been calculated to be approx. 2.46% of our scope 3 emissions, using the online Quantis Scope 3 Evaluator tool. The tool calculates the emissions associated with scope 3 categories using spend data and category types, these equate to 3,273,857 tCO2e

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

0

Explanation

We do not currently collect emissions data from suppliers

Capital goods

Evaluation status

Not relevant, explanation provided

Explanation

Centrica did not undertake any capital projects in 2018 of a magnitude that we believe would generate emissions that were relevant from the perspectives of size, stakeholder interest or risk. Our guideline materiality threshold is 5% of our emissions.

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

Evaluation status

Relevant, calculated

Metric tonnes CO2e

56,114,830

Emissions calculation methodology

This relates to power purchased for resale to customers, but excludes traded power (which is sold to non-end-users).

The activity data is power purchased for sale (MWh) and the associated carbon is based on site specific emissions where we have site specific

contracts and grid averages for electricity purchased on the open market in the UK and Ireland. In North America, the carbon emissions are calculated using national emission factors. Together, these total 52,427,345 tCO2e.

Additionally, the Transmission and Distribution (T&D) losses of the power we consume and the power we purchase equate to 3,073,621 tCO2e.

Note: Where relevant, the scope 2 location-based approach has been used.
Lastly the scope 3 emissions associated with our power and fuel consumption are calculated based on our scope 1 and 2 emissions. These equate to 613,864 tCO2e.

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

0

Explanation

Centrica does not generate all the power that our customers require and hence, we purchase power from third parties and resell it to our customers. This is one of our main sources of scope 3 emissions and therefore very relevant to the company.

The T&D losses are from both the power we resell and the power we consume at our own assets.

The scope 3 fuel and energy related activities emissions associated with our scope 1 and 2 are also estimated using the Quantis Scope 3 Evaluator tool.

In total, these equate to 42% of our scope 3 emissions.

Upstream transportation and distribution

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

5,044

Emissions calculation methodology

Emissions from the fuel consumed by the supply and support ships used in relation to our offshore oil and gas platforms. Data based on the fuel consumption data provided by the shipping contractors converted to ghg emissions using the relevant DEFRA factors

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

100

Explanation

These emissions equate to 0.004% of our scope 3 emissions and therefore are not relevant in terms of magnitude. Our influence over the emissions is limited and they are not deemed an area that exposes us to risk.

Waste generated in operations

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

16,292

Emissions calculation methodology

Emissions from waste have been calculated from our spend on waste services. Using the Quantis Scope 3 Evaluator tool

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

0

Explanation

Carbon emissions associated with waste in our supply chain are not considered relevant from a materiality perspective (16,292 tonnes), relative to other scope 3 emissions (0.01%). However, they have been calculated using the Quantis Scope 3 Evaluator tool based on spend.

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO2e

13,309

Emissions calculation methodology

Business travel emissions include those arising from business flight and rail use, employees using their own vehicles for business purposes and helicopter flights for personnel to offshore assets. The flights (11,512 tCO2e) and rail (262tCO2e) are calculated based on journey distance provided by our travel provider, multiplied by DEFRA emission factors. Emissions from employees using their own vehicles for business purposes (1,167 tCO2e) are based on expense claims, using a generic emission factor for car mileage. Helicopter flights (368 tCO2e) are based on fuel consumption multiplied by DEFRA emission factors.

In total these equate to 13,309tCO2e

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

0

Explanation

While this is only a small component of our scope 3 emissions (0.01%), it is an area that we can partly influence. Rail and flights and some grey fleet are therefore part of our internal carbon footprint target.

Employee commuting

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

20,400

Emissions calculation methodology

Calculated using Quantis Scope 3 Evaluator tool from spend and employee number data

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

0

Explanation

This is an immaterial (0.02%) component of our scope 3 emissions and we have limited ability to influence the emissions. However, emissions have been calculated using the Quantis Scope 3 Evaluator tool

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Explanation

Our reporting approach includes upstream leased assets in our scope 1 and 2 emissions. Therefore, this field is not relevant.

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Explanation

The vast majority of our emissions associated with the transportation and distribution of our products are included within the following source of scope 3 emissions: Fuel-and-energy-related activities (not included in scope 1 or 2). This is because these emissions relate to T&D losses from power and gas distribution.

We have immaterial other downstream transportation and distribution emissions.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Explanation

As Centrica's primary products are electricity and gas that are used as end products, the emissions from the processing of sold intermediate products is not relevant.

Use of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

73,641,793

Emissions calculation methodology

Emissions are calculated based on the quantity of gas sold to residential and business customers (energy units), multiplied by the emission factor for natural gas. This totals 66,675,793 tC02e.

Crude oil production emission calculations are based on the CDP scope 3 Oil and Gas Guidance generic conversion and emission factors. This results in 6,966,000 tC02e.

Emissions from traded gas (which is sold to non-end-users) are excluded

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

0

Explanation

This is a relevant component of our scope 3 emissions in respect to its size (55% of our scope 3) and is relevant to the sector.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Explanation

From a carbon perspective, we sell small volumes of products that require end of life treatment, relative to the quantity of gas, electricity and services that we supply. Using revenue as an indicator of magnitude, Connected Home's (the most relevant business) revenue is approximately 0.6% of the revenue of the gas and electricity focused businesses. This size in conjunction with stakeholder interest mean these emissions are not considered relevant

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Explanation

Centrica only leases a few properties. The emissions have previously been calculated to be immaterial at approximately 0.00004% They, do not expose the organisation to risk and hence, are not considered relevant.

Franchises

Evaluation status

Not relevant, explanation provided

Explanation

Centrica operates Franchises in the UK and North America, including the Dyno Franchise. We do not track franchisee carbon emissions; however, previously these calculated emissions equated to less than 0.001% of our scope 3 and therefore are not relevant from a size perspective. Subsequent to this, we have reduced the size of our franchises.

Investments

Evaluation status

Not relevant, explanation provided

Explanation

Centrica is not a financial institution and does not provide financial services relevant to Scope 3

Other (upstream)

Evaluation status

Not evaluated

Explanation

-

Other (downstream)

Evaluation status

Not evaluated

Explanation

-

C6.7

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

Yes

C6.7a

(C6.7a) Provide the emissions from biologically sequestered carbon relevant to your organization in metric tons CO2.

Row 1

Emissions from biologically sequestered carbon (metric tons CO2)

1,438

Comment

n/a

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

0.000058

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

1,720,278

Metric denominator

unit total revenue

Metric denominator: Unit total

29,800,000,000

Scope 2 figure used

Location-based

% change from previous year

61

Direction of change

Decreased

Reason for change

The 2018 financial intensity figure is 0.000058, presented as tonnes CO2e per £ of total revenue. For clarity we typically present this as tonnes CO2e per £million revenue. This equates to 58.

This is a 61% decrease on 2017's intensity of 148 TCO2e/£m and is a result of our scope 1 and 2 emissions decreasing by 59%, mainly due to a full year's less emissions following the sale of two of our UK gas fuelled power stations in autumn 2017; while our revenue increased by 6%. The power station divestments are part of our strategic plan to focus more on our customer products and services; and less on owning and operating emission intensive assets.

The reduction of our Internal Carbon Footprint emissions as a result of fleet and office emission reduction activities such as cleaner vehicles and more efficient BMS management has also contributed to the reductions

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Intensity figure

53

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

718,382

Metric denominator

megawatt hour generated (MWh)

Metric denominator: Unit total

13,531,429

Scope 2 figure used

Location-based

% change from previous year

57

Direction of change

Decreased

Reason for change

The 2018 Central Power Generation carbon intensity figure is 53. This is a 57% decrease on 2017's intensity of 125. This is mainly due to the sale of two of our UK gas fuelled power stations in H2 2017; meaning the relative proportion of our 'low carbon' nuclear power generation increased. These divestments are part of our business strategy to move our focus away from high carbon emitting assets towards a focus on customer products and services

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	1,632,656.3	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	46,156	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	2,117	IPCC Fourth Assessment Report (AR4 - 100 year)
HFCs	0.9	IPCC Fourth Assessment Report (AR4 - 100 year)
PFCs	0	IPCC Fourth Assessment Report (AR4 - 100 year)
SF6	604	IPCC Fourth Assessment Report (AR4 - 100 year)
NF3	0	IPCC Fourth Assessment Report (AR4 - 100 year)
Other, please specify Chlorodifluoromethane (HCFC-22)	6.8	IPCC Fourth Assessment Report (AR4 - 100 year)

C-EU7.1b

(C-EU7.1b) Break down your total gross global Scope 1 emissions from electric utilities value chain activities by greenhouse gas type.

	Gross Scope 1 CO2 emissions (metric tons CO2)	Gross Scope 1 methane emissions (metric tons CH4)	Gross Scope 1 SF6 emissions (metric tons SF6)	Gross Scope 1 emissions (metric tons CO2e)	Comment
Fugitives	0	2	0	59	These emissions relate to fugitive emissions from the gas turbines (unburnt hydrocarbons in turbine exhaust

Combustion (Electric utilities)	714,472	37.7	0	715,414	The methane and carbon dioxide from the combustion of gas and diesel at our power stations
Combustion (Gas utilities)	0	0	0	0	
Combustion (Other)	0	0	0	1,846	
Emissions not elsewhere classified	0	0	0	0	n/a

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	635,530
North America	15,968
Ireland	680,546
Norway	264,606
Other, please specify Rest of World	84,891

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)
UK Home	42,421
Ireland	680,546
North America Home	12,467
Connected Home	82
Distributed Energy & Power	220,101
Energy Marketing & Trading	107
Spirit Energy	613,099
Centrica Storage	112,258
Corporate Centre	460

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
Electric utility generation activities	717,319	This refers to the Scope 1 emissions from central power generation as this is the energy intensive activity of the sector. As a result of the sale of S. Humber and Langage power station, plus the extended outage of Whitegate power station, the emissions are much reduced in 2018 We do not offset or have credits that reduce our gross Scope 1.

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)
United Kingdom of Great Britain and Northern Ireland	32,299	34,273	113,836	0
North America	4,957	4,957	10.63	0
Ireland	1,155	919	2,784	0
Other, please specify Rest of World	326	737	1,384	0

C7.6

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

By business division

C7.6a

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

Business division	Scope 2, location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
UK Home	6,527	5,483
Ireland	1,155	919
North America Home	4,990	4,990
Connected Home	297	410

Distributed Energy & Power	14,950	15,298
Energy Marketing & Trading	703	1,054
Spirit Energy	8,032	11,081
Centrica Storage	1,761	1,379
Corporate Centre	322	272

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	1,341	Decreased	0.03	In the UK, we increased our 2018 self-generated renewable electricity by 4,735MWh, resulting in the equivalent not being purchased from the grid and the associated grid average emissions (1341/4,155,233) x 100 = 0.03%

Other emissions reduction activities	6,425	Decreased	0.154	We have a target to reduce our Internal Carbon Footprint emissions by 20% by 2025 based on a 2015 baseline. The 2018 Scope 1&2 emission reductions associated with this equate to 6,425 tonnes. These are as a result of reductions in our office and fleet emissions, LED lighting as well as a range of other initiatives such as zoning and boiler upgrades were delivered at our buildings, as well as an ongoing office rationalisation and consolidation programme is providing savings of 1,661 tonnes A 5% reduction in UK commercial fleet emissions was made by replacing 115 vehicles with more efficient models, improving our first-time fix rates when servicing customers' homes and businesses and we reduced the number of vehicles required to serve customers by 10%. Use of electric and hybrid vehicles also helped reduce emissions. Overall the fleet emission savings equate to 4763 tonnes. (6,425/ 4,155,233) x 100 = 0.15%
Divestment	2,074,364	Decreased	50	In the second half of 2017 we sold two large power stations (Langage and South Humber); interests in Canadian and Trinidad & Tobago E&P; and our solar business in North America. The power stations were significant emitters and as such, reduced our emissions by approx. 1.3 million tonnes in 2018 compared with 2017. The sale of our E&P Canadian and Trinidad & Tobago businesses, and the divestment of 31% of the remaining E&P assets with the formation of Spirit Energy, resulted in approx. 747,000 tonne reduction in emissions. The divestments were part of our company strategy to focus on downstream products and services as opposed to high emitting up stream assets

				Combined these divestments resulted in 50% reduction in our Scope 1 & 2 emissions (2,074,364/ 4,155,233) x 100 = 49.9%
Acquisitions	162	Increased	0	Centrica purchased RE-store at the end of 2017, resulting in a relative increase in emissions in 2018. Re-store is a demand response aggregator company and therefore office based. As such its emissions are relatively low at 162 tonnes in 2018. This equates to 0.004% increase in our footprint (163/4,155,233) x 100 = 0.004%
Mergers	0	No change	0	No mergers in 2018
Change in output	355,065	Decreased	8.5	In 2018 we had outages at some of our nuclear interests resulting in a decrease in output and an increase in imported power, resulting in a 4,309 tonne increase in our nuclear emissions. An extended outage at our Whitegate power station (Bord Gais Energy) resulted in a reduction of 311,930 tonnes being emitted. In 2018, there was a reduction in the output and therefore the emissions in relation to the CHPs we own on behalf of our customers. This resulted in a 82,189 tonne emission reduction. In 2018, our gas storage business, CSL, moved to gas production mode, resulting in a 26,598 tonne increase in their emissions.

				Three power stations (Brigg, Kings Lynn and Peterborough) increased their production slightly resulting in an increase of 8,148 tonnes emitted. Together these equate to a 355,065 tonne reduction in emissions following changes in output (8.5% reduction) (355,065/4155,233) x 100 = 8.5%
Change in methodology	0	No change	0	We have had no changes in our carbon accounting methodology in 2018
Change in boundary	0	No change	0	We have had no changes in our carbon accounting boundaries in 2018
Change in physical operating conditions	0		0	No emission changes are attributed to changes in physical operating conditions
Unidentified	6,057	Increased	0.15	A 6,057-tonne increase in emissions cannot be attributed to any single factor (6057/4,155,233) x 100 = 0.15%
Other	3,979	Decreased	0.1	The closure of Barry Power station resulted in nearly a 4000-tonne reduction in emissions. (3,979/4,155,233) x 100 = 0.1%

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?

Location-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	No
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)	LHV (lower heating value)	60,392	7,179,879	7,240,271
Consumption of purchased or acquired electricity		0	128,630	128,630
Consumption of self-generated non-fuel renewable energy		6,431		6,431
Total energy consumption		66,823	7,308,509	7,375,332

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	Yes
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

LHV (lower heating value)

Total fuel MWh consumed by the organization

6,856,580

MWh fuel consumed for self-generation of electricity

6,832,181

MWh fuel consumed for self-generation of heat

18,610

MWh fuel consumed for self-generation of cooling

4,653

MWh fuel consumed for self-cogeneration or self-trigeneration

1,136

Comment

The majority of our gas consumption is used by our thermal power stations for the generation of electricity for sale

Fuels (excluding feedstocks)

Other, please specify: Shipping fuel

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

22,142

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

22,142

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Support and supply ships for CSL platform

Fuels (excluding feedstocks)

Wood Chips

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

592

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

592

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Biomass boiler

Fuels (excluding feedstocks)

Petrol

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

61,214

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

61,214

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Fleet vehicle fuel

Fuels (excluding feedstocks)

Biodiesel

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

59,800

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

59,800

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Includes biodiesel component of forecourt diesel

Fuels (excluding feedstocks)

Diesel

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

234,650

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

234,650

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Excludes biodiesel component of forecourt fuel

Fuels (excluding feedstocks)

Gas Oil

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

5,293

MWh fuel consumed for self-generation of electricity

4,805

MWh fuel consumed for self-generation of heat

488

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Partly used as back up fuel at a power station

C8.2d

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

Biodiesel

Emission factor

2.62694

Unit

kg CO2e per liter

Emission factor source

UK Government GHG Conversion Factors for Company Reporting 2018

Comment

Diesel average biofuel blend for vehicles

Diesel

Emission factor

2.68779

Unit

kg CO2 per liter

Emission factor source

UK Government GHG Conversion Factors for Company Reporting 2018

Comment

-

Gas Oil

Emission factor

2.97049

Unit

kg CO2e per liter

Emission factor source

UK Government GHG Conversion Factors for Company Reporting 2018

Comment

-

Natural Gas

Emission factor

0.20465

Unit

metric tons CO2e per MWh

Emission factor source

UK Government GHG Conversion Factors for Company Reporting 2018

Comment

We use site specific EFs for our upstream plant gas consumption based on analysis of calorific value. However the downstream gas consumption EF is based on the HHV

Petrol

Emission factor

2.20307

Unit

kg CO2e per litre

Emission factor source

UK Government GHG Conversion Factors for Company Reporting 2018

Comment

Petrol average forecourt biofuel blend for vehicles

Wood Chips

Emission factor

56.88051

Unit

kg CO2e per metric ton

Emission factor source

UK Government GHG Conversion Factors for Company Reporting 2018

Comment

Other

Emission factor

3,228.84

Unit

kg CO2e per metric ton

Emission factor source

UK Government GHG Conversion Factors for Company Reporting 2018

Comment

Fuel Oil

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	1,891,791	64,207	6,427	6,427
Heat	592	592	592	592
Steam	0	0	0	0
Cooling	0	0	0	0

C-EU8.2e

(C-EU8.2e) For your electric utility activities, provide a breakdown of your total power plant capacity, generation, and related emissions during the reporting year by source.

Coal – hard

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

-

Lignite

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

-

Oil

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

-

Gas

Nameplate capacity (MW)

1,019

Gross electricity generation (GWh)

1,885

Net electricity generation (GWh)

1,828

Absolute scope 1 emissions (metric tons CO2e)

711,692

Scope 1 emissions intensity (metric tons CO2e per GWh)

389

Comment

Brigg, Barry and Peterborough power stations generated approximately half the power they generated in 2017

Biomass

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

-

Waste (non-biomass)

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

-

Nuclear

Nameplate capacity (MW)

1,784

Gross electricity generation (GWh)

11,704

Net electricity generation (GWh)

11,704

Absolute scope 1 emissions (metric tons CO2e)

6,689

Scope 1 emissions intensity (metric tons CO2e per GWh)

0.57

Comment

As a non-operated asset we do not receive gross generation data so have used net for gross as well. Figures are provided on the basis of our 20% equity stake

Geothermal

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

-

Hydroelectric

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

Wind

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

We sold our remaining Renewables interests in H1 2017.

Solar

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

-

Other renewable

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

-

Other non-renewable

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

-

Total

Nameplate capacity (MW)

2,803

Gross electricity generation (GWh)

13,589

Net electricity generation (GWh)

13,532

Absolute scope 1 emissions (metric tons CO2e)

718,381

Scope 1 emissions intensity (metric tons CO2e per GWh)

53

Comment

All figures are based on equity

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

No purchases or generation of low-carbon electricity, heat, steam or cooling accounted with a low-carbon emission factor

Low-carbon technology type

-

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

-

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

-

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

-

Comment

We did not purchase any low carbon energy

C-EU8.4

(C-EU8.4) Does your electric utility organization have a transmission and distribution business?

No

C9. Additional metrics

C9.1

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

Description

Other, please specify

Water

Metric value

76,697

Metric numerator

m3

Metric denominator (intensity metric only)

N/A

% change from previous year

5.2

Direction of change

Decreased

Please explain

An annual target is set for office water in our main UK offices.

The reduction of water consumption reduces the use of water resources, but also reduces the emissions associated with water management and treatment.

Description

Waste

Metric value

926

Metric numerator

Tonnes

Metric denominator (intensity metric only)

N/A

% change from previous year

21

Direction of change

Decreased

Please explain

Annual targets are set for our UK office and learning centre waste. A 21% reduction compared to the previous year was achieved. The reduction in waste equates to reduced resource consumption and reduced emissions associated with production and waste disposal.

C-EU9.5a

(C-EU9.5a) Break down, by source, your total planned CAPEX in your current CAPEX plan for power generation.

Primary power generation source	CAPEX planned for power generation from this source	Percentage of total CAPEX planned for power generation	End year of CAPEX plan	Comment
Gas	50,000,000	5	2019	We announced in 2016, a £180m investment programme into new flexible power plants across the country. This covered the replant at Kings Lynn (CCGT), two gas reciprocating engines (one at Brigg Power Station and one at Peterborough Power Station) and a 49MW battery project at Roosecote. The two gas reciprocating engines and the battery were completed in the second half of 2018, with Kings Lynn expected to be completed in 2019. We have announced that Capex in 2019 will be around £1bn, although no further power generation projects have been awarded the 15 year Capacity Market contracts and therefore no other projects are currently committed to. This results in minimal Power Generation capex in 2019 beyond the completion of the Kings Lynn project.

C-EU9.5b

(C-EU9.5b) Break down your total planned CAPEX in your current CAPEX plan for products and services (e.g. smart grids, digitalization, etc.).

Products and services	Description of product/service	CAPEX planned for product/service	Percentage of total CAPEX planned products and services	End of year CAPEX plan
Other, please specify remaining Capex	We have announced that we will spend around £1bn of capex in 2019, of which Oil and Gas will be ~£500m. The remaining Capex will be split across all other business areas including our DE&P and Connected Home businesses. We are unable to disclose how much capex is being invested in specific products and services as it is commercially sensitive.	500,000,000	50	2019

C-CO9.6/C-EU9.6/C-OG9.6

(C-CO9.6/C-EU9.6/C-OG9.6) Disclose your investments in low-carbon research and development (R&D), equipment, products, and services.

Investment start date

January 1, 2018

Investment end date

December 31, 2018

Investment area

Services

Technology area

Other, please specify: Smart Systems

Investment maturity

Large scale commercial deployment

Investment figure

38,000,000

Low-carbon investment percentage

0-20%

Please explain

Connected Home made an operating loss of £85m in 2018 and a further £38m capitalised investment in our Connected Home business which supplies new technologies and energy efficient solutions to residential customers. Hive products, including the smart thermostat, allow customers to better understand and manage their energy usage.

Investment start date

January 1, 2018

Investment end date

December 31, 2018

Investment area

Services

Technology area

Distributed energy resources

Investment maturity

Large scale commercial deployment

Investment figure

106,000,000

Low-carbon investment percentage

0-20%

Please explain

Our Distributed Energy and Power (DE&P) business made an operating loss of £81m in 2018 and a further £106m capitalised investment in our Distributed Energy and Power business which supplies new technologies, flexible generation and energy efficient solutions to commercial and industrial customers.

Investment start date

January 1, 2018

Investment end date

December 31, 2018

Investment area

R&D

Technology area

Digital technology

Investment maturity

Small scale commercial deployment

Investment figure

100,000,000

Low-carbon investment percentage

61-80%

Please explain

In 2017, Centrica announced the creation of a new venture ‘Centrica Innovations’ (CI) to identify, incubate and accelerate new technologies and innovations, with £100m dedicated to the fund over five years. To date, Centrica has invested in nine projects, including:
- 4 Companies in the distributed/ decentralised energy system space. These include (i) a blockchain solution that standardises electric grid data and provides software tools so utilities can run local energy markets (ii) Linear Generator provider that offers businesses affordable flexible and reliable clean power from natural gas
- 4 companies in the connected world space. These include (i) technology specialists in industrial cyber security (ii) Cutting edge in home monitoring and fall detection, empowering people to live independently for longer
- 1 company in the electric vehicle space, which is an end-to-end software solutions provider for electric vehicle charging

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	No third-party verification or assurance

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

PwC Assurance Statement 2018.pdf

basis_of_reporting_2018.pdf

Page/ section reference

Assurance Statement: Page 1

Basis of reporting: page: Page 30

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

PwC Assurance Statement 2018.pdf

basis_of_reporting_2018.pdf

Page/ section reference

Assurance Statement: Page 1

Basis of reporting: page: Page 30

Relevant standard

ISAE 3410

Proportion of reported emissions verified (%)

100

C10.2

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

Yes

C10.2a

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

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C4. Targets and performance	Progress against emissions reduction target	ISAE3410	We have a target for the reduction of our Internal Carbon Footprint emissions (offices, fleet & business travel) by 20% by 2025 (subsequently increased to 35%) from a 2015 baseline. Progress against target was assured in 2017 and is in a triennial program. Assurance Statement: Page 1 Basis of reporting: page: Page 58

[1]PwC Assurance Statement 2017.pdf

[2]basis_of_reporting_2017.pdf

C11. Carbon pricing

C11.1

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

Yes

C11.1a

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

EU ETS

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

81.6

Period start date

January 1, 2018

Period end date

December 31, 2018

Allowances allocated

439,059

Allowances purchased

824,255

Verified emissions in metric tons CO2e

1,239,546

Details of ownership

Facilities we own and operate

Comment

The verified emissions are the sum of Centrica's EU ETS data from all relevant countries including; UK, Ireland, Norway and Netherlands. However, the '% of scope 1 emissions covered by the ETS' is slightly higher as our scope 1 emissions include non-operated assets that operate under other companies' ETS.

C11.1d

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

EU Emissions Trading System (EU ETS)

The cost of carbon has become an important factor in all investment decisions taken by Centrica in the power and gas markets. We actively use all available methods to manage our exposure to the risk of rising carbon costs through abatement and emissions trading. Centrica has been actively trading in the EU Emissions Trading market for over ten years and has also been active in the international carbon credit market. We aim to meet the cost of our carbon emissions in the most economical manner for our customers and shareholders. Centrica believes that flexibility is important to help installations manage their carbon exposure. We are constantly looking to manage our carbon position using both abatement and carbon credits. Using the trading markets enables us to effectively manage cost exposures arising with regards to carbon pricing through the EU ETS. We also have in place robust procedures to ensure verification of our emissions and subsequent surrender of sufficient emissions allowances is carried out in line with the scheme requirements.

An example of our strategy for complying with EU ETS is our Merchant Power business, which factors in a carbon escalator price (based on the EU ETS price) into the investment case for fossil fuelled assets to test the viability in gaining future market contracts.

C11.2

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

No

C11.3

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

Yes

C11.3a

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

Objective for implementing an internal carbon price

Navigate GHG regulations
Stakeholder expectations
Change internal behavior
Stress test investments

GHG Scope

Scope 1

Application

We produce a carbon pricing forecast for the EU ETS and UK carbon price floor to 2040.
Our forecast is informed by the ETS price, policy and third-party forecasts. These projections are primarily used within our power generation and oil & gas asset businesses for near-term forecasts of business performance and longer-term forecasts which are factored into new capital investment decisions.

The carbon price is also utilised by the UK downstream businesses for near term hedging, where it constitutes approximately 12% of the wholesale power price.

Internal forecasts of carbon prices are integrated in to our short to long term projections of power prices and ancillary market returns. These projections in turn are used to develop our view of the future financial performance of the company and what strategic decisions we need to take, for example where to invest and when.

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

32

Variance of price(s) used

N/A

Type of internal carbon price

Shadow price

Impact & implication

Our power generation operations in the UK and Republic of Ireland together with some of our oil and gas assets in the North Sea and Netherlands, are currently subject to the EU Emission Trading System (EU ETS) carbon price and/or the UK carbon price floor, which are set at an EU and UK level respectively. In 2018, the combined impact of EU ETS carbon price and UK carbon price floor was around £32/tCO2e. The costs mostly apply to our scope 1 emissions from gas fired power generation and are reflected in the traded price of electricity.

Utilising an internal carbon price enables us to better predict the long-term impacts of regulations, such as the UK carbon price floor and EU ETS, on our business and communicate this information to interested stakeholders such as politicians and investment analysts as appropriate, to better understand our business and inform their decision-making.

We support the use of carbon prices as a mechanism for incentivising decarbonisation. This is because we believe that if carbon pricing mechanisms continue over the long term, it will impact attractiveness of investment opportunities by providing financial incentives to grow lower carbon generation. For example, following a previously volatile EU ETS carbon price, we forecast an upward trajectory in carbon prices in the future which will impact the viability of high carbon power investments such as coal versus lower carbon power investments in gas, nuclear and

renewable energy. This in-turn gives confidence in our strategic direction of focusing on lower carbon generation and the grid flexibility required for higher levels of renewable generation

C12. Engagement

C12.1

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

Yes, our suppliers
Yes, our customers

C12.1a

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

Type of engagement

Compliance & onboarding

Details of engagement

Included climate change in supplier selection / management mechanism
Code of conduct featuring climate change KPIs
Climate change is integrated into supplier evaluation processes
Other, please specify: Raising standards through engagement

% of suppliers by number

3

% total procurement spend (direct and indirect)

12

% Scope 3 emissions as reported in C6.5

0.35

Rationale for the coverage of your engagement

We strive to ensure that all of our supply chain is sustainable, but we focus our engagement efforts on high risk suppliers so that we can have the biggest impact. To identify which suppliers are high risk, we risk-rate them using a third-party tool that determines risk around the following key areas: country, sector, spend and product or service.

Suppliers identified by the tool as high risk, are subject to a further, enhanced risk assessment.

Impact of engagement, including measures of success

We use our purchasing power to embed high social, ethical and environmental standards across our supply chain. This helps safeguard the environment and limit GHG emissions. We therefore measure the success of our engagement in how we maintain high environmental standards as well as how we are reducing risk across our supply chain.

Towards this, we ensure suppliers a) sign-up to our responsible business clauses in contracts; b) comply with our Procurement and CR Policy for Suppliers which includes a commitment to safeguard the environment; and c) maintain strong performance in our supply chain sustainability score by reducing risk.

As part of this, we manage measure our success through our supplier risk rating process. In 2018, we assessed 69 further suppliers which resulted in an average supplier sustainability risk score of 54 (low risk). As a result of action to reduce risk, our score continues to be better than the multi-industry average of 42 (medium risk).

If a supplier receives a high or medium risk rating, we work with them to create corrective action plans that build their capability. We do this by drawing on our expertise and knowledge acquired via collaboration with the Responsible Sourcing Council (RSC) and through on-the-ground

site inspections, which gives us greater insight into issues and helps us tailor support so that we can raise standards collaboratively. In 2018, we undertook 14 site inspections and saw 15 suppliers improve their performance via corrective action plans which included appointment of a person responsible for environmental issues and rolling out training to employees on environmental practices to reduce adverse impact.

Within Centrica, we have also created a network of responsible procurement champions to proactively cascade and embed the importance of sustainability with suppliers. And during 2018, we also rolled-out training to our category managers on our 'Every Visit Counts' programme, to ensure they take any opportunity when visiting suppliers to assess practices and improve standards relating to the environment.

Comment

While we work hard to raise standards across our supply chain, we also look to help other companies raise standards in theirs. Through our ongoing membership of the RSC, we attended all of their events in 2018 and hosted the first meeting of 2019. At the meeting, we shared our responsible procurement achievements so that others could learn from our experience as well as collaborate with us to find solutions to some of our challenges.

C12.1b

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

Type of engagement

Education/information sharing

Details of engagement

Run an engagement campaign to education customers about your climate change performance and strategy

% of customers by number

100

% Scope 3 emissions as reported in C6.5

89.07

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

With around 90% of our carbon emissions arising from our customers, its vital that we enable all of our customers to use energy more sustainably. Core to achieving this is to engage our customers through focused campaigns and wider targeted communications. In doing so, we can educate and inform customers in reducing their footprint and cutting costs, while driving sales.

A good example of engagement is through our support of the sector-led campaign by Smart Energy GB. The campaign uses marketing, events, partnerships and media to encourage customers to adopt smart meters, enabling more people to benefit from greater insight that can be used to reduce energy use. Direct communication to customers through letters and engineer visits, also help drive awareness and installation.
We have sought out certifications to boost credibility and take-up of energy saving products that can strengthen communications across media and sales channels. We became the first UK energy supplier to achieve accreditation from the Carbon Trust for our renewable tariff for business customers which secured strong coverage and improved the proposition. Meanwhile, our Hive smart thermostat and bulbs were awarded an Energy Star rating in North America and has encouraged more customers to buy our products to protect the environment and save money.

Centrica Business Solutions undertook a Powering Britain report series to illustrate the economic and environmental benefits distributed energy solutions can have if adopted by key sectors. Findings detailed in our 'Powering Sustainability' report were distributed through targeted media, events and advertising as well as in proactive customer engagements.

We also ran and supported campaigns focused on raising awareness about national schemes that reward companies for undertaking carbon reduction activities. These include the Renewable Heat Incentive (RHI) which gives companies a subsidy for each kWh generated by renewable products and Energy Performance Contracts (EPC) that guarantee customers carbon and cost savings. It also covers regional initiatives like the London Energy Efficiency Fund, that gives companies the opportunity to access a £500m fund for innovative and low carbon products.

Impact of engagement, including measures of success

Our measure of success is helping our customers use energy more sustainably. Since 2008, we calculate that we have saved our customers nearly 35mtCO2e by bringing products and services to market that reduce emissions. This success is a direct result of raising awareness and encouraging customers to use our products and services.

Specific examples contributing to this include our smart meter campaign, which raised awareness of the savings smart meters create and enabled us to install an additional 1.4m devices in 2018 saving around 100,000tCO2e. Moreover, external accreditation and advertising

campaigns relating to our Hive connected home products supported a growth in sales and an increase in gross revenue by 60%. In 2018 for example, we sold over 300,000 Hive smart thermostats which on average, is estimated to save 14,900tCO2e annually by giving customers greater control over their heating and hot water.

Meanwhile, Centrica Business Solutions engagement campaigns helped large-scale energy users to tangibly understand the benefits and take action to realise their carbon and cost ambitions. For instance, our analysis shows that if just 50% of the UK's Industry, Healthcare and Hospitality & Leisure sectors took up distributed energy solutions, they could save nearly 11% on their carbon footprint each year.

The benefit of this can be demonstrated by St Georges Hospital in London, which is projected to save £1m in cost efficiencies and 6,000tCO2e annually from distributed energy solutions. Additional efforts relating to the RHI and the London Energy Efficiency Fund has enabled a steady take-up, further feeding the installation of low carbon products and services. An example of this can be illustrated with the continued delivery of EPC's in 2018 which reduced in-year emissions by 7,500tCO2e. Overall, affective customer engagement contributed to a 14% rise in the gross revenue of our Distributed Energy & Power business in 2018.

Our success in securing carbon savings through our products and services, has led us to be bolder in inspiring customers to take action. We have subsequently introduced a Responsible Business Ambition to help reduce customer carbon emissions by 25% by 2030, whereby we will directly target a 3% reduction through products and services. The saving is equivalent to the annual emissions of 2.5m UK homes and is three times our own emissions

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?

Direct engagement with policy makers
Trade associations
Funding research organizations
Other

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Other, please specify Renewable Heat Incentive (RHI)	Support with minor exceptions	Renewable Heat Incentive (RHI) - In response to the sector specific decarbonisation requirements under the UK's fifth carbon budget, we believe the design and function of the RHI needs to be revisited for domestic households to support a step change in heat decarbonisation. We have worked with a leading economic consultancy (Vivid Economics) and leveraged our own internal research to identify shortcomings associated with the RHI, notably long pay-back periods for customers and a limited range of qualifying technologies. Our work has focused on the role a re-purposed RHI could play in tackling the early stages of heat decarbonisation. We have begun engaging Government bodies and other stakeholders on changes that could be made to the scheme, such as responding to various calls for evidence on heat decarbonisation.	We believe the Government could introduce changes to the RHI through a consultation that supports scheme changes at the end of the current spending review period (2020-21). Legislation would then need to be introduced to reframe the new scheme design. Changes to the RHI scheme could include: a) a re-design of assignment of rights to allow third parties to provide domestic customers with up-front subsidy for technologies and active consideration of transitioning from a Feed-in-Tariff (FiT) model to a capital grant model, which will both improve scheme cost effectiveness and demand; b) some form of ring-fencing of RHI funding to ensure the domestic sector secures a higher overall proportion of funding, given the progress that needs to be made; and c) Bringing low carbon technologies such as Gas Absorption Heat Pumps (GAHP), hybrids and Combined Heat and Power (CHP) into scope, as is the case in other countries such as Germany. For example, the Committee on Climate Change (CCC) has recommended that10m hybrid gas heat pumps should be installed by 2030. Customers will need to be incentivised to purchase the heating systems, given the higher cost compared to conventional gas boilers.

Energy efficiency	Support	Energy efficiency in homes and businesses Energy Company Obligation (ECO) - ECO is a government energy efficiency scheme aimed at domestic premises administered by Ofgem and delivered by large energy suppliers. ECO was introduced in 2013, with the latest phase running from December 2018 to March 2022. Energy efficiency in homes remains a key way to reduce energy bills, cut carbon emissions and tackle fuel poverty. We are playing our part in this important scheme and continue to work with third parties to deliver the obligation. In the Clean Growth Strategy, Government committed to "extend support for home energy efficiency improvements until 2028 at the current level of ECO funding". We believe that now is the right time to engage policy makers and revisit the design of the scheme as well as the role of energy suppliers who deliver it. Businesses and public sector - While energy efficiency in homes has steadily improved since the mid-1990s, the energy efficiency of non-domestic stock has improved little in recent years. We have conducted and published research that demonstrates the value of decentralised energy and	ECO ECO3 regulations will be altered slightly in 2019 to incorporate new standards. We will continue to encourage Government to ensure that whilst an obligation on energy suppliers is in place, all suppliers should have to play their part, not just the larger ones. The current small firm exemption has led to distortions in the market. Businesses To drive energy efficiency uptake with businesses, we recommend that a range of approaches must be considered which reflects the different energy demands, fuel types and uses - from public sector and manufacturing to offices and community centres. The UK Government is consulting on the potential for an energy efficiency scheme for SMEs, as a way to achieve the carbon reduction targets for SMEs set out in the Clean Growth Strategy. We are engaging with Government on this issue and whilst we agree with the goal, we are keen to ensure that this consultation does not result in an overly complex scheme that ultimately increases energy bills for SMEs.

		optimisation solutions for large-scale energy users. Our Powering Britain report series identified potential energy savings that would reduce annual carbon footprint by 11% if just 50% of Industrial, Health and Hospitality & Leisure sectors took up these solutions. We have used the report extensively with stakeholders, including Government and policy makers, to raise awareness of energy saving opportunities and inform future policy decisions.	
Energy efficiency	Support with minor exceptions	Future Homes Standard - The UK Government proposed a Future Homes Standard in the Autumn 2018 Budget, for introduction in 2025. It will set minimum environmental standards for all new housing, including a commitment to removing traditional fossil fuel heating systems. We support making new build homes zero carbon and believe it is one of the most economic segments to decarbonise.	We believe the Future Homes Standard could be brought forward from 2025 to an earlier date, given the industry had already prepared for the introduction of a zero carbon homes standard in 2016 which was subsequently abandoned. Around 200,000 new homes are built each year in the UK, and there is an opportunity to bank carbon savings from those homes now.
Other, please specify: Smart Meters	Support	UK - Centrica has always been a strong advocate of the smart meter roll-out because we understand the positive impact they can have on helping people better understand, control and reduce their energy usage. By the end of 2018, we had installed 6.8m smart meters in homes and businesses since 2009. We will take all reasonable steps to offer smart meters to all of our customers by the 2020 mandated deadline, so that they can join the millions of people already enjoying the benefits of smart meters. To support this, we've invested in training over 2,000 British Gas Smart Energy Experts which has enabled us to install smart meters in homes at	UK - We are supportive of smart meters and continue to work with both the Government and industry, to ensure that as many of our customers as possible, are able to benefit from their installation. This includes collaboration with Smart Energy GB, an independent organisation enlisted by Government to champion and communicate the switch to smart meters with the public. Given the programme was designed over a decade ago and is currently impacted by the introduction of price caps, we believe there are opportunities to amplify smart meter benefits, reduce programme costs and measure installs more effectively.

		a rate of 1 every 21 seconds during 2018. To ensure effective take-up, we have shared learnings about our roll-out at industry working groups, consultations and regular meetings with Government alongside other stakeholders. Topics discussed include customer engagement, handling of consumer data and maximising benefits from different consumer types including vulnerable customers. North America - Direct Energy continued to share learning and customer insights from our innovative, smart-enabled products through major industry conferences as well as at meetings with regulators and legislators across states and legislative bodies in 2018. This has enabled us to highlight the positive impacts of load-shifting to off-peak periods and show how increased energy awareness helps customers reduce consumption. Direct Energy is also working with policy makers in many jurisdictions to address key regulatory barriers. These include smart meter deployment, data quality, access to smart meter data, the billing relationship and privacy concerns around customer data.	Examples of how to achieve this include but are not limited to a) whether alternative technologies like smart phones could be utilised more effectively; b) whether 'opt-in' is an effective model because time and money needs to be spent on persuading customers to have smart meters installed; c) more effective management of costs within the programme such as those associated with the delays experienced by the Data Communications Company; and d) clarity on what supplier obligations will look like post 2020 to enable effective planning. North America - We believe it is critical that smart meter data be timely, accurate and consistent. This will enable retail energy providers to offer innovative products using 15-minute interval usage data that will empower the introduction of energy saving products and applications for customers. In addition, we encourage utilities to increase service levels as smart meter deployment completes to ensure optimal availability and quality of associated data. Towards this, we funded a project in Texas to streamline and simplify the process for customers, enabling them to share their data with energy service providers. We are additionally supportive of legislation that balances the protection of privacy interests with provision of innovative new energy products and applications.
Other, please specify: Targeted Charging Review	Support with major exceptions	Targeted Charging Review (TCR) - Ofgem's TCR will change the way network costs are recovered, negatively impacting the current economic case for investment in distributed generation, which provides important system	We have proposed that the TCR reforms be delayed to 2023 when wider changes to the market, including the introduction of local flexibility markets, are expected. This will prevent a hiatus in investment in key technology that is needed to provide

		flexibility and supports the transition to a lower carbon future. Together with a number of other stakeholders, we have worked with Government and the regulator to make the case for this change to be delayed and align more closely with wider reforms in the market.	system flexibility and in so doing, support the expansion of intermittent, renewable generation.
Other, please specify: Net Zero Emissions legislation	Support	Net zero emissions legislation - Based on the analysis published by the CCC, we support the introduction of a 2050 net zero emission target which would end the UK's contribution to global warming within 30 years. As a supporter of the Paris Agreement and having set our own ambition to become net zero by 2050, we welcome the UK's commitment and believe it is achievable. We had lent our support to a number of bodies, including the CBI, who had written to Government requesting that the implementation of legislation be brought forward.	We advocated for the legislation to be implemented as soon as possible and at the end of June 2019, the UK Government made the committed to become the first major economy to pass net zero emissions into law.
Carbon tax	Support	UK Carbon Price Floor Support Mechanism (CPF) - Although Centrica is shifting its focus away from centralised power generation, we remain a major investor in gas fired generation and nuclear. We have two gas fired power stations, two rapid response plants and a 20% equity stake in the UK's existing nuclear power plants. We believe domestic carbon price support has an important role to play in delivering cost-effective decarbonisation. Since its introduction in 2013, the domestic carbon price policy alongside other	We welcomed confirmation in the Autumn 2018 budget that the Government will continue to hold the CPS rate at £18/tonne CO2 for 2020/21.

		environmental policy, has had a material impact in reducing UK carbon emissions. For example, it's estimated that UK carbon emissions have fallen by nearly 14% over this period while there's been a significant switch from coal to gas. Investors in generation, such as Centrica, rely on certainty in the investment framework to commit expenditure for the long term. Domestic carbon price policy is one important part of wider mechanisms which determine investment in generation. The announcement of a reformed capacity market and clarity over the transition from coal to gas and nuclear, are also components which build investor confidence.	
Carbon tax	Support	EU Emissions Trading Scheme (EU ETS) - In light of the benefits of international carbon markets for cost-efficient emission reductions, we support the continued participation of the UK in the EU ETS following Brexit. We believe the European approach reduces costs, thereby making decarbonisation both cheaper and faster. A robust EU ETS that delivers a level-playing field, could reduce the need for a separate CPF in the UK over the longer term. We have actively supported within the EU and with other stakeholders, proposals that will lead to the strengthening of the EU ETS including a) doubling the	As part of Brexit, government will need to determine what arrangements are necessary under the Great Repeal Bill process to preserve participation in the current phase III of the EU ETS, and what separate legislation/arrangements will be necessary to preserve membership post phase III. We support the Government's proposals to link to the EU ETS and will provide a response to their consultation, setting out how best we believe this can be achieved. We note that a number of other EU member states are also introducing domestic floor price policies for carbon to bolster the EU ETS. We believe that the UK should do similar, through repurposing the current carbon price support mechanism to

		annual rate of allowances (to 24%) taken out of the market and placed in the Market Stability Reserve (MSR) and b) introducing a process whereby future imbalances caused by policy decisions can be corrected – for example, if energy efficiency targets reduced demand.	provide a forward trajectory for carbon.

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

Energy UK

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Energy UK is the trade association for the energy industry. It represents over 80 members made up of generators, gas and electricity suppliers as well as other businesses operating in the energy industry.

Energy UK and its members are committed to driving the sustainability agenda forward by reducing the sector's environmental impact. This is reflected in Energy UK's vision for the UK to have, 'a more decarbonised energy supply and one that is secure, diverse and affordable with greater local heat and power'.

The association has a range of initiatives underway to make these ambitions a reality, which will ensure the industry makes a positive contribution to society, economy and the environment.

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

Centrica is represented on Energy UK's Board and chairs the Heat Decarbonisation, New Energy and Services and Flexibility working groups. We are also active members of working groups that for example, focus on power generation and environmental policy.

While views held within Energy UK on climate change related issues are predominantly consistent with our own, there are occasional divergences between members, such as over how best to deliver the smart meter roll-out. As leaders in the UK's mandatory smart meter deployment and a firm believer in the value they can create in giving customers greater control and understanding over their energy consumption and costs, we aim to influence and increase awareness of smart meter benefits with members throughout the association.

Trade association

Heating and Hot Water Industry Council (HHIC)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

HHIC is committed to driving, supporting and promoting the sustained growth of the UK's residential heating and hot water industry. The HHIC informs and advises on these issues to tackle challenges and influence Government on how best to meet the 2020 and 2050 carbon targets.

Membership is made up of heating manufacturers together with new renewable entrants to the market.

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

We are a proactive member of HHIC, participating in the Low Carbon Technology, Micro CHP, Hybrid and Boiler technical and policy working groups that help inform and shape Council positions.

Through participation on these working groups, we can also contribute to industry responses, standards and consultations from Government and regulators while developing initiatives that support the introduction of innovative renewable and low carbon heating technologies in the UK.

Trade association

Energy Manager Association (EMA)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

EMA was established to bring cohesion to the energy management profession in order to help the UK meet its energy obligations, which include those relating to carbon reduction.

To accomplish this, the EMA aims to establish a best practice approach to energy management that will improve the standing of the profession and drive it into the heart of British businesses.

The EMA works closely with energy managers across the UK to influence future policy development so that it functions at optimal levels for practitioners. Engagement largely focuses on Government departments such as BEIS and the Department for Environment, Food and Rural Affairs (DEFRA).

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

Centrica is represented on various advisory boards within the EMA and provides input on carbon reporting, training standards, behaviour change and industry standards. We have used our involvement in the Association to influence and increase awareness of best practice Energy Performance Contract policy development.

Trade association

Association for Decentralised Energy (ADE)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

ADE is an advocate of an integrated approach to delivering energy locally, designed around the needs of the user.

As an industry leader, the ADE brings together interested parties from across the sector to develop a sustainable environment for combined heat and power, district heating and cooling technologies as well as demand-side energy services.

Being an advocate for the proliferation of decentralised energy generation, our views are consistent with those of the ADE.

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

We are a member of ADE and are represented on the board. We work with them to promote decentralised energy products and services, including CHP and demand-side response, and aim to create the policy environment to encourage growth in the sector.

Trade association

Confederation of British Industry (CBI)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

CBI represents large sections of British business. The CBI recognises that climate change is a real threat and is committed to identifying cost effective policies to tackle the risks. They also help identify and support the prospects for growth and wealth creation through the development of the low carbon economy.

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

We are a full member of the CBI and sit on their Energy and Climate Change working groups as well as the board. We share industry insight and data where appropriate to help inform CBI policy positioning on key issues such as carbon pricing and UK carbon budgets. We played an instrumental role in helping develop the CBI's 2030 Vision and focused on the policy choices relating to UK decarbonisation.

Trade association

Advanced Energy Economy (AEE)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

AEE is a national association of business leaders in North America who are focused on making the global energy system more secure, clean and affordable. To secure this vision, the AEE encompass a broad range of products and services for meeting immediate and future energy needs which we generally support and includes energy efficiency, demand-side response, energy storage, natural gas electric generation, solar, wind, hydro, nuclear, electric vehicles, biofuels and smart grid.

AEE's State Policy Program seeks to maintain this momentum by working with their coalition of State and Regional Partners as well as business members to promote advanced energy legislation in statehouses around the nation. AEE's Federal Policy Program develops and advocates for federal policies that create market opportunities for advanced energy companies. Central to this work is promoting legislation and regulation that seek to remove market barriers for advanced energy technologies.

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

Centrica has a seat on AEE's board. We share our learning with the group on how we can build a more sustainable energy system and influence their State and Federal Policy programmes.

Trade association

Advanced Energy Management Alliance (AEME)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The Alliance advocates for policies that empower and compensate customers appropriately by contributing energy or energy-related services and to manage energy usage, in a manner that contributes to a more efficient, cost-effective, resilient, reliable and environmentally sustainable grid.

The Alliance specifically aims to increase awareness of the benefits of distributed products including energy management and demand-side response while advocating for programmes and rule structures that make business sense for customers while meeting the needs of grid operators and utilities.

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

Centrica is a member of the board and plays a pivotal role by using insights to proactively influence Federal and State regulatory and legislative proceedings.

C12.3d

(C12.3d) Do you publicly disclose a list of all research organizations that you fund?

No

C12.3e

(C12.3e) Provide details of the other engagement activities that you undertake.

Having a regular and meaningful engagement strategy enables us to better understand and manage issues that are important to our stakeholders and our business. By involving stakeholders in how we do business, we can demonstrate our accountability and increase understanding of the impact we

have in society which helps us identify opportunities and manage risks more effectively. Interactions are conducted through a variety of methods - from one-to-one meetings to formal committees and workshops - and span a spectrum of topics such as shaping a lower carbon future.

Government - We engage Government via direct meetings and consultations relating to evolving energy policy, in order to enable a more cost-effective lower carbon future. This included discussions with the UK Government on issues such as carbon pricing, heat decarbonisation, the capacity market and decentralisation, alongside changes to carbon reporting with the introduction of Streamlined Energy and Carbon Reporting (SERC). We also engaged Government on the Powering Britain report series which illustrates the economic and environmental benefits distributed energy solutions can create if adopted by key sectors, to support positive policy development in this area.

Customers - We actively seek feedback from a variety of consumers and consumer organisations to better understand their needs and support the expansion of innovative products and services. All significant initiatives, such as new proposition launches, are underpinned by robust research and analysis, to ensure we can deliver for the changing needs of our customers and empower them to use energy more sustainably. Towards this, we have committed a £100m investment in our Centrica Innovations fund to accelerate new technologies and ideas that transform people's lives and help them be more sustainable. Our Smart and Connected Home teams also run ongoing engagement surveys to learn how we can increase take-up and further enhance offerings. We additionally carry out consumer campaigns and hold exhibitions that enable customers as well as the general public, to experience the benefits of the Connected Home and wider energy efficient products first-hand.

Investors – In 2018, we continued our dialogue with investors, holding numerous sessions with institutional investors about our approach to climate change. Amongst a wide range of topics, we discussed our low carbon transition plan including relevant targets and performance, our strategic resilience to climate change, our governance arrangements and thoughts on the TCFD recommendations. We also hosted a roundtable with a large coalition of institutional investors focused specifically on climate change, in which our Group Chief Executive and other executive members, led an open and detailed discussion on our approach to managing risks and seizing opportunities related to climate change.

NGOs & think tanks - In 2018, we maintained a relationship with many of the main environmental NGOs and think tanks in the UK and North America. This helps improve our understanding of their concerns on issues such as climate change, and explore areas where we have common goals so that we can collaborate to drive progress. These meetings form a valuable part of our wider stakeholder engagement programme and inform our thinking on addressing the challenge of climate change as we develop a path to net zero.

Communities – By engaging our communities, we believe we can create stronger communities and deliver positive impact over the long term. In our DE&P businesses, project managers and issue specialists engage key stakeholders to ensure each project fully assesses, understands and has plans

in place to manage potential impacts - from the start of the approval process to the end of a project's lifecycle. These engagements include collaboration with environmental NGOs and local interest groups on issues that span the decommissioning of power plants to the growth of distributed energy and the potential positive impact this could have in keeping carbon emissions and energy costs as low as possible. We also collaborate with communities to explore the potential of local energy markets. In 2018 for example, we continued working with over 200 homes and businesses in our £19m local energy market trial in Cornwall, which is testing how flexible demand, generation and storage can reduce pressure on the electricity grid, enable the growth of renewables and avoid expensive network upgrades. At the same time, we engaged the public sector to take-up distributed energy products that enable cost and carbon savings that can be redirected towards vital community services. And as part of our commitment to supporting those in need, we helped 29,000 people with energy advice and grants to reduce use and debt via the British Gas Energy Trust.

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?

To better manage risks and opportunities related to climate change, Centrica actively contributes to the development of public policy by engaging key stakeholders which include government and regulators in the UK, Republic of Ireland, EU, US, Canada and Norway. We ensure our engagements on policy across the business are consistent with our overall approach to climate change and Group strategy, by having dedicated policy groups that develop detailed policy positions which are fed into the Centrica Executive Committee (CEC) for review and approval. The CEC therefore has ultimate ownership and sets the company's position on public policy for key issues like climate change.

In 2017 steps were taken to establish a centralised Centrica Policy Group (CPG) with senior level representation from across all business units. The CPG continued to meet regularly in 2018, to consider strategic policy issues that cut across the business and ensure we take a consistent position on issues such as decarbonisation, air quality and the future of the energy market. We also maintain a central policy risk register which is regularly reviewed by the CPG and appropriate action taken. Other subject specific working level policy and regulatory groups additionally exist – ranging from a group focused solely on energy efficiency policy to our Vulnerable Customers Steering Group which may consider ways to strengthen routes through which customers can access and adopt energy efficiency products and practices. Outcomes of policy groups and any new approaches to public policy are shared with the CEC.

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

Annual Report and Accounts 2018.pdf

Page/Section reference

- Pages 7, 12, 14, 17, 29, 33, 40, 44 - 45, 54, 57, 60 - 61, 78 and 239.

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

Climate change related information is integrated throughout the Annual Report and Accounts 2018 – from a statement of commitment in the Chief Executive introduction at the start of the book, to our carbon performance in the Strategic Report and our wider KPI disclosure which closes the document.

Publication

Other, please specify

website

Status

Complete

Attach the document

TCFD webpage.docx

Page/Section reference

Full document

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

At centrica.com/TCFD, we have provided a dedicated disclosure that demonstrates our commitment to tackle climate change and our progress against the TCFD recommendations. The webpage acts as an appendix to our disclosure in the Annual Report & Accounts 2018. We will build on our disclosure in the Annual Report and Accounts 2019.

Publication

In voluntary sustainability report

Status

Complete

Attach the document

Responsible Business Ambitions Brochure 2018.pdf

Page/Section reference

- Pages 1, 2, 5 and 6

Content elements

Strategy
Emissions figures
Emission targets

Comment

The Brochure supports the introduction of the Responsible Business Ambitions - a set of 15 goals that give meaning to our overarching aim of ‘helping you run your world in ever more sustainable ways’. As part of our Ambitions, we have set long term goals that will help shape a low carbon world by enabling our customers, the energy system and our business to use energy more sustainably. More detail is available at centrica.com/Ambition2030.

Publication
In voluntary communications

Status
Complete

Attach the document
Data centre 2018.xlsx

Page/Section reference
Third tab

Content elements
Emissions figures
Emission targets
Other metrics

Comment
The data centre contains over 100 metrics. It enables us to transparently report our wider non-financial impact and show trends over time. The metrics span all of our impact areas – from safety and customer satisfaction to carbon and community investment.

Publication
In voluntary communications

Status
Complete

Attach the document

Powering Sustainability Report 2018.pdf

Page/Section reference

Full document

Content elements

Strategy
Risks & opportunities
Emissions figures

Comment

Throughout 2017 and 2018, we have produced a Powering Britain report series that demonstrates the carbon and cost savings that could be made if key sectors took up distributed energy solutions. This Report focuses specifically on the carbon savings and is used to encourage take-up of solutions by customers as well as promote positive policy development in this area.

Publication

In voluntary communications

Status

Complete

Attach the document

Our Code.pdf

Page/Section reference

Page 30

Content elements

Governance

Comment

Our Code sets out the minimum expectations for how we go about our business and guides us to make good choices. It includes a commitment to safeguard the environment and applies to everyone who works for us, with us or alongside us. Our Code forms the foundation of being a responsible business and represents a high-level summary of the key areas of Centrica's Policies and Standards which incorporates our Health, Safety, Environment and Environment Policy.

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.

n/a

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	Group General Counsel & Company Secretary	Other C-Suite Officer

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	Public or Non-Public Submission	I am submitting to
I am submitting my response	Public	Investors

Please confirm below

I have read and accept the applicable Terms