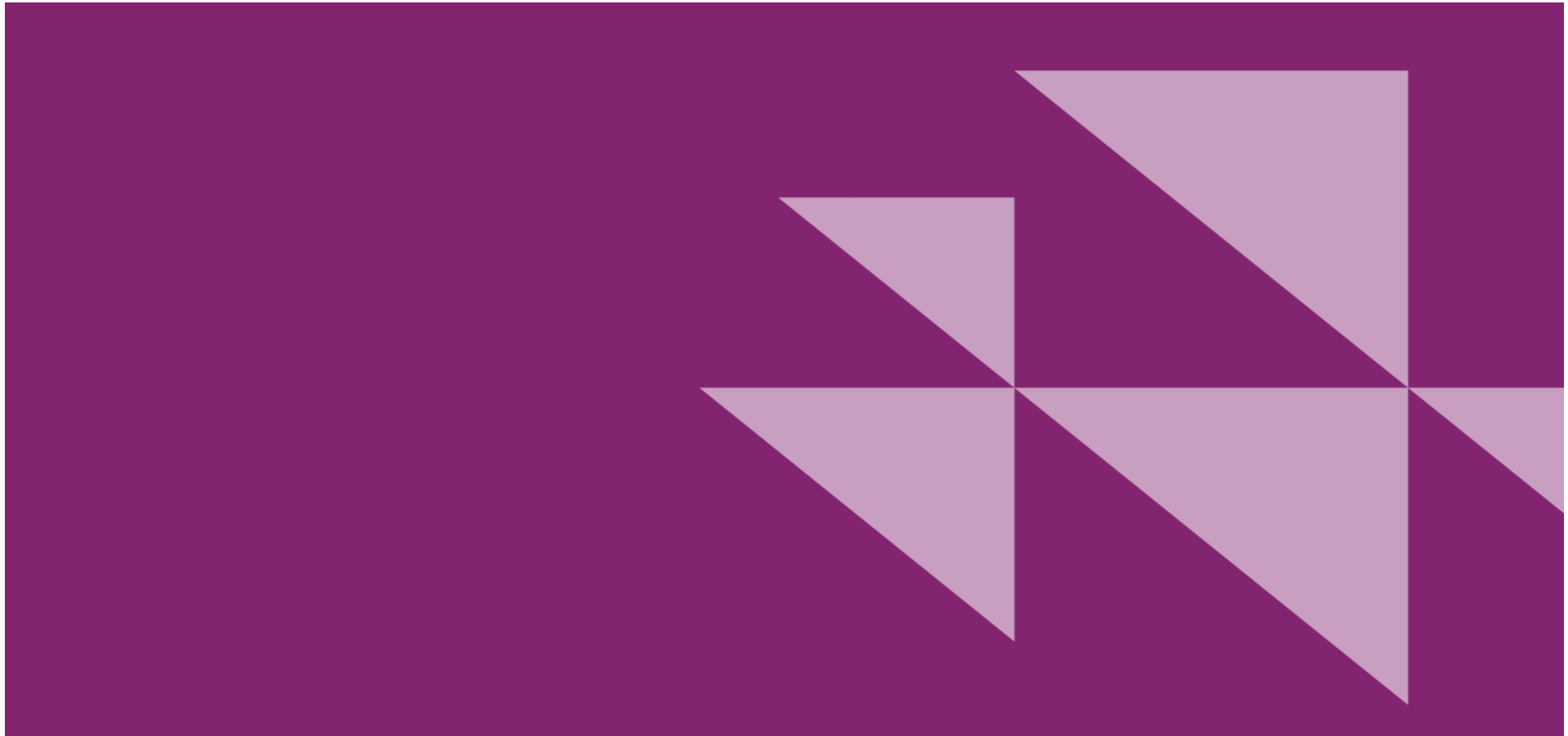

CDP Climate Change Questionnaire 2018



Centrica – Climate Change 2018

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. Everything we do is focused on satisfying the changing needs of our customers. Our areas of focus for growth are Energy Supply, Services, Connected Home, Distributed Energy & Power and Energy Marketing & Trading. 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.

Following our strategic review in 2015 and the fundamental transformation of our business to focus on our customers, we have divested or decommissioned the majority of our Central Power Generation assets, placed our Exploration & Production assets into a non-operated 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

The implications of climate change are far-reaching and the energy sector is at the forefront of the need to respond. As a leading energy and services company, we can play an essential role in tackling climate change. That is why we are reducing emissions across our business and providing products and services that lead to a lower carbon future. These actions positively contribute to emission reduction targets at a national and international level.

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.

Reducing our impact

We believe decarbonisation of the energy system will increasingly be driven by decentralisation, digitisation and increased customer control in how energy is generated, managed and consumed. This changing energy landscape coupled with our business capabilities and strategy, empower us to play a leading role in enabling the low carbon transition. We do this by focusing on three key areas:

a) Helping customers cut their carbon emissions - With over 90% of our carbon emissions associated with energy consumed by our customers, giving them the ability to lower their impact through our products and services will make the biggest difference in our efforts to tackle climate change. Towards this, we are investing £500m in establishing a market-

leading Connected Home business to provide customers with greater choice and control over their energy; £700m in our Distributed Energy & Power (DE&P) business to revolutionise the way energy is generated, managed and consumed by giving large-scale energy users the power to operate and optimise their energy; and £100m to identify, incubate and accelerate new technologies that satisfy our customers and lead to a lower carbon future. Since 2008, we calculate that these efforts together with our energy efficiency products, have helped our customers save over 31mtCO₂e.

b) Decarbonising the energy system – We are leading the transition to a decentralised energy system by proving new products and services, developing demand-response capabilities and building battery storage facilities. In doing so, we can increase grid flexibility, support the growth of renewables and reduce reliance on fossil fuels. Towards making these ambitions a reality in 2017, we launched a £180m investment programme to build new flexible power stations and one of the world’s largest battery storage facilities, while investing £62m to acquire REstore, Europe’s leading demand-response aggregator, to help avoid the need to turn on additional generation during peaks in demand by flexing energy consumption from commercial and industrial customers.

c) Reducing emissions from our direct operations - We effectively manage and reduce our carbon emissions through technology, innovation and cultural change. To drive reductions, we set and achieve long-term targets which can be demonstrated by us exceeding our ambition to cut our internal carbon footprint by 20% in 2015 and our continued focus towards securing a further 20% reduction by 2025.

We also understand the wider role we can play in mitigating climate change in supply chains and communities. For example, we work collaboratively with partners to raise and maintain high environmental standards in our supply chain and engage communities via dedicated educational initiatives to ensure future generations 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 2017	December 31 2017	No

C0.3

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

Canada
Denmark
Germany
Hungary
Ireland
Israel
Italy
Netherlands
Norway
Romania
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

C-OG0.7

(C-OG0.7) Which part of the oil and gas value chain and other areas does your organization operate in?

Row 1

Oil and gas value chain

Upstream

Other divisions

Please select

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) 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' impact on climate change, as they are responsible for setting Group objectives and strategy to be approved by the Board, including those related to climate change. Through their membership of the Board and regular attendance at the Board Safety, Health, Environment, Security and Ethics Committee (SHESEC), the CEO is well-placed to ensure that issues associated with climate change are represented consistently at the highest level.
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 – some meetings	<ul style="list-style-type: none"> Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Monitoring and overseeing progress against goals and targets for addressing climate-related issues 	The Board SHESEC reviews climate strategy annually, which in turn will guide business plans and other major plans of action as applicable. Risk management policies, performance against objectives, goals and targets with respect to these matters will be considered as part of this review. A report is delivered by the Group Head of Environment providing an update on climate-related strategy, risks, opportunities and progress against performance targets. Externalities are assessed include market, competitive, technology and policy aspects relating to climate change. Performance against, and continued suitability of, climate goals and targets will also be reviewed.
Scheduled – some meetings	<ul style="list-style-type: none"> Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans Monitoring implementation and performance of objectives 	The SHESEC Chairman provides a report to the Board following each meeting; therefore the Board considers 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 and is ultimately responsible for developing strategy and major policies, including those related to climate change, as well as approving the annual operating plans for the business, including those related to HSE. Additionally, the board is responsible for the continued effectiveness of corporate responsibility

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
	Monitoring and overseeing progress against goals and targets for addressing climate-related issues	arrangements, which will include strategic HSE issues such as climate change alongside wider sustainability matters, such as customer service and safety performance.

C1.2

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

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Safety, Health, Environment and Quality committee	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored.

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 six 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 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.

As the committee which sets the overall direction, tone from the top and performance expectations for HSES for 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.

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.

Who is entitled to benefit from these incentives?

Environment/Sustainability manager

Types of incentives

Monetary reward

Activity incentivized

Emissions reduction target

Comment

Delivery of certain Centrica and Business Unit specific environment plans is incentivised and may include reductions in internal carbon footprint, carbon intensity and total 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. Additionally, we have also created a recognition for suppliers based on their responsible procurement credentials which can relate to their environmental sustainability performance. This recognition is sponsored by our Chief Procurement Officer (CPO).

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.

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 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; 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-term and medium-term time horizons (0-3 years). Each identified risk from asset to company level, together with related controls, is consistently assessed and reported according to the Group Enterprise Risk Management Policy, Standards and Guidelines. 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 the 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 annual business planning process, the CEC review the strategy against key risks in the external environment, market landscapes, operating strategies and plans as well as any investment or future regulation. At an asset level, business units (BUs) and Group Functions are confronted with risks that could impact the Group's assets, liabilities, financial position 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 (RACC) 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 financial and non-financial 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 using this process alongside other business risks and thus the significance of climate-related risks relative to other business risks will be determined via this assessment process.

Substantive financial and strategic risks are determined using the risk scoring process outlined above, where a risk rating of 1-48 is derived from a 1-6 impact and 1-8 likelihood score. 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 will be ranked as low, moderate or high according to the overall risk rating. A risk with an impact score of 4 or above for any impact criteria would be categorised as a 'high' score according to the heat map and would therefore be classified as a 'priority', or substantive, risk, which is reported to the Group Risk, Audit and Control Committee (GRACC).

Risks over a long-term (3 year or more) time horizon are assessed 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. For example, current uncertainty over the next phase of the ECO scheme could lead to the slowing of delivery and changes to the scheme may have negative financial implications for our business, with £78m committed by the business in 2017 to the delivery of this obligation.
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. For example, Centrica plans to invest £700m in our Distributed Energy & Power (DE&P) business over 2015-2020 and uncertainty over UK regulations on distributed generation could potentially put this investment at risk, therefore it is vital that legislative changes 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, including distributed energy products and services, such as demand response and energy optimisation. New technology presents both risks and opportunities to

	Relevance & inclusion	Please explain
		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 is helping to inform our investment in distributed energy and power solutions, such as battery storage 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 through our ERM process. 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 plan to deliver ahead of the deadline for the ECO scheme ending September 2018 to mitigate this risk.
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. Given that we have identified decarbonisation as a key market trend influencing the energy sector, this is closely monitored through our ERM process to ensure we are successfully responding to external drivers and delivering on our strategy. 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.
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 through our ERM process. For example, due to 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 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.
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. In order to help manage this and also diversifying the products and services we provide to offset the potential fall in energy consumption, by offering time-of-use tariffs, smart thermostats and other energy management tools.
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. An 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.
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

	Relevance & inclusion	Please explain
		energy system. 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.

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 Risk, Assurance and Control Committee (GRACC), 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 GRACC is chaired by the Group Chief Executive, with membership comprising of the 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).

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 business 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.

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.

Following the GRACC, the Audit Committee, a sub-committee of the Board, receives the updated paper which includes a CEC-approved assessment of our principal risks 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 driver

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. 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. 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.

Time horizon

Current

Likelihood

Unlikely

Magnitude of impact

Medium-low

Potential financial impact

1300000

Explanation of financial impact

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 and constructing power stations, we always take into account flood risk. This risk continues to be managed across our power stations. For example at our power generation assets we use tools provided by the Environment Agency (EA), such as flood risk maps, our meteorology teams and business continuity arrangements to identify assets at a higher risk of flooding in extreme circumstances and regularly undertake risk assessments. In E&P 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. For nuclear plants, safety case reviews are undertaken regularly as part of normal business both internally and by the Office for Nuclear Regulation, and through the life extension programme. These look to improve the resilience of nuclear power plants to severe weather events, including factoring in any changes to the likelihood of severe weather events occurring. 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.

Cost of management

2600000

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.

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Physical risk

Primary climate-related risk driver

Chronic: Rising mean temperatures

Type of financial impact driver

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

Company-specific description

Increasingly unpredictable and adverse weather conditions, such as warmer summers, may affect the efficiency and profitability of our power generation facilities. The loss of efficiency due to higher ambient temperatures, is slightly more prevalent in air-cooled condensed plants, however due to divestment of a number of our centralised power generation assets in line with our 2015 strategic review, we currently only have one such plant in active service (Barry). Very low temperatures can also reduce efficiency if we have to deploy anti-icing systems on gas fired stations. Beyond efficiency losses, the principle impact of higher temperatures is reduction in the output capacity of our power stations. This can vary up to 10% across typical annual temperatures, and with more extreme high temperature events this could be reduced further. Our gas fired power stations are at risk from drought as they require a reliable source of water for use in their boilers. However, after assessment in 2011, which was further reviewed in 2015, we concluded that the risk from drought or water shortages as a consequence of climate change was also low during the expected life of the stations.

Time horizon

Long-term

Likelihood

Exceptionally unlikely

Magnitude of impact

Medium-low

Potential financial impact

1750000

Explanation of financial impact

From the baseline data used in a 2010 Energy UK paper which assumed a uniform air temperature of 32°C across the UK, Centrica's gas fired fleet would experience a drop of between 5-10% in maximum output. The risk of this scenario is low and we have divested our larger centralised power generation assets, however the potential financial impact has been estimated on a simplistic basis, by assuming a 5% reduction in our 2017 Central Power total operating profit of £35m. The exact financial impact would be dependent on the asset that is impacted and the duration of impact, therefore this estimate is likely to represent a worst-case scenario.

Management method

Following the strategic review in 2015, we are fundamentally transforming Centrica from a centralised asset-based business model towards a customer focussed energy services and supply model, however any new assets that we invest in will take account of the physical climate risks which could affect their design. We have continued to work together with Energy UK on adaptation and resilience issues. By working at Trade Association level it means that a coordinated response for generators can be achieved when interacting with BEIS, DEFRA and EA among others. This is important because the resilience of generation in the UK is based on a number of criteria including geographical spread of assets, the overall capacity margin, different generation technologies and a national distribution system.

Cost of management

6000

Comment

Management costs vary year on year but can be up to £6K annually.

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Please select

Type of financial impact driver

Please select

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 is now subject to strict deployment caps, which makes it less accessible to new projects than previously. 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

Potential financial impact

160000000

Explanation of financial impact

This 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 2017 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 2017. We will be working closely with Government in responding to its 5-year review of electricity market reform policy, through written responses to related consultations and through direct engagement with officials. 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 (expected Summer 2018). The time horizon on carbon tax is similar and we await longer term clarity from Government in the Autumn 2018 Budget. We will engage with policy-makers and government consultations on these matters where appropriate.

Cost of management

40000

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. 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.

Identifier

Risk 4

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 driver

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 demand, creating imbalance of energy supply to the grid. Electricity cannot easily be stored 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 electricity suppliers do not buy enough electricity to meet our customers' needs in advance, an extra cost may be incurred based upon the last minute and short balancing actions made by National Grid. Extreme weather can impact customer demand, making it less predictable and variable and thus increasing the mismatch between generation, demand and costs. 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. The extreme weather in March 2018 ('Beast from the East'), caused significant variance between actual and forecast consumption, leading to significant additional costs for the business and ultimately consumers. These events are expected to become more frequent.

Time horizon

Short-term

Likelihood

About as likely as not

Magnitude of impact

Medium-low

Potential financial impact

500000

Explanation of financial impact

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 the basis. 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.

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 2017-2018 we are developing 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.

Cost of management

100000

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, which is estimated to cost us in excess of £100k per annum.

Identifier

Risk 5

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Please select

Type of financial impact driver

Please select

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. Since 2009, British Gas customers have reduced their underlying energy consumption by 6% for gas and 12% for electricity. 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%. 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 3.4% 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

Potential financial impact**Explanation of financial impact**

Continuing reduction in gas and electricity consumption will impact Centrica's profits if mitigating actions are not taken, however we are unable to provide an estimate for the financial impact of this at the time.

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 the UK, having installed over 4.7m in homes and businesses by the end of 2017. 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. In 2017, we completed solar installations totalling over 22.9MWp for residential and commercial customers.

Cost of management

1200000000

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 6

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Please select

Type of financial impact driver

Please select

Company- specific description

The future success of our business depends on our ability to play a leading role in the introduction of new and disruptive technologies and in implementing the necessary operational and organisational changes, to meet the requirements of new markets. Whilst representing new opportunities, these developments also create threats to our future profitability if we do not implement correctly. Uncertainty over new technologies poses a risk to the development of our energy efficiency and other low carbon-related products and services, which we expect to be key components of our downstream profitability. The lack of volume of installs and performance data evidence for new microgeneration technologies, are significant barriers for their introduction as there is no formal process with Government to add new innovation to schemes such the Feed in Tariff (FIT). For smart meters, there is an interoperability risk that if a customer switches supplier, they may lose their smart meter functionality, negating the customer benefit. In the US, there is the risk that regulators could favour one smart meter technology over another, which could constrain the technology available to create new smart-enabled products and services. The US market is already very fragmented, with each state having its own energy rules and policies. Also, lack of utility-wide deployments or access to data, will restrict our pursuit of providing customers with more valuable technology and services. There is also the risk that other non-traditional competitors will begin to offer energy services, directly or through white label relationships with other energy suppliers.

Time horizon

Short-term

Likelihood

About as likely as not

Magnitude of impact

Medium

Potential financial impact

40

Explanation of financial impact

In 2018, it is estimated that investment in smart meters will cost each Centrica customer the equivalent of almost £40 on the bill. In total Centrica and other leading energy suppliers will have the responsibility for the installation and maintenance of smart meters in the UK, at an estimated cost of £11.5bn, however this cost will be split across all suppliers.

Management method

We have entered the Connected Home market to provide new services to our customers, while protecting our position in energy supply and services from non-traditional competitors. We are also working to understand technology limitations and how customer segments can better use technology. We have continued to build our capabilities in smart technologies and established a global Connected Home business in 2015, which we continue to expand into new markets. In 2017 we signed a partnership agreement with Eni gas e luce to provide 8 million Italian customers with access to our Connected Home products. We are leading the UK's smart meter roll-out which is an enabler of smart technology and by the end of 2017, we had installed 4.7m meters in homes and businesses. We will cut over to installing the latest SMETS-2 meters at the earliest opportunity and are leading the industry in

their deployment. The introduction of a common infrastructure via the Data and Communications Company (DCC), will eventually mean customers can switch supplier and retain their smart benefits. Through 2017 and 2018, we are undertaking a programme of testing with the DCC for the latest generation SMETS2 meters and are currently in a pilot phase having installed over 1,600. Further technology development through the DCC is also needed for smart meters to ensure reliable local communications can be established to cater for gas and electricity meters in all building types.

Cost of management

35000000

Comment

In 2017 we had a further £35m capitalised investment in our Connected Home business, to further our competitive position and launch new products and services. This included introducing Hive in North America.

Identifier

Risk 7

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 driver

Please select

Company- specific description

UK energy efficiency mandates Delivery of ECO In the UK, there is a risk that we fail to meet our legal obligations under ECO, which requires energy suppliers to improve the insulation of harder-to-treat properties in the domestic sector and to invest resources in reducing heating costs for vulnerable households. In addition to the risk of enforcement 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 ECO The current ECO scheme is due to run until the end of September 2018. The UK Government recently consulted on ECO3, the next phase of the fuel poverty focused obligation running to 2022. As public consultation into the nature of the extension has been delayed, the specifics of the new scheme have yet to be confirmed. We now expect a hiatus in regulations due to lack of parliamentary time for debate. As we usually plan ECO delivery 1-2 years in advance, the uncertainty caused by the delayed consultation will lead to a slowing of delivery or break as industry transitions to the new scheme. Unexpected changes to ECO could also have the effect of increasing bills for our customers. Investment in projects that may be cancelled or changed may have negative financial implications for our business.

Time horizon

Current

Likelihood

About as likely as not

Magnitude of impact

Medium

Potential financial impact

89000000

Explanation of financial impact

This impact is estimated on the basis of our 2017 ECO delivery cost of £78m and the potential cost of a fine (estimated at £11m on the basis of the example provided below) if we were to fail to meet our delivery target. 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.

Management method

ECO delivery We are on track to deliver our ECO obligation ahead of the next interim deadline of September 2018. This contingency reduces the risk of missing the overall target. We have entered a number of contracts with third parties to deliver ECO, resulting in the installation of more than 56,000 measures in 2017. We work closely with the heating and insulation industry and Government to develop capacity, new technologies and best practice in order to increase cost effectiveness of delivery. We use a number of delivery channels to mitigate ECO costs. For example in 2017, these included a wide range of bilateral partners, both large managing agents and direct with smaller installers, with national coverage to effectively manage cost and delivery risk.

Cost of management

3600000

Comment

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

Identifier

Risk 8

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Please select

Type of financial impact driver

Please select

Company- specific description

Carbon pricing The pricing of carbon emissions has a direct impact on the economics of our power stations and the cost of electricity that we purchase from other generators. Due to the competitive nature of wholesale power markets, the price of power includes the full opportunity cost of carbon. The outlook for the total cost of carbon - UK Carbon Price Support plus EU ETS is uncertain, although the UK Government has confirmed the Carbon Price Support (CPS) rate will be ~£18/t to 2020-21. We have no clarity on UK CPS beyond this date, although it is possible some confirmation may be provided in the Autumn 2018 Budget. Further uncertainty is driven by Brexit and the UK's potential departure from the EU ETS. As it is unclear what the future total cost of carbon will be, there is a risk the price may change. This may impact the relative economics of different forms of generation across Europe, impacting our power generation operations in this region. Changes to carbon prices can also lead to changes in asset values and our hedged positions. Our capacity to borrow money may change as lenders consider carbon risk in their lending decisions.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Medium

Potential financial impact

Explanation of financial impact

There is no set financial risk that can be calculated surrounding the profitability of our power stations in relation to carbon pricing. This is because we can only forecast the potential cost of regulatory uncertainty around the carbon price regime at the time we set the price of power.

Management method

To mitigate the risks around pricing of carbon emissions, we produce our own forecasts of future carbon prices, with strong emphasis on credible high and low scenarios, as well as a 'central' view. We factor the economic costs of carbon into generation dispatch decisions and recover the costs through energy sales arrangements. The exposure of our supply business to carbon prices via electricity prices is recognised and treated as another 'commodity exposure' that needs to be hedged within our commodity risk management procedures.

Cost of management

250000

Comment

Management costs are dependent on the level of activity in any given year. We estimate the total employee and external costs for carbon-related management including EU ETS and carbon pricing, such as the UK Carbon Price Floor and carbon analysis, to be in the region of £250k per year.

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 driver

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. Whilst changes to financial support provided over recent years will have a negative impact on some technologies, we believe a significant opportunity remains for Centrica in investment in distributed energy, which is why we are looking to expand activity in this area. Decentralised technology, using a combination of embedded generation, storage, energy efficiency and demand side response measures, will play a key role to play in helping the UK keep energy affordable and secure while meeting our carbon reduction commitments. Through Government and regulatory support there are some accessible incentives and subsidies available. These can 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 subsidy regime for micro-generation technologies has changed since August 2015. For solar, Feed-in-Tariffs (FITs) have been substantially reduced and withdrawn from the Renewable Obligation Certificates (ROC). However, we still believe there are opportunities for solar, particularly for industrial and commercial customers. The Renewable Heat Incentive (RHI) supports renewable heat technologies, 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. 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 proactively manage their energy consumption, enabling a 10% reduction in electricity usage on average. Time-of-use (TOU) 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

Potential financial impact

2000000000

Explanation of financial impact

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 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. By the end of 2017, British Gas led the industry on smart meter deployment, having installed 4.7m in homes and businesses. In 2017, 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.

Cost to realize opportunity

94000000

Comment

This cost represents the sum of capital investments made in 2017 to support our growth in the DE&P and Connected Home businesses; comprising of the acquisition of REstore by DE&P for £59m and £35m of capitalised investment in Connected Home.

Identifier

Opp2

Where in the value chain does the opportunity occur?

Customer

Opportunity type

Products and services

Primary climate-related opportunity driver

Please select

Type of financial impact driver

Please select

Company- specific description

Changing consumer behaviour is an increasing factor in the market for low carbon products and services. Concern about 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. To this end, 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 new smart-enabled propositions are influencing consumer behaviour. In our 2016-17 sample of customers with smart meters, we found customers reduced their dual fuel consumption by around 3.4% on average. We expect this figure to rise to around 5% with information available through apps or online, which provide smart meter customers with useful insights into their energy consumption. 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 2017 we rolled out the Hive family of products in North America and Ireland, including the Hive active thermostat with air-conditioning in North America. We also signed a strategic partnership with Eni gas e luce in Italy to provide access to Hive products for their 8 million customers. Through our DE&P business, we are giving large-scale energy users the opportunity to operate, monitor and optimise their energy like never before. By the end of 2017 DE&P had over 4700 contracted sites in 13 countries, across insight, optimisation and solutions. We have also expanded our offering in North America, which will be a major focus for future growth.

Time horizon

Current

Likelihood

Likely

Magnitude of impact

High

Potential financial impact

2000000000

Explanation of financial impact

WWe are targeting a revenue of £1bn by 2022 for our two core growth businesses of DE&P and Connected Home. Our Connected Home gross revenue grew 27% in 2017, reflecting increasing demand for our products. Our leadership position in the mandated smart meter roll-out, is also helping enhance customer experience and retention, with 66% of smart credit customers having higher satisfaction than with their standard meter. The residential solar segment in North America is expected to grow 9% in 2017 while the non-residential solar market is predicted to grow 11% per year to 2022. 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. In 2017, our DE&P business had an operational revenue of £171m, up from £92m in 2015.

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. By the end of 2017, we had installed 4.7m smart meters in the UK 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 2017, we completed solar installations totalling over 22.9 MWp for residential and commercial customers globally.

Cost to realize opportunity

1200000000

Comment

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. We have made capital investments of €4.5m (£3.6m) for a stake in Power Plus Communications (PPC) and in early 2015, we acquired AlertMe for £65m (including our previous 21% stake). Direct Energy

has also already invested over US\$250k (£186k) to develop our Free Day TOU products, our outgoing Nest partnership and digital initiatives . In 2014, we acquired Astrum Solar for US\$53m (£33m) to enter the US residential solar market. We also agreed to fund up to US\$50m (£31m) as part of the SolarCity deal.

Identifier

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Other

Type of financial impact driver

Please select

Company- specific description

Competitive differentiation through low carbon products and services Having a positive reputation on the low carbon agenda, can differentiate us from our competitors and provide us with the necessary credibility to influence policy-making. Our commitment to microgeneration and smart metering gives us a significant opportunity to differentiate our businesses and tap into growing markets for low carbon products and services. We are dedicated to delivering our obligations that enable consumers to reduce carbon emissions through the Energy Company Obligation (ECO). British Gas also went early in its smart meter roll-out and by the end of 2017, we had installed 4.7m in homes and businesses, giving consumers increased control and insights into their energy. In North America, we are differentiating our Direct Energy business as the company that helps our customers use less of the product we sell. Our investment in solar and development of demand response, smart thermostats and energy saving products and services, supports the reputation we want to develop as the company that saves customers energy. We see that customers who receive energy efficiency and low carbon products or advice, gain greater control over their energy and are more likely to have a positive perception of the company and experience increased levels of satisfaction. For example, the net promoter score (NPS) for British Gas customers who have a Hive product is 10 points higher than for those who do not.

Time horizon

Current

Likelihood

About as likely as not

Magnitude of impact

High

Potential financial impact

2000000000

Explanation of financial impact

We are targeting a revenue of £1bn by 2022 for our two core growth businesses of DE&P and Connected Home. Additional sources of opportunity exist, including the significant potential market for community based schemes, with £78m committed towards ECO in 2017, which includes community based schemes. The residential solar segment in North America is expected to grow 9% in 2017 while the non-residential solar market is predicted to grow 11% year-on-year to 2022. In 2017, we completed solar installations totalling over 22.9 MWp for residential and commercial customers globally.

Strategy to realize opportunity

In 2017, we installed more than 56,000 energy efficiency measures in the UK as part of our ECO commitments, generating lifetime savings of 20mtCO2e and reducing heating costs by an estimated £14m each year. By delivering ECO through our in-house central heating installation business and third-party contracts amongst other channels, we have been able to develop award-winning regeneration schemes in collaboration with our social housing clients. For instance, our £27m partnership with Southampton City Council is part-funded by ECO and will bring solid wall insulation and other energy efficiency improvements to 1.5k social houses. Our acquisition of AlertMe and investment in PPC are helping us take a leading position in the Connected Home market. By the end of 2017, we had installed over 900,000 Connected Home hubs, giving customers the ability to better manage their energy.

Cost to realize opportunity

1335000000

Comment

The UK Government introduced ECO in 2013 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 - particularly in fuel poor homes. We expect the Obligation to cost over £1.3bn. In 2017 we had a further £35m capitalised investment in our Connected Home business.

Identifier

Opp4

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Please select

Type of financial impact driver

Please select

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 air emission regulations, city air quality strategies and Government incentives relating to tax amongst others. Our British Gas New Connections team 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. 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. There are additional opportunities within the Electric Vehicle Industry value chain that Centrica could explore, including owning of its own public chargers through which to sell electricity to the end consumer.

Time horizon

Current

Likelihood

More likely than not

Magnitude of impact

Low

Potential financial impact

2000000

Explanation of financial impact

We are realising revenues of around £2m annually. If the business is to expand, additional capital investment would be required.

Strategy to realize opportunity

The UK is experiencing an EV boom, demonstrated by vehicle sales reaching a 12-year high and market share expanding to 4.2% in 2017. 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. Since our electric vehicle services businesses was established in 2013, we have installed approximately 40% of the 1k public rapid chargers which are located in high-demand places, such as Welcome Break Service Stations and Westfield Shopping Malls. Around 4k additional charge points have been installed at workplace or retail locations alongside 8.5k chargers in residential homes. We contract our services to site hosts or owner operators of the chargers. As part of this, we survey a site, design the build and quote the customer for the works.

Cost to realize opportunity

5500000

Comment

The business is a start-up and remains relatively small. Since 2013, we have invested £5.5m (Opex and cost of goods sold).

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 probability 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

	Impact	Description
		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.
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. 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 2017 gross revenue.
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. For example, in 2017 we made a capitalised investment of £115m in our DE&P business to supply new and flexible technologies, and a £35m capitalised investment in Connected Home, supplying products to customers such as smart thermostats.
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 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 to a reduced demand for energy, driven by improved efficiency and changing consumer behaviour. For example, currently dual fuel customers in the UK with a smart meter reduce their consumption by 3.4% 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 targeting an annual revenue of £1 billion for each of our growth businesses, DE&P and Connected Home, by 2022.

	Relevance	Description
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 £1.5 billion of operating and capital resources to our growth focus areas and correspondingly are reducing our resource allocation to our asset portfolio by about £1.5 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 2016-17 we invested £300m in incremental investments to support growth in our customer-facing businesses, including the acquisition of REstore in 2017 for £59m, Europe's leading demand response aggregator, helping energy markets to become more flexible and efficient.
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 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. For example a shutdown at a nuclear power station due to a severe weather event would cost approximately £1.3m per day, or £260K based on our 20% equity share.
Liabilities	Not 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, under the Energy Company Obligation (ECO), designed to improve domestic energy efficiency and invest in reducing heating costs for vulnerable customers, we committed £78m in 2018 to deliver our obligations. The UK Government recently consulted on phase 3 of ECO, the next phase of the 3.5 year fuel poverty focused obligation running to 2022, therefore our liabilities beyond the end of the current delivery phase, due to end 30 September 2018, remain uncertain.
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 & the Executive have dedicated meetings each year to review and develop strategy. Externalities are assessed including market, competitive, technology, regulatory & policy aspects all of which are influenced by climate change. All business units (BUs) attend these meetings and decisions are fed into business plans as appropriate.

In 2015 we 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.

ii. Reduction targets: National and international climate targets significantly influence our strategy. UK policy to achieve carbon budgets informed our decision to move away from centralised power generation towards distributed energy solutions. Delivery of the UK's mandated smart meter roll-out has also been embedded in our strategy. Moreover, Centrica has a long track record of setting carbon reduction targets for our direct operations, including a 20% reduction in our internal carbon footprint by 2025 & a 50% reduction in our power generation carbon intensity by 2020. Following our strategic review, these targets are under review to ensure they remain appropriate. We are also investigating the feasibility of setting a customer focused scope 3 target.

iii. Business decisions in 2017: Climate change is driving innovation & technology advancement across the energy sector. Accordingly, we established Centrica Innovations (CI), with an initial £100m investment to identify, incubate & accelerate new technologies that can help deliver products & services that meet our customers' needs and enable the low carbon transition. We have already made significant investments in start-ups like LO3 Energy, to trial Blockchain technology and enable peer-to-peer energy trading, which we believe could be a significant enabler of decentralised, low carbon & flexible energy.

We also acquired REstore, which delivers demand-side management services to large energy users, helping energy markets become more flexible & efficient, mitigating impact on climate change.

Finally, we launched Centrica Business Solutions to provide innovative, end-to-end solutions for our business customers, including a dedicated sustainability service aimed at helping customers using energy insight, demand management & onsite generation.

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. These include remote heating controls such as Hive Active Heating and time-of-use tariffs for residential customers .

v Short-term strategy: We are building on our strengths as a customer-facing business by delivering products & services that enable customers to use energy more efficiently. This capitalises on opportunities arising from Government policies, while meeting demand from customers for products that allow greater control over energy.

vi Long-term strategy: Our business strategy positions us to play an important long-term role in enabling the low carbon energy transition with three key focus areas; helping customers cut their carbon emissions, decarbonising the energy system & reducing our own carbon emissions.

vii. Strategic advantage: Expanding our Connected Home business enables us to differentiate Centrica beyond energy supply. We have sold over 1.6m products to help customers save time, money and carbon. This builds on our leadership position in the UK's mandated smart meter roll-out, having installed around 5m meters since 2009. Smart meters offer customers the opportunity to reduce their energy use & also provide us a platform to offer smart-enabled products. Our team of 15,000 engineers and technicians give us a strategic advantage in installing energy efficient products and services, which we calculate has saved customers 31mtCO₂e 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 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 domestic 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. So, while gas will remain an important part of the energy landscape, Exploration & Production will also continue to play a role in our portfolio but will be operated separately by a joint venture, Spirit Energy.

Electricity: The ability to store and balance energy is vital for renewables to thrive. Our strategy is to gain advantage from this, by helping large-scale energy users manage their energy. In doing so, we are also enabling the transformation of the wider electricity system by providing greater grid flexibility which maximises the generation and utilisation of renewable and low carbon power.

To this end, we are developing several large-scale battery storage projects such as our 49MW Roosecote Battery. Also, through REstore, we are creating 'virtual power plants', reducing or shifting demand to manage grid imbalance. This will play a crucial role in supporting renewables, while reducing the need for fossil-fuelled back-up power plants. Acquisition of Neas Energy enables us to provide services for power generators to optimise the trading of their energy into markets across Europe. We are also 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...)	(Continuation of 'other please specify' due to short field and no comment box: "and Centrica central case drawing from IEA".) Details 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. 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'. 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, in part due to societies response to climate change. Following the strategic review, we have successfully

Climate-related scenarios	Details
	<p>divested or de-commissioned the majority of our centralised power generating assets, placed our oil and gas E&P assets into a non-operated joint venture and decided to cease natural gas storage at our Rough asset. We are now channelling a planned £1.2bn investment into establishing market-leading business units, DE&P and Connected Home, which will play a significant role in decarbonising the energy sector in an increasingly decentralised, democratised and digitised energy system. Following the FSB report from the Task Force on Climate-related Financial Disclosures, we have reviewed the recommendations and are assessing how we might augment our strategic review process and further use forward-looking scenario analyses to enhance long-term planning on climate change. We have completed a detailed analysis of our primary businesses, located in the UK, against four different scenarios including 2 degrees, using National Grid's Future Energy Scenarios. This analysis has provided valuable insights into the range of risks and impacts associated with the energy transition on Centrica's core businesses whilst also highlighting the significant opportunities and potential growth areas that Centrica is already engaged in through its new strategy. A key conclusion was that our targeted growth businesses DE&P and Connected Home are both advantaged in a 2-degree scenario against our central case due to increased demand for storage, demand-side response, smart technologies and time-of-use tariffs. We are planning to include the potential impacts of climate change in our next strategic planning session with the Centrica Executive later in 2018. We will be assessing how climate change and societies response is influencing attributes such as customers' needs, competitor offerings and emerging business models.</p>

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. As a leading energy and services business, we can play an essential role in tackling climate change. We believe decarbonisation of the energy system will be driven by three trends; decentralisation, digitisation and increased customer control in how energy is generated, managed and used. Our business strategy is our low carbon transition plan and positions us as a key player in enabling the energy transition by helping customers cut their energy use and carbon emissions, decarbonising the energy system and reducing our own carbon emissions.

To deliver this, we plan to invest £1.2bn over 2015-22, in establishing market-leading DE&P and Connected Home businesses. Beyond 2022 we intend to grow these businesses and use our Centrica Innovations team to identify and develop new technologies that can help deliver products and services for our customers, to stay at the forefront of technology advancements powering the energy transition. We are currently working to better understand the potential future impacts of our transition plan on mitigating climate change out to 2050.

We have already completed key steps in delivering our plan and have greatly evolved our product offering in support of the low carbon transition.

Through DE&P, we focus on meeting the needs of our business customers by helping them find better ways to manage their energy. In doing so, we are also enabling the transformation of the wider electricity system by providing greater flexibility in the grid which helps maximise the utilisation of renewable and low carbon power.

Towards this, we acquired Panoramic Power in 2015 to provide web-enabled sensors that allow real-time visibility of energy use to generate actionable insights. In 2016, we then acquired ENER-G, an established supplier and operator of CHP solutions alongside Neas Energy, a leader in providing a route-to-market for renewable power generators. Next, we acquired REstore, a pioneer in demand-side-response, aggregation and optimisation services. REstore creates 'virtual power plants' by reducing or shifting demand to manage grid imbalance while providing a crucial role in supporting renewables and reducing the need for traditional fossil-fuelled back-up power plants. We also started work on our Cornwall Local Energy Market trial to advance smart and flexible markets that support decarbonisation and renewable growth. This £19m programme will test the use of flexible demand, generation and storage and reward local people and businesses for being more flexible with their energy. We additionally commenced development of several large-scale centralised battery storage projects including our 49MW Roosecote Battery in the UK.

As we transition to a decarbonised system, there is still a requirement for fast response power generation using more traditional fuels such as natural gas. We have converted some of our existing gas power stations to provide this rapid response back-up service and are planning to construct several modern gas engine peaking plants.

In 2017, we established Centrica Innovations, with a £100m investment to identify, incubate and accelerate new technologies and innovations that can help deliver new products and services for our customers. We have already invested in LO3 Energy, enabling us to trial Blockchain technology in the UK to allow peer-to-peer energy trading for our customers. We believe this could be a significant enabler of decentralised, low-carbon and flexible energy.

We are also delivering new smart technologies and tariffs for customers' homes and businesses to give them greater insight and control in how they use and save energy. These include remote heating controls such as Hive Active Heating. In total, we have sold over 1.6m Connected Home products, providing opportunities for customers to better manage their energy and save time, money and carbon. We are now focused on doubling our customer numbers during 2018.

We seek to understand the real-world impact of our activities on mitigating climate change and use the insights to better achieve our climate goals and meet our customers' needs. In total, including government mandated schemes, we calculate that we have helped our customers save 31 mtCO₂ since 2008, equivalent to the annual carbon emissions of around nine million UK homes.

With regards to our own direct impacts, we are on track to produce 80% less carbon per unit of revenue than we did a decade ago. This is a result of our strategic decision-making which has reduced our ownership of carbon intensive power assets. We also have a strong track record for setting and achieving mid-term carbon reduction targets. In 2015, we exceeded our 8-year target to reduce the internal carbon footprint by 20%, achieving a 27% reduction. We have now established a new target to reduce our internal carbon emissions by a further 20% by 2025.

C4. Targets and performance

C4.1

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

Both absolute and intensity targets

C4.1a

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

Target reference number

Abs 1

Scope

Other, please specify (Scope 1+2 (location-based) + 3 (travel))

Full other field: Scope 1+2 (location-based) + 3 (business travel)

% emissions in Scope

86

% reduction from base year

25

Base year

2015

Start year

2015

Base year emissions covered by target (metric tons CO₂e)

60151

Target year

2025

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

% achieved (emissions)

96

Target status

Underway

Please explain

The target encompasses the internal carbon footprint of British Gas and spans our core property, fleet and travel. To achieve this target, we need to reduce our carbon emissions by an average of 2.5% each year which we consider is appropriate for our sector. The target was developed as science-based and while we recognise this target does not meet all the science-based target criteria currently used by CDP, we will continue to engage with the organisation and the Science Based Target Initiative (SBTI) to progress thinking in this developing area. Our carbon savings will mostly come from reducing our property scope 1 and 2 emissions, delivered through energy efficiency measures, solar, distributed generation, storage and LED installations alongside business efficiency. Reductions in scope 1 van emissions and company cars will also be targeted through rolling-out high efficiency and electric/hybrid vehicles.

Target reference number

Abs 2

Scope

Other, please specify (Scope 1+2 (location-based) +3 (travel))

% emissions in Scope

2

% reduction from base year

20

Base year

2015

Start year

2015

Base year emissions covered by target (metric tons CO2e)

91454

Target year

2025

Is this a science-based target?

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

% achieved (emissions)

89

Target status

Underway

Please explain

The target encompasses the internal carbon footprint of Centrica's core property, fleet and travel including all subsidiaries and brands globally. It does not cover emissions from our energy producing assets, the reporting and management of which are treated separately. The target concentrates on areas where Centrica and its 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 are 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 on understanding and mitigating 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 efficiency. We will also target a reduction in scope 1 emissions from our vans and company cars via more efficient or electric/hybrid models.

C4.1b

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

Target reference number

Int 1

Scope

Scope 1

% emissions in Scope

92

% reduction from baseline year

54

Metric

Metric tons CO2e per megawatt hour (MWh)*

Base year

2008

Start year

2008

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

0.44

Target year

2020

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

% achieved (emissions)

100

Target status

Underway

Please explain

We have set a Group equity-based target to reduce the carbon intensity of our centralised power generation by 54% to 0.2tCO₂/MWh by 2020. The target has been internally assessed as science-based, using the Sectoral Decarbonisation Approach (SDA) employed by CDP/WRI although it does not meet all the science-based criteria currently employed by CDP. The SDA Pathway for Power Generation requires our carbon intensity to fall to 0.24 by 2020, which means that our target will go beyond the required reduction. In 2017, we exceeded the target by 38% to 125gCO₂/kWh. The reduction was part of our ongoing strategy to divest the majority of our centralised gas fired power stations to focus on smaller distributed, flexible back-up plants. Due to these changes, our nuclear power generation through partnership with EDF, is now dominant and further reduced our carbon intensity. We are currently reviewing our target to ensure it remains meaningful and reflects our new strategy.

% change anticipated in absolute Scope 1+2 emissions

54

% change anticipated in absolute Scope 3 emissions

0

C4.2

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

C-OG4.2a

(C-OG4.2a) Explain, for your oil and gas production activities, why you do not have a methane-specific emissions reduction target or do not incorporate methane into your targets reported in C4.2; and forecast how your methane emissions will change over the next five years.

Our industry is a Major Accident and Hazard industry, due to the pressurisation of oil and gas and the safety implications this presents. As such, we take every effort to minimise gas emissions but we do not set a quantitative target on methane specific targets. This is because our aim is to minimise these emissions as standard, to as low as practicably possible. We report our fugitive methane emissions to regulators using regulatory acceptable methodologies.

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 projects at each stage of development, and for those in the implementation stages, the estimated CO₂e savings.

	Number of projects	Total estimated annual CO ₂ e savings in metric tonnes CO ₂ e (only for rows marked *)
Under investigation	0	0
To be implemented*	10	126
Implementation commenced*	4	1883
Implemented*	10	601366
Not to be implemented	0	0

C4.3b

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

Activity type

Energy efficiency: Building fabric

Description of activity

Other, please specify (Insulation & upgrade of heating measures)

Estimated annual CO2e savings (metric tonnes CO2e)

75000

Scope

Scope 3

Voluntary/Mandatory

Mandatory

Annual monetary savings (unit currency – as specified in CC0.4)

7200000

Investment required (unit currency – as specified in CC0.4)

1300000000

Payback period

4 - 10 years

Estimated lifetime of the initiative

>30 years

Comment

Energy Company Obligation (ECO) The UK Government introduced ECO in 2013 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 - particularly in fuel poor homes. We expect the Obligation to cost over £1.3bn* and deliver lifetime savings that exceed 20mtCO2e**. In 2017, we installed more than 56,000 measures which will deliver total lifetime savings of 2mtCO2e**, equating to an annual saving of over 75,000tCO2e** in 2017. 2017 installations will save customers an estimated £7.2m*** on their energy bills during the year. *Costs have been aligned with methodology for reporting to Ofgem and includes administration fees. **Carbon savings include the following ECO components: CERO, CSCO and the Heating Cost Reduction Obligation (HHCRO). HHCRO is typically reported to Ofgem in lifetime heating bill savings only, but has been converted into lifetime annual carbon savings achieved to highlight the extent of the emissions saved through ECO. ***Estimated bill savings based on carbon savings calculation noted above.

Activity type

Energy efficiency: Building services

Description of activity

Please select

Estimated annual CO2e savings (metric tonnes CO2e)

116400

Scope

Scope 3

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

Investment required (unit currency – as specified in CC0.4)

87000000

Payback period

1-3 years

Estimated lifetime of the initiative

Ongoing

Comment

Connected and smart products Products like smart meters* and Hive Active Heating can generate carbon savings by giving customers greater understanding and control over their energy. In 2017, we installed 1.5m smart meters in homes and businesses as part of the mandated smart meter roll-out. These installs are estimated to save around 100,000tCOe by giving customers greater insight into their energy consumption and costs, enabling them to take action to reduce their use. Overall, we have installed around 5m smart meters since 2009 which is more than any other energy supplier in the UK. Nearly 213,000 Hive Active Heating smart thermostats were also delivered in 2017, giving customers the ability to control their heating and hot water remotely from anywhere at any time. This makes customer lives simpler and smarter while reducing potential for wasting energy by never having to heat an empty home which is projected to save customers 16,400tCO2e. *While the smart meter roll-out is a mandated initiative, 'voluntary' has been selected for the overall row response given smart meters are only one aspect of our offering, coupled with the continued focus for growth on providing voluntary Connected Home products.

Activity type

Low-carbon energy installation

Description of activity

Please select

Estimated annual CO2e savings (metric tonnes CO2e)

21343

Scope

Scope 3

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

3600000

Investment required (unit currency – as specified in CC0.4)

66800000

Payback period

4 - 10 years

Estimated lifetime of the initiative

16-20 years

Comment

Solar products In 2017, we completed solar installations totalling over 22.9MWp for residential and commercial customers. Annually, these products are expected to generate savings that total 21,343tCO2e and £3.6m on energy bills. Our global solar activity is being refocused to concentrate on large-scale energy users where the biggest carbon benefits exist via our Distributed Energy & Power business.

Activity type

Energy efficiency: Building services

Description of activity

Other, please specify (EPCs/Optimisation services)

Estimated annual CO2e savings (metric tonnes CO2e)

13870

Scope

Scope 3

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

2700000

Investment required (unit currency – as specified in CC0.4)**Payback period**

4 - 10 years

Estimated lifetime of the initiative

11-15 years

Comment

Energy Performance Contracts (EPC) / Optimisation Services EPCs and similar optimisation services guarantee businesses and other large-scale energy users, with financial and/or carbon savings over an agreed contract period which typically span up to 15 years. By running their operations more efficiently, these energy users can reduce their environmental impact and unlock new sources of revenue for growth. This can be demonstrated with EPC annual savings totalling 13,870tCO2e and £2.7m.

Activity type

Energy efficiency: Building services

Description of activity

Please select

Estimated annual CO2e savings (metric tonnes CO2e)

4200

Scope

Scope 3

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

Investment required (unit currency – as specified in CC0.4)

145000000

Payback period

4 - 10 years

Estimated lifetime of the initiative

11-15 years

Comment

Combined Heat and Power (CHP) Generators In 2017, we installed 83 CHP generators. CHP can cut carbon emission by up to 25% and we calculate that during 2017, our installations reduced customer scope 3 emissions by around 4,200tCO₂e. An additional 197,000tCO₂e is estimated to have been saved as a result of CHP's under our maintenance for the same year.

Activity type

Energy efficiency: Processes

Description of activity

Other, please specify (Fleet & company cars)

Estimated annual CO₂e savings (metric tonnes CO₂e)

488

Scope

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

Investment required (unit currency – as specified in CC0.4)

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 2017, reducing emissions by 10% or 488tCO₂e. This was in part driven by a 7% reduction in UK commercial fleet emissions where we replaced 1,500 vehicles with more efficient models. We also upsized 150 vans which although less fuel efficient per mile, reduced mileage and carbon emissions because the engineers were able to transport a greater number of parts which improved first-time fix rates and negated the need for return visits. Use of electric and hybrid vehicles are also helping progress towards our ambition for a 100% zero carbon enabled British Gas fleet by 2030. In North America, our fleet emissions reduced by 18% and was primarily driven by the installation of telematic devices to improve driving efficiency. We additionally continued to encourage employees into low emission company cars, including electric and hybrid options. This has reduced our average tailpipe emissions to 102gCO₂/km from 106 the previous year. We now have 280 electric or hybrid vehicles on the company car scheme. It has not been possible to accurately calculate annual monetary and investment values due to the phased implementation of the programme.

Activity type

Energy efficiency: Building services

Description of activity

Please select

Estimated annual CO₂e savings (metric tonnes CO₂e)

20

Scope

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)**Investment required (unit currency – as specified in CC0.4)**

54833

Payback period

4 - 10 years

Estimated lifetime of the initiative

16-20 years

Comment

Centrica property – LED lighting In pursuit of our internal carbon footprint target, we install energy efficient lighting and monitoring devices at key offices. In the UK, LED lighting was delivered at several offices including Leeds, Edinburgh and Coventry. Combined, these upgrades resulted in a reduction of 20tCO₂e.

Activity type

Energy efficiency: Building services

Description of activity

Please select

Estimated annual CO₂e savings (metric tonnes CO₂e)

17

Scope

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

6039

Investment required (unit currency – as specified in CC0.4)

30000

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

Power station - LED lighting To support our commitment to reduce our operational footprint, we installed energy efficient LED lighting across several power stations in 2017. Following the replacement of old light fittings with LED units at both Barry power station and South Humber power station in 2015 and 2016, additional upgrades were made at Brigg, Barry and Peterborough power stations in 2017. The LED lighting will reduce scope 2 emissions by 17tCO₂e and save over £6,000 annually.

Activity type

Energy efficiency: Building services

Description of activity

Please select

Estimated annual CO₂e savings (metric tonnes CO₂e)

28

Scope

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

9500

Investment required (unit currency – as specified in CC0.4)

27000

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

Power Station – Heating ventilation and air-conditioning (HVAC) To reduce emissions at our power stations in 2017, we replaced several less efficient systems with modern HVAC equipment at our Barry and Brigg sites. We estimate the new HVAC's will reduce our scope 2 emissions by 28tCO2e and save £9,500 annually.

Activity type

Process emissions reductions

Description of activity

Other, please specify (Equipment reliability programme)

Estimated annual CO2e savings (metric tonnes CO2e)

370000

Scope

Scope 1

Scope 3

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)**Investment required (unit currency – as specified in CC0.4)****Payback period**

Please select

Estimated lifetime of the initiative

Please select

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 7.2% in 2017, the equivalent of an improvement of 5.34TWh in 2017, generating a carbon saving of 1.86mtCO2e. Based on our 20% equity share, this equates to 0.37mtCO2e. The methodology compares 2009 underlying UCLF to 2017 UCLF, multiplies by 2017 maximum generation of 78TWh and then multiplies by the CCGT carbon intensity value (0.349kg/KWh). It is not possible to calculate investment, payback or estimate lifetime of the initiative, due to the phased implementation and complexity of the programme.

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	Corporate strategy Core to our customer-facing business is our strategy to satisfy the changing needs of our customers by giving them the tools to manage their energy in a simpler, smarter and more efficient way. The business model for Centrica Consumer is evolving to provide energy supply alongside energy efficient and Connected Home products and services that give customers greater control and insights into their consumption that can reduce energy use, bills and carbon emissions. Likewise, our Centrica Business strategy is

Method	Comment
	giving large-scale energy users such as commercial businesses and hospitals, the ability to take control of their energy and use it more efficiently through our DE&P business. DE&P does this by bringing together flexible and local generation with storage and renewable technologies alongside energy efficient and building management systems. To deliver this new energy future for homes and businesses, we expect to invest £1.2bn in our Connected Home and DE&P 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 our development of innovative products and services that connect customers with their entire homes and help them better manage their energy. 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 2017-21 in innovative start-ups, giving us access to technology and entrepreneurial resources that will help us 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 learnings within the Group.
Dedicated budget for other emissions reduction activities	Internal carbon emission reduction targets By setting and publishing carbon reduction targets that have executive support, investment in low carbon technologies to lower our own emissions, has been stimulated and the business has focused on initiatives to meet these goals.
Dedicated budget for energy efficiency	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 ECO, 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.

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

Several measures enable reductions in customer gas use (customers' scope 1 emissions): wall insulation, loft insulation, energy efficient boilers and Air Source Heat Pumps. We deliver boilers through our established central heating installation business and insulation through a number of delivery channels. Channels include third-party contracts, the UK Government brokerage market and contracts with local authorities. These products alongside glazing, heat pumps and biomass boilers are a core deliverable for the UK Government's mandated Energy Company Obligation (ECO).

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 (RdSAP - see comment box)

Other: Reduced data Standard Assessment Procedure (RdSAP) methodology, as set in ECO.

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

Comment

Measures we have installed for customers through ECO during 2013-17, will generate lifetime savings that exceed 20mtCO₂e* and have already saved customers an estimated £240m** on energy bills. Of this, 75,000tCO₂e* and an estimated £7.2m** in bill savings were delivered in 2017. The current phase of ECO ends in September 2018 and will be replaced by a scheme focused on low income and fuel poor households which will run to 2022. Up to March 2017, savings have been calculated using industry approved software that converts lifetime carbon savings attributable to each measure to kg/CO₂ savings. This approach is used in banking with Ofgem. From April 2017 onwards, ECO savings are taken from deemed scores as banked with Ofgem. * Carbon savings include the following ECO components: Carbon Emission Reduction Obligation (CERO) and the Carbon Saving Community Obligation (CSCO). HHCRO is typically reported to Ofgem in lifetime heating bill savings only, but has been converted into lifetime annual carbon savings achieved to highlight the extent of the emissions saved through ECO. ** Estimated bill savings based on carbon savings calculation noted above.

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 and industrial customers via our DE&P business, helping our large-scale energy users generate and manage their energy more intelligently. In 2017, these installations totalled 22.9MWp. This is expected to save customers 21,343tCO₂e and £3.6m on energy bills.

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)

Other: 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.

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

Comment

The solar panels we installed in the UK during 2017, saved 16tCO₂e. Meanwhile, in North America, the solar panels we delivered in 2017 save 18,827tCO₂e. In North America, we also offer business customers solar through our US\$125m (£78m) fund with SolarCity, of which Direct Energy contributed US\$50m (£31m). In partnership with SolarCity and based on our 40% equity share, Direct Energy have financed and placed in commercial operation 1.8MWp of solar projects in 2017. This generated 3,360MWh and 2,500tCO₂e.

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). Cumulatively, we have installed over 1.6m Connected Home products, enabling customers to control Hive's ecosystem of products with just a few taps on the app – from smart thermostats, lights, plugs and cameras to smart window, door and motion sensors. This includes nearly 213,000 Hive Active Heating smart thermostats in 2017, helping a growing number of customers avoid ever having to heat an empty home because they can control their heating from anywhere at anytime. Based on an analysis into gas usage for customers with Hive Active Heating, we have seen customers save around 16,400tCO₂e.. Smart meters support the Connected Home and can help customers reduce their carbon emissions because they give greater visibility over how much energy is being used and its costs in real-time, empowering customers to take control of their energy and cut consumption. In a sample of our residential customers with smart meters installed in 2017, we found credit customers had reduced their dual fuel consumption by around 3.4%, saving £32 on average per annum across gas (customers' scope 1) and electricity (customers' scope 2). We are leaders in the UK's mandatory smart meter roll-out, having installed around 5m in homes and businesses since 2009. This constitutes nearly half of all smart meters installed in the UK.

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)

Other: 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).

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

Comment

We conducted an analysis of 27,500 Hive Active Heating customers. We compared their gas consumption in the 12 months before having Hive Active Heating installed in their home and the 12 months after it was installed, controlling for items such as significant differences in temperature. The analysis showed that customers could save over £130 on their energy bills each year. To grow our capabilities in this area, we are investing £500m between 2015-20 in our global Connected Home business. Our analysis of smart meter customer consumption uses a methodology approved by BEIS and is based on a sample of British Gas customers with smart meters, comparing consumption before and after smart meter installation with comparable British Gas customers who have standard meters. Based on the 3.4% consumption reduction, we calculate that the smart meters we installed during 2017 will save customers around 100,000tCO₂e per annum.

Level of aggregation

Group of products

Description of product/Group of products

Time-of-use (TOU) and prepaid tariffs

Direct Energy continues to offer 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). Direct Energy customers on the Free Saturdays/Sundays plan are shifting 15% of their energy use each year to the free off-peak day, when generation is typically more efficient. In 2017, we continued to offer a voluntary (opt-in) behavioural demand-response programme called Reduce Your Use Rewards. The programme which had 57,000 customers enrol, enables customers to save 10% on monthly energy bills if they lower usage during weekday afternoon peak hours over the course of a one-month period during Texas' hottest month. Reduce Your Use Rewards works in collaboration with ERCOT, the grid operator, which asks consumers and businesses to reduce electricity demand during peak hours. ERCOT confirmed reductions directly related to the programme totalled up to 26.7MW. Direct Energy's prepay tariff in Texas has also demonstrated a reduction in electricity consumption by an average of 9.6%, equating to a reduction in demand of more than 100,000MWhs per year.

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

Comment

We calculate that customers with prepayment plans in North America, could save 9.6% of average daily energy consumption which equates to around 7,685tCO₂e.

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 and waste. Over 11,000 Panoramic Power sensors were deployed in 2017. We now have over 53,000 sensors in use across more than 1,800 sites in 30 countries and are collecting around 14bn data points per month.

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)

Other: 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

Comment

Panoramic Power customers save on average 10-20% on energy bills.

Level of aggregation

Product

Description of product/Group of products

Combined Heat and Power (CHP) Generators

In 2017, we installed 83 CHP units worldwide. The majority of these were in the UK, with additional activity in Hungary, Netherlands, Italy, North America and Ireland. We also have equity in and/or maintain over 1,100 units worldwide. CHP enables the energy demands of commercial properties to be met in an efficient manner. 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. It also removes transition and distribution losses 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 (Please see comment box)

Other: 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

Comment

CHP 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 2017, delivered in year carbon savings of around 4,200tCO₂e. The entire portfolio under our maintenance delivered approximately 197,000tCO₂e in 2017.

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 enhance the energy efficiency and control of large-scale energy users to reduce costs and carbon emissions (customers' scope 1 and 2). Improvements typically involve replacing industrial size 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)

Other: 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.

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

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 2017, our EPC contracts created annual savings of 13,870tCO₂e and an estimated £2.7m on energy bills. These savings are expected to increase annually with initiative completion and increased customer numbers.

Level of aggregation

Product

Description of product/Group of products

Demand Side Response

We control 855MW of flexible power under our 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 up a marginal unit generator (typically CCGT) which would be far more carbon intensive. The 855MW is spread across 110 customers throughout the UK, France, Germany and Belgium. This constituted an increase of 112MW and 20 customers compared to 2016.

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)

Other: 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.

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

Comment

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

Level of aggregation

Product

Description of product/Group of products

Electric Vehicle charging points

We installed around 500 electric vehicle charging points in 2017, powering lower carbon transport (customers' scope 1) in the UK. Installations were concentrated in locations where the vehicles would be utilised frequently, such as at commercial properties, motorway service stations and car manufacturers. Overall, we have installed over 13,000 charge points across the UK.

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)

Other: 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

Comment

In 2017, our DE&P business will support the expansion of low carbon vehicles following a new £18m electric vehicle scheme with Transport for London.

C-EU4.6

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

Centrica's power stations each have bespoke management systems in place with procedures for operation and maintenance which comprehensively incorporate hydrocarbon leak prevention, detection and mitigation. All power stations operate under 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 to be higher risk, we employ autonomous, high accuracy methane gas leak detection systems. 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.

C-OG4.6

(C-OG4.6) Describe your organization's efforts to reduce methane emissions from oil and gas production activities.

We have hydrocarbon reduction measures on all of our installations which we actively manage through a process safety framework. These measures range from monitoring the integrity of subsea wells to active inspection and management of process equipment on topsides of offshore installations and onshore terminals. This includes an ongoing focus on the improvement of Asset Integrity and incorporates management of small bore tubing, flexible hoses and bolted joints. At our Centrica Storage Limited (CSL) Easington site, we are working on a gas management improvement plan that will identify all gas vented from the asset, feasibility of recovery and reducing and/or treating vented gas. We will be reviewing fugitive emissions in the future at our Barrow Terminal.

COG4.7

(C-OG4.7) Does your organization conduct leak detection and repair (LDAR) or use other methods to find and fix fugitive methane emissions from oil and gas production activities?

Yes

C-OG4.7a

(C-OG4.7a) Describe the protocol through which methane leak detection and repair or other leak detection methods, are conducted for oil and gas production activities, including predominant frequency of inspections, estimates of assets covered, and methodologies employed.

Leak detection and repair is fundamental to the safety of our people and our installations. As such, we endeavour to reduce the frequency and scale of any leaks. We have multiple types of assets across UK, Netherlands and Norway which require us to employ a range of protocols.

Spirit Energy engages with many industry initiatives and bodies. For example, they are a member of the UK Oil and Gas Technology Centre and Step Change in Safety as well as becoming a member of the UK Joint industry project to improve inspection in the oil and gas industry. Spirit Energy also participated in the UK Step Change Work Group that led to the

publication of the updated HCR Prevention guidance. Spirit Energy will continue to embed the requirements of the guidance into operational and assurance practices. As part of this, hydrocarbon reduction plans are being developed which cover areas including leadership, inspections, maintenance, training and competence.

Both Exploration & Production and Centrica Storage Limited have routine industry methodologies for leak detection such as line of sight detectors to identify gas clouds, acoustic detectors to discover noise from high pressure leaks and Infra-Red detectors to monitor flames. At Easington, optical gas imaging was additionally used to identify any leaks prior to a major shutdown period. On its platform, we also undertake regular inspections to spot leaks from flanges using snoop to reduce risk.

C-OG4.8

(C-OG4.8) If flaring is relevant to your oil and gas production activities, describe your organization's efforts to reduce flaring, including any flaring reduction targets.

We flare from oil and gas exploration and appraisal activities for a number of reasons such as where there is no route to export gas or for safety and maintenance requirements. For example, we carry out well tests to help us understand the level of reserves in the ground and this process may include a requirement to flare as there is no route to capture and export the gas. In another example at our sites, flaring is only used for emergencies, blowdowns or prior to maintenance work.

Across all operations where we carry out flaring, we actively aim to limit occurrence and duration of flaring for both environmental and safety reasons. In all locations, these activities are regulated under a permit which sets out prescribed limits and we target full compliance with them. We must, however, be mindful of different regulations in different jurisdictions. For instance, in some locations, we may conduct minimal flaring when wells are starting-up and the production has not stabilised but flaring at this stage of the production cycle is not permitted in the Netherlands so we must ensure activities in this part of the world adheres to this requirement.

We also take steps to limit the impact of flaring where flaring must occur. One specific example is a North Sea oil field that we operate which has no gas export route and therefore flares the gas that is produced. Efforts are made to ensure the flare is lit as required to avoid venting the gas which would otherwise result in methane emissions being emitted that have a greater global warming potential.

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)

10781982

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)

113098

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)

113098

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?

Gross global Scope 1 emissions (metric tons CO₂e)

4023283

C6.2

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

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?

Scope 2, location-based

58594

Scope 2, market-based (if applicable)

51069

Comment

We purchase power with supplier specific emissions in the Republic of Ireland and the UK.

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 the 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'.

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

2795782

Emissions calculation methodology

The Purchased Goods and Services emissions have been calculated to be approx. 2% 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 2,795,782 tCO2e

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

0

Explanation

We do not currently collect emissions data directly from suppliers.

Capital goods

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

Emissions calculation methodology

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

Explanation

Centrica did not undertake any capital projects in 2017 of a magnitude that we believe would generate emissions equating to 5% or more of our total scope 3 emissions, 5% being our default materiality threshold.

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

Evaluation status

Relevant, calculated

Metric tonnes CO2e

59900195

Emissions calculation methodology

This relates to power purchased for resale to customers, but excludes traded power. The activity data is power sold (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 54,985,977 tCO2e. Additionally, the Transmission and Distribution (T&D) losses of the power we consume and the power we purchase equate to 3,853,968 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 1,060,250tCO2e.

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 47% of our scope 3 emissions.

Upstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

Emissions calculation methodology

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

Explanation

These emissions typically equate to 0.02% 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

20043

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, relative to other scope 3 emissions. However, they have been calculated using the Quantis Scope 3 Evaluator tool based on spend.

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

17917

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 (12,797tCO₂e) and rail (346tCO₂e) 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 (1,379tCO₂e) are based on expense claims, using a generic emission factor for car mileage. Helicopter flights (3,395tCO₂e) are based on fuel consumption multiplied by DEFRA emission factors. In total these equate to 17,917 tCO₂e

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

20400

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

Metric tonnes CO2e

Emissions calculation methodology

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

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

Metric tonnes CO2e

Emissions calculation methodology

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

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

Metric tonnes CO2e

Emissions calculation methodology

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

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

68482807

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 61,731,807tCO2e. Crude oil production emission calculations are based on the CDP scope 3 Oil and Gas Guidance generic conversion and emission factors. This results in 6,751,000tCO2e.

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 (>50% of our scope 3) and is relevant to the sector.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e**Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation**

We sell negligible volumes of product relative to the quantity of gas, electricity and services that we supply. These emissions are therefore not relevant.

Downstream leased assets**Evaluation status**

Not relevant, explanation provided

Metric tonnes CO2e**Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation**

Centrica only leases a few properties. The emissions have been estimated based on typical consumption values. The emissions were calculated to be immaterial at approximately 0.00004% (2015). They, do not expose the organisation to risk and hence, are not considered relevant.

Franchises**Evaluation status**

Not relevant, explanation provided

Metric tonnes CO2e**Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation**

Centrica operates Franchises in the UK and North America, including the Dyno Franchise. We do not track franchisee carbon emissions; however, these calculated emissions equate to less than 0.001% of our scope 3 (2015).

Investments**Evaluation status**

Not relevant, explanation provided

Metric tonnes CO2e**Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation**

Centrica is not a financial organisation.

Other (upstream)**Evaluation status**

Not evaluated

Metric tonnes CO2e**Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation**

N/A

Other (downstream)**Evaluation status**

Not evaluated

Metric tonnes CO2e**Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners**

Explanation

N/A

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.

1870

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**

146

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

4081872

Metric denominator

unit total revenue

Metric denominator: Unit total

28023

Scope 2 figure used

Location-based

% change from previous year

22

Direction of change

Please select

Reason for change

The 2017 financial intensity figure is 146, presented per £ million of total revenue as this is the KPI we use to track & report on our performance. This is a 22% decrease on 2016's intensity of 187 and is a result of our scope 1 and 2 emissions decreasing by 20%, mainly due to the sale of two of our UK gas fuelled power stations; while our revenue increased by 3%. However 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.

Intensity figure

125

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

2381986

Metric denominator

Other, please specify (Gigawatt hour)

Metric denominator: Unit total

19102

Scope 2 figure used

Please select

% change from previous year

9

Direction of change

Decreased

Reason for change

The 2017 Central Power Generation carbon intensity figure is 125. This is a 9% decrease on 2016's intensity of 137. This is mainly due to the sale of two of our UK gas fuelled power stations; meaning the relative proportion of our low carbon nuclear power generation increased.

C-OG6.12

(C-OG6.12) Provide the intensity figures for Scope 1 emissions (metric tons CO2e) per unit of hydrocarbon category.

Unit of hydrocarbon category (denominator)

Thousand barrels of crude oil / condensate

Metric tons CO2e from hydrocarbon category per unit specified

0.08

% change from previous year

14

Direction of change

Increased

Reason for change

Production has dropped by 26% but emissions have only dropped 16% resulting in a 14% carbon intensity increase.

Comment

The oil production platform is less efficient at lower production volumes.

Unit of hydrocarbon category (denominator)

Other, please specify (Please see comments box)

Gas production in thousands of barrels of oil equivalent

Metric tons CO2e from hydrocarbon category per unit specified

28.24

% change from previous year

47

Direction of change

Increased

Reason for change

Production has reduced by 62% but emissions only dropped 44%.

Comment

Our production facilities were shut down for long periods in 2017. Start-ups; shut-downs and lower production result in reduced efficiency and hence an increased carbon intensity.

C-OG6.13

(C-OG6.13) Report your methane emissions as percentages of natural gas and hydrocarbon production or throughput.

Oil and gas business division

Upstream

Estimated total methane emitted expressed as % of natural gas production or throughput at given division

0.17

Estimated total methane emitted expressed as % of total hydrocarbon production or throughput at given division

0.16

Comment

To provide the methane as a percentage of 'total hydrocarbon', the methane and the oil & gas production has all been converted to energy units. The 'total hydrocarbon production' includes oil production as well as gas.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization have greenhouse gas emissions other than carbon dioxide?

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	3842152	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	137768	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	20723	IPCC Fourth Assessment Report (AR4 - 100 year)
HFCs	585	IPCC Fourth Assessment Report (AR4 - 100 year)
PFCs	0	IPCC Fourth Assessment Report (AR4 - 100 year)
SF6	570	IPCC Fourth Assessment Report (AR4 - 100 year)
Other, please specify (Chlorodifluoromethane (HCFC-22))	21485	IPCC Fourth Assessment Report (AR4 - 100 year)
NF3	0	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	72	0	1788	No further comments
Combustion (Electric utilities)	2339193	131	0	2342470	No further comments
Combustion (Gas utilities)	0	0	0	0	No further comments
Combustion (Other)	0	0	0	0	No further comments
Emissions not elsewhere classified	0	0	0	3926	Other emissions cannot be easily categorised as CH4 or CO2 as include N2O, HCFC, PFC

C-OG7.1b

(C-OG7.1b) Break down your total gross global Scope 1 emissions from oil and gas value chain production activities by greenhouse gas type.

	Gross Scope 1 CO2 emissions (metric tons CO2)	Gross Scope 1 methane emissions (metric tons CH4)	Gross Scope 1 emissions (metric tons CO2e)	Comment
Fugitives (Oil:Total)	0	0	0	No further comments
Fugitives (Oil: Venting)	0	0	0	No further comments
Fugitives (Oil: Flaring)	1305.27	0.07	1308	Combusted
Fugitives (Oil: E&P, excluding venting and flaring)	0	0	0	No further comments
Fugitives (Oil: All Other)	0	0	0	No further comments
Fugitives (Gas: Total)	0	0	0	All fugitive gas is captured in sub categories of venting and fugitive and therefore not to be repeated here.
Fugitives (Gas: Venting)	0	4750.67	118767	Fugitive
Fugitives (Gas: Flaring)	120756.5	6.82	120990	Combined
Fugitives (Gas: E&P, excluding venting and flaring)	0	2667.64	66691	Fugitives from pipework, etc.
Fugitives (Gas: Midstream)	0	0	0	No further comments
Fugitives (Gas: All other)	0	0	0	No further comments
Combustion (Oil: Upstream, excluding flaring)	0	0	0	No further comments
Combustion (Gas: Upstream, excluding flaring)	3215686.54	181.5	3221913	Combusted
Combustion (Refining)	0	0	0	No further comments
Combustion (Chemicals production)	0	0	0	No further comments
Combustion (Electricity generation)	0	0	0	No further comments
Combustion (Other)	0	0	0	No further comments
Process emissions	0	0	0	No further comments
Emission not elsewhere classified	256499	0	256499	Emissions unspecified in the options above including CO2 removal

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	1958048
North America	565338

Country/Region	Scope 1 emissions (metric tons CO2e)
Ireland	992373
Norway	373920
Other, please specify (Rest of World)	133604

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	46110
Ireland	992373
North America Home	12573
Connected Home	25
Distributed Energy & Power	1557748
Energy Marketing & Trading	407
Exploration & Production	1343408
Centrica Storage	70321
Corporate Centre	319

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	Net Scope 1 emissions, metric tons CO2e	Comment
Electric utility generation activities	2348184	<Field Hidden>	Scope 1 emissions from central power generation as this is the energy intensive activity of the sector. We do not offset or have credits that reduce our gross Scope 1.
Oil and gas production activities (upstream)	1413736	<Field Hidden>	These relate to our oil and gas production business as well as our gas storage business. We do not offset or have credits that reduce our gross Scope 1.
Oil and gas production activities (downstream)	0	<Field Hidden>	Downstream oil and gas activities are not relevant to our business.

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	35723	27696	101601	0
North America	21342	21342	112966	0
Ireland	1258	970	3012	0
Norway	10	494	1119	0
Other, please specify (Rest of World)	261	567	1015	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	8280	
Ireland	1258	
North America Home	6044	
Connected Home	114	
Distributed Energy & Power	15111	
Energy Marketing & Trading	745	
Exploration & Production	24773	
Centrica Storage	1926	
Corporate Centre	341	

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

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

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Oil and gas production activities (upstream)	26700	24270	The Scope 2 emissions mainly relate to our two UK gas terminals.
Oil and gas production activities (downstream)	0	0	Downstream oil and gas activities are not relevant for our business.

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	184	Decreased	0	In the UK, we increased our 2017 self-generated renewable electricity by 523MWh, resulting in the equivalent not being purchased off the grid and the associated grid average emissions $(184/5073320) \times 100 = 0.004\%$
Other emissions reduction activities	10002	Decreased	0.2	We have a target to reduce our Internal Carbon Footprint emissions by 20% by 2025 based on a 2015 baseline. The 2017 Scope 1&2 emission reductions associated with this equate to 10,002 tonnes. These are as a result of reductions in our office and fleet emissions, The office improvements include LED lighting installation, improved monitoring with Panoramic Power, as well as office rationalisation and consolidation. These total 3,320 tonnes of savings The fleet improvements include the replacement of 1500 vehicles with new models and larger vehicles to enable more first-time fixes, resulting in less journeys. Our company car policy is tailored to incentivise the greater use of electric and hybrid cars. These total 6682 tonnes of savings $(10,002/5073320) \times 100 = 0.197\%$
Divestment	1037202	Decreased	20.44	In 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 former were significant emitters and as such, reduced our annual emissions by over 1 million tonnes, resulting in over 20% reduction in our total emissions. The divestments were part of our company strategy to focus on downstream products and services as opposed to high emitting up stream assets $(1037202/5073320) \times 100 = 20.44\%$
Acquisitions	110222	Increased	2.17	We purchased the Ener-G acquisition mid-2016, as such, in 2017 we have had a whole year of emissions equating to an increase of 110,222 tonnes or 2.17% $(110222/5073320) \times 100 = 2.17\%$
Mergers	0	No change	0	No mergers in 2017
Change in output	41005	Decreased	0.81	In 2017 we had a decrease in output in our nuclear interests resulting in a 998 tonne reduction; a decrease in production in our gas storage business (CSL) resulting in a 52,493 tonne reduction; an 88 tonne increase in our growing Centrica Hive business and a 12,397tonne increase in our Irish business (Bord Gais Energy) following an increase in power generation at the Whitegate power station. Together these equate to a

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
				41,005-tonne reduction in emissions following changes in output (0.81% reduction) $(41005/5073320) \times 100 = 0.81\%$
Change in methodology	0	No change	0	We have had no changes in our carbon accounting methodology in 2017
Change in boundary	0	No change	0	We have had no changes in our carbon accounting boundaries in 2017
Change in physical operating conditions	0	No change	0	No emission changes are attributed to changes in physical operating conditions
Unidentified	13276	Decreased	0.26	A 13,276 tonne reduction in emissions cannot be attributed to any single factor $(13276/5073320) \times 100 = 0.26\%$
Other	0	No change	0	No emission reduction activities are attributed to 'other' factors

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)	418	18310581	18311000
Consumption of purchased or acquired electricity	N/A	0	219713	219713
Consumption of self-generated non-fuel renewable energy	N/A	1697	N/A	1697
Total energy consumption	N/A	2115	18530294	18532409

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 steam	No

	Indicate whether your organization undertakes this fuel application
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

17917575

MWh fuel consumed for the self-generation of electricity

12636525

MWh fuel consumed for self-generation of heat

5275086

MWh fuel consumed for self-generation of cooling

4829

MWh fuel consumed for self- cogeneration or self-trigeneration

1136

Fuels (excluding feedstocks)

Marine Fuel Oil

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

20562

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

20562

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Fuels (excluding feedstocks)

Wood Chips

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

418

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

418

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Fuels (excluding feedstocks)

Petrol

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

61054

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

61054

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Fuels (excluding feedstocks)

Biodiesel

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

34877

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

34877

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Fuels (excluding feedstocks)

Diesel

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

276436

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

276436

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Fuels (excluding feedstocks)

Gas Oil

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

78

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

78

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self- cogeneration or self-trigeneration

0

C8.2d

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

Biodiesel

Emission factor

2.60016

Unit

kg CO2e per liter

Emission factor source

UK Government GHG Conversion Factors for Company Reporting 2017

Comment

Diesel average biofuel blend for vehicles

Diesel

Emission factor

2.67193

Unit

kg CO2e per liter

Emission factor source

UK Government GHG Conversion Factors for Company Reporting 2017

Comment

Gas Oil

Emission factor

2.95351

Unit

kg CO2e per liter

Emission factor source

UK Government GHG Conversion Factors for Company Reporting 2017

Comment

Marine Fuel Oil

Emission factor

3226.82

Unit

kg CO2e per metric ton

Emission factor source

UK Government GHG Conversion Factors for Company Reporting 2017

Comment**Natural Gas****Emission factor**

0.20463

Unit

metric tons CO2e per MWh

Emission factor source

UK Government GHG Conversion Factors for Company Reporting 2017

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**

2.19835

Unit

kg CO2e per liter

Emission factor source

UK Government GHG Conversion Factors for Company Reporting 2017

Comment

Petrol average forecourt biofuel blend for vehicles

Wood Chips**Emission factor**

47.9888

Unit

kg CO2e per metric ton

Emission factor source

UK Government GHG Conversion Factors for Company Reporting 2017

Comment**C8.2e****(C8.2e) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.**

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	6484174	114496	137685	1530
Heat	66.06	66.06	0	0
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)

3289

Gross electricity generation (GWh)

6346

Net electricity generation (GWh)

6234

Absolute scope 1 emissions (metric tons CO2e)

2374709

Scope 1 emissions intensity (metric tons CO2e per GWh)

381

Comment

We sold our two largest power stations in H2, these values represent the contribution of the sold assets prior to their sale.

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)

1784

Gross electricity generation (GWh)

12732

Net electricity generation (GWh)

12732

Absolute scope 1 emissions (metric tons CO2e)

7277

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)

270

Gross electricity generation (GWh)

138

Net electricity generation (GWh)

136

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. These figures reflect the contribution in 2017 prior to sale.

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)

5343

Gross electricity generation (GWh)

19216

Net electricity generation (GWh)

19102

Absolute scope 1 emissions (metric tons CO2e)

2381986

Scope 1 emissions intensity (metric tons CO2e per GWh)

125

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

Comment

We did not purchase any low carbon energy We generated and consumed 1697MWh of power and heat on site, generated by a number of our UK offices using solar thermal, solar PV. In addition, we generated and consumed 232MWh of heat from office biomass boilers. However these are not purchased.

C-EU8.4

(C-EU8.4) Does your electric utility organization have a global 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

81157

Metric numerator

m3

Metric denominator (intensity metric only)

N/A

% change from previous year

7.4

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

929

Metric numerator

Tonnes

Metric denominator (intensity metric only)

N/A

% change from previous year

5

Direction of change

Decreased

Please explain

Annual targets are set for our UK office waste. A 5% reduction compared to the previous year was achieved. The reduction in waste equates to reduced resource consumption and reduced emissions associated with waste disposal.

C-OG9.2a

(C-OG9.2a) Disclose your net liquid and gas hydrocarbon production (total of subsidiaries and equity-accounted entities).

	In-year net production	Comment
Crude oil and condensate, million barrels	0	Crude oil and condensate are included at an aggregated level within our liquids disclosure, entered under the natural gas liquids field.
Natural gas liquids, million barrels	13	This figure comprises natural gas liquids, crude oil and condensate, we are unable to provide a split between this figures for commercial reasons.

	In-year net production	Comment
Oil sands, million barrels (includes bitumen and synthetic crude)	0	We have no oil sands production.
Natural gas, billion cubic feet	255	No further comments.

C-OG9.2b

(C-OG9.2b) Explain which listing requirements or other methodologies you use to report reserves data. If your organization cannot provide data due to legal restrictions on reporting reserves figures in certain countries, please explain this.

We report the reserves data annually in the Group Annual Report & Accounts. Please note we are unable to disclose 1P or 3P reserves for commercial reasons.

C-OG9.2c

(C-OG9.2c) Disclose your estimated total net reserves and resource base (million boe), including the total associated with subsidiaries and equity-accounted entities.

	Estimated total net proved + probable reserves (2P) (million BOE)	Estimated total net proved + probable + possible reserves (3P) (million BOE)	Estimated net total resource base (million BOE)
Row 1	275	-	-

C-OG9.2d

(C-OG9.2d) Provide an indicative percentage split for 2P, 3P reserves, and total resource base by hydrocarbon categories.

	Net proved + probable reserves (2P) (%)	Net proved + probable + possible reserves (3P) (%)	Net total resource base (%)
Crude oil / condensate / Natural gas liquids	62	-	-
Natural gas	38	-	-
Oil sands (includes bitumen and synthetic crude)	0	-	-

C-OG9.2e

(C-OG9.2e) Provide an indicative percentage split for production, 1P, 2P, 3P reserves, and total resource base by development types.

Development type

Shallow-water

In-year net production (%)

77

Net proved reserves (1P) (%)

-

Net proved + probable reserves (2P) (%)

77

Net proved + probable + possible reserves (3P) (%)

-

Net total resource base (%)

-

Comment

We are unable to disclose 1P or 3P reserves for commercial reasons.

Development type

Deepwater

In-year net production (%)

23

Net proved reserves (1P) (%)

-

Net proved + probable reserves (2P) (%)

23

Net proved + probable + possible reserves (3P) (%)

-

Net total resource base (%)

-

Comment

We are unable to disclose 1P or 3P reserves for commercial reasons.

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	180000000	7	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. We are roughly half way through the construction at the start of 2018 We have announced that Capex in 2018 will not be above £1,100m, so Power Generation, so the completion of the £180m project in 2018 will be c6 – 8 %. No further projects have been awarded the 15 year Capacity Market contracts and therefore no other projects are currently committed to.

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 total Capex)	We have announced that we will spend no more than £1,100m of capex in 2018, of which Oil and Gas will be ~£500m. The remaining Capex will be split across all other business areas including our DE&P and	-	-	-

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
	Connected Home businesses. We are unable to disclose how much capex is being invested in products and services as it is commercially sensitive.			

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 2017

Investment end date

December 31 2017

Investment area

Services

Technology area

Other, please specify (Connected Home)

Investment maturity

Large scale commercial deployment

Investment figure

35000000

Low-carbon investment percentage

20

Please explain

Connected Home made an operating loss of £95m in 2017 and a further £35m capitalised investment. 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 2017

Investment end date

December 31 2017

Investment area

Services

Technology area

Distributed energy resources

Investment maturity

Large scale commercial deployment

Investment figure

115000000

Low-carbon investment percentage

20

Please explain

Our Distributed Energy and Power (DE&P) business made an operating loss of £53m in 2017 and a further £115m capitalised investment. Investment in our Distributed Energy and Power business which supplies new technologies, flexible generation and energy efficient solutions to commercial and industrial customers.

C-OG9.7

(C-OG9.7) Disclose the breakeven price (US\$/BOE) required for cash neutrality during the reporting year, i.e. where cash flow from operations covers CAPEX and dividends paid/ share buybacks.

For commercial reasons, we cannot publish this information.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 and/or Scope 2 emissions and attach the relevant statements.

Scope

Scope 1

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

[Assurance statement 2017.pdf](#)

[Basis of Reporting 2017.pdf](#)

Page/ section reference

Assurance Statement: Page 1

Basis of reporting: page: Page 53

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

[Assurance statement 2017.pdf](#)

[Basis of Reporting 2017.pdf](#)

Page/ section reference

Assurance Statement: Page 1

Basis of reporting: page: Page 53

Relevant standard

ISAE 3410

Proportion of reported emissions verified (%)

100

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

Scope 3- at least one applicable category

Verification or assurance cycle in place

Triennial process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Attach the statement[Assurance Statement 2016.PDF](#)[Basis of Reporting 2016.pdf](#)**Page/section reference**

Assurance statement: page 1-2

Basis of Reporting: Page 50

Relevant standard

Other, please specify (ISAE3000 (Revised))

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 from a 2015 baseline. Progress against target was assured in 2017.

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.

Alberta SGER

EU ETS

C11.1b

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

Alberta SGER

% of Scope 1 emissions covered by the ETS

1.7

Period start date

January 1 2017

Period end date

December 31 2017

Allowances allocated

0

Allowances purchased

8799

Verified emissions in metric tons CO₂e

69730

Details of ownership

Facilities we own and operate

Comment

Note, in mid-2017 we divested our interests in Canadian gas exploration and production. As such, the programme is only relevant to part of 2017.

EU ETS

% of Scope 1 emissions covered by the ETS

76

Period start date

January 1 2017

Period end date

November 27 2017

Allowances allocated

624689

Allowances purchased

3162654

Verified emissions in metric tons CO₂e

3763107

Details of ownership

Facilities we own and operate

Comment

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 economic 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.

Alberta Greenhouse Gas Reduction Program

We have been active in the Alberta Greenhouse Gas Reduction Program since acquiring the Wildcat Hills Gas Plant in 2010. Emission reporting and compliance requirements are met through a regular review of all applicable government regulations. Professional consulting services are also employed to make recommendations for future events or procedures such as the design of an information or control system. A third-party verification process has been built into the GHG reduction programme to provide assurance. Verification is also used to test past data and the independent verifier may provide observations on areas for improvement Allowances are surrendered in line with the scheme requirements for our verified emissions.

Note, in mid-2017 we divested our interests in Canadian gas exploration and production. As such, the programme is only relevant to part of 2017.

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

GHG Scope

Scope 1

Application

Power stations in the Power Business unit and gas terminals and offshore production platforms in our oil and gas business both utilise internal forecasts for the EU ETS carbon price and the UK carbon price floor. These projections are used to forecast near-term business performance as well as longer-term business planning.

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

23

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 2017, the combined impact of EU ETS carbon price and UK carbon price floor was around £23/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.

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

4

% total procurement spend (direct and indirect)

21

% Scope 3 emissions as reported in C6.5

0.5

Rationale for the coverage of your engagement

Suppliers engaged are based on a risk and opportunities profile approach, using criteria around country, sector, spend and potential, rather than focusing purely on our spend profile.

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 action helps reduce GHG emissions. Success measures include a) ensuring suppliers sign-up to our responsible business clauses set out in contracts; b) comply with our Procurement and CR Policy for Suppliers which includes a commitment to safeguard the environment; and c) maintaining strong performance in our supply chain sustainability score by reducing risk. To ensure we make the biggest impact and manage risk effectively, we focus on identifying potentially higher risk suppliers and taking action to improve performance through our responsible procurement programme. In 2017, we assessed 138 suppliers which resulted in an average supplier sustainability risk score of 56 (low risk). This is better than the multi-industry average of 44 (medium risk). If a supplier receives a high or medium risk rating, we work with them to create corrective action plans that raise standards and in some cases, conduct more in-depth on-the-ground site inspections to further aid our understanding of supplier performance. In 2017, 18 site inspections took place to help ensure we have the insight needed to uphold our social, ethical and environmental commitments.

Comment

To drive our responsible procurement practices forward and ensure we exchange and share best practice, we joined the Responsible Sourcing Council (RSC) in late 2017. The Council provides invaluable insight by bringing together different industries and stakeholders from across the world, to collaborate on enhancing supply chain transparency, driving strong supply chain risk management and embedding robust sustainability strategies. We also attended conferences related to CR and Responsible Procurement to further evolve our best practice strategy.

C12.1b

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

Type of engagement

Other, please specify (Products, services and solutions)

Size of engagement

100

% Scope 3 emissions as reported in C6.5

89

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, it's vital that we provide opportunities to all of our customers to reduce energy's impact on the environment through our products, services and solutions. Centrica Consumer provides energy efficiency goods and services alongside Connected Home devices. Through products like energy efficient boilers and smart meters, we can give customers greater insight and control which can lead to a reduction in usage and associated carbon emissions. We are encouraging customers to take advantage of these products and services through advertising their benefits which can be demonstrated with through Smart Energy GB's smart meter campaign. The campaign aims to educate the public on what smart meters are, how visibility of energy usage could save customers money and that upgrading to one costs no money. Centrica Business provides distributed energy solutions that can also give customers the ability to take control over their energy, giving them the ability to operate, manage and generate it themselves. Battery storage, solar panels and energy management systems for example, can give large-scale energy users the ability to meet their low carbon targets and unlock new efficiencies to power their growth. Companies are incentivised to take advantage of these initiatives through a number of initiatives. These include but are not limited to the Renewable Heat Incentive which gives companies a subsidy for each kWh generated by renewable products and Energy Performance Contracts that guarantee customers carbon and cost savings, alongside regional initiatives like the London Energy Efficiency Fund that gives companies the opportunity to access a £112m fund to take up innovative and low carbon products.

Impact of engagement, including measures of success

Our measure of success is helping our customers reduce their carbon emissions and money off their bill by using energy more sustainably. And since 2008, we calculate that we have saved our customers 31mtCO₂e by bringing products, services and solutions to market. Specific examples contributing to this saving, includes 89% of customers with Hive smart thermostats who say they feel more in control over their energy and is estimated to have saved 16,400tCO₂e in 2017. Meanwhile, if just 50% of the UK's Industry, Healthcare and Hospitality & Leisure sectors took up distributed energy solutions, they could save nearly £1bn on their energy bills and generate associated carbon emissions from being able to use energy more sustainably. This can be demonstrated by St Georges Hospital in London, which is projected to save £1m in cost efficiencies and 6,000tCO₂e annually from our distributed energy solutions.

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 scheme 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	We consider that the Government could introduce changes to the RHI through a consultation to support 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

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
		<p>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 which could be made to the scheme, including responding to various calls for evidence on heat decarbonisation.</p>	<p>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 here; 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.</p>
Energy efficiency	Support	<p>Energy efficiency in homes and businesses</p> <p>Energy Company Obligation (ECO)</p> <p>Energy efficiency in homes remains an important way to reduce energy bills, cut carbon emissions and tackle fuel poverty. We have engaged policymakers on ensuring the next phase of ECO maximises these benefits in a cost-efficient way for customers. As part of this, we submitted a response to the Department for Business, Energy and Industrial Strategy's (BEIS) consultation on ECO3 which is the next iteration of the ECO scheme due to run until 2022.</p> <p>Digital Economy Act</p> <p>We engaged officials in the Cabinet Office and BEIS on the Digital Economy Bill (now Act). This focused on the new data sharing provisions to help energy suppliers better target fuel poor households for energy efficiency and financial support. Engagement included a response to the Cabinet Office's consultation. 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 conducted and published research with a third party, FTI Consulting, which demonstrates the value of decentralised energy and optimisation solutions for large-scale energy users. Our report, 'Powering Britain's Economic Future', identified potential annual energy savings totalling nearly £1bn if just 50% of Industrial, Health and Hospitality & Leisure sectors took up these solutions. We have used the report extensively with stakeholders, including policy makers, to raise awareness of energy saving opportunities and inform future policy decisions.</p>	<p>ECO</p> <p>Our consultation response set out three key recommendations: a) a fairer funding model with the scheme being paid for either via general taxation or through all energy companies contributing their fair share because at present, suppliers with less than 250,000 customers are exempt from contributing to the scheme which means that customers of obligated suppliers disproportionately pick up the full programme costs); b) increase deliverability and cost-effectiveness of in-scope products; and c) ensure an orderly transition from the current scheme to ECO3. Delays to consultation means there is a risk of a hiatus between outgoing and incoming schemes which could impact scoring and destabilise the energy efficiency supply chain. We continue to stress the importance of a smooth transition and a 'carry-over/carry-under' or 'early delivery' option to help mitigate this risk.</p> <p>Businesses</p> <p>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. These organisations could benefit from changes to schemes like the Enhanced Capital Allowance and Energy Saving Opportunity Scheme, which would amplify attractiveness of measures while supporting development of distributed energy systems, generating substantial carbon and cost savings.</p>
Other, please specify (Smart meters)	Support	<p>UK</p> <p>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 2017, we had</p>	<p>UK</p> <p>are supportive of smart meters and continue to work with both Government and industry to ensure that as many of our customers as possible, are able to benefit from smart meters. We are working with other industry participants and also through Smart Energy GB, an</p>

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
		<p>installed around 5 million smart meters in homes and businesses. We will take all reasonable steps to offer smart meters to all of our customers by the 2020 mandated deadline so they can join the millions of people already enjoying the benefits that smart meters can bring. To support this, we have invested over £8m in training over 2,000 British Gas Smart Energy Experts and are installing meters in homes at a rate of 1 every 22 seconds. To ensure an effective roll-out, we have shared learnings through industry working groups, consultations and regular meetings with Government and other stakeholders. Topics discussed include how to engage customers, how to handle consumer data and how to maximise benefits from different consumer types including vulnerable customers.</p> <p>North America</p> <p>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 2017. 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. In Texas, we engaged regulators and other key stakeholders to encourage regulated utilities who own the smart meters, to provide increased regularity and completeness of smart meter data to retail energy providers (REPs) so that we can maximise our smart offerings. Direct Energy is also working with policy makers in many jurisdictions to address key regulatory barriers such as smart meter deployment, data quality, access to smart meter data, the billing relationship and privacy concerns around customer data.</p>	<p>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, we believe there are opportunities to amplify smart meter benefits, reduce programme costs and measure installs more effectively. We advocate reviewing: a) whether alternative technologies like smart phones could be utilised more effectively than automatically providing all customers with in-home displays as standard; b) whether 'opt-in' is an effective model because time and money needs to be spent on persuading customers to have a smart meter installed; and c) whether measuring suppliers on the number of smart meters they have delivered among their customer base at the end of the obligation rather than the total number they have invested in and installed, is the best way to measure success given this could encourage suppliers who have invested less to target new customers who already have meters installed and count these meters towards their obligation fulfilment. We also engage government on reducing risk around the advent of The Tariff Cap Bill. If a cost allowance set up under the cap does not reflect the true amount suppliers like Centrica have to pay on the smart meter roll-out, suppliers may need to slow or halt roll-out.</p> <p>North America</p> <p>We believe it is critical that smart meter data be timely, accurate and consistent. This will enable REPs 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, Direct Energy encourages utilities to increase service levels as smart meter deployment completes, to ensure optimal availability and quality of associated data. To support this, we funded a project in Texas to streamline and simplify the process for customers to be able to share their data with energy service providers. Direct Energy is supportive of legislation which balances the protection of privacy interests with provision of innovative new energy products and applications.</p>
Carbon tax	Support	<p>Carbon Price Floor</p> <p>Although Centrica is shifting its focus away from centralised power generation, we remain a major investor in gas fired generation and nuclear. We have 5 power stations, 4 new rapid response gas fired projects in the pipeline and have a 20% equity stake in the UK's existing 8 nuclear power plants. We believe the Carbon Price Floor (CPF) has an important role to play in delivering cost-effective decarbonisation. Since its introduction in 2013 the CPF, alongside other environmental policy, has had a material impact in reducing UK carbon emissions. It is estimated that UK carbon emissions have fallen by around 13.5% over this period and there has been a</p>	<p>Government has announced that longer term clarity over the CPF will be provided in the 2018 Budget. In the interim, we welcome further clarity on the near-term trajectory.</p>

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
		significant switch from coal to gas fired generation. Investors in generation, such as Centrica, rely on certainty in the investment framework to commit expenditure for the long term. The CPF 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. We welcomed confirmation in the 2017 Autumn Statement that the CPF would remain frozen at £18/tonne (plus inflation) to 2020-22. Industry now needs clarity regarding the longer term CPF trajectory and how this may/may not interact with the UK's ongoing relationship with the EU ETS.	
Carbon tax	Support	<p>EU Emissions Trading Scheme</p> <p>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, making decarbonisation both cheaper and faster. A robust EU ETS that delivers a level-playing field, could reduce the need for a separate Carbon Price Floor in the UK over the longer term. We have actively supported within the EU and with other stakeholders, proposals which will lead to the strengthening of the EU ETS including a) doubling the 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. Going forward, there might be ways to link a new UK ETS to the EU ETS but we would need to examine the details of such mirrored or linked systems, before supporting alternatives. At first sight, we believe it would be very complicated and in all likelihood, the UK ETS would need to follow the same price trajectory as the system it is linked to.</p>	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.

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 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, or are you attempting to, influence the 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 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, or are you attempting to, influence the 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, or are you attempting to, influence the 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, or are you attempting to, influence the position?

We are a member of ADE and represented on the board. We work with them to promote decentralised energy, including CHP and demand side response, and 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, or are you attempting to, influence the position?

We are a full member of the CBI and sit on their Energy and Climate Change working groups and 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 which was published in February 2017 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 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 and their 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, or are you attempting to, influence the 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.

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.**

Regular and meaningful stakeholder engagement is important. It enables us to better understand and manage issues that are most important to our stakeholders and our business. By involving stakeholders in how we do business, we can demonstrate our accountability and increase our understanding while identifying opportunities and managing risks more effectively. Stakeholder interactions are conducted through a variety of methods from one-to-one meetings to formal committees and workshops, spanning a range of issues including how we can better enable the low carbon transition.

Government - Throughout the year, we engaged Government through direct meetings and consultation responses on evolving energy policy to help it become more cost-effective, while strengthening energy security and enabling a lower carbon future. This included discussions with the UK Government on a range of issues such as the content of the recent Energy Bill which has since been passed into law, the smart meter roll-out and the future of energy efficiency schemes.

Customers - We engaged a variety of consumers and consumer organisations to better understand their needs and support the expansion of our innovative products and services that offer greater understanding and control over energy. We ensure that all significant initiatives, such as new proposition launches, are underpinned by a robust research and analysis to ensure we can deliver for the changing needs of our customers. Towards this, we have committed a £100m investment to build, collaborate and invest in purposeful start-ups that will make energy work harder for our customers by focusing on control, convenience and affordability. Our Smart and Connected Home teams also run ongoing engagement

surveys to explore how we can encourage increased take-up and secure feedback to inform future development. We additionally carry out consumer campaigns to raise awareness around reducing energy use which in North America, includes our Innovation to Inspiration interactive bus tour that enables customers and the general public to experience the benefits of the Connected Home and energy efficient products first-hand.

NGOs - In 2017, we continued our dialogue with many of the main environmental NGOs in the UK and North America in order to better understand their concerns on issues such as climate change and to explore areas where we have common goals and opportunities for collaboration. These meetings form a valuable part of our wider stakeholder engagement programme and inform our thinking on meeting the challenge of climate change. Most notably in 2017, our Chief Executive met with the Chief Executive of a major global environmental NGO to discuss a wide range of issues including climate change and the role of energy companies in the low carbon transition.

Communities - The communities in which we operate are important to us so we engage community stakeholders to ensure we make a positive and lasting impact. In our Central Power Generation and 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 approval process to the end of a project's lifecycle. These engagements include collaboration with environmental NGOs and local interest groups on a range of issues spanning 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 are also collaborating with communities to explore the potential of local energy markets. We are recruiting over 100 homes and businesses to take part in our £19m local energy market trial in Cornwall which will test how flexible demand, generation and storage can reduce pressure on the electricity grid, enable the growth of renewables and avoid expensive network upgrades. £10m has additionally been invested in start-ups with innovative energy ideas through our corporate impact investment which has helped over 38,000 people in society since 2013 and includes growing the green skills of young people not in education employment or training (NEETs) as well as generating solar energy for low income communities. Finally, our Community Action Partnership with National Energy Action (NEA) works alongside local authorities and charities through a designated website to advise on creating action plans that equip communities with the tools to use energy more efficiently. Through the partnership, we have reached over 100,000 people with energy efficiency advice.

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 for example, steps were taken to establish a centralised Centrica Policy Group (CPG) with senior level representation from across all business units. The CPG meets regularly 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 our 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 while our Vulnerable Customers Steering Group may consider ways to strengthen routes through which these 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

[Centrica Annual Report 2017.pdf](#)

Content elements

Governance

Strategy

Risks & opportunities

Emissions figures
Emission targets
Other metrics

Publication

In voluntary sustainability report

Status

Complete

Attach the document

[Centrica Strategic Update on Carbon 2017.pdf](#)

Content elements

Strategy
Emissions figures
Emission targets
Other metrics

Publication

In voluntary communications

Status

Complete

Attach the document

[Centrica Data Centre 2012-2017.xlsx](#)

Content elements

Emissions figures
Emission targets
Other metrics

Publication

In voluntary communications

Status

Complete

Attach the document

[Centrica Investor Factsheet 2017.pdf](#)

Content elements

Strategy
Emissions figures
Emission targets
Other metrics

Publication

In voluntary communications

Status

Complete

Attach the document

[Centrica Our Code.pdf](#)

Content elements

Other, please specify (Ethical commitments)

Publication

In voluntary communications

Status

Complete

Attach the document

[Centrica Powering Britain Report 2017.pdf](#)

Content elements

Strategy

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.

Note to question C8.1:

As an international energy and services company, interpreting this question presents challenges. Under one definition, virtually all operational spend may be deemed to have been spent on energy as that is the purpose of our business. However, to provide comparisons with other companies and industries, we have interpreted this as energy used in the running of our business. The figure provided is an approximate figure based on the electricity and heating used at our offices, imported electricity used at our power stations and petrol/diesel costs for our fleet. We have employed an average price across our operations and have not included the costs of natural gas used to generate electricity or the costs of electricity purchased from third party providers for supply to our customers. These are specific to our business as an energy and services company and involve commercially sensitive contracts. We publish the amount of natural gas used and electricity purchased but not the costs.

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 Note: this role sits on Centrica's Board and oversees the Legal & Corporate secretariat functions.	Director on board