



## Climate Change 2017 Information Request Chevron Corporation

### Module: Introduction

#### Page: Introduction

#### CC0.1

##### Introduction

Please give a general description and introduction to your organization.

Chevron's portfolio is built upon a strong and diverse set of assets around the globe. In the Upstream sector, our asset classes comprise conventional and unconventional crude oil and natural gas, heavy oil, liquefied natural gas (LNG), and deepwater assets. Our Upstream portfolio includes premier LNG assets in Australia; legacy crude oil assets in Kazakhstan; strong unconventional assets in the United States, Canada and Argentina; and excellent deepwater assets in Nigeria, Angola and the U.S. Gulf of Mexico. In addition, our world-class Downstream and Chemicals business is focused on growing higher-return segments, including petrochemicals, lubricants and additives.

For over 138 years, we have provided affordable, reliable energy that creates economic opportunity and improves lives. Our business success is driven by our people and their commitment to getting results the right way. The 2016 Corporate Responsibility Report Highlights is a summary of how we address safety and the environmental, social and governance issues that matter to our business and stakeholders.

The foundation of how we operate is The Chevron Way, which explains who we are, what we believe, how we achieve and where we aspire to go. It defines our values, which distinguish us from our competitors and make us the partner of choice.

One of these values is to protect people and the environment. We demonstrate this value in a variety of ways, including through our commitment to human rights, which is embedded in our safety culture and participation in international human rights initiatives.

Vision: At the heart of The Chevron Way is our vision ... to be the global energy company most admired for its people, partnership and performance.

Enabling human progress: We develop the energy that improves lives and powers the world forward.

Values: Our company's foundation is built on our values, which distinguish us and guide our actions to deliver results. We conduct our business in a socially and environmentally responsible manner, respecting the law and universal human rights to benefit the communities where we work.

Diversity and inclusion: We learn from and respect the cultures in which we operate. We have an inclusive work environment that values the uniqueness and diversity of individual talents, experiences and ideas.

High performance: We are passionate about delivering results, and strive to continually improve. We hold ourselves accountable for our actions and outcomes. We apply proven processes in a fit-for-purpose manner and always look for innovative and agile solutions.

Integrity and trust: We are honest with ourselves and others, and honor our commitments. We trust, respect and support each other. We earn the trust of our colleagues and partners by operating with the highest ethical standards in all we do.

Partnership: We build trusting and mutually beneficial relationships by collaborating with our communities, governments, customers, suppliers and other business partners. We are most successful when our partners succeed with us.

Protect people and the environment: We place the highest priority on the health and safety of our workforce and protection of our assets, communities and the environment. We deliver world-class performance with a focus on preventing high-consequence incidents.

##### Major business strategies

Upstream: Deliver industry-leading returns while developing high-value resource opportunities

Downstream & Chemicals: Grow earnings across the value chain and make targeted investments to lead the industry in returns

Midstream: Deliver operational, commercial and technical expertise to enhance results in Upstream and Downstream & Chemicals

##### Enterprise strategies

People: Invest in people to develop and empower a highly competent workforce that delivers results the right way

Execution: Deliver results through disciplined operational excellence, capital stewardship and cost efficiency

Growth: Grow profits and returns by using our competitive advantages

Technology and functional excellence: Differentiate performance through technology and functional expertise

#### CC0.2

##### Reporting Year

Please state the start and end date of the year for which you are reporting data.

The current reporting year is the latest/most recent 12-month period for which data is reported. Enter the dates of this year first.

We request data for more than one reporting period for some emission accounting questions. Please provide data for the three years prior to the current reporting year if you have not provided this information before, or if this is the first time you have answered a CDP information request. (This does not apply if you have been offered and selected the option of answering the shorter questionnaire). If you are going to provide additional years of data, please give the dates of those reporting periods here. Work backwards from the most recent reporting year.

Please enter dates in following format: day(DD)/month(MM)/year(YYYY) (i.e. 31/01/2001).

Enter Periods that will be disclosed

Fri 01 Jan 2016 - Sat 31 Dec 2016

#### CC0.3

##### Country list configuration

Please select the countries for which you will be supplying data. If you are responding to the Electric Utilities module, this selection will be carried forward to assist you in completing your response.

Select country

**CC0.4**  
**Currency selection**

Please select the currency in which you would like to submit your response. All financial information contained in the response should be in this currency.

USD(\$)

**CC0.6**  
**Modules**

As part of the request for information on behalf of investors, companies in the electric utility sector, companies in the automobile and auto component manufacturing sector, companies in the oil and gas sector, companies in the information and communications technology sector (ICT) and companies in the food, beverage and tobacco sector (FBT) should complete supplementary questions in addition to the core questionnaire. If you are in these sector groupings, the corresponding sector modules will not appear among the options of question CC0.6 but will automatically appear in the ORS navigation bar when you save this page. If you want to query your classification, please email [respond@cdp.net](mailto:respond@cdp.net). If you have not been presented with a sector module that you consider would be appropriate for your company to answer, please select the module below in CC0.6.

**Further Information**

Chevron's participation in the survey should not be construed as an agreement or endorsement of the factual accuracy of the survey or its assumptions, or agreement with the guidelines, scoring, and/or any definitions used in the survey. Chevron's responses are not intended as a policy statement on the issues presented. In addition, Chevron response should not be construed as a comprehensive list or statement on the issues presented. Chevron has provided representative information where appropriate

**Module: Management**

**Page: CC1. Governance**

**CC1.1**  
**Where is the highest level of direct responsibility for climate change within your organization?**

Board or individual/sub-set of the Board or other committee appointed by the Board

**CC1.1a**  
**Please identify the position of the individual or name of the committee with this responsibility**

The Public Policy Committee of the Board of Directors of Chevron Corporation: Assists the Board of Directors in identifying, evaluating and monitoring public policy trends and social, political and environmental issues that could impact the Corporation's business activities and performance. It also reviews and makes recommendations for the Corporation's strategies related to corporate responsibility and reputation management.

Duties and Responsibilities: The following are some of the common recurring duties and responsibilities of the Committee in carrying out its oversight functions:

- To assist the Board of Directors in identifying, evaluating and monitoring social, political and environmental trends, issues and concerns;
- To assist the Board in analyzing how public policy trends could impact the Corporation's business activities and performance;
- To assist the Board in determining how the Corporation can anticipate and adjust to public policy trends in order to more effectively achieve its business goals or to be an important contributor to the policy dialogue;
- To assist the Board in analyzing the company's global reputation and developing recommendations to strategically position the company to support its business objectives;
- To develop recommendations to the Board with regard to formulating and adopting basic policies, programs and practices concerning broad public policy issues;
- To assist the Board in fulfilling its oversight responsibility for the Corporation's broad enterprise risk management program by periodically assessing and responding as appropriate to risks that may arise in connection with the social, political and environmental, and public policy aspects of the Corporation's business;

**CC1.2**  
**Do you provide incentives for the management of climate change issues, including the attainment of targets?**

No

**Further Information**

At the end of each year, the Management Compensation Committee (MCC) and Board approve the Chevron Incentive Plan (CIP) award after performance results are evaluated against pre-determined measures. The Chevron Incentive Plan is designed to recognize annual performance achievements based on the MCC's assessment of Company performance across four broad categories: financial, capital management, operating performance, and health, environment and safety. Each category contains multiple performance measures, reflecting outcomes on both short-term and long-term measures on absolute, relative, and time-series performance. The CIP also recognizes individual leadership through measurable individual contributions. The award is delivered as an annual cash bonus based on a percentage of base salary and makes up approximately 11 percent of the CEO's annual compensation and on average 14 percent of all other Named Executive Officer's annual compensation.

**Page: CC2. Strategy**

**CC2.1**  
**Please select the option that best describes your risk management procedures with regard to climate change risks and opportunities**

Integrated into multi-disciplinary company wide risk management processes

**CC2.1a**  
**Please provide further details on your risk management procedures with regard to climate change risks and opportunities**

Frequency of monitoring	To whom are results reported?	Geographical areas considered	How far into the future are risks considered?	Comment

Frequency of monitoring	To whom are results reported?	Geographical areas considered	How far into the future are risks considered?	Comment
Annually	Board or individual/sub-set of the Board or committee appointed by the Board	All geographical areas, domestic (USA) and foreign in which Chevron's operation and performance are affected or could be affected	> 6 years	Chevron operates in a highly competitive and constantly changing marketplace. We regularly reassess our views of existing and future energy markets as well as policy scenarios under which we expect to operate. To manage the wide array of potential risks inherent to its business, Chevron has in place mature processes for risk management, including risks that may be associated with climate change. Executive management and ultimately the Board of Directors are involved in these processes. Examples of our risk management processes include Enterprise Risk Management, investment decision making, and strategic and business planning. As to climate change risks, our assessments have included an examination of potential carbon-constrained scenarios, including pricing scenarios and the relative competitiveness of asset types.

**CC2.1b**

**Please describe how your risk and opportunity identification processes are applied at both company and asset level**

Company level:

Chevron has robust risk management processes in place that we believe effectively address climate-change-related risks. GHG emissions issues, climate change risks and carbon pricing risks are considered in Chevron's strategies, business planning, and risk management tools and processes. When assessing the business risk posed by a carbon-restricted world, Chevron considers the world's energy demand, the role fossil fuels play in providing that energy, the evolution and advancement of energy and climate policies, and the advancement of new energy technologies.

Since 2007, as part of its ongoing planning process, Chevron has generated an internal outlook of future carbon prices. Given the uneven state of GHG regulation around the world, this outlook is framed on a regional basis. The outlook is based on an assessment of economic conditions, energy demand, policy evolution, technology developments and costs of abatement, among other factors. This assessment brings together corporate experts and regional operating personnel.

Asset level:

Individual investments are developed, approved and implemented in the context of the strategic plan and segment-specific business plans. The business segments develop investment proposals supporting appropriation requests that are evaluated by management and, as appropriate, reported to the Executive Committee and/or the Board of Directors. A number of GHG-related factors are considered in project appropriation assessments and documents. These factors include an annual profile of anticipated project GHG emissions (both Scope 1 and Scope 2), economic analysis of the current Company endorsed carbon price outlook as applied to the project's anticipated emissions profile and an assessment of the options to reduce GHG emissions and/or optimize energy efficiency. Chevron continually considers the possible policy and/or regulatory actions associated with carbon pricing as applied to our current production portfolio.

**CC2.1c**

**How do you prioritize the risks and opportunities identified?**

To prioritize, Chevron uses:

Analysis of carbon-constrained future: In addition to our routine suite of supply, demand and pricing analyses, Chevron has analyzed the impacts of supply, demand and resultant pricing levels under a reduced-demand/GHG constrained scenario, including consideration of the IEA's 450 Scenario

Internal carbon pricing outlook: Since 2007, as part of its ongoing planning process, Chevron has generated an internal outlook of future carbon prices.

Capital project approvals: Individual investments are developed, approved and implemented in the context of the strategic plan and segment-specific business plans. The business segments develop investment proposals supporting appropriation requests that are evaluated by management and, as appropriate, reported to the Executive Committee and/or the Board of Directors.

Policy and regulatory risk: Policies addressing climate change and GHG emissions vary widely around the globe, both in substance and in the pace of implementation. This variation occurs at country-by-country and subnational levels. Governments around the world have a variety of GHG/climate regulations with which Chevron is required to comply. The Company actively monitors emerging GHG/climate regulation.

Physical: For decades, Chevron has managed risks associated with the impact of severe weather on our operations. These long-standing practices are being applied and extended to reflect possible climate impacts. For example, Chevron is ensuring the ongoing resilience of our infrastructure, both for current operations and for those being developed and/or considered.

Chevron portfolio management: As a premier developer of energy resources with a focus on capital efficiency, Chevron expects to play a prominent role in meeting global energy demand as energy and climate policies evolve. To accomplish this, we continually refresh our portfolio, taking into account our views of future market and regulatory conditions.

**CC2.2**

**Is climate change integrated into your business strategy?**

Yes

**CC2.2a**

**Please describe the process of how climate change is integrated into your business strategy and any outcomes of this process**

i. How is the strategy influenced: We regularly reassess our views of existing and future energy markets as well as policy scenarios under which we expect to operate. To manage the wide array of potential risks inherent to its business, Chevron has in place mature processes for risk management, including risks that may be associated with climate change. Executive management and ultimately the Board of Directors are involved in these processes. Examples of our risk management processes include Enterprise Risk Management, investment decision making, and strategic and business planning. As to climate change risks, our assessments have included an examination of potential carbon-constrained scenarios, including pricing scenarios and the relative competitiveness of asset types.

ii. Example: We participated in a joint industry project with experts at the National Center for Atmospheric Research to better understand possible changes in the frequency and magnitude of hurricanes in the Gulf of Mexico over the next 50 years and are using information from this work to support the meteorology and oceanography (metocean) design basis for offshore Gulf of Mexico assets

iii. Aspects of CC that have influenced the strategy: Regulation of greenhouse gas (GHG) emissions could increase Chevron's operational costs and reduce demand for Chevron's hydrocarbon and other products. Further, for decades, Chevron has managed risks associated with the impact of severe weather on our operations. These long-standing practices are being applied and extended to reflect possible climate impacts.

iv. S-T strategy: Chevron has robust risk management processes in place that we believe effectively addresses climate-change-related risks. GHG emissions issues, climate change risks and carbon pricing risks are considered in Chevron's strategies, business planning, and risk management tools and processes.

v. L-T strategy: In addition to our routine suite of supply, demand and pricing analyses, Chevron has analyzed the impacts of supply, demand and resultant pricing levels under a reduced-demand/GHG constrained scenario, including consideration of the IEA's 450 Scenario. Further, since 2007, as part of its ongoing planning process, Chevron has generated an internal outlook of future carbon prices. Furthermore, for decades, Chevron has managed risks associated with the impact of severe weather on our operations. These long-standing practices are being applied and extended to reflect possible climate impacts. For example, Chevron is ensuring the ongoing resilience of our infrastructure, both for current operations and for those being developed and/or considered.

vi. Advantage over competition: Despite lower prices, our cash margins continued to be quite competitive, our upstream cash margins were just under \$18 a barrel at \$44 Brent and Chevron's total shareholder return outpaced our major competitors and the S&P 500 in 2016. Our processes have enabled the Company to adapt to the dynamic and constantly changing nature of energy markets. As markets have evolved and changed, so have our Company's operations. The history of our operations has shown that we are consistently well prepared and able to adapt to changing conditions in the marketplace.

vii. Business decisions driven by CC: We integrate climate change risks into strategic and business planning processes. These are examples of major business decisions resulting from this process:

\* We have made significant progress in reducing flare gas volumes in Angola through the execution of various projects. For example, our Nemba Enhanced Secondary Recovery Project reduced flaring at the South and North Nemba fields by almost 34 million standard cubic feet per day in 2016.

\* Chevron Australia's Gorgon Project incorporates facilities to safely inject reservoir carbon dioxide more than 1.2 miles (2 km) below the surface of Barrow Island. Carbon dioxide occurs naturally in the gas being produced and is extracted as a routine part of the processing operations. In most gas processing plants, these gases are vented to the atmosphere. When fully operational, it is anticipated that greenhouse gas emissions from the Gorgon Project will be reduced by up to 4 million metric tons per year, or 100 million metric tons over the life of the project.

\* In Alberta, Canada, Chevron is a co-venture partner of the Quest Carbon Capture and Storage (CCS) project—the first CCS project in the Canadian oil sands. This innovative project is designed to capture and safely store more than a million metric tons of carbon dioxide each year—equivalent to taking 250,000 cars off the road annually. Commercial operations at the Quest CCS project began in November 2015.

viii. Influence of Paris agreement: International agreements (e.g., the Paris Agreement and the Kyoto Protocol) and national, regional, and state legislation and regulatory measures that aim to limit or reduce greenhouse gas (GHG) emissions are currently in various stages of implementation. Consideration of GHG issues and the responses to those issues through international agreements and national, regional or state legislation or regulation are integrated into the company's strategy, planning and capital investment reviews, where applicable. They are also factored into the company's long-range supply, demand and energy price forecasts. These forecasts reflect long-range effects from renewable fuel penetration, energy efficiency standards, climate-related policy actions, and demand response to oil and natural gas prices.

ix. Forward looking scenarios: In addition to our routine suite of supply, demand and pricing analyses, Chevron has analyzed the impacts of supply, demand and resultant pricing levels under a reduced-demand/GHG constrained scenario, including consideration of the IEA's 450 Scenario. These are the key findings from that analysis:

• The pricing levels modeled for the IEA 450 Scenario generally align with the low end of the price trajectory range being used throughout Chevron's various planning processes. In essence, our investments have already been stress-tested against such a low-demand environment through our routine, established processes.

• Certain high-cost assets around the world could be impacted by the hypothetical GHG-constrained case. Given the reduced demand and pricing impacts of this hypothetical modeling scenario, this is an expected modeling outcome. In the event that this GHG-constrained case were to manifest itself, these high cost assets, for which a final investment decision has yet to be made, would not find a place in our investment portfolio given our risk management processes. However, even applying this hypothetical scenario, given the ongoing demand for energy, lower-cost assets remain competitive, including those assets already producing, which would continue to produce.

## CC2.2c

### Does your company use an internal price on carbon?

Yes

## CC2.2d

### Please provide details and examples of how your company uses an internal price on carbon

i) Scope that the emissions pertain to: Scope 1

ii) Where/How it is used: Greenhouse gas emissions issues, climate change risks and carbon pricing risks are considered in Chevron's strategies, business planning, and risk management tools and processes. Chevron continually considers the possible policy and/or regulatory actions associated with carbon pricing as applied to our current production portfolio. Further, since 2008, our internal carbon price has been considered in the economic evaluations supporting major capital project appropriations

iii) Rationale: Chevron is exposed to a number of direct financial costs relating to GHG/climate regulation. The most prominent are payments for allowances for internal emissions under cap and trade systems and payments of carbon taxes on internal emissions. Some of these costs may be ultimately borne by customers in the competitive marketplace, mitigating their impact. The Company incurs additional expenses for monitoring, reporting and verifying emissions as well as collecting, accounting for and disbursing carbon taxes and allowance costs that it collects on products it sells. Since 2007, as part of its ongoing planning process, Chevron has generated an internal outlook of future carbon prices.

iv) Actual price(s) used and variance: Given the uneven state of GHG regulation around the world, this outlook is framed on a regional basis. The outlook is based on an assessment of economic conditions, energy demand, policy evolution, technology developments and costs of abatement, among other factors. This assessment brings together corporate experts and regional operating personnel.

v) Process to determine price(s) and business division responsible: Given the uneven state of GHG regulation around the world, this outlook is framed on a regional basis. The outlook is based on an assessment of economic conditions, energy demand, policy evolution, technology developments and costs of abatement, among other factors. This assessment brings together corporate experts and regional operating personnel.

vi) Examples of how carbon pricing has affected your business:

Existing Upstream production: As a general matter, producing assets will continue to produce until the point at which operating costs are not covered. This remains true in a carbon-constrained world, although costs may also be increased from regulations such as cap and trade and/or the imposition of carbon taxes not being absorbed in the competitive marketplace. The Company mitigates these risks through consideration of a range of potential carbon prices into

its appropriations evaluations.

vii)Challenges with this process: The actual level of expenditure required to comply with new or potential climate change-related laws and regulations and amount of additional investments in new or existing technology or facilities, such as carbon dioxide injection, is difficult to predict with certainty and is expected to vary depending on the actual laws and regulations enacted in a jurisdiction, the company's activities in it and market conditions.

**CC2.3**  
**Do you engage in activities that could either directly or indirectly influence public policy on climate change through any of the following? (tick all that apply)**

- Direct engagement with policy makers
- Trade associations
- Funding research organizations

**CC2.3a**  
**On what issues have you been engaging directly with policy makers?**

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
Mandatory carbon reporting	Support with minor exceptions	In the United States, the California Air Resources Board and the Environmental Protection Agency have established mandatory reporting rules. We engage with both agencies to inform them of the reporting issues that we face, including reporting burden, data availability, measuring and control systems, and confidential business information, among others. In Australia Chevron is a long term supporter of the National Greenhouse and Energy Reporting Act as Australia's single national reporting system for data on greenhouse gas emissions, energy use and energy production from industry. Chevron continues to advocate for improvements to the NGER, primarily around the simplification and streamlining of reporting obligations. For example, simplifying requirements for the reporting of non-material emissions sources which are costly for industry to comply with and could be determined by government from alternative sources. An example of this is the requirement to report SF6 fugitive emissions for individual facilities.	The demands placed on organizations by both voluntary reporting initiatives and regulations are substantial, presenting logistical and compliance issues, particularly in the gathering of information and its publication. Specific technical requirements set by regulators concerning the measurement and evaluation of emissions, serve to further increase the complexity of reporting requirements. The large number of various initiatives and methodologies has contributed to concerns about comparability and increased complexity. Greenhouse gas emissions reporting may require clarification and alignment. We encourage policymakers to continue to engage with industry associations and voluntary certification bodies to understand the issues faced by our industry, reduce the burden of reporting and harmonize disclosure requirements.
Other: Direct Measures	Oppose	Overlapping policies such as direct measures undermine the effectiveness of market-based mechanisms.	In California: We share the concerns of California about climate change risks and have worked closely with the California Air Resources Board to design a workable program. With respect to direct measures, we believe that Low Carbon Fuel Standard (LCFS) targets need to be set at realistic and sustainable levels that will enhance regulatory certainty for all stakeholders. In Oregon: In 2016 the Department of Environmental Quality implemented a Clean Fuels Program (CFP) that mirrors the California LCFS. We continue to engage with the government on the feasibility of the CFP. Our experiences with the California LCFS, including the lack of new low carbon fuels developed under the program, indicate these policies may have undesirable consequences to Oregon consumers.
Other: Climate Policy Review	Support with minor exceptions	In Australia, the Australian Government has commenced a review of its climate policies with a view to delivering on its 2030 emissions reduction target. A discussion paper was released in early 2017. Chevron has engaged in that policy review.	Chevron Australia encourages the government to take into account that certain sectors of the Australian economy are heavily trade exposed. The government's Emissions Reductions Fund should be technology neutral and the government should undertake reforms to ensure a wider range of technology neutral emissions abatement can be accessed via the fund.
Energy efficiency	Support	At Chevron, we share the concerns of governments and the public about climate change. We support cost effective energy efficiency measures for all sectors. Governments should continue to encourage and account for voluntary efforts to improve energy efficiency. We developed a formal, business-driven climate change approach for managing greenhouse gas emissions, which incorporates energy efficiency.	Energy efficiency policies can be effective if the goals are reasonable and achievable, closely coordinated with relevant industries (e.g. auto manufacturers, fuel manufacturers and governments), and negative customer impacts are mitigated. Energy efficiency is the most immediate and cost-effective source of "new" energy with no GHG emissions. In addition to government support of energy efficiency efforts, the private sector should increase its own efforts to enhance efficiency in everything from manufacturing and transportation to building management and construction. In Australia we have advocated that the most effective way to maximize energy productivity is through properly functioning energy markets, where the consumer makes choices regarding energy consumption based on the true cost of energy

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
Clean energy generation	Support with minor exceptions	Natural gas is an efficient energy source and the cleanest-burning fossil fuel. Natural gas extracted from dense shale rock formations has become the fastest-growing source of gas in the United States and could become a significant new global energy source. Safe and responsible development of natural gas from shale is critical. Chevron designs safety and environmental protection into each well we drill. However, we are judged not only by what we do, but by what our industry does as a whole. We, therefore, work with the industry and our regulators to share best practices and encourage continual improvement to earn the public's trust as we move forward. Chevron continues to add more shale gas acreage to its portfolio.	Governments are critical participants in stimulating the development and deployment of new energy technologies. Their most critical role will be to set and maintain a policy framework that promotes energy and environmental security. That strategy should embrace new areas of development that are becoming available as a result of our increased investments and advancing technology. The delivery of new energy supplies to market remains hindered by restricted access and lengthy regulatory processes both in the United States and abroad. Governments should move proactively to address these issues. To encourage investment across the entire energy portfolio, sound and consistent policies must be enacted. These policies should promote stable, predictable fiscal and regulatory regimes, protect the sanctity of contracts and strengthen the rule of law. The production and use of energy must serve as a platform for broader economic growth and social well-being. We must ensure that the economic benefits of energy flow to all stakeholders, including the poor and the vulnerable. This can be done only through proactive national and international leadership fully supported by industry. The concept of the RFS2 was well intentioned – technology forcing for advanced biofuels; however it has been poorly implemented. It needs to be significantly revised; or repealed.
Other: Renewable Fuel Standard	Support with major exceptions	Chevron believes that advanced biofuels can play an important role in our future energy mix if we can unlock the secrets to sustainable, large-scale and cost-effective production. While the concept of the US EPA's Renewable Fuel Standard (RFS2) was well intentioned, it is a seriously flawed program. The new renewable fuel standards increase the volume of renewable fuel required to be blended into transportation fuel to 36 billion gallons by 2022. We pursue renewable energy technologies that leverage our company's strengths and that can be deployed with competitive economic returns with a focus on energy efficient technologies. We conduct internal research and collaborate with governments, businesses and academia in researching and developing alternative and renewable energy sources. Through these partnerships, we share information and help to advance technology that can lead to more renewable energy for future generations.	The concept of the RFS2 was well intentioned – technology forcing for advanced biofuels; however it has been poorly implemented. It needs to be significantly revised; or repealed.
Regulation of methane emissions	Support with major exceptions	On January 14, 2015, the White House and EPA announced a framework for reducing methane emissions from the oil and gas sector by 40 to 45 percent from 2012 levels by 2025. While other industries are mentioned, the primary focus is oil and gas sector emissions. The oil and gas sector is responsible for roughly 30% of U.S. methane emissions. Agriculture (including enteric fermentation and manure management) is also roughly 30%, followed by landfills (20%) and coal mining (9%). On August 18, 2015, the EPA released a package of four proposed rules/guidelines that impact upstream air emissions. Shortly after the new source rule is final, an existing source guideline for ozone non-attainment areas is expected. In addition to the EPA rulemakings, on January 22, 2016, the Bureau of Land Management (BLM) released a proposed flaring and venting rule that applies to many of the proposed EPA new source controls to existing sources on federally managed land. Additionally, the rule aims to eliminate venting and curtail flaring even in situations out of operator's direct control. While we support the goal of reducing methane emissions, the current proposals are duplicative, and do not cost-effectively address reducing methane emissions.	The proposed EPA and BLM rules need to be significantly revised or repealed. Rules should focus on new sources only. Excessive testing and monitoring requirements result in excess cost and little emissions benefit. Data Chevron has provided in our public comments to both agencies shows very low rates of leak detection, indicating that regulatory estimates of potential emissions reductions are inflated.

**CC2.3b**

**Are you on the Board of any trade associations or provide funding beyond membership?**

Yes

**CC2.3c**

**Please enter the details of those trade associations that are likely to take a position on climate change legislation**

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
American Petroleum Institute	Consistent	<p>These are examples of key national and international level trade associations, not an exhaustive list. On a November 2015 publication titled "Climate Change and Energy", the American petroleum Institute (API) states that "...it is clear that climate change is a serious problem that requires research for solutions and effective policies that allow us to meet our energy needs while protecting the environment. That's why oil and gas companies are working to reduce their greenhouse gas emissions."</p>	<p>Chevron believes that climate change is a global issue. We share the concerns of governments and the public about climate change risks and recognize that the use of fossil fuels to meet the world's energy needs contributes to the rising concentration of greenhouse gasses in Earth's atmosphere. GHGs contribute to increases in global temperatures. We take prudent, practical and cost-effective actions to address climate change risks as part of our commitment to running our business the right way. Reliable and affordable energy is necessary for improving standards of living, expanding the middle class and lifting people out of poverty. Oil and natural gas will continue to fulfill a significant portion of global energy demand for decades to come—even in a carbon-constrained scenario.</p>
American Petroleum Institute	Consistent	<p>On a November 2015 publication titled "Climate Change and Energy", the American petroleum Institute (API) states that: "EPA describes President Obama's Clean Power Plan (CPP) as a "historic" step forward in reducing carbon emissions from power plants. However, a closer look reveals yet another government preference for a few sources that ignores the current contributions and future potential for natural gas, nuclear and hydroelectric power. In many ways, it's as if the administration has charted a path forward that completely ignores the energy superhighway that is built on the back of proven zero and low-emissions power sources. Instead, the CPP quietly steers the American electricity sector toward an off-roading adventure down an uncertain path with an unclear future. America's energy revolution continues to deliver broad economic benefits while helping to reduce emissions of carbon dioxide (CO2) from electricity production to near 20-year lows. These reductions are the result of market forces. They have little to do with government programs and everything to do with the fact that the United States is the world's leading producer of natural gas. With such an abundant supply of affordable fuel on hand, power plants already have an incentive to use cleaner-burning natural gas without government interference. In the CPP, EPA ignores the strong performance of current low and no-emission generation leaders (nuclear, hydro and natural gas) in favor of segments of the power industry that represent less than 7 percent of current electricity generation. Federal tax credits and other incentives interfere with the market and could have dire economic consequences. All energy sources have a role to play in supplying America's energy needs. But using regulatory authority to benefit one power source over another in electricity generation could stifle innovation, destroy jobs and raise energy bills for those who can least afford it. EIA data shows that natural gas is the prime power source in 11 of the 22 states with below average emission rates. An additional eight states in this group rely on natural gas to deliver more than 20 percent of electricity consumed."</p>	<p>EPA's Clean Power Plan is facing significant legal challenges. Chevron has been actively engaged with EPA to limit the impact of the power plant rules, which as drafted could impact our industrial cogeneration units.</p>

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
Australian Petroleum Production and Exploration Association	Mixed	<p>APPEA supports a national climate change policy that delivers greenhouse gas emissions reductions at least cost and facilitates broad-based investment decisions consistent with an international price on carbon. Climate policy must be fully integrated and consistent with policies in other areas – including energy, international trade, taxation, economic growth, population, and environmental and social responsibility 1. International engagement is crucial. Australia should continue to engage the international community to pursue environmentally effective and economically efficient climate change policies. 2. Climate change and energy policies must be integrated and harmonised. 3. Climate change adaptation strategies are necessary. 4. Climate policy must not compromise national or global economic development or energy security.</p>	<p>Chevron's position is consistent with minor exceptions. All of Chevron's activities that influence policy are guided by our Policy Principles for Addressing Climate Change, which are broadly consistent with APPEA's position on climate change. Our stance reflects a balanced approach to addressing climate change through short- and long-term measures. We believe that a successful climate policy will be one in which GHG management is accomplished equitably by the top emitting countries of the world through long-term and coordinated national frameworks. Principle One: Reducing greenhouse gas emissions is a global issue that requires global engagement and action. Principle Two: Policies should be balanced and measured to ensure long-term economic, environmental and energy security needs are all met, costs are allocated in an equitable, gradual and predictable way and actions consider both GHG mitigation and climate change adaptation. Principle Three: Continued research, innovation and application of technology are essential to enable significant and cost-effective mitigation to climate change risks over the long term. Principle Four: The costs, risks, trade-offs and uncertainties associated with GHG reduction and climate change adaptation efforts and policies must be transparent and openly communicated to global consumers.</p>
International Emissions Trading Association	Consistent	<p>IETA is dedicated to: •the objectives of the United Nations Framework Convention on Climate Change and ultimately climate protection; •the establishment of effective market-based trading systems for greenhouse gas (GHG) emissions by businesses that are demonstrably fair, open, efficient, accountable and consistent across national boundaries; and •maintaining societal equity and environmental integrity while establishing these systems.</p>	<p>Chevron is exposed to a number of direct financial costs relating to GHG/climate regulation. The most prominent are payments for allowances for internal emissions under cap and trade systems and payments of carbon taxes on internal emissions. Some of these costs may be ultimately borne by customers in the competitive marketplace, mitigating their impact. The Company incurs additional expenses for monitoring, reporting and verifying emissions as well as collecting, accounting for and disbursing carbon taxes and allowance costs that it collects on products it sells. Since 2007, as part of its ongoing planning process, Chevron has generated an internal outlook of future carbon prices. Given the uneven state of GHG regulation around the world, this outlook is framed on a regional basis. The outlook is based on an assessment of economic conditions, energy demand, policy evolution, technology developments and costs of abatement, among other factors. This assessment brings together corporate experts and regional operating personnel.</p>
American Fuels and Petrochemical Manufacturers	Consistent	<p>AFPM members are strongly committed to clean air, water and waste reduction, have an outstanding record of compliance with the United States Environmental Protection Agency (EPA) and other regulators, and have invested hundreds of billions of dollars to dramatically reduce emissions as measured by EPA.</p>	<p>(Chevron is a member of AFPM's Board) We agree with the core message and commitment to clean air, water and waste reduction. Chevron shares the concerns of governments and the public about climate change risks and recognizes that the use of fossil fuels to meet the world's energy needs contributes to the rising concentration of greenhouse gases (GHGs) in Earth's atmosphere. GHGs contribute to an increase in global temperature. We apply cost-effective technologies to improve the energy efficiency of our base business operations and capital projects. As we work to address climate risks, we must create solutions that achieve environmental objectives without undermining growth of the global economy and our aspirations for a better quality of life for all.</p>

## CC2.3d

Do you publicly disclose a list of all the research organizations that you fund?

No

**CC2.3f**  
**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?**

The Strategy and Planning Committee is responsible for managing the strategic and business planning processes at the Board's direction.

Our policy principles for addressing climate change have guided our actions and policy views for the past 10 years.

1- Reducing GHG emissions is a global issue that requires global engagement and action.

GHGs do not recognize sovereign borders. Climate change risks stem from the cumulative effect of GHG emissions from all nations. By 2025, about one-third of global energy-related GHG emissions are projected to come from OECD nations and two-thirds from non-OECD nations – the single largest being China, accounting for nearly 30% of projected global energy-related GHG emissions. With emissions rising fastest in the broader developing world, climate change risks cannot be addressed by actions taken in the developed world alone. Global engagement is required. Unilateral action by any country or jurisdiction could result in unintended consequences that could distort markets, reduce competitiveness of trade-exposed industries and undermine intended environmental objectives – without reducing climate change risks to that country or jurisdiction.

2- Policies should be balanced and measured to ensure long-term economic, environmental and energy security needs are all met, costs are allocated in an equitable, gradual and predictable way and actions consider both GHG mitigation and climate change adaptation. Access to affordable, reliable energy is essential to the growth of strong economies, sustained improvements in the quality of life, and the eradication of poverty. To ensure these benefits for today's and future generations alike, GHG reduction and climate change adaptation objectives must balance the need for economic growth, environmental stewardship, and energy security.

How the costs of these actions are shared is equally important. GHGs are a function of many activities, from manufacturing, agriculture and transport, to supply the world with essential food, goods and services, to how much energy we use to power our homes, drive our cars and otherwise travel for work and leisure. To reduce GHG emissions while avoiding disruptive economic and social impacts, policies must be developed that allow for multiple solutions, reasonable timeframes for the turnover of infrastructure, equitable sharing of costs across carbon-emitting sectors of the economy and efficient allocation of capital.

3- Continued research, innovation and application of technology are essential to enable significant and cost-effective mitigations to climate change risks over the long term. There are large-scale, proven and affordable technologies available today that can be applied to lower or reduce the growth of global GHGs. Natural gas, energy efficiency, and nuclear technologies can be implemented immediately to help reduce GHG emissions while innovative research continues. This also may include unsubsidized wind energy in jurisdictions where large-scale development can be achieved. Government must enable the development and application of these energy technologies by removing barriers to access, streamlining permitting and ensuring responsible and cost-effective regulation.

Energy efficiency is the most immediate and cost-effective source of "new" energy with no GHG emissions. In addition to government support of energy efficiency efforts, the private sector should increase its own efforts to enhance efficiency in everything from manufacturing and transportation to building management and construction.

Innovative technologies are created and developed through an ecosystem of free markets, university research, government investment, public-private partnership, entrepreneurial venture capital start-ups, and industrial and individual application of new technologies. The development of multiple solutions and pathways will require sufficient time for government and industry to learn from and to apply the outcomes of the research.

Policies that enable these dynamic aspects of science, research, innovation and application of technology to address scale, cost and technological barriers will advance the most cost-effective solutions to climate change risks.

4- The costs, risks, trade-offs and uncertainties associated with GHG reduction and climate change adaptation efforts and policies must be transparent and openly communicated to global consumers. Developing solutions of the scale required by the climate change challenge will be a complex endeavor. It is essential to understand and fully communicate the economic and social costs of various policies and the projected environmental benefits, both in the near term and the long term, so we can agree on solutions that are fair, balanced, effective and affordable to global consumers.

**Further Information**

Regarding question 2.3c - These are examples of key national and international level trade associations, not an exhaustive list.

**Page: CC3. Targets and Initiatives**

**CC3.1**  
**Did you have an emissions reduction or renewable energy consumption or production target that was active (ongoing or reached completion) in the reporting year?**

No

**CC3.1f**  
**Please explain (i) why you do not have a target; and (ii) forecast how your emissions will change over the next five years**

(i) why you do not have a target: Chevron operates in a highly competitive and constantly changing marketplace. We regularly reassess our views of existing and future energy markets as well as policy scenarios under which we expect to operate. To manage the wide array of potential risks inherent to its business, Chevron has in place mature processes for risk management, including risks that may be associated with climate change. Executive management and ultimately the Board of Directors are involved in these processes. Examples of our risk management processes include Enterprise Risk Management, investment decision making, and strategic and business planning. As to climate change risks, our assessments have included an examination of potential carbon-constrained scenarios, including pricing scenarios and the relative competitiveness of asset types. Our processes have enabled the Company to adapt to the dynamic and constantly changing nature of energy markets. As markets have evolved and changed, so have our Company's operations. The history of our operations has shown that we are consistently well prepared and able to adapt to changing conditions in the marketplace.

(ii) forecast how your emissions will change over the next five years: Chevron has analyzed the impacts of supply, demand and resultant pricing levels under a reduced-demand/GHG-constrained scenario, including consideration of the International Energy Agency (IEA) 450 Scenario. This analysis has shown:

- The pricing levels modeled for the IEA 450 Scenario generally align with the low end of the price trajectory range already being used throughout Chevron's various planning processes.
- Although certain high-cost assets around the world could be impacted by a hypothetical GHG-constrained case, those high cost assets for which a final investment decision has yet to be made would not find a place in our investment portfolio given our risk management processes. Lower-cost assets remain competitive, specifically, those assets already producing, which would continue to produce.

**CC3.2**  
**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

CC3.2a

Please 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	Description of product/Group of products	Are you reporting low carbon product/s or avoided emissions?	Taxonomy, project or methodology used to classify product/s as low carbon or to calculate avoided emissions	% revenue from low carbon product/s in the reporting year	% R&D in low carbon product/s in the reporting year	Comment
Product	<p>Chevron Geothermal Indonesia, Ltd., manages two large geothermal projects in Indonesia—Darajat and Salak, both on the island of Java. The output from our Darajat and Salak geothermal operations provides steam to two power plants with a total capacity of 647 megawatts. In 2006, the Darajat III unit was approved by the United Nations as a Clean Development Mechanism (CDM) project, a market-based instrument of the UN's Kyoto Protocol to encourage implementation of cost-effective greenhouse gas reductions. At the time of registration, Darajat III was the largest geothermal energy project registered under the CDM program. Currently, the Darajat III unit continues to help Indonesia avoid over 740,000 metric tons of CO2 equivalents per year. In the Philippines, the Philippines Geothermal Production Company (in which Chevron has a 40 percent interest) produces steam energy for the Tiwi and Mak-Ban geothermal power plants in southern Luzon, which have a combined installed capacity of 692 megawatts. Chevron is also an investor in the John L. Featherstone (formerly Hudson Ranch Power I) geothermal plant in the Salton Sea geothermal field of California. This 49.9 megawatt capacity project is the first standalone geothermal power generation project to have been developed, permitted and built in the last 20 years in California's Salton Sea geothermal resource area.</p>	Low carbon product	Other: Chevron follows official guidelines, including UNFCCC Clean Development Mechanism guidelines		Less than or equal to 10%	<p>The company operates the Darajat geothermal field and holds a 95 percent interest in two power plants in West Java. The field supplies steam to a three-unit power plant with a total operating capacity of 270 megawatts. Chevron also operates and holds a 100 percent interest in the Salak geothermal field in the Gunung Salak contract area in West Java. The field supplies steam to a six-unit power plant, three of which are company owned, with a total operating capacity of 377 megawatts. In 2014, Chevron secured the preliminary survey assignment for a South Sekincau prospect, and in June 2015, Chevron submitted preliminary survey results to the government of Indonesia. In August 2016, the government of Indonesia announced establishment of the Sekincau working area with an estimated resource potential of</p>

Level of aggregation	Description of product/Group of products	Are you reporting low carbon product/s or avoided emissions?	Taxonomy, project or methodology used to classify product/s as low carbon or to calculate avoided emissions	% revenue from low carbon product/s in the reporting year	% R&D in low carbon product/s in the reporting year	Comment
						<p>378 megawatts of generating capacity, which Chevron can pursue through a tender process. In December 2016, the company signed an agreement for the sale of its geothermal assets in Indonesia. This transaction is expected to close in 2017.</p>

Level of aggregation	Description of product/Group of products	Are you reporting low carbon product/s or avoided emissions?	Taxonomy, project or methodology used to classify product/s as low carbon or to calculate avoided emissions	% revenue from low carbon product/s in the reporting year	% R&D in low carbon product/s in the reporting year	Comment
Product	Our Casper Wind Farm, commissioned in 2009, turned a former refinery site near Casper, Wyoming, into an 11-turbine wind power facility. It supplies approximately 16.5 megawatts of electricity to the local power grid, enough to power approximately 4,400 homes.	Low carbon product	Other: Chevron follows industry standards, including IPIECA/API guidelines and our own GHG protocol to calculate GHG emissions savings		Less than or equal to 10%	Chevron continues to be committed to understanding and evaluating the economic viability of investments in renewable energy. We pursue renewable energy technologies that leverage our company's strengths and that can be deployed with competitive economic returns. These technologies include geothermal energy, advanced biofuels, wind power and solar energy, in addition to energy efficiency technologies. We conduct internal research and collaborate with governments, businesses and academia in researching and developing alternative and renewable energy sources. Through these partnerships, we share information and help to advance technology that can lead to more renewable energy for future generations.

**CC3.3**  
**Did you have emissions reduction initiatives that were active within the reporting year (this can include those in the planning and/or implementation phases)**

Yes

**CC3.3a**  
**Please identify the total number of projects at each stage of development, and for those in the implementation stages, the estimated CO2e savings**

Stage of development	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	41	1200000
To be implemented*	9	700000
Implementation commenced*	1	43000
Implemented*	3	700
Not to be implemented	0	0

**CC3.3b**

For those initiatives implemented in the reporting year, please provide details in the table below

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
Low carbon energy installation	Replace two reciprocating generators with micro turbines in Chuchupa A, Colombia	360	Scope 1	Voluntary	63000	410000	4-10 years	6-10 years	These units were purchased for "interior" areas, which makes them cheaper than the micro turbine purchased for Chuchupa B.
Low carbon energy installation	Replace one reciprocating generators with micro turbine in Chuchupa B, Colombia	180	Scope 1	Voluntary	32000	486000	11-15 years	6-10 years	This turbine is more expensive than those installed in Chuchupa A because it is approved to be installed outdoors.

**CC3.3c**

What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	A decision to invest in an asset and add it to the Company's portfolio is made based on the then-current view of factors, including anticipated future cost, performance, market, pricing and regulatory conditions. Changes in anticipated demand, pricing, competitiveness and regulation become apparent over time, leading to revised capital allocation and redirection of the portfolio. Today, Chevron's refining and marketing assets are required to comply with a wide range of existing GHG and climate regulations. The Company's experience informs its views of how these programs are evolving, how they may evolve over time and how best to manage such changes, and we budget for prospective costs of such regulations in our business and strategic planning and our approval of capital project appropriations. By ensuring that our refineries and marketing systems are competitive and efficient, we expect to be in a position to meet the remaining demand, even in a carbon-constrained future. In addition, the emergence of fuels and processing technology could impact Downstream operations. For example, we are preparing to meet the requirements of biofuels mandates. We have evaluated a variety of alternative feedstocks as the basis for biofuels production. We are actively demonstrating the feasibility of marketing biologically derived fuels made from processing these feedstocks through existing facilities with existing runs of petroleum.
Dedicated budget for energy efficiency	Of all the ways to meet the world's expanding energy needs, efficiency and conservation are the cheapest and most beneficial to the environment. Using energy more efficiently helps reduce carbon emissions, lower energy costs and preserve our finite natural resources. We achieve energy savings in big and small ways. Chevron employees and contractors make energy efficiency a constant priority through everyday acts, such as maintaining our equipment so that it runs smoothly, and through complex projects, such as building high-efficiency power plants. For example, our Power and Energy Management business unit collaborates with other Chevron groups to help oil fields, refineries and other facilities trim energy costs, test new technologies, achieve efficiency gains, manage emissions and improve power reliability.
Internal price on carbon	A number of GHG-related factors are considered in project appropriation assessments and documents. These factors include an annual profile of anticipated project GHG emissions (both Scope 1 and Scope 2), economic analysis of the current Company endorsed carbon price outlook as applied to the project's anticipated emissions profile and an assessment of the options to reduce GHG emissions and/or optimize energy efficiency. Chevron is exposed to a number of direct financial costs relating to GHG/climate regulation. The most prominent are payments for allowances for internal emissions under cap and trade systems and payments of carbon taxes on internal emissions. Some of these costs may be ultimately borne by customers in the competitive marketplace, mitigating their impact. The Company incurs additional expenses for monitoring, reporting and verifying emissions as well as collecting, accounting for and disbursing carbon taxes and allowance costs that it collects on products it sells. Since 2007, as part of its ongoing planning process, Chevron has generated an internal outlook of future carbon prices. Given the uneven state of GHG regulation around the world, this outlook is framed on a regional basis. The outlook is based on an assessment of economic conditions, energy demand, policy evolution, technology developments and costs of abatement, among other factors. This assessment brings together corporate experts and regional operating personnel.

Method	Comment
Marginal abatement cost curve	In 2011 a group of Chevron employees published a journal article about the use of MAC curves to assess GHG mitigation options and costs in California. This is an excerpt of the document: "The California Global Warming Solutions Act of 2006, also known as Assembly Bill 32, sets a goal for the state to reduce its greenhouse gas emissions to 1990 levels by 2020. As proposed in the 2008 Climate Change Scoping Plan, a portion of the state's emissions will be regulated under a cap and trade program. In this program, a fixed 'cap' or limit will be placed on emissions from four sectors -- power generation, industry, commercial and residential fuel combustion, and transportation. Each year, the cap will decline. Entities within the capped sectors have three options to meet their emissions cap. They can: 1- reduce emissions inside the facility fence line, 2- buy emission allowances from other entities within the cap and trade program or 3- invest in or purchase credits from projects that reduce emissions outside the facility boundary and outside the cap and trade program (offsets). In order to facilitate decisions among these options, assess the cost of compliance and prepare for implementation of AB32, Chevron has undertaken a detailed assessment of greenhouse gas mitigation options and cost per tonne using a Marginal Abatement Cost Curve (MACC). A MACC is a tool for high level assessment and comparison of options. It can be viewed as a "supply curve" for emission reductions." Reference: Susann Nordrum, Daniel Lieberman, Mary Colombo, Alan Gorski, Charles Webb, Assessment of greenhouse gas mitigation options and costs for California Petroleum Industry facilities: The shape of things to come, Energy Procedia, Volume 4, 2011, Pages 5729-5737, ISSN 1876-6102, 10.1016/j.egypro.2011.02.568. We continue to use this tool today to inform our operations.

**Further Information**

**Page: CC4. Communication**

**CC4.1**  
**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	Status	Page/Section reference	Attach the document	Comment
In voluntary communications	Complete	Entire document	<a href="https://www.cdp.net/sites/2017/91/3191/Climate%20Change%202017/Shared%20Documents/Attachments/CC4.1/climate-risk-perspective.pdf">https://www.cdp.net/sites/2017/91/3191/Climate Change 2017/Shared Documents/Attachments/CC4.1/climate-risk-perspective.pdf</a>	This report provides insight into some of the longstanding risk management processes we use and the application of these processes to the management of climate change risks.
In mainstream reports (including an integrated report) in accordance with the CDSB Framework	Complete	2, 19, 21, 22, FS-18	<a href="https://www.cdp.net/sites/2017/91/3191/Climate%20Change%202017/Shared%20Documents/Attachments/CC4.1/Chevron_10K_20170223.pdf">https://www.cdp.net/sites/2017/91/3191/Climate Change 2017/Shared Documents/Attachments/CC4.1/Chevron_10K_20170223.pdf</a>	
In voluntary communications	Complete	11-13, 26-29	<a href="https://www.cdp.net/sites/2017/91/3191/Climate%20Change%202017/Shared%20Documents/Attachments/CC4.1/FINAL-2016-corporate-responsibility-report.pdf">https://www.cdp.net/sites/2017/91/3191/Climate Change 2017/Shared Documents/Attachments/CC4.1/FINAL-2016-corporate-responsibility-report.pdf</a>	

**Further Information**

**Module: Risks and Opportunities**

**Page: CC5. Climate Change Risks**

**CC5.1**  
**Have you identified any inherent climate change risks that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply**

- Risks driven by changes in regulation
- Risks driven by changes in physical climate parameters
- Risks driven by changes in other climate-related developments

**CC5.1a**  
**Please describe your inherent risks that are driven by changes in regulation**

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
International agreements	International agreements (e.g., the Paris Agreement and the Kyoto Protocol) and national (e.g., carbon tax, cap-and-trade or efficiency standards), regional and state legislation (e.g.,	Increased operational cost	Up to 1 year	Direct	Virtually certain	Low	Regulation of greenhouse gas (GHG) emissions could increase Chevron's operational costs and reduce demand for Chevron's hydrocarbon and other	Consideration of GHG issues and the responses to those issues through international agreements and national, regional or state legislation or	The actual level of expenditure required to comply with new or potential GHG emissions laws and regulations and amount of additional

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>California AB32 and SB32; low carbon fuel standards) and regulatory measures (e.g., the U.S. Environmental Protection Agency's methane performance standards) that aim to limit or reduce GHG emissions are currently in various stages of implementation. For example, the Paris Agreement went into effect in November 2016, and a number of countries are adopting policies to meet their Paris Agreement goals. Consideration of GHG issues and the responses to those issues through international agreements and national, regional or state legislation or regulation are integrated into the company's strategy, planning and capital investment reviews. They are also factored into the company's long-range supply, demand and energy price forecasts. These forecasts reflect long-range effects from renewable fuel penetration, energy efficiency standards, climate-related policy actions, and demand response to oil and natural gas prices. In addition, legislation and regulations intended to address hydraulic fracturing also continue to evolve at the international, national and state levels. In Europe, Chevron is engaged in upstream activities in Denmark, Norway and the United Kingdom. Net daily oil-equivalent production of</p>						<p>products. For example, based on public information, the market price of a European Union Allowance (EUA) in 2016 was about €5.36 /tonne of CO2. Hypothetically, if this price and the number of allowances purchased remained constant, the monetary impact from buying allowances to comply with the EU ETS could be approximately €1.22 million per annum (~\$1.27 million USD).</p>	<p>regulations are integrated into the company's strategy and planning, capital investment reviews, and risk management tools and processes. They are also factored into the company's long-range supply, demand and energy price forecasts. These forecasts reflect long-range effects from renewable fuel penetration, energy efficiency standards, climate-related policy actions, and demand response to oil and natural gas prices. Additionally, the company assesses carbon pricing risks by considering carbon costs in these forecasts. For instance, in Europe, Chevron is engaged in upstream activities in Denmark, Norway and the United Kingdom. Net daily oil-equivalent production of 86,000 barrels during 2016 in this region represented approximately 3 percent of the companywide total. The European Union Emissions Trading System (EU ETS) applies in these countries</p>	<p>investments in new or existing technology or facilities, such as carbon dioxide injection, is difficult to predict with certainty and is expected to vary depending on the actual laws and regulations enacted in a jurisdiction, the company's activities in it and market conditions. For example, since 2013 Chevron has been upgrading its GHG management system using Essential Suite. The upgrade was completed in 2015 and exceeded \$16 million of direct expense. Recurrent costs are expected to continue in the training of data reporters in all our facilities and keeping the system up-to-date.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	86,000 barrels during 2016 in this region represented approximately 3 percent of the companywide total. The European Union Emissions Trading System (EU ETS) applies in these countries								
Cap and trade schemes	Greenhouse gas regulations including cap and trade generally create large compliance liabilities for energy intensive businesses like cement, power generation, refining, and selected oil & gas production. Additionally, under isolated cap and trade schemes the ability to pass these compliance liabilities through the value chain can be compromised for businesses producing globally traded products (e.g. a refiner will not be able to charge higher prices to a marketer to cover costs since the marketer could simply purchase cheaper imported gasoline). In 2006, California Governor Arnold Schwarzenegger signed AB 32, the Global Warming Solutions Act. The legislation seeks to cap California's greenhouse gas (GHG) emissions at 1990 levels by 2020. Chevron incurs costs associated with emissions reduction activities, and the purchase of allowances or credits for its facilities in California. CA has been "playing alone" in the field of GHG cap and trade legislation for the last few years, creating a structural long-term competitive disadvantage for energy-intensive, trade exposed industries (like	Increased operational cost	Up to 1 year	Direct	Virtually certain	Low	Chevron is exposed to a number of direct financial costs relating to GHG/climate regulation. The most prominent are payments for allowances for internal emissions under cap and trade systems and payments of carbon taxes on internal emissions. Some of these costs may be ultimately borne by customers in the competitive marketplace, mitigating their impact. The Company incurs additional expenses for monitoring, reporting and verifying emissions as well as collecting, accounting for and disbursing carbon taxes and allowance costs that it collects on products it sells. For example, based on public information, the market price of a European Union Allowance (EUA) in 2016 was about €5.36 /tonne of CO <sub>2</sub> . Hypothetically, if this price and the number of allowances purchased remained constant, the monetary	The Company mitigates these risks through consideration of a range of potential carbon prices into its appropriations evaluations. Since 2007, as part of its ongoing planning process, Chevron has generated an internal outlook of future carbon prices. Given the uneven state of GHG regulation around the world, this outlook is framed on a regional basis. The outlook is based on an assessment of economic conditions, energy demand, policy evolution, technology developments and costs of abatement, among other factors. This assessment brings together corporate experts and regional operating personnel.	The actual level of expenditure required to comply with new or potential GHG emissions laws and regulations and amount of additional investments in new or existing technology or facilities, such as carbon dioxide injection, is difficult to predict with certainty and is expected to vary depending on the actual laws and regulations enacted in a jurisdiction, the company's activities in it and market conditions.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>refining) in CA that is unsustainable. Although California has recently linked with Quebec, this will only add 12% more allowances to the market and therefore is unlikely to meaningfully reduce costs. In California, our refineries and upstream operations have been subject to broad sector emission cap covering all of the GHG sources in California that became effective on January 2013. Litigation is pending regarding the collection of auction revenue which is an element of the cap and trade regulatory scheme.</p>						<p>impact from buying allowances to comply with the EU ETS could be approximately €1.22 million per annum (~\$1.27 million USD).</p>		

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Carbon taxes	Carbon taxes and other greenhouse gas emissions-related laws, policies and regulations may result in substantial capital, compliance, operating and maintenance costs. The level of expenditure required to comply with these laws and regulations is uncertain and is expected to vary by jurisdiction depending on the laws enacted in each jurisdiction, Chevron's activities in it and market conditions.	Increased operational cost	Up to 1 year	Direct	Virtually certain	Low	Chevron is exposed to a number of direct financial costs relating to GHG/climate regulation. The most prominent are payments for allowances for internal emissions under cap and trade systems and payments of carbon taxes on internal emissions. Some of these costs may be ultimately borne by customers in the competitive marketplace, mitigating their impact. The Company incurs additional expenses for monitoring, reporting and verifying emissions as well as collecting, accounting for and disbursing carbon taxes and allowance costs that it collects on products it sells	The Company mitigates these risks through consideration of a range of potential carbon prices into its appropriations evaluations. Since 2007, as part of its ongoing planning process, Chevron has generated an internal outlook of future carbon prices. Given the uneven state of GHG regulation around the world, this outlook is framed on a regional basis. The outlook is based on an assessment of economic conditions, energy demand, policy evolution, technology developments and costs of abatement, among other factors. This assessment brings together corporate experts and regional operating personnel. Reducing GHG emissions in the face of rising energy demand presents a formidable challenge to our global society. As we work to address climate change risks, we must create solutions that achieve environmental objectives without undermining growth of the global economy and our aspirations for a better quality of life for all.	The actual level of expenditure required to comply with new or potential GHG emissions laws and regulations and amount of additional investments in new or existing technology or facilities, such as carbon dioxide injection, is difficult to predict with certainty and is expected to vary depending on the actual laws and regulations enacted in a jurisdiction, the company's activities in it and market conditions.

Risk driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Emission reporting obligations	Chevron has an obligation to report GHG emissions using other calculation methodologies and protocols. For example, in California Chevron follows the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions produced by the California Air Resources Board (ARB) and in the European Union we follow the EU ETS Monitoring, Reporting and Verification Guidelines. Chevron reports GHG emissions to the U.S. EPA according to EPA's regulations on GHG emissions reporting. Further, Chevron also reports GHG emissions as outlined in the Australia National Greenhouse and Energy Reporting Act and Korea's GHG and Energy Target Management System Operating Guidelines. This creates a cost burden for the company and allows for potential errors that could result in non-compliance.	Increased operational cost	Up to 1 year	Direct	Virtually certain	Low	Example: On December 5, 2016, Chevron received a NOV from the California Air Resources Board (CARB) alleging that for compliance years 2011-2015, Chevron failed to deduct some exported volumes of fuel from the sales that must be reported under the state's Low Carbon Fuel Standard (LCFS) program. The allegation is that Chevron purchased and retired more LCFS credits than were required. Chevron and CARB are negotiating a potential resolution of the alleged violation. Resolution of this NOV may result in the payment of a civil penalty of \$100,000 or more.	With new mandatory reporting requirements, Chevron continued to strengthen its emissions reporting system in 2016. The system helps us manage our GHG footprint by making our emissions data more accessible to key managers. In 2015 we completed deployment of a new GHG reporting system, Essential Suite, upgraded from a previous enterprise-wide system deployed in 2010.	The actual level of expenditure required to comply with new or potential GHG emissions laws and regulations is difficult to predict with certainty and is expected to vary depending on the actual laws and regulations enacted in a jurisdiction, the company's activities in it and market conditions. For example, since 2013 Chevron has been upgrading its GHG management system using Essential Suite. The upgrade was completed in 2015 and exceeded \$16 million of direct expense. Recurrent costs are expected to continue in the training of data reporters in all our facilities and keeping the system up-to-date.
Uncertainty surrounding new regulation	The ultimate effect of international agreements and national, regional and state legislation and regulatory measures to limit GHG emissions on the company's financial performance, and the timing of these effects, will depend on a number of factors. Such factors include, among others, the sectors covered, the greenhouse gas emissions reductions required, the extent to which Chevron would be entitled to	Increased operational cost	Up to 1 year	Direct	Virtually certain	Low-medium	The actual level of expenditure required to comply with new or potential climate change-related laws and regulations and amount of additional investments in new or existing technology or facilities, such as carbon dioxide injection, is difficult to predict with certainty and is expected to vary depending on the actual	The Company routinely engages with government officials considering such regulations to share its views on regulations under consideration, the practical aspects of implementing specific proposals, and the possible impacts to the Company as an investor in the energy sector, as well as the impacts to consumers. Chevron's	The actual level of expenditure required to comply with new or potential GHG emissions laws and regulations is difficult to predict with certainty and is expected to vary depending on the actual laws and regulations enacted in a jurisdiction, the company's activities in it and market conditions.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>receive emission allowance allocations or would need to purchase compliance instruments on the open market or through auctions, the price and availability of emission allowances and credits, and the extent to which the company is able to recover the costs incurred through the pricing of the company's products in the competitive marketplace. Further, the ultimate impact of GHG emissions-related agreements, legislation and measures on the company's financial performance is highly uncertain because the company is unable to predict with certainty, for a multitude of individual jurisdictions, the outcome of political decision-making processes and the variables and tradeoffs that inevitably occur in connection with such processes. Policies addressing climate change and GHG emissions vary widely around the globe, both in substance and in the pace of implementation. This variation occurs at country-by-country and subnational levels. Governments around the world have a variety of GHG/climate regulations with which Chevron is required to comply. The Company actively monitors emerging GHG/climate regulation. For example, In 2007, California began an effort to establish a fuel regulation called</p>						<p>laws and regulations enacted in a jurisdiction, the company's activities in it and market conditions.</p>	<p>ongoing efforts to understand the impact of policy on the different parts of our business—particularly supply, demand and pricing—and to work with governments to ensure they fully understand the perspectives of a major participant in the industry all serve to address this risk. These efforts help us better evaluate how GHG/climate regulation may unfold in certain jurisdictions where we operate, thereby informing a number of elements of the ongoing strategic analysis.</p>	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>Low Carbon Fuel Standard (LCFS) as an early action under AB 32. Its goal is to reduce the carbon intensity of transportation fuels in the state by 10% by 2020. Chevron has worked closely with the state to try to design a program that could achieve its goals and maintain a robust state economy. After ten years of regulatory development, CARB is still modifying key elements of the regulation and it remains subject to legal challenges.</p>								
<p>General environmental regulations, including planning</p>	<p>In the years ahead, companies in the energy industry, like Chevron, may be challenged by an increase in international and domestic regulation relating to GHG emissions. Such regulation could have the impact of curtailing profitability in the oil and gas sector or rendering the extraction of the company's oil and gas resources economically infeasible. Although the IEA's World Energy Outlook scenarios anticipate global demand for oil to continue increasing until 2040, and even GHG-constrained scenarios (such as the IEA's 450 case) anticipate significant demand for petroleum and natural gas given their respective advantages in transportation and power generation, if a new onset of regulation contributes to a decline in the demand for the company's products, this could have a material adverse effect on the</p>	<p>Reduced demand for goods/services</p>	<p>1 to 3 years</p>	<p>Direct</p>	<p>About as likely as not</p>	<p>Medium</p>	<p>GHG emissions-related laws and related regulations and the effects of operating in a potentially carbon-constrained environment may result in increased and substantial capital, compliance, operating and maintenance costs and could, among other things, reduce demand for hydrocarbons and the company's hydrocarbon-based products, make the company's products more expensive, adversely affect the economic feasibility of the company's resources, and adversely affect the company's sales volumes, revenues and margins</p>	<p>Governments around the world have a variety of GHG/climate regulations with which Chevron is required to comply. The Company actively monitors emerging GHG/climate regulation. Further, the Company routinely engages with government officials considering such regulations to share its views on regulations under consideration, the practical aspects of implementing specific proposals, and the possible impacts to the Company as an investor in the energy sector, as well as the impacts to consumers. Chevron's ongoing efforts to understand the impact of policy on the different parts of our business—particularly supply,</p>	<p>Example: Richmond refinery's modernization project includes a limit on greenhouse gas emissions to ensure that they do not increase as a result of the project. Modernization represents one of the most important steps the refinery can make to improve energy efficiency. As part of the project, the Richmond Refinery will also invest \$30 million over 10 years in the City of Richmond and North Richmond to fight climate change and create local green jobs. In addition, the refinery has provided 60 acres of land to create the largest solar installation in Contra Costa County, which will be developed and operated by Marin Clean Energy – the</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	company and its financial condition.							demand and pricing—and to work with governments to ensure they fully understand the perspectives of a major participant in the industry all serve to address this risk. These efforts help us better evaluate how GHG/climate regulation may unfold in certain jurisdictions where we operate, thereby informing a number of elements of the ongoing strategic analysis. Example from the El Segundo refinery: Air emissions from the refinery have drastically reduced over the last decade. The refinery's overall air emissions have decreased by almost 50% since 2002. Relative to our competitors in the region, we have the lowest overall air emissions on a per barrel basis. We essentially have an environmental footprint comparable to a refinery that is one-third our size.	company that provides electricity to customers in Richmond.

**CC5.1b**  
Please describe your inherent risks that are driven by changes in physical climate parameters

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Tropical cyclones (hurricanes and typhoons)	Chevron operates in both urban areas and remote and sometimes inhospitable regions. The company's operations are	Reduction/disruption in production capacity	>6 years	Direct	About as likely as not	Low	Example: Chevron's Pascagoula Refinery flooded in 1969 and again in 1998. To help prevent	For decades, Chevron has managed risks associated with the impact of severe weather on	Example: Ike's sustained winds and rainfall produced an enormous storm surge that knocked

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>therefore subject to disruption from natural or human causes beyond its control, including physical risks from hurricanes, severe storms, floods and other forms of severe weather, war, accidents, civil unrest, political events, fires, earthquakes, system failures, cyber threats and terrorist acts, any of which could result in suspension of operations or harm to people or the natural environment. Having more deepwater assets in Chevron's portfolio requires even more foresight. Chevron and our legacy companies have been exploring for and developing oil and gas resources in the Gulf of Mexico for more than 75 years. For example, during 2016, net daily production in the Gulf of Mexico averaged 158,000 barrels of crude oil, 183 million cubic feet of natural gas and 13,000 barrels of NGLs. As of early 2017, Chevron has an interest in 316 leases in the Gulf of Mexico, 257 of which are located in water depths greater than 1,000 feet (305 m). At the end of 2016, the company was the largest leaseholder in the Gulf of Mexico.</p>						<p>such an occurrence from happening again, a dike was raised around the refinery. Hurricane Katrina made landfall on Aug. 29, 2005. Three weeks later, Hurricane Rita struck. The effects of the storms included a reduction in production and added costs for repairs and maintenance resulting in an approximate \$1.4 billion negative impact. A similar event could cause a similar magnitude of financial impact.</p>	<p>our operations. These long-standing practices are being applied and extended to reflect possible climate impacts. For example, Chevron is ensuring the ongoing resilience of our infrastructure, both for current operations and for those being developed and/or considered. Furthermore, we have:</p> <ul style="list-style-type: none"> <li>• Undertaken a global assessment of possible impacts to our assets, including those resulting from the possibility of increased frequency and/or severity of storms, rising sea levels, temperature increases or decreases, and interruptions in water supply availability;</li> <li>• Participated in a joint industry project with experts at the National Center for Atmospheric Research to better understand possible changes in the frequency and magnitude of hurricanes in the Gulf of Mexico over the next 50 years and are using information from this work to support the meteorology and oceanography (metocean) design basis for offshore Gulf of Mexico assets; and</li> </ul>	<p>out power for weeks, flooded tank fields with up to 10 feet of water, submerged equipment throughout the entire facility and created a major supply chain disruption that extended well into the following year. \$16.2 million were spent to construct a wall to prevent damage from storms such as Ike, which cost Chevron \$37 million in rebuilding Port Arthur's Lubricants Plant and \$5 million per month in continuing to provide supply to customers during rebuilding.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								Worked with host governments to ensure that the design basis for particular long-lived asset investments reflects views of possible metocean scenarios. Example: \$16.2 million were spent to construct a wall to prevent damage from storms such as Ike, which cost Chevron \$37 million in rebuilding Port Arthur's Lubricants Plant and \$5 million per month in continuing to provide supply to customers during rebuilding.	

CC5.1c

Please describe your inherent risks that are driven by changes in other climate-related developments

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Changing consumer behavior	GHG emissions-related laws and related regulations and the effects of operating in a potentially carbon-constrained environment may result in increased and substantial capital, compliance, operating and maintenance costs and could, among other things, reduce demand for hydrocarbons and the company's hydrocarbon-based products, make the company's products more expensive, adversely affect the economic feasibility of the company's resources, and adversely affect the company's sales volumes, revenues and margins. GHG emissions (e.g., carbon dioxide and methane) that could be regulated	Reduced demand for goods/services	>6 years	Indirect (Client)	More likely than not	Low-medium	Chevron has analyzed the impacts of supply, demand and resultant pricing levels under a reduced-demand/GHG-constrained scenario, including consideration of the International Energy Agency (IEA) 450 Scenario. This analysis has shown: <ul style="list-style-type: none"> <li>The pricing levels modeled for the IEA 450 Scenario generally align with the low end of the price trajectory range already being used throughout Chevron's various planning processes.</li> <li>Although certain high-cost assets</li> </ul>	The Strategy and Planning Committee is responsible for managing the strategic and business planning processes at the Board's direction. These processes are designed to ensure that our business remains resilient under a variety of circumstances, and they include examination of external points of view, ongoing assessment of the dynamics of the energy marketplace, monitoring of policy and regulatory developments, and examination of trends, such as advancements in technology and evolution	Chevron continues to be committed to understanding and evaluating the economic viability of investments in renewable energy. We pursue renewable energy technologies that leverage our company's strengths and that can be deployed with competitive economic returns. Example: For example, in 2006, the Darajat III geothermal unit was approved by the United Nations (UN) as a Clean Development Mechanism (CDM) project, a market-based instrument of the UN's Kyoto Protocol to

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	include, among others, those associated with the company's exploration and production of hydrocarbons such as crude oil and natural gas; the upgrading of production from oil sands into synthetic oil; power generation; the conversion of crude oil and natural gas into refined hydrocarbon products; the processing, liquefaction and regasification of natural gas; the transportation of crude oil, natural gas and related products and consumers' or customers' use of the company's hydrocarbon products. Many of these activities, such as consumers' and customers' use of the company's products, as well as actions taken by the company's competitors in response to such laws and regulations, are beyond the company's control. In addition, increasing attention to climate change risks has resulted in an increased possibility of governmental investigations and, potentially, private litigation against the company.						around the world could be impacted by a hypothetical GHG-constrained case, those highcost assets for which a final investment decision has yet to be made would not find a place in our investment portfolio given our risk management processes. Lower-cost assets remain competitive, specifically, those assets already producing, which would continue to produce.	of consumer preferences. Further, the Company routinely engages with government officials considering such regulations to share its views on regulations under consideration, the practical aspects of implementing specific proposals, and the possible impacts to the Company as an investor in the energy sector, as well as the impacts to consumers. Example: For example, in 2006, the Darajat III geothermal unit was approved by the United Nations (UN) as a Clean Development Mechanism (CDM) project, a market-based instrument of the UN's Kyoto Protocol to encourage implementation of cost-effective greenhouse gas reductions. As stated in the project design document, construction and operation of Darajat Unit III resulted in over \$128 million of foreign direct investment in Indonesia. The fee paid to the CDM assessment team was \$128934 USD.	encourage implementation of cost-effective greenhouse gas reductions. As stated in the project design document, construction and operation of Darajat Unit III resulted in over \$128 million of foreign direct investment in Indonesia. The fee paid to the CDM assessment team was \$128934 USD.
Uncertainty in market signals	Chevron operates in a highly competitive and constantly changing marketplace. We regularly reassess our views of existing and future energy markets as well as policy scenarios under which we expect to operate. To manage the wide	Reduced demand for goods/services		Direct	About as likely as not	Low	In view of the continuing global demand for oil and gas, the substantial future investment required to meet that demand, and the way investment decisions to explore for and/or	Chevron has analyzed the impacts of supply, demand and resultant pricing levels under a reduced-demand/GHG-constrained scenario, including consideration of the	Trillions of dollars will need to be spent to keep the world supplied with energy in the decades ahead. According to the IEA, the majority of the investment will be spent on fossil fuels.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>array of potential risks inherent to its business, Chevron has in place mature processes for risk management, including risks that may be associated with climate change. The “stranded assets” concept posits that as a result of regulatory, market and physical changes in the energy market associated with the transition to a low-carbon economy, some fossil fuel energy and power-generation resources will cease earning an economic return at some point prior to the end of their investment designated economic life. Proponents posit that the restrictions in fossil fuel consumption would cause financial losses for firms holding impaired energy assets. One of the critiques of this theory is that it neglects the fact that even in the carbon-constrained scenarios, a significant demand for fossil fuels remains, as noted above. As already discussed, given the ongoing level of demand, changes in regulation and the resultant impacts on demand that will manifest over time, the industry in general—and companies like Chevron in particular— will be able to adapt investment patterns and portfolios to these policy and demand circumstances.</p>						<p>develop resources are phased and made with a market view in mind, the current risk exposure to the Company in a greenhouse gas (GHG)–restricted scenario is minimal. Trillions of dollars will need to be spent to keep the world supplied with energy in the decades ahead. According to the IEA, the majority of the investment will be spent on fossil fuels. The IEA predicts in its latest World Energy Outlook that 60 percent of the \$44 trillion in investment in energy supply through 2040 will be in fossil fuels, slightly less than the 70 percent of total energy investment spent on fossil fuels over the past 15 years.</p>	<p>International Energy Agency (IEA) 450 Scenario. This analysis has shown: • The pricing levels modeled for the IEA 450 Scenario generally align with the low end of the price trajectory range already being used throughout Chevron’s various planning processes. • Although certain high-cost assets around the world could be impacted by a hypothetical GHG-constrained case, those high-cost assets for which a final investment decision has yet to be made would not find a place in our investment portfolio given our risk management processes. Lower-cost assets remain competitive, specifically, those assets already producing, which would continue to produce.</p>	<p>The IEA predicts in its latest World Energy Outlook that 60 percent of the \$44 trillion in investment in energy supply through 2040 will be in fossil fuels, slightly less than the 70 percent of total energy investment spent on fossil fuels over the past 15 years. A significant amount of the spending will be used to enhance production from existing oil and gas fields as they naturally decline with age, rather than in developing new resources. The industry limits its base business production decline rate through the deployment of innovative technology and investment in existing fields. Filling the gap between ongoing demand and the natural decline requires continual investment and provides another opportunity to adapt strategy consistent with market signals</p>

**Further Information**

**CC6.1**  
**Have you identified any inherent climate change opportunities that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply**

- Opportunities driven by changes in regulation
- Opportunities driven by changes in physical climate parameters
- Opportunities driven by changes in other climate-related developments

**CC6.1a**  
**Please describe your inherent opportunities that are driven by changes in regulation**

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Cap and trade schemes	Chevron is continuously seeking business opportunities that help us meet, for example, our EU ETS targets, while reducing greenhouse gas emissions and growing our business. For example, in 2006, the Darajat III geothermal unit was approved by the United Nations (UN) as a Clean Development Mechanism (CDM) project, a market-based instrument of the UN's Kyoto Protocol to encourage implementation of cost-effective greenhouse gas reductions. At the time of registration, Darajat III was the largest geothermal energy project registered under the CDM program. The Darajat III unit continues to help Indonesia avoid emissions of over 746,000 metric tons of CO2 equivalents per year.	Reduced operational costs	Up to 1 year	Direct	Virtually certain	Low	Example: The average 2016 price of a Certified Emission Reduction (CER)-a GHG credit granted through the Clean Development Mechanism (CDM)-was about \$0.38/tonne of CO2e and the average price of a European Union Allowance (EUA) was about \$5.7/tonne of CO2. Hypothetically, if these prices were to remain constant, the potential monetary revenue from selling the credits could be between \$283,000-\$4.2 million per annum.	Chevron continues to be committed to understanding and evaluating the economic viability of investments in renewable energy. These include advanced biofuels, wind power and solar energy, in addition to energy efficiency technologies. We conduct internal research and collaborate with governments, businesses and academia in researching and developing alternative and renewable energy sources. Also, Chevron's technology activities support the company's worldwide operations and major capital projects by developing and deploying technology solutions that drive business growth and efficiency. For example, in 2006, the Darajat III geothermal unit was approved by the United Nations (UN) as a Clean Development Mechanism (CDM) project, a market-based instrument of the UN's Kyoto Protocol to encourage implementation of cost-effective greenhouse gas reductions.	As stated in the project design document, construction and operation of Darajat Unit III resulted in over \$128 million of foreign direct investment in Indonesia. The fee paid to the CDM assessment team was \$128934 USD (since 2009 this has been public information disclosed in the UNFCCC website).
Air pollution	Some	Increased	Up to 1	Direct	Virtually	Low	Example:	Chevron is	Most of the

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
limits	<p>geographies have set limits to air emissions from power plants. The power sector accounts for about half of global energy-related GHG emissions. Multiple approaches and technologies can be used to reduce the GHG intensity of this sector. In the near term, one of the most cost-effective and impactful steps that society can take is to switch from coal to natural gas. This step could cut emissions in half for every unit of electricity generated. Near-zero emissions options include renewables and nuclear power. Longer term, the deployment of gas and biomass-based power generation with CCS would enable near-zero or negative emissions electricity. An environmentally friendly and efficient energy source, natural gas is the cleanest-burning conventional fuel, producing lower levels of greenhouse gas emissions than the heavier hydrocarbon fuels, like coal and oil. Historically, natural gas also has been one of the most economical energy sources. Natural gas fuels electric power generators, heats buildings and is used as a raw material in many consumer products, such as those made of traditional plastics. In the United States, shale gas has helped trigger an energy renaissance. This clean-burning fuel holds promise for nations around the world seeking</p>	demand for existing products/services	year		certain		<p>Overall, we have approximately 28,760 billion cubic feet of net proved reserves of NG with 3,676 billion cubic feet in the US. The average natural gas realization in the US was \$1.59 per thousand cubic feet in 2016 and our sales of natural gas were 3,317 million cubic feet per day.</p>	<p>engaged in every aspect of the natural gas business—production, liquefaction, shipping, regasification, pipelines, marketing and trading, power generation, and gas-to-liquids (GTL). We hold the largest natural gas resource position in Australia through the Gorgon and Wheatstone projects and the North West Shelf Venture. We also have significant natural gas holdings in western Africa, Bangladesh, China, Indonesia, Kazakhstan, North America, the Philippines, South America, Thailand and the United Kingdom. Chevron continues to evaluate the shale and tight-resource acreage in its portfolio. Shale and tight resources are sources of natural gas, found in the fine-grained sedimentary rock. Locked in very small spaces within the reservoir rock, the gas is extracted using advanced technologies that enable it to flow to production wells.</p>	<p>costs of complying with existing laws and regulations pertaining to company operations and products are embedded in the normal costs of doing business. However, it is not possible to predict with certainty the amount of additional investments in new or existing technology or facilities or the amounts of increased operating costs to be incurred in the future to: prevent, control, reduce or eliminate releases of hazardous materials into the environment; remediate and restore areas damaged by prior releases of nitrogen oxide, sulfur oxide, or other hazardous materials; or comply with new environmental laws or regulations. Although these costs may be significant to the results of operations in any single period, the company does not presently expect them to have a material adverse effect on the company's liquidity or financial position.</p>

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>to strengthen energy security and generate economic growth. According to the study America's New Energy Future, by research company IHS, shale gas is contributing to the U.S. economy by creating jobs and driving a rebirth of manufacturing. According to the U.S. Department of Energy, the demand for natural gas will grow by approximately 56 percent through 2040. Chevron is well positioned to meet this escalating demand.</p>								
<p>Product efficiency regulations and standards</p>	<p>Of all the ways to meet the world's expanding energy needs, efficiency and conservation are the cheapest and most beneficial to the environment. Using energy more efficiently helps reduce carbon emissions, lower energy costs and preserve our finite natural resources. Example: Due to the size and nature of the operations, managing energy consumption in our IndoAsia Business Unit (IBU) is a critical focus area. IBU continues to make significant improvements in energy efficiency and has reduced its energy intensity by 27 percent from 2014 to 2016. This improvement was achieved through the establishment of an Integrated Optimization Decision Support Center (IODSC) in IBU's Sumatra operations in Indonesia. The IODSC monitors the day-to-day energy performance of the surface facilities and provides recommendations</p>	<p>Increased demand for existing products/services</p>	<p>Up to 1 year</p>	<p>Direct</p>	<p>Virtually certain</p>	<p>Low</p>	<p>Example: SJVBU replaced traditional diesel powered light towers with solar hybrid units for night time drilling. These lights capture and store energy from the sun during the day which later powers multiple LED clusters to illuminate the rig site during evening hours. Not only have these reduced emissions by 90%, but SJV has recognized the increase in safety. They are much quieter, provide a clearer, white light (as opposed to the 'yellowed' traditional light towers), and require significantly less maintenance; decreasing field traffic and overall continual costs. Full Deployment: 114 units =~\$500,000 savings/year.</p>	<p>We achieve energy savings in big and small ways. Chevron employees and contractors make energy efficiency a constant priority through everyday acts, such as maintaining our equipment so that it runs smoothly, and through complex projects, such as building high-efficiency power plants. For example, our Power and Energy Management business unit collaborates with other Chevron groups to help oil fields, refineries and other facilities trim energy costs, test new technologies, achieve efficiency gains, manage emissions and improve power reliability. Chevron continues to be committed to understanding and evaluating the economic viability of investments in renewable energy. These technologies include</p>	<p>Example: We built an \$80 million cogeneration facility in El Segundo, California, to provide electrical and steam power for our refinery there. In addition, we're using cogeneration at several of our other refineries to produce additional electricity from energy that would otherwise go unused.</p>

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	for optimizing energy efficiency.							advanced biofuels, wind power and solar energy, in addition to energy efficiency technologies. We conduct internal research and collaborate with governments, businesses and academia in researching and developing alternative and renewable energy sources. Through these partnerships, we share information and help to advance technology that can lead to more renewable energy for future generations.	
Emission reporting obligations	We rely on our environmental data to understand our performance and help identify potential areas of improvement.	Reduced operational costs	Up to 1 year	Direct	Virtually certain	Low	The Company incurs expenses for monitoring, reporting and verifying emissions as well as collecting, accounting for and disbursing carbon taxes and allowance costs that it collects on products it sells.	We have invested in processes, systems and training to meet our objective of maintaining high-quality environmental data. For example, we conduct detailed onsite and desktop peer reviews of local data collection processes, with a focus on operations that contribute the most to our enterprisewide data. These peer reviews verify that all sources have been accounted for and reported in accordance with Chevron's Operational Excellence Data Reporting Standard. Our peer review process and independent reviews by third parties continue to provide ongoing assurance of our data quality to enable informed	Example: Since 2013 Chevron has been upgrading its GHG management system using Essential Suite. The upgrade was completed in 2015 and exceeded \$16 million of direct expense. Recurrent costs are expected to continue in the training of data reporters in all our facilities and keeping the system up-to-date.

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								business decisions. Recognizing the importance of independent review and verification of our emissions inventory process and results, we engaged Ernst & Young to conduct a third-party verification of our operated assets' GHG emissions for 2010 through 2012. In 2013, we began an annual independent review of one-third of our GHG emissions inventory. In 2015, Ernst & Young conducted an independent review of one-third of our GHG emissions inventory for 2014.	

**CC6.1b**

Please describe your inherent opportunities that are driven by changes in physical climate parameters

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
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Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Snow and ice	In Calgary, Alberta, the Chevron Arctic Center is home base for some of the world's foremost experts in Arctic exploration and development. Should global warming be sustained such that seasonal ice cover within Arctic resource basins be diminished, both access to and the economics of offshore oil and gas exploration and production in the Arctic could potentially improve. The greatest effects could be associated with an extension to the summer operating season which will tend initially to favor access to and the cost of exploration operations in some Arctic basins. However, it is important to note that the impacts of global warming vary by geographic region in the Arctic and, by extension, will vary on a basin by basin and prospect basis. The type of operational conditions that could benefit from the impact of global warming could be an extension of the currently limited operating season, which may impact the cost and schedule of exploration and production activities. Climate change could pose other considerations for industry access and activity, such as changing weather patterns and reduced sea ice coverage, which could reduce the moderating influence ice has on sea states, posing new metocean considerations for offshore drilling. In general, the lengthening of the operating season has the potential to generate a reduction in the drilling and completion costs of sub-sea wells and to influence development schedules.	Other: Increased exploration capacity	>6 years	Direct	Likely	Low	Dependent on field and basin specific factors, CAPEX for an offshore Arctic development project can vary between \$10-30 billion. In basins with limited operating seasons, where extensive sub-sea development drilling is required, up to 60-70% of the project CAPEX could be dedicated to drilling, completion, tie-back, and construction related activities. Climate change, which impacts the extent or duration of sea ice cover, under certain circumstances, could reduce these costs from 25 - 50%, allowing sufficient CAPEX savings to potentially enable their economic production.	The Chevron Arctic Center in Calgary maintains Subject Matter Experts (SMEs) on safe and environmentally responsible exploration and resource development activities in an Arctic environment. Our experts have gained considerable historical operational experience in harsh pack ice conditions in the Canadian & US Beaufort Seas. The Chevron Arctic Center monitors scientific developments and ice sheet data to assess changes in operating seasons and ice conditions. This activity helps us determine the need for ice capable drilling & marine infrastructures, and the cost implications thereof. For example, Chevron Arctic Center SMEs monitor the changes in the type and character of ice conditions in the global Arctic basins of interest to Chevron. In addition, we update our full field development cost / economic assessments in these basins specifically to address the potential impact of changes in seasonal ice cover or ice cover patterns.	In relation to climate change issues, the activities of the subject matter experts at the Chevron Arctic Center cost approximately \$250,000 annually.

**CC6.1c**

Please describe your inherent opportunities that are driven by changes in other climate-related developments

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Other drivers	<p>Some governmental organizations have identified a link between climate change and water quality and supply reliability. For example, according to the 2014 United States National Climate Assessment: "Water quality and water supply reliability are jeopardized by climate change in a variety of ways that affect ecosystems and livelihoods." As a global company, we know that access to adequate supplies of water is essential for the communities where we operate as well as for our ability to produce energy around the world. As users of this critical natural resource, we must manage it responsibly. Chevron strives to use the lowest quantity and quality of water practicable. Where operational, regulatory and business conditions permit, we seek opportunities to reuse waters in order to increase overall supply. Examples: The El Segundo Refinery is the only refinery in the Los Angeles Basin that receives the majority of its crude supply via ocean tankers. Crude oil is off-loaded into underwater pipelines at our offshore Marine Terminal located several miles offshore, ensuring no impact to residents or the</p>	Other: Reduce fresh water consumption	Up to 1 year	Direct	Likely	Low	<p>Examples: Our refinery in Richmond, California, is the largest user of reclaimed water in the San Francisco Bay Area, where approximately 60 percent of water withdrawn is water that has already been used. One of the projects that contributed to this achievement was the Richmond Advanced Recycled Expansion (RARE), a joint effort with the East Bay Municipal Water District (EBMUD). The RARE Water Project facility doubled the allowable capacity for use of certain reclaimed water at the refinery from 3 million gallons to more than 6 million gallons per day. Use of reclaimed water from the RARE Water Project facility frees up enough fresh water to supply up to 16,000 homes (46,000 people) on a daily basis. Chevron strives to maximize the reuse of its Appalachian brine; in 2014 we recycled or reused 97 percent of our brine. This is part of an overall strategy to reduce both our freshwater consumption and the need for water transportation, transfer and disposal.</p>	<p>Our Environmental, Social and Health Impact Assessment Corporate Standard (ESHIA) process and our Upstream specific Natural Resources Environmental Performance Standard (Natural Resources EPS) help us manage our water use across the life of our operated assets. The ESHIA process is used by local project teams early in the life of the project to assess the potential impacts and benefits of our activities on natural resources, including water. An important part of this process is assessing existing environmental and social conditions, such as how local communities are using water. The assessment results help us consider and address in our project planning potentially significant water use by our operations in relation to local water availability. Our Natural Resources EPS is applied across all of our onshore Upstream businesses and capital projects and requires a water resources screening assessment to identify potentially significant environmental and social impacts</p>	<p>Example: Fresh water is a precious resource. Chevron is committed to responsible water use and strives to reduce the amount of fresh water used in our hydraulic fracturing operations. In the Permian Basin, we are endeavoring to use deeper aquifers that contain brackish water not suitable for human consumption or agricultural usage. During hydraulic fracturing in our Marcellus Shale operations, we have the capability to recycle nearly 100 percent of our flowback and produced water. We also build pipelines that deliver water to our well pads, reducing the number of water trucks on nearby roadways. At our El Segundo refinery, 80% of the water used for refinery processes and landscaping is recycled or reclaimed water</p>

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	coastline. This terminal is one of the safest, most efficient in operation, and can handle two tankers at once in order to ensure that the crude is transferred from ship to shore without spilling even a drop into the water.							associated with our water use. Where there are potentially significant impacts, a water resources management plan (WRMP) is developed. The WRMP helps our operations identify and implement measures that reduce water withdrawals when possible.	
Reputation	Chevron believes that climate change is a global issue. We share the concerns of governments and the public about climate change risks and recognize that the use of fossil fuels to meet the world's energy needs contributes to the rising concentration of greenhouse gasses in Earth's atmosphere. GHGs contribute to increases in global temperatures. We take prudent, practical and cost-effective actions to address climate change risks as part of our commitment to running our business the right way. We focus on improving instruction in science, technology, engineering and math (STEM) and on helping to provide the career and technical training that can lead to well-paying jobs. If people and communities are to thrive, nothing is more important than education and job training. A	Wider social benefits	Up to 1 year	Direct	Virtually certain	Low-medium	Examples: Each year in the U.S., public school teachers post requests for materials for classroom projects on DonorsChoose.org. Through its Fuel Your School program, Chevron contributes \$1 for each fuel purchase of eight or more gallons during the month of October at participating Chevron and Texaco stations, up to a specified amount in each market, to help fund eligible classroom projects at local public schools. Each year, public school teachers post requests for materials for classroom projects on MyClassNeeds.ca. Through its Fuel Your School program, Chevron Canada contributes \$1 for each fuel purchase of 30 or more liters during a 30-day period at participating Chevron stations, up to a specified amount in each participating community, to help fund eligible classroom projects at local public schools.	STEM education is a key building block of employability and economic development. Working with our partners, we take a holistic approach to our investments in education by inspiring young people to pursue STEM careers and supporting educational standards, proven curricula and teacher professional development. We bring together the people, resources and expertise to promote lasting change on a local level by championing educational programs from kindergarten through college, as well as career and technical training for the workforce. Example: Chevron, along with regional partners, established the Appalachia Partnership Initiative (API) to address education and workforce development skills gaps in Pittsburgh's Tri-State area (Pennsylvania, Ohio and West	Examples: Chevron takes a collaborative approach to social investment by partnering with NGOs, government leaders, and public and private international organizations. Through these partnerships, we offer funding, technical expertise, local capabilities and convening power. In 2016, Chevron contributed more than \$185 million around the world in areas where we operate. This level of social investment demonstrates our commitment to investing in programs that strengthen health and education. Chevron's U.S. Fuel Your School program has grown over the years to support students in various communities where Chevron has business operations. The Fuel Your School program has funded nearly

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>workforce armed with the critical skills needed to succeed in the jobs of tomorrow is important not only to the success of our business, but also to a country's ability to compete in the global marketplace. That's why Chevron invests in schools and teachers. We focus on improving instruction in the key subjects of science, technology, engineering and math and on helping provide the career and technical training that can lead directly to well-paying jobs. Working with our partners, we take a comprehensive approach to investments in education by getting students excited about STEM and encouraging them to pursue STEM courses and, ultimately, STEM careers. We support educational standards and proven curricula that promote project- and problem-based learning. We also support teacher training, provide classroom resources, fund outside-of-school activities, and develop partnerships with universities designed to strengthen faculty, curricula and student development. These investments don't just help the communities in</p>							<p>Virginia). The API works with local partners to make investments in K-12 science, technology, engineering and math (STEM) education as well as in post-secondary training and apprenticeship programs. For example, Chevron is working with ShaleNET, a workforce training program for the energy and advanced manufacturing industries, to provide scholarships to students at community colleges in the region. The partnership also focuses on connecting high school education programs and workforce training through career and technical curriculum resources, supply chain connections, post-secondary training programs, and trade certifications.</p>	<p>\$33 million in classroom materials in select communities across the United States. Chevron supported six of the communities with the help of local marketers. Chevron supports similar Fuel Your School programs in parts of Canada, Hong Kong, Malaysia, the Philippines, Singapore and Thailand.</p>

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	which we operate – they help us, too. Tomorrow's Chevron engineers are today's schoolchildren								

**Further Information**

**Module: GHG Emissions Accounting, Energy and Fuel Use, and Trading**

**Page: CC7. Emissions Methodology**

**CC7.1**

Please provide your base year and base year emissions (Scopes 1 and 2)

Scope	Base year	Base year emissions (metric tonnes CO2e)
Scope 1	Thu 01 Jan 2015 - Thu 31 Dec 2015	59000000
Scope 2 (location-based)	Thu 01 Jan 2015 - Thu 31 Dec 2015	4000000
Scope 2 (market-based)		

**CC7.2**

Please give the name of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

Please select the published methodologies that you use
American Petroleum Institute Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry, 2009
IPIECA's Petroleum Industry Guidelines for reporting GHG emissions, 2nd edition, 2011
Australia - National Greenhouse and Energy Reporting Act
Korea GHG and Energy Target Management System Operating Guidelines
US EPA Mandatory Greenhouse Gas Reporting Rule
European Union Emission Trading System (EU ETS): The Monitoring and Reporting Regulation (MMR) – General guidance for installations
Other

**CC7.2a**

If you have selected "Other" in CC7.2 please provide details of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

Chevron's GHG Reporting Protocol, Version 2.0  
 In California we follow the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions produced by the California Air Resources Board (ARB).

**CC7.3**

Please give the source for the global warming potentials you have used

Gas	Reference
CO2	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	IPCC Fourth Assessment Report (AR4 - 100 year)
HFCs	IPCC Fourth Assessment Report (AR4 - 100 year)
PFCs	IPCC Fourth Assessment Report (AR4 - 100 year)
SF6	IPCC Fourth Assessment Report (AR4 - 100 year)

**CC7.4**

Please give the emissions factors you have applied and their origin; alternatively, please attach an Excel spreadsheet with this data at the bottom of this page

Fuel/Material/Energy	Emission Factor	Unit	Reference

**Further Information**

The emissions factors applied in the calculation of our GHG emissions can be found in the attachment. Regarding question 7.1 - Refinements were made in the data reporting for 2015 equity and operated GHG emissions.

**Attachments**

[https://www.cdp.net/sites/2017/91/3191/Climate Change 2017/Shared Documents/Attachments/ClimateChange2017/CC7.EmissionsMethodology/worksheet-to-input-of-EF-2009API.xlsx](https://www.cdp.net/sites/2017/91/3191/Climate%20Change%202017/Shared%20Documents/Attachments/ClimateChange2017/CC7.EmissionsMethodology/worksheet-to-input-of-EF-2009API.xlsx)

**Page: CC8. Emissions Data - (1 Jan 2016 - 31 Dec 2016)**

**CC8.1**

Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory

Equity share

**CC8.2**  
Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e

60000000

**CC8.3**  
Please describe your approach to reporting Scope 2 emissions

Scope 2, location-based	Scope 2, market-based	Comment
We are reporting a Scope 2, location-based figure	We have operations where we are able to access electricity supplier emissions factors or residual emissions factors, but are unable to report a Scope 2, market-based figure	The World Resources Institute/World Business Council for Sustainable Development Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard defines three "scopes" that Chevron uses to report GHG emissions. Scope 1 includes direct emissions from sources within a facility. Scope 2 includes indirect emissions from electricity and steam that Chevron imports. Scope 3 is an optional reporting category that allows for the treatment of all other indirect emissions. Chevron reports Scope 2 following the Standard and accounting for GHG emissions from the generation of purchased electricity consumed by the company.

**CC8.3a**  
Please provide your gross global Scope 2 emissions figures in metric tonnes CO2e

Scope 2, location-based	Scope 2, market-based (if applicable)	Comment
4000000		The World Resources Institute/World Business Council for Sustainable Development Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard defines three "scopes" that Chevron uses to report GHG emissions. Scope 1 includes direct emissions from sources within a facility. Scope 2 includes indirect emissions from electricity and steam that Chevron imports. Scope 3 is an optional reporting category that allows for the treatment of all other indirect emissions. Chevron reports Scope 2 following the Standard and accounting for GHG emissions from the generation of purchased electricity consumed by the company.

**CC8.4**  
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

**CC8.4a**  
Please 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	Relevance of Scope 1 emissions from this source	Relevance of location-based Scope 2 emissions from this source	Relevance of market-based Scope 2 emissions from this source (if applicable)	Explain why the source is excluded
The following entities are not currently included in the 2016 Chevron corporate GHG inventory: Chevron Phillips Chemical Co., the Caspian Pipeline Consortium, the Chad-Cameroon pipeline joint venture, and other non-operated assets in which Chevron has an equity interest of 16 percent or less.	Emissions are relevant but not yet calculated	Emissions are relevant but not yet calculated		These are entities over which Chevron does not have full operational control or that do not generally follow Chevron's corporate GHG inventory protocol or a compatible protocol. Chevron continues to perform third-party verification of its GHG emissions to help ensure the high quality of its reported data. CDP guidelines state that potentially incomplete and/or unreliable information can be excluded from the company's inventory. Further, certain entities like Chevron Phillips Chemical Co. report greenhouse gas emissions and other sustainability metrics voluntarily in their own reports. Chevron's GHG Reporting Protocol states that: An exception to the requirement for GHG emissions to be reported by facilities in which Chevron has an equity share exists for those operations within Global Marketing that are company owned but operated by others. Those Global Marketing facilities that are specifically excluded from GHG reporting include: Company Owned and Retail Operated (COROs) gas stations; Company Owned and Franchise Operated (COFOs) gas stations; and other Commercial and Industrial operations that may not be company operated. In addition, any non-operated joint venture facilities where Chevron has 16 percent or less equity share can be exempt from reporting.

**CC8.5**  
Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	More than 5% but less than or equal to 10%	Data Gaps Assumptions Metering/ Measurement Constraints Sampling	Regulatory requirements for uncertainty estimates generally require 2-5%. The majority of uncertainties and error sources can be attributed to the following: -Not all gas lines are metered. In some of our sites flare gas must be estimated based on engineering analysis -Emission factors for fugitive emissions and other small sources present a higher level of uncertainty -Variability of associated gas composition -Uncertainties associated with emission factors and other assumptions established in the WBCSD/WRI Greenhouse Gas Protocol, API Compendium and IPIECA guidelines -Fuel sampling procedures have inherent uncertainties, which we estimate routinely and are in compliance with U.S. EPA regulations outlined in the GHG Mandatory Reporting Rule and the EU ETS Monitoring, Reporting and Verification Guidelines.
Scope 2 (location-based)	More than 5% but less than or equal to 10%	Data Gaps Metering/ Measurement Constraints Sampling Data Management	Regulatory requirements for uncertainty estimates generally require 2-5%. For most of our Scope 2 emissions we rely on power and steam data provided by third parties. Potential sources of uncertainty from imported electricity and steam include measurements methodologies that are inappropriate, calibration errors, equipment failure, and data acquisition and processing mistakes due to human error.
Scope 2 (market-based)			

**CC8.6**  
Please indicate the verification/assurance status that applies to your reported Scope 1 emissions

Third party verification or assurance process in place

**CC8.6a**  
Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Triennial process	Underway but not complete for reporting year – previous statement of process attached	Limited assurance	<a href="https://www.cdp.net/sites/2017/91/3191/Climate%20Change%202017/Shared%20Documents/Attachments/CC8.6a/EY_Chevron_Verification%202015%202014%202013.pdf">https://www.cdp.net/sites/2017/91/3191/Climate Change 2017/Shared Documents/Attachments/CC8.6a/EY_Chevron_Verification 2015 2014 2013.pdf</a>	The first two pages contain the assurance statement	ISO14064-3	100

**CC8.7**  
Please indicate the verification/assurance status that applies to at least one of your reported Scope 2 emissions figures

Third party verification or assurance process in place

**CC8.7a**  
Please provide further details of the verification/assurance undertaken for your location-based and/or market-based Scope 2 emissions, and attach the relevant statements

Location-based or market-based figure?	Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
Location-based	Triennial process	Underway but not complete for reporting year – previous statement of process attached	Limited assurance	<a href="https://www.cdp.net/sites/2017/91/3191/Climate%20Change%202017/Shared%20Documents/Attachments/CC8.7a/EY_Chevron_Verification%202015%202014%202013.pdf">https://www.cdp.net/sites/2017/91/3191/Climate Change 2017/Shared Documents/Attachments/CC8.7a/EY_Chevron_Verification 2015 2014 2013.pdf</a>	The first two pages contain the assurance statement	ISO14064-3	100

**CC8.8**  
Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2

Additional data points verified	Comment
Product footprint verification	Year to year changes can be calculated from the statement provided by the verifier and attached to 8.7a. A separate verification of GHG emissions of our products was also conducted. The verification statement is attached to question 14.2a.

**CC8.9**

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

**Further Information**

**Page: CC9. Scope 1 Emissions Breakdown - (1 Jan 2016 - 31 Dec 2016)**

**CC9.1**

Do you have Scope 1 emissions sources in more than one country?

Yes

**CC9.1a**

Please break down your total gross global Scope 1 emissions by country/region

Country/Region	Scope 1 metric tonnes CO2e
North America	29000000
Africa and Latin America	12000000
Asia Pacific (or JAPA)	15000000
Europe	680000
Eurasia	3400000
Middle East	8000

**CC9.2**

Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)

By business division

By GHG type

**CC9.2a**

Please break down your total gross global Scope 1 emissions by business division

Business division	Scope 1 emissions (metric tonnes CO2e)
Upstream	36000000
Downstream	21000000
Other	3600000

**CC9.2c**

Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)
CO2	55000000
CH4	4900000
N2O	170000
Other:	2200

**Further Information**

**Page: CC10. Scope 2 Emissions Breakdown - (1 Jan 2016 - 31 Dec 2016)**

**CC10.1**

Do you have Scope 2 emissions sources in more than one country?

Yes

**CC10.1a**

Please break down your total gross global Scope 2 emissions and energy consumption by country/region

Country/Region	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes 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)
North America	2500000		8000000	0
Africa and Latin America	280000		450000	0
Asia Pacific (or JAPA)	1300000		1800000	0
Europe	3400		50000	50000
Eurasia	3300		4900	0
Middle East	20000		39000	0

**CC10.2**

Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

By business division

**CC10.2a**

Please break down your total gross global Scope 2 emissions by business division

Business division	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Upstream	2000000	
Downstream	1700000	
Other	160000	

**Further Information****Page: CC11. Energy****CC11.1**

What percentage of your total operational spend in the reporting year was on energy?

More than 10% but less than or equal to 15%

**CC11.2**

Please state how much heat, steam, and cooling in MWh your organization has purchased and consumed during the reporting year

Energy type	MWh
Heat	0
Steam	5900000
Cooling	0

**CC11.3**

Please state how much fuel in MWh your organization has consumed (for energy purposes) during the reporting year

140000000

**CC11.3a**

Please complete the table by breaking down the total "Fuel" figure entered above by fuel type

Fuels	MWh
Diesel/Gas oil	4500000
Distillate fuel oil No 2	450000
Distillate fuel oil No 4	5000
Distillate fuel oil No 6	5000000
Jet kerosene	52000
Kerosene	2
Liquefied Natural Gas (LNG)	400000
Liquefied petroleum gas (LPG)	9300000
Motor gasoline	54000
Natural gas	120000000
Propane	220000
Waste oils	20000

**CC11.4**

Please provide details of the electricity, heat, steam or cooling amounts that were accounted at a low carbon emission factor in the market-based Scope 2 figure reported in CC8.3a

Basis for applying a low carbon emission factor	MWh consumed associated with low carbon electricity, heat, steam or cooling	Emissions factor (in units of metric tonnes CO2e per MWh)	Comment
No purchases or generation of low carbon electricity, heat, steam or cooling accounted with a low carbon emissions factor	0		

**CC11.5**

Please report how much electricity you produce in MWh, and how much electricity you consume in MWh

Total electricity consumed (MWh)	Consumed electricity that is purchased (MWh)	Total electricity produced (MWh)	Total renewable electricity produced (MWh)	Consumed renewable electricity that is produced by company (MWh)	Comment
	4500000	13000000	2700000	0	The company does not track total electricity consumed as an enterprise.

**Further Information**

**Page: CC12. Emissions Performance**

**CC12.1**

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

Increased

**CC12.1a**

Please 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

Reason	Emissions value (percentage)	Direction of change	Please explain and include calculation
Emissions reduction activities	1.09	Decrease	Our Nemba Enhanced Secondary Recovery Project reduced flaring at the South and North Nemba fields by almost 34 million standard cubic feet per day in 2016. Calculation: -Assuming that the gas stream is all methane and that complete combustion is achieved, 34 million scf/day would be equivalent to 689 tonnes/day of methane avoided. -Given the CO2/CH4 mass ratio of 2.75, the equivalent mass of CO2 avoided was 1,895 tonnes/day (693,709 tonnes/year) -2015 Scope1+2 emissions were 63,463,226 tonnes/year. -Therefore, % CO2 reduction= (693,709 / 63,463,226)*100 = 1.09%
Divestment		Decrease	The marginal GHG emissions contributions from these assets have not been quantified: *United States: - Midcontinent: In 2016, the company divested properties in areas including Oklahoma, Texas and Wyoming. - Gulf of Mexico: During 2016, the company divested 35 onshore and off shore assets in the shelf area. -Shale: In April 2016, the company divested its interest in the Antrim Shale in Michigan *International: -Chevron completed the sale of its marketing and lubricants assets in New Zealand in June 2016.
Acquisitions		Increase	Acquired off shore acreage in Norway and the U.S. Gulf of Mexico. Led a consortium that was the successful bidder on a license off shore Mexico in the deepwater Perdido area of the Gulf of Mexico. (License awarded February 2017.)
Mergers	0	No change	Chevron reported no mergers in 2016.
Change in output	1	Decrease	*Upstream: Production increases from major capital projects, shale and tight properties, and base business were more than off set by normal field declines, the impact of asset sales, the Partitioned Zone shut-in, the effects of civil unrest in Nigeria and planned turnaround activity. *Downstream: -United States: Refined product sales of 1.21 million barrels per day in 2016 were down 1 percent, primarily due to lower gas oil sales. - International: Total refined product sales of 1.46 million barrels per day in 2016 were down 3 percent from 2015. Excluding the effects of the Caltex Australia Limited, divestment, refined product sales were down 1 percent, primarily reflecting lower fuel oil sales. Calculations: 2016 total liquid products from Chevron operations were 1719000 BOE/day, compared to 1744000 in 2015. 2016 total NG produced from Chevron operations was 4766xE6 ft3/day, compared to 4773xE6 in 2015. Converting NG products to BOE/day and adding NG products + Liquid products, the % change in output between 2015 and 2016 is 1%.
Change in methodology	0.8	Decrease	-Combustion: In 2015 we emitted 39,658,891 tonnes of CO2e, compared to 39,578,413 tonnes of CO2e in 2016. This resulted in a reduction of 0.2% (80,478 tonnes of CO2e) compared to last year. -Vented emissions: In 2015 we emitted 2,695,590 tonnes of CO2e, compared to 2,247,836 tonnes of CO2e in 2016. this resulted in a reduction of 16.51% (447,754 tonnes of CO2e) compared to last year. Combined, these emissions reductions (528,232 tonnes of CO2e) constitute approximately 0.8% of 2015 Scope 1 and 2 emissions (63,463,226 tonnes of CO2e) reported to CDP in question 7.1.
Change in boundary		No change	
Change in physical operating conditions		No change	
Unidentified		No change	
Other		No change	

**CC12.1b**

Is your emissions performance calculations in CC12.1 and CC12.1a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

**CC12.2**

Please describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per unit currency total revenue

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator: Unit total revenue	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator: Unit total revenue	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
.000562	metric tonnes CO2e	114472000000	Location-based	22.6	Increase	Calculations: Scope 1 + 2 emissions = 64,322,447 metric tonnes of CO2e, total revenue and other income = \$114,472 millions. Intensity figure was calculated in metric tonnes of CO2e / USD total revenue and other income. Numerator: In 2016, emissions were slightly higher than the previous year; operated GHG emissions decreased primarily due to variation in which assets were producing and reduced power generation and steam demand. In addition, the execution of two flare reduction projects in our Nigeria/Mid-Africa and Southern Africa strategic business units contributed to the decrease. Note that refinements were made in the data reporting for 2015 equity and operated GHG emissions. Denominator: Sales and other operating revenues decreased in 2016 primarily due to lower refined product and crude oil prices, partially offset by higher crude oil volumes.

CC12.3

Please provide any additional intensity (normalized) metrics that are appropriate to your business operations

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator	Metric denominator: Unit total	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
40	metric tonnes CO2e	Other: thousands of BOE	949404000	Location-based	6.1	Decrease	Upstream emissions per 1000 BOE per year: Calculations: Upstream Scope 1 + 2 emissions = 38,079,859 metric tonnes of CO2e, Upstream production = 949,404,000 barrels of oil equivalent (BOE). Intensity figure was calculated in metric tonnes of CO2e / 1000 BOE from upstream operations. Numerator: 2016 direct, operated GHG emissions decreased primarily due to variation in which assets were producing and reduced power generation and steam demand. In addition, the execution of two flare reduction projects in our Nigeria/Mid-Africa and Southern Africa strategic business units contributed to the decrease. Note that refinements were made in the data reporting for 2015 equity and operated GHG emissions. Denominator: Production of 2.594 million oil-equivalent barrels per day was 1 percent lower than net oil-equivalent production in 2015. Production increases from major capital projects, shale and tight properties, and base business were more than off set by normal field declines, the impact of asset sales, the Partitioned Zone shut-in, the effects of civil unrest in Nigeria and planned turnaround activity.
21	metric tonnes CO2e	Other: thousands of BOE	1043466000	Location-based	4.2	Increase	Downstream emissions per 1000 BOE per year: Calculations: Downstream Scope 1 + 2 emissions = 22,434,340 metric tonnes of CO2e, Upstream production = 1,043,466,000 barrels of oil equivalent (BOE). Intensity figure was calculated in metric tonnes of CO2e / 1000 BOE from downstream operations. Numerator: 2016 GHG emissions increased slightly compared to the previous year. Note that refinements were made in the data reporting for 2015 equity and operated GHG emissions. Denominator: -United States: Refined product sales of 1.21 million barrels per day in 2016 were down 1 percent, primarily due to lower gas oil sales. -International: Total refined product sales of 1.46 million barrels per day in 2016 were down 3 percent from 2015. Excluding the effects of the Caltex Australia Limited, divestment, refined product sales were down 1 percent, primarily reflecting lower fuel oil sales.

Further Information

Page: CC13. Emissions Trading

CC13.1

Do you participate in any emissions trading schemes?

Yes

**CC13.1a**

Please complete the following table for each of the emission trading schemes in which you participate

Scheme name	Period for which data is supplied	Allowances allocated	Allowances purchased	Verified emissions in metric tonnes CO <sub>2</sub> e	Details of ownership
European Union ETS	Fri 01 Jan 2016 - Sat 31 Dec 2016	150694	229000	373571	Facilities we own and operate
California's Greenhouse Gas Cap and Trade Program	Fri 01 Jan 2016 - Sat 31 Dec 2016			43764345	Other: Facilities we own and operate and fuels sold in California

**CC13.1b**

What is your strategy for complying with the schemes in which you participate or anticipate participating?

Chevron is exposed to a number of direct financial costs relating to GHG/climate regulation. The most prominent are payments for allowances for internal emissions under cap and trade systems and payments of carbon taxes on internal emissions. Some of these costs may be ultimately borne by customers in the competitive marketplace, mitigating their impact. The Company incurs additional expenses for monitoring, reporting and verifying emissions as well as collecting, accounting for and disbursing carbon taxes and allowance costs that it collects on products it sells.

Since 2007, as part of its ongoing planning process, Chevron has generated an internal outlook of future carbon prices.

Given the uneven state of GHG regulation around the world, this outlook is framed on a regional basis. The outlook is based on an assessment of economic conditions, energy demand, policy evolution, technology developments and costs of abatement, among other factors. This assessment brings together corporate experts and regional operating personnel.

Individual investments are developed, approved and implemented in the context of the strategic plan and segment-specific business plans. The business segments develop investment proposals supporting appropriation requests that are evaluated by management and, as appropriate, reported to the Executive Committee and/or the Board of Directors.

Since 2008, our internal carbon price has been considered in the economic evaluations supporting major capital project appropriations.

A number of GHG-related factors are considered in project appropriation assessments and documents. These factors include an annual profile of anticipated project GHG emissions (both Scope 1 and Scope 2), economic analysis of the current Company endorsed carbon price outlook as applied to the project's anticipated emissions profile and an assessment of the options to reduce GHG emissions and/or optimize energy efficiency. Following the process described above, Chevron continually considers the possible policy and/or regulatory actions associated with carbon pricing as applied to our current production portfolio.

**CC13.2**

Has your organization originated any project-based carbon credits or purchased any within the reporting period?

Yes

**CC13.2a**

Please provide details on the project-based carbon credits originated or purchased by your organization in the reporting period

Credit origination or credit purchase	Project type	Project identification	Verified to which standard	Number of credits (metric tonnes CO <sub>2</sub> e)	Number of credits (metric tonnes CO <sub>2</sub> e): Risk adjusted volume	Credits canceled	Purpose, e.g. compliance
Credit origination	Geothermal	Clean Development Mechanism (CDM) Project No. 0673	CDM (Clean Development Mechanism)	746000	746000	Yes	Compliance

**Further Information**

Question 13.1a: Allowances allocated and purchased under the California Emissions Trading Scheme are not for public disclosure

**Page: CC14. Scope 3 Emissions****CC14.1**

Please account for your organization's Scope 3 emissions, disclosing and explaining any exclusions

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO <sub>2</sub> e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Purchased goods and services	Not relevant, explanation provided				<p>In 2014 we conducted a detailed assessment of Scope 3 emissions. We assessed the following categories for Chevron:</p> <ul style="list-style-type: none"> <li>Purchased goods and services (cat. 1), fuel and energy related activities (cat. 3),</li> <li>Waste generated in operations (cat. 5),</li> <li>Business travel (cat. 6),</li> <li>Employee commuting (cat. 7),</li> <li>Processing of sold products (cat. 10),</li> <li>Use of sold products (cat. 11), end of life treatment of sold products (cat. 12),</li> <li>and Investments (cat. 15).</li> </ul> <p>The most significant emissions are from category 11, which are approximately 95% of total Scope 3 emissions, which was 378 million tonnes of CO2e in 2014.</p> <p>Therefore the only relevant category to Chevron every year is category 11 - Use of sold products. In 2016, emissions from category 11 were 364 million tonnes of CO2e.</p>

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Capital goods	Not relevant, explanation provided				<p>In 2014 we conducted a detailed assessment of Scope 3 emissions. We assessed the following categories for Chevron: Purchased goods and services (cat. 1), fuel and energy related activities (cat. 3), Waste generated in operations (cat. 5), Business travel (cat. 6), Employee commuting (cat. 7), Processing of sold products (cat. 10), Use of sold products (cat. 11), end of life treatment of sold products (cat. 12), and Investments (cat. 15). The most significant emissions are from category 11, which are approximately 95% of total Scope 3 emissions, which was 378 million tonnes of CO2e in 2014. Therefore the only relevant category to Chevron every year is category 11 - Use of sold products. In 2016, emissions from category 11 were 364 million tonnes of CO2e.</p>

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Fuel-and-energy-related activities (not included in Scope 1 or 2)	Not relevant, explanation provided				<p>In 2014 we conducted a detailed assessment of Scope 3 emissions. We assessed the following categories for Chevron:</p> <ul style="list-style-type: none"> <li>Purchased goods and services (cat. 1), fuel and energy related activities (cat. 3),</li> <li>Waste generated in operations (cat. 5),</li> <li>Business travel (cat. 6),</li> <li>Employee commuting (cat. 7),</li> <li>Processing of sold products (cat. 10),</li> <li>Use of sold products (cat. 11),</li> <li>end of life treatment of sold products (cat. 12),</li> <li>and Investments (cat. 15).</li> </ul> <p>The most significant emissions are from category 11, which are approximately 95% of total Scope 3 emissions, which was 378 million tonnes of CO2e in 2014.</p> <p>Therefore the only relevant category to Chevron every year is category 11 - Use of sold products. In 2016, emissions from category 11 were 364 million tonnes of CO2e.</p>

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Upstream transportation and distribution	Not relevant, explanation provided				<p>In 2014 we conducted a detailed assessment of Scope 3 emissions. We assessed the following categories for Chevron: Purchased goods and services (cat. 1), fuel and energy related activities (cat. 3), Waste generated in operations (cat. 5), Business travel (cat. 6), Employee commuting (cat. 7), Processing of sold products (cat. 10), Use of sold products (cat. 11), end of life treatment of sold products (cat. 12), and Investments (cat. 15). The most significant emissions are from category 11, which are approximately 95% of total Scope 3 emissions, which was 378 million tonnes of CO2e in 2014. Therefore the only relevant category to Chevron every year is category 11 - Use of sold products. In 2016, emissions from category 11 were 364 million tonnes of CO2e.</p>

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Waste generated in operations	Not relevant, explanation provided				<p>In 2014 we conducted a detailed assessment of Scope 3 emissions. We assessed the following categories for Chevron:</p> <ul style="list-style-type: none"> <li>Purchased goods and services (cat. 1), fuel and energy related activities (cat. 3),</li> <li>Waste generated in operations (cat. 5),</li> <li>Business travel (cat. 6),</li> <li>Employee commuting (cat. 7),</li> <li>Processing of sold products (cat. 10),</li> <li>Use of sold products (cat. 11), end of life treatment of sold products (cat. 12),</li> <li>and Investments (cat. 15).</li> </ul> <p>The most significant emissions are from category 11, which are approximately 95% of total Scope 3 emissions, which was 378 million tonnes of CO2e in 2014.</p> <p>Therefore the only relevant category to Chevron every year is category 11 - Use of sold products. In 2016, emissions from category 11 were 364 million tonnes of CO2e.</p>

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Business travel	Not relevant, explanation provided				<p>In 2014 we conducted a detailed assessment of Scope 3 emissions. We assessed the following categories for Chevron: Purchased goods and services (cat. 1), fuel and energy related activities (cat. 3), Waste generated in operations (cat. 5), Business travel (cat. 6), Employee commuting (cat. 7), Processing of sold products (cat. 10), Use of sold products (cat. 11), end of life treatment of sold products (cat. 12), and Investments (cat. 15). The most significant emissions are from category 11, which are approximately 95% of total Scope 3 emissions, which was 378 million tonnes of CO2e in 2014. Therefore the only relevant category to Chevron every year is category 11 - Use of sold products. In 2016, emissions from category 11 were 364 million tonnes of CO2e.</p>

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Employee commuting	Not relevant, explanation provided				<p>In 2014 we conducted a detailed assessment of Scope 3 emissions. We assessed the following categories for Chevron:</p> <ul style="list-style-type: none"> <li>Purchased goods and services (cat. 1), fuel and energy related activities (cat. 3),</li> <li>Waste generated in operations (cat. 5),</li> <li>Business travel (cat. 6),</li> <li>Employee commuting (cat. 7),</li> <li>Processing of sold products (cat. 10),</li> <li>Use of sold products (cat. 11), end of life treatment of sold products (cat. 12),</li> <li>and Investments (cat. 15).</li> </ul> <p>The most significant emissions are from category 11, which are approximately 95% of total Scope 3 emissions, which was 378 million tonnes of CO2e in 2014.</p> <p>Therefore the only relevant category to Chevron every year is category 11 - Use of sold products. In 2016, emissions from category 11 were 364 million tonnes of CO2e.</p>

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Upstream leased assets	Not relevant, explanation provided				<p>In 2014 we conducted a detailed assessment of Scope 3 emissions. We assessed the following categories for Chevron:</p> <ul style="list-style-type: none"> <li>Purchased goods and services (cat. 1), fuel and energy related activities (cat. 3),</li> <li>Waste generated in operations (cat. 5),</li> <li>Business travel (cat. 6),</li> <li>Employee commuting (cat. 7),</li> <li>Processing of sold products (cat. 10),</li> <li>Use of sold products (cat. 11), end of life treatment of sold products (cat. 12),</li> <li>and Investments (cat. 15).</li> </ul> <p>The most significant emissions are from category 11, which are approximately 95% of total Scope 3 emissions, which was 378 million tonnes of CO2e in 2014.</p> <p>Therefore the only relevant category to Chevron every year is category 11 - Use of sold products. In 2016, emissions from category 11 were 364 million tonnes of CO2e.</p>

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Downstream transportation and distribution	Not relevant, explanation provided				<p>In 2014 we conducted a detailed assessment of Scope 3 emissions. We assessed the following categories for Chevron: Purchased goods and services (cat. 1), fuel and energy related activities (cat. 3), Waste generated in operations (cat. 5), Business travel (cat. 6), Employee commuting (cat. 7), Processing of sold products (cat. 10), Use of sold products (cat. 11), end of life treatment of sold products (cat. 12), and Investments (cat. 15). The most significant emissions are from category 11, which are approximately 95% of total Scope 3 emissions, which was 378 million tonnes of CO2e in 2014. Therefore the only relevant category to Chevron every year is category 11 - Use of sold products. In 2016, emissions from category 11 were 364 million tonnes of CO2e.</p>

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Processing of sold products	Not relevant, explanation provided				<p>In 2014 we conducted a detailed assessment of Scope 3 emissions. We assessed the following categories for Chevron: Purchased goods and services (cat. 1), fuel and energy related activities (cat. 3), Waste generated in operations (cat. 5), Business travel (cat. 6), Employee commuting (cat. 7), Processing of sold products (cat. 10), Use of sold products (cat. 11), end of life treatment of sold products (cat. 12), and Investments (cat. 15). The most significant emissions are from category 11, which are approximately 95% of total Scope 3 emissions, which was 378 million tonnes of CO2e in 2014. Therefore the only relevant category to Chevron every year is category 11 - Use of sold products. In 2016, emissions from category 11 were 364 million tonnes of CO2e.</p>
Use of sold products	Relevant, calculated	364000000	<p>Scope 3 CO2 emissions from our crude oil, natural gas liquids (NGL), and natural gas product streams for 2016 were calculated as follows: 1. For CO2 emissions from NG: a. Applied high heating value (HHV) for processed and unprocessed natural gas (HHV processed = 1,027 Btu per ft<sup>3</sup>, HHV unprocessed = 1,235 Btu per ft<sup>3</sup>, source –2009 API Compendium, Table 3.8, Page 320) to calculate the energy content of NG products. b. Subtracted out the natural gas that was consumed in operations during 2016. c. Applied the CO2 emissions factor for NG of 0.0531 tonnes CO2 per mmBtu (2009 API Compendium, Table 4.3) to calculate emissions from 2016 natural gas. 2. For CO2 emissions from crude oil + NGL: a. Separated out natural gas liquids production from crude oil production for 2016 to enable a more accurate CO2 emissions estimate for the liquids product stream. b. Made the assumption that a barrel of NGL has about 2/3rds the energy content of a barrel of crude oil (HHV = 2/3 * 5.8 mmBtu per barrel, source of crude oil HHV – 2009 API Compendium, Table 3.8, Page 320) to calculate the energy content of NGL produced in 2016. Calculated the energy content of crude oil using an API HHV of 5.8 mmBtu/bbl (2009 API Compendium, Table 3.8). c. Applied the CO2 combustion emissions factor (EF) for natural gas liquids (EF = 0.0643 tonnes CO2 per mmBtu) and for crude oil (EF=0.0745 tonnes CO2/mmBtu) on a HHV basis (2009 API Compendium, Table 4.3, Page 418) to the natural gas liquids and crude oil produced in 2016. Data quality: The execution of the methodology described above has been evaluated by a third party (LRQA)</p>	0.00%	<p>Combustion of our products resulted in emissions of 364 million metric tons of CO2 equivalent in 2016, approximately 1.1 percent less than the 368 million metric tons emitted in 2015. Our natural gas product stream decreased by 0.15% relative to last year, while our liquids product stream decreased by 1.43%.</p>

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
End of life treatment of sold products	Not relevant, explanation provided				<p>In 2014 we conducted a detailed assessment of Scope 3 emissions. We assessed the following categories for Chevron: Purchased goods and services (cat. 1), fuel and energy related activities (cat. 3), Waste generated in operations (cat. 5), Business travel (cat. 6), Employee commuting (cat. 7), Processing of sold products (cat. 10), Use of sold products (cat. 11), end of life treatment of sold products (cat. 12), and Investments (cat. 15). The most significant emissions are from category 11, which are approximately 95% of total Scope 3 emissions, which was 378 million tonnes of CO2e in 2014. Therefore the only relevant category to Chevron every year is category 11 - Use of sold products. In 2016, emissions from category 11 were 364 million tonnes of CO2e.</p>

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Downstream leased assets	Not relevant, explanation provided				<p>In 2014 we conducted a detailed assessment of Scope 3 emissions. We assessed the following categories for Chevron:</p> <ul style="list-style-type: none"> <li>Purchased goods and services (cat. 1), fuel and energy related activities (cat. 3),</li> <li>Waste generated in operations (cat. 5),</li> <li>Business travel (cat. 6),</li> <li>Employee commuting (cat. 7),</li> <li>Processing of sold products (cat. 10),</li> <li>Use of sold products (cat. 11), end of life treatment of sold products (cat. 12),</li> <li>and Investments (cat. 15).</li> </ul> <p>The most significant emissions are from category 11, which are approximately 95% of total Scope 3 emissions, which was 378 million tonnes of CO2e in 2014.</p> <p>Therefore the only relevant category to Chevron every year is category 11 - Use of sold products. In 2016, emissions from category 11 were 364 million tonnes of CO2e.</p>

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Franchises	Not relevant, explanation provided				<p>In 2014 we conducted a detailed assessment of Scope 3 emissions. We assessed the following categories for Chevron: Purchased goods and services (cat. 1), fuel and energy related activities (cat. 3), Waste generated in operations (cat. 5), Business travel (cat. 6), Employee commuting (cat. 7), Processing of sold products (cat. 10), Use of sold products (cat. 11), end of life treatment of sold products (cat. 12), and Investments (cat. 15). The most significant emissions are from category 11, which are approximately 95% of total Scope 3 emissions, which was 378 million tonnes of CO2e in 2014. Therefore the only relevant category to Chevron every year is category 11 - Use of sold products. In 2016, emissions from category 11 were 364 million tonnes of CO2e.</p>

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Investments	Not relevant, explanation provided				<p>In 2014 we conducted a detailed assessment of Scope 3 emissions. We assessed the following categories for Chevron: Purchased goods and services (cat. 1), fuel and energy related activities (cat. 3), Waste generated in operations (cat. 5), Business travel (cat. 6), Employee commuting (cat. 7), Processing of sold products (cat. 10), Use of sold products (cat. 11), end of life treatment of sold products (cat. 12), and Investments (cat. 15). The most significant emissions are from category 11, which are approximately 95% of total Scope 3 emissions, which was 378 million tonnes of CO2e in 2014. Therefore the only relevant category to Chevron every year is category 11 - Use of sold products. In 2016, emissions from category 11 were 364 million tonnes of CO2e.</p>

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Other (upstream)	Not relevant, explanation provided				<p>In 2014 we conducted a detailed assessment of Scope 3 emissions. We assessed the following categories for Chevron: Purchased goods and services (cat. 1), fuel and energy related activities (cat. 3), Waste generated in operations (cat. 5), Business travel (cat. 6), Employee commuting (cat. 7), Processing of sold products (cat. 10), Use of sold products (cat. 11), end of life treatment of sold products (cat. 12), and Investments (cat. 15). The most significant emissions are from category 11, which are approximately 95% of total Scope 3 emissions, which was 378 million tonnes of CO2e in 2014. Therefore the only relevant category to Chevron every year is category 11 - Use of sold products. In 2016, emissions from category 11 were 364 million tonnes of CO2e.</p>

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Other (downstream)	Not relevant, explanation provided				In 2014 we conducted a detailed assessment of Scope 3 emissions. We assessed the following categories for Chevron: Purchased goods and services (cat. 1), fuel and energy related activities (cat. 3), Waste generated in operations (cat. 5), Business travel (cat. 6), Employee commuting (cat. 7), Processing of sold products (cat. 10), Use of sold products (cat. 11), end of life treatment of sold products (cat. 12), and Investments (cat. 15). The most significant emissions are from category 11, which are approximately 95% of total Scope 3 emissions, which was 378 million tonnes of CO2e in 2014. Therefore the only relevant category to Chevron every year is category 11 - Use of sold products. In 2016, emissions from category 11 were 364 million tonnes of CO2e.

**CC14.2**  
Please indicate the verification/assurance status that applies to your reported Scope 3 emissions

Third party verification or assurance process in place

**CC14.2a**  
Please provide further details of the verification/assurance undertaken, and attach the relevant statements

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 3 emissions verified (%)
Annual process	Complete	Limited assurance	<a href="https://www.cdp.net/sites/2017/91/3191/Climate%20Change%202017/Shared%20Documents/Attachments/CC14.2a/CY2016%20Chevron%20Scope%203-Verification%20Report.pdf">https://www.cdp.net/sites/2017/91/3191/Climate Change 2017/Shared Documents/Attachments/CC14.2a/CY2016 Chevron Scope 3-Verification Report.pdf</a>		ISO14064-3	95

**CC14.3**  
Are you able to compare your Scope 3 emissions for the reporting year with those for the previous year for any sources?

Yes

**CC14.3a**  
Please identify the reasons for any change in your Scope 3 emissions and for each of them specify how your emissions compare to the previous year

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Use of sold products	Change in output	1.1	Decrease	Combustion of our products resulted in emissions of 364 million metric tons of CO2 equivalent in 2016, approximately 1.1 percent less than the 368 million metric tons emitted in 2015. Our natural gas product stream decreased by 0.15% relative to last year, while our liquids product stream decreased by 1.43%. An environmentally friendly and efficient energy source, natural gas is the cleanest-burning conventional fuel, producing lower levels of greenhouse gas emissions than the heavier hydrocarbon fuels, like coal and oil. Historically, natural gas also has been one of the most economical energy sources. Natural gas fuels electric power generators, heats buildings and is used as a raw material in many consumer products, such as those made of traditional plastics. Natural gas is a growing segment of Chevron's energy portfolio. Our natural gas resources span six continents, with significant holdings in Africa, Australia, Southeast Asia, the Caspian region, Latin America and North America. Chevron's net production in 2016 was about 5.25 billion cubic feet of natural gas per day, including equity shares in affiliates, and we expect to substantially increase this volume over the next decade.

**CC14.4**

Do you engage with any of the elements of your value chain on GHG emissions and climate change strategies? (Tick all that apply)

Yes, our customers

**CC14.4a**

Please give details of methods of engagement, your strategy for prioritizing engagements and measures of success

i) Description of methods: As part of Chevron's Operational Excellence Management System, the company has standard corporate processes for Stakeholder Engagement and Issue Management. Collectively, the two processes require our businesses to systematically identify issues, and for priority issues, develop issues management plans linked to stakeholder engagement activities. These plans help both our business units and corporate functions prioritize engagements with stakeholders and track the outcomes of the meetings. Additionally, each year the company reviews those issues that have the potential to impact the reputation and business environmental for the enterprise. Climate change and GHG management are issues that the company also manages through our corporate groups, including our Health, Environment and Safety organization as well as our Policy, Government and Public Affairs function.

One of the key avenues for Chevron to communicate with stakeholders is through the company's annual Corporate Responsibility Report and complementary web pages. We extensively coverage both our climate change principles and policy positions as well as our internal efforts to reduce our GHG emissions. Also, we provide public information about GHG emissions and our GHG management practices to the public through voluntary disclosures like the CDP questionnaire and publications such as the corporate responsibility report. Our customers can access this information and additional details about our GHG management strategy through our website: chevron.com.

ii) Strategy for prioritizing engagements: At the enterprise level, Chevron recently put into place an issue prioritization process. This process is used to select content for our corporate responsibility reporting. The process includes the following steps: Step 1) A cross-function team of employees identify environmental, social and governance (ESG) issues that are salient to our stakeholders and our business; Step2) the teams conducts an initial prioritization of the ESG issues based on relevance to our business; Step 3) seek feedback from internal subject matter experts and key external stakeholders; and Step 4) determine those issues of highest importance and discuss each in our Corporate Responsibility Report and website. One of Chevron's high priority issues continues to be climate change and energy efficiency. Similarly Chevron's Stakeholder Engagement Process requires the development of engagements plans to establish engagement objectives and to identify and prioritize external stakeholders. These plan should be linked to the issues management plans and are reviewed and updated annually, or more frequently as the business necessitates.

iii) Measures of success: It is difficult to measure with hard numbers the success of our interactions with our stakeholders. However, we can gauge the effectiveness of our interactions and issues management activities looking at outcomes, including the health of our relationships and the willingness to continue to engage. For example, during the 2016 calendar year, we held multiple investor engagements (comprising approximately 36% of our outstanding stock) where climate change was substantively addressed. Over the years, we've been able to demonstrate success on our social media platforms through the growing user base and the productive meetings with shareholders on climate related issues.

**Further Information**

**Module: Sign Off**

**Page: CC15. Sign Off**

**CC15.1**

Please provide the following information for the person that has signed off (approved) your CDP climate change response

Name	Job title	Corresponding job category
Wes Lohec	Vice President, Health, Environment and Safety	Other: Vice President

**Further Information**

**Module: Oil & Gas**

**Page: OG0. Reference information**

**OG0.1**

Please identify the significant petroleum industry components of your business within your reporting boundary (select all that apply)

- Exploration, production & gas processing
- Storage, transportation & distribution
- Specialty operations

Refining  
Retail & marketing

#### Further Information

### Page: OG1. Production, reserves and sales by hydrocarbon type - (1 Jan 2016 - 31 Dec 2016)

#### OG1.1

Is your organization involved with oil & gas production or reserves?

Yes

#### OG1.2

Please provide values for annual gross and net production by hydrocarbon type (in units of BOE) for the reporting year in the following table. The values required are aggregate values for the reporting organization

Product	Gross production (BOE)	Net production (BOE)	Production consolidation boundary	Comment
Natural gas liquids (NGL)				
Light oil				
Medium oil				
Heavy oil		629154000	Equity share	
Extraheavy oil				
Bitumen (oil sands)				
Shale oil				
Tight oil				
Conventional non-associated natural gas				
Associated natural gas		331382744	Equity share	
Shale gas				
Tight gas				

#### OG1.3

Please provide values for reserves by hydrocarbon type (in units of BOE) for the reporting year. Please indicate if the figures are for reserves that are proved, probable or both proved and probable. The values required are aggregate values for the reporting organization

Product	Country/region	Reserves (BOE)	Date of assessment	Proved/Probable/Proved+Probable
Natural gas liquids (NGL)				
Light oil				
Medium oil				
Heavy oil	Rest of world	5554000000	Sat 31 Dec 2016	Proved
Extraheavy oil				
Shale oil				
Tight oil				
Synthetic oil	Rest of world	774000000	Sat 31 Dec 2016	Proved
Conventional non-associated natural gas				
Associated natural gas				
Shale gas	Rest of world	4958073592	Sat 31 Dec 2016	Proved
Synthetic gas				
Tight gas				

#### OG1.4

Please explain which listing requirements or other methodologies you have used to provide reserves data in OG1.3. If your organization cannot provide data due to legal restrictions on reporting reserves figures in certain countries, please explain this

The company has adopted a comprehensive reserves and resource classification system modeled after a system developed and approved by the Society of Petroleum Engineers, the World Petroleum Congress and the American Association of Petroleum Geologists. The system classifies recoverable hydrocarbons into six categories based on their status at the time of reporting – three deemed commercial and three potentially recoverable. Within the commercial classification are proved reserves and two categories of unproved: probable and possible. The potentially recoverable categories are also referred to as contingent resources. For reserves estimates to be classified as proved, they must meet all SEC and company standards.

Proved oil and gas reserves are the estimated quantities that geoscience and engineering data demonstrate with reasonable certainty to be economically producible in the future from known reservoirs under existing economic conditions, operating methods and government regulations. Net proved reserves exclude royalties and interests owned by others and reflect contractual arrangements and royalty obligations in effect at the time of the estimate.

Proved reserves are classified as either developed or undeveloped. Proved developed reserves are the quantities expected to be recovered through existing wells with existing equipment and operating methods. Due to the inherent uncertainties and the limited nature of reservoir data, estimates of reserves are subject to change as additional information becomes available.

Proved reserves are estimated by company asset teams composed of earth scientists and engineers. As part of the internal control process related to reserves estimation, the company maintains a Reserves Advisory Committee (RAC) that is chaired by the Manager of Global Reserves, an organization that is separate from the Upstream operating organization. The Manager of Global Reserves has more than 30 years' experience working in the oil and gas industry and holds both undergraduate and graduate degrees in geoscience. His experience includes various technical and management roles in providing reserve and resource estimates in support of major capital and exploration projects, and more than 10 years of managing oil and gas reserves processes. He has been named a Distinguished Lecturer by the American Association of Petroleum Geologists and is an active member of the American Association of Petroleum Geologists, the SEPM Society of Sedimentary Geologists and the Society of Petroleum Engineers.

All RAC members are degreed professionals, each with more than 10 years of experience in various aspects of reserves estimation relating to reservoir engineering, petroleum engineering, earth science or finance. The members are knowledgeable in SEC guidelines for proved reserves classification and receive annual training on the preparation of reserves estimates.

The RAC has the following primary responsibilities: establish the policies and processes used within the operating units to estimate reserves; provide independent reviews and oversight of the business units' recommended reserves estimates and changes; confirm that proved reserves are recognized in accordance with SEC guidelines; determine that reserve volumes are calculated using consistent and appropriate standards, procedures and technology; and

maintain the Global Reserves Manual, which provides standardized procedures used corporatwide for classifying and reporting hydrocarbon reserves.

During the year, the RAC is represented in meetings with each of the company's upstream business units to review and discuss reserve changes recommended by the various asset teams. Major changes are also reviewed with the company's Strategy and Planning Committee, whose members include the Chief Executive Officer and the Chief Financial Officer. The company's annual reserve activity is also reviewed with the Board of Directors. If major changes to reserves were to occur between the annual reviews, those matters would also be discussed with the Board.

RAC subteams also conduct in-depth reviews during the year of many of the fields that have large proved reserves quantities. These reviews include an examination of the proved-reserve records and documentation of their compliance with the Global Reserves Manual. In addition, third-party engineering consultants are used to supplement the company's own reserves estimation controls and procedures, including through the use of third-party audits of selected oil and gas assets.

**OG1.5**  
Please provide values for annual sales of hydrocarbon types (in units of BOE) for the reporting year in the following table. The values required are aggregate values for the reporting organization

Product	Sales (BOE)	Comment
Conventional non-associated natural gas	566732636	This figure includes upstream sales, international and domestic.
Associated natural gas		
Compressed Natural Gas (CNG)		
Shale gas		
Synthetic gas		
Tight gas		
Natural gas liquids (NGL)	84180000	This figure includes upstream and downstream sales, international and domestic.
Gasoline/petroleum	370758000	
Refined products	608292000	Other refined product sales, domestic and international, including sales of affiliates

**OG1.6**  
Please provide the average breakeven cost of current production used in estimation of proven reserves

Hydrocarbon/project	Breakeven cost/BOE	Comment
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**OG1.7**  
In your economic assessment of hydrocarbon reserves, resources or assets, do you conduct scenario analysis and/or portfolio stress testing consistent with a low-carbon energy transition?

Yes, compatible with IEA 450  
Yes, other

**OG1.7a**  
Please describe your scenario analysis and/or portfolio stress testing, the inputs used and the implications for your capital expenditure plans and investment decisions

In view of the continuing global demand for oil and gas, the substantial future investment required to meet that demand, and the way investment decisions to explore for and/or develop resources are phased and made with a market view in mind, the current risk exposure to the Company in a greenhouse gas (GHG)-restricted scenario is minimal.

Chevron has analyzed the impacts of supply, demand and resultant pricing levels under a reduced-demand/GHG-constrained scenario, including consideration of the International Energy Agency (IEA) 450 Scenario.

This analysis has shown:

- The pricing levels modeled for the IEA 450 Scenario generally align with the low end of the price trajectory range already being used throughout Chevron's various planning processes.
- Although certain high-cost assets around the world could be impacted by a hypothetical GHG-constrained case, those highcost assets for which a final investment decision has yet to be made would not find a place in our investment portfolio given our risk management processes. Lower-cost assets remain competitive, specifically, those assets already producing, which would continue to produce.

Chevron has undertaken a number of steps to manage GHGs, including investments in flare reduction, investments in CO<sub>2</sub> injection, improved energy efficiency and activity in biofuels. In summary, we believe Chevron's current risk management and business planning processes are sufficient to mitigate the risks associated with climate change. These processes are appropriate to enable the Company to continue to monitor and adjust accordingly as climate policy developments unfold.

The IEA's 450 Scenario, which is premised on the assumption that a hypothetical combination of policy-driven improvements in energy efficiency and carbon taxes is enacted to limit atmospheric CO<sub>2</sub> concentrations to 450 ppm. Implementing the 450 Scenario would be a tremendous challenge, requiring increasing investments in energy production and distribution infrastructure, changes in consumer behavior and lifestyles, and the imposition of a variety of policies. The IEA acknowledges this, noting that the 450 Scenario is not a prediction or forecast, but rather an illustration of a possible path that society could pursue to achieve its climate change goals. (Key findings from that assessment are noted in Chevron's Managing Climate Risk, a Perspective for Investors report, Risk Management and Governance beginning on Page 8.) ...[T]he IEA contrasts its hypothetical 450 Scenario with its New Policies Scenario, which represents the IEA's current expectation of demand and emissions trajectories, and their Current Policies Scenario, which assumes no changes in policy moving forward.

**Further Information**

**Page: OG2. Emissions by segment in the O&G value chain - (1 Jan 2016 - 31 Dec 2016)**

**OG2.1**  
Please indicate the consolidation basis (financial control, operational control, equity share) used to report the Scope 1 and Scope 2 emissions by segment in the O&G value chain. Further information can be provided in the text box in OG2.2

Segment	Consolidation basis for reporting Scope 1 emissions	Consolidation basis for reporting Scope 2 emissions
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Segment	Consolidation basis for reporting Scope 1 emissions	Consolidation basis for reporting Scope 2 emissions
Exploration, production & gas processing	Equity Share	Equity Share
Refining	Equity Share	Equity Share
Retail & marketing	Equity Share	Equity Share
Storage, transportation & distribution	Equity Share	Equity Share

**OG2.2**

Please provide clarification for cases in which different consolidation bases have been used and the level/focus of disclosure. For example, a reporting organization whose business is solely in storage, transportation and distribution (STD) may use the text box to explain why only the STD row has been completed

**OG2.3**

Please provide masses of gross Scope 1 carbon dioxide and methane emissions in units of metric tonnes CO<sub>2</sub> and CH<sub>4</sub>, respectively, for the organization's owned/controlled operations broken down by value chain segment

Segment	Gross Scope 1 carbon dioxide emissions (metric tonnes CO <sub>2</sub> )	Gross Scope 1 methane emissions (metric tonnes CH <sub>4</sub> )
Exploration, production & gas processing	31000000	190000
Refining	21000000	3600
Specialty operations	3600000	260

**OG2.4**

Please provide masses of gross Scope 2 GHG emissions in units of metric tonnes CO<sub>2</sub>e for the organization's owned/controlled operations broken down by value chain segment

Segment	Gross Scope 2 emissions (metric tonnes CO <sub>2</sub> e)	Comment
Exploration, production & gas processing	2200000	
Refining	1700000	
Specialty operations	160000	

**Further Information**

**Page: OG3. Scope 1 emissions by emissions category - (1 Jan 2016 - 31 Dec 2016)**

**OG3.1**

Please confirm the consolidation basis (financial control, operational control, equity share) used to report Scope 1 emissions by emissions category

Segment	Consolidation basis for reporting Scope 1 emissions by emissions category
Exploration, production & gas processing	Equity Share
Refining	Equity Share
Specialty operations	Equity Share

**OG3.2**

Please provide clarification for cases in which different consolidation bases have been used to report by emissions categories (combustion, flaring, process emissions, vented emissions, fugitive emissions) in the various segments

**OG3.3**

Please provide masses of gross Scope 1 carbon dioxide and methane emissions released into the atmosphere in units of metric tonnes CO<sub>2</sub> and CH<sub>4</sub>, respectively, for the whole organization broken down by emissions category

Emissions category	Gross Scope 1 carbon dioxide emissions (metric tonnes CO <sub>2</sub> )	Gross Scope 1 methane emissions (metric tonnes CH <sub>4</sub> )
Combustion	39000000	16000
Flaring	8000000	36000
Process emissions	7500000	33000
Vented emissions	670000	63000
Fugitive emissions	4500	45000

**OG3.4**

Please describe your organization's efforts to reduce flaring, including any flaring reduction targets set and/or its involvement in voluntary flaring reduction programs, if flaring is relevant to your operations

Chevron flares and vents natural gas for safety and operational purposes and in areas where pipelines or other gas transportation infrastructure and utilization alternatives do not exist. We are working to reduce natural gas flaring and venting and the resulting GHG emissions. We have developed internal country-specific plans to minimize gas flaring, and we are a member of the World Bank-led Global Gas Flaring Reduction Partnership. Since 2008, activities carried out by the Nigerian National Petroleum Corporation/Chevron Nigeria Limited joint venture have reduced routine gas flaring by more than 90 percent in the Niger Delta. We have also made significant progress in reducing flare gas volumes in Angola through the execution of various projects. For example, our Nemba Enhanced Secondary Project reduced flaring at the South and North Nemba fields by almost 34 million standard cubic feet per day in 2016. In total, flare gas volume rates in Angola have been reduced by more than 50 percent since 2012.

**Further Information**

**Page: OG4. Transfers & sequestration of CO2 emissions - (1 Jan 2016 - 31 Dec 2016)****OG4.1**

Is your organization involved in the transfer or sequestration of CO2?

Yes

**OG4.2**

Please indicate the consolidation basis (financial control, operational control, equity share) used to report transfers and sequestration of CO2 emissions

Activity	Consolidation basis
Transfers	Equity Share
Sequestration of CO2 emissions	Equity Share

**OG4.3**

Please provide clarification for cases in which different consolidation bases have been used (e.g. for a given activity, capture, injection or storage pathway)

**OG4.4**

Using the units of metric tonnes of CO2, please provide gross masses of CO2 transferred in and out of the reporting organization (as defined by the consolidation basis). Please note that questions of ownership of the CO2 are addressed in OG4.6

Transfer direction	CO2 transferred – Reporting year
CO2 transferred in	0
CO2 transferred out	

**OG4.5**

Please provide clarification on whether any oil reservoirs and/or sequestration system (geological or oceanic) have been included within the organizational boundary of the reporting organization. Provide details, including degrees to which reservoirs are shared with other entities

**OG4.6**

Please explain who (e.g. the reporting organization) owns the transferred emissions and what potential liabilities are attached. In the case of sequestered emissions, please clarify whether the reporting organization or one or more third parties owns the sequestered emissions and who has potential liability for them

The company holds a 20 percent nonoperated working interest in the AOSP near Fort McMurray, Alberta. Oil sands are mined from both the Muskeg River and the Jackpine mines. Bitumen is extracted from the oil sands and transported by pipeline to the Scotford Upgrader near Edmonton, Alberta, where it is upgraded into synthetic oil using hydroprocessing technology. Carbon dioxide emissions from the upgrader are reduced by the collocated Quest carbon capture and storage facilities. In 2016, average net daily synthetic oil production was 50,000 barrels.

According to Shell's website: "Our Quest project, near Edmonton, is showing that CCS works – storing one million tonnes of CO2 in its first year operating, ahead of schedule and under budget."

**OG4.7**

Please provide masses in metric tonnes of gross CO2 captured for purposes of carbon capture and sequestration (CCS) during the reporting year according to capture pathway. For each pathway, please provide a breakdown of the percentage of the gross captured CO2 that was transferred into the reporting organization and the percentage that was transferred out of the organization (to be stored)

Capture pathway in CCS	Captured CO2 (metric tonnes CO2)	Percentage transferred in	Percentage transferred out
Separation of CO2 from industrial process gas streams	200000		

**OG4.8**

Please provide masses in metric tonnes of gross CO2 injected and stored for purposes of CCS during the reporting year according to injection and storage pathway

Injection and storage pathway	Injected CO2 (metric tonnes CO2)	Percentage of injected CO2 intended for long-term (>100 year) storage	Year in which injection began	Cumulative CO2 injected and stored (metric tonnes CO2)
CO2 injected into a geological formation or saline formation for long-term storage	200000	100%	2015	

**OG4.9**

Please provide details of risk management performed by the reporting organization and/or third party in relation to its CCS activities. This should cover pre-operational evaluation of the storage (e.g. site characterization), operational monitoring, closure monitoring, remediation for CO2 leakage, and results of third party verification

Shell Canada Limited developed a Measurement, Monitoring and Verification Plan (MMV). According to the Plan, "A risk-based workflow was applied. This approach relies on a systematic assessment of the whole suite of containment risks, followed by a review of the effectiveness of safeguards provided by geology, engineering and recognition of MMV performance targets. The proposed conceptual MMV plan is designed to provide early warning of any breach of containment triggering appropriate responses, thereby reducing risk and ensuring that the remaining risk is insignificant compared to everyday risks broadly accepted by society."

**Further Information****Page: OG5. Emissions intensity - (1 Jan 2016 - 31 Dec 2016)****OG5.1**

Please provide estimated emissions intensities (Scope 1 + Scope 2) associated with current production and operations

Year ending	Segment	Hydrocarbon/product	Emissions intensity (metric tonnes CO2e per thousand BOE)	% change from previous year	Direction of change from previous year	Reason for change
2016	Exploration, production & gas processing	Conventional non-associated natural gas Associated natural gas Natural gas condensate Natural gas liquids (NGL) Liquefied Natural Gas (LNG) Shale gas Synthetic gas Tight gas Light oil Medium oil Heavy oil Extraheavy oil Bitumen (oil sands) Shale oil Synthetic oil Tight oil	40	6.1	Decrease	Numerator: 2016 direct, operated GHG emissions decreased primarily due to variation in which assets were producing and reduced power generation and steam demand. In addition, the execution of two flare reduction projects in our Nigeria/Mid-Africa and Southern Africa strategic business units contributed to the decrease. Note that refinements were made in the data reporting for 2015 equity and operated GHG emissions. Denominator: Production of 2.594 million oil-equivalent barrels per day was 1 percent lower than net oil-equivalent production in 2015. Production increases from major capital projects, shale and tight properties, and base business were more than off set by normal field declines, the impact of asset sales, the Partitioned Zone shut-in, the effects of civil unrest in Nigeria and planned turnaround activity.
2016	Refining	Refined products Diesel Gasoline/petroleum	21	4.1	Increase	Numerator: 2016 GHG emissions increased slightly compared to the previous year. Note that refinements were made in the data reporting for 2015 equity and operated GHG emissions. Denominator:-United States: Refined product sales of 1.21 million barrels per day in 2016 were down 1 percent, primarily due to lower gas oil sales.-International: Total refined product sales of 1.46 million barrels per day in 2016 were down 3 percent from 2015. Excluding the effects of the Caltex Australia Limited, divestment, refined product sales were down 1 percent, primarily reflecting lower fuel oil sales.

**OG5.2**

Please clarify how each of the emissions intensities has been derived and supply information on the methodology used where this differs from information already given in answer to the methodology questions in the main information request

Upstream KPI - Calculations: Upstream Scope 1 + 2 emissions = 38,079,859 metric tonnes of CO2e, Upstream production = 949,404,000 barrels of oil equivalent (BOE). Intensity figure was calculated in metric tonnes of CO2e / 1000 BOE from upstream operations

Downstream KPI - Calculations: Downstream Scope 1 + 2 emissions = 22,434,340 metric tonnes of CO2e, Downstream production = 1,043,466,000 barrels of oil equivalent (BOE). Intensity figure was calculated in metric tonnes of CO2e / 1000 BOE from downstream operations

**Further Information**

**Page: OG6. Development strategy - (1 Jan 2016 - 31 Dec 2016)**

**OG6.1**

For each relevant strategic development area, please provide financial information for the reporting year

Strategic development area	Describe how this relates to your business strategy	Sales generated	EBITDA	Net assets	CAPEX	OPEX	Comment
Energy efficiency	Of all the ways to meet the world's expanding energy needs, efficiency and conservation are the cheapest and most beneficial to the environment. Using energy more efficiently helps reduce carbon emissions, lower energy costs and preserve our finite natural resources. We achieve energy savings in big and small ways. Chevron employees and contractors make energy efficiency a constant priority through everyday acts, such as maintaining our equipment so that it runs smoothly, and through complex projects, such as building high-efficiency power plants. For example, our Power and Energy Management business unit collaborates with other Chevron groups to help oil fields, refineries and other facilities trim energy costs, test new technologies, achieve efficiency gains, manage emissions and improve power reliability.						
Renewable energy, excluding Biomass and Biofuels	Chevron continues to be committed to understanding and evaluating the economic viability of investments in renewable energy. These technologies include advanced biofuels, wind power and solar energy, in addition to energy efficiency technologies. We conduct internal research and collaborate with governments, businesses and academia in researching and developing alternative and renewable energy sources. Through these partnerships, we share information and help to advance technology that can lead to more renewable energy for future generations.						

Strategic development area	Describe how this relates to your business strategy	Sales generated	EBITDA	Net assets	CAPEX	OPEX	Comment
Biofuels	Biofuels are transportation fuels made from recently living organisms. They are renewable, meaning their sources can be regrown. Biofuels are generally divided into three categories: • First-generation, or conventional, biofuels are made largely from sugars, starches and plant oils, many of which could be consumed as food. Often, blending of these biofuels into transportation fuels is mandated by law. • Second-generation biofuels are made from nonedible cellulosic plant materials. Chevron is actively involved in the evaluation of options for biomass processing as part of our transportation fuels businesses, particularly in California. To date, our work, as well as that of others, to produce second-generation biofuels has not been successful in identifying an option that is economic at scale without subsidies. However, we are leveraging our current manufacturing facilities to co-process biofuels with traditional petroleum products. • Third-generation biofuel production from algae and other biological processes is still in the research stage. Most efforts are targeted toward specialty chemical and pharmaceutical products given the challenges in scale and economics associated with fuels production. Chevron believes that second- and third-generation biofuels could help meet the world's future energy needs if they are scalable, sustainable and affordable for consumers. That's why Chevron is working on developing solutions that meet the criteria of scalability, sustainability and cost under an effective policy framework.						

**OG6.2**  
Please describe your future capital expenditure plans for different strategic development areas

Strategic development area	CAPEX	Total return expected from CAPEX investments	Comment
Exploration and development of new hydrocarbon reserves	17300000000		In 2017, the upstream capital and exploratory budget is \$17.3 billion. Approximately \$8.5 billion of planned capital spending relates to base producing assets, including about \$2.5 billion for shale and tight resource investments, the majority of which is slated for Permian Basin developments in Texas and New Mexico. Another \$7 billion is related to major capital projects already underway, including approximately \$2 billion toward the completion of the Gorgon and Wheatstone LNG projects in Australia and approximately \$3 billion of affiliate expenditures associated with the Future Growth and Wellhead Pressure Management Project (FGP/WPMP) at the Tengiz Field in Kazakhstan. Global exploration funding accounts for approximately \$1 billion of the upstream budget, and the remainder is primarily related to early stage projects supporting potential future development opportunities.

**OG6.3**  
Please describe your current expenses in research and development (R&D) and future R&D expenditure plans for different strategic development areas

Strategic development area	R&D expenses – Reporting year	R&D expenses – Future plans	Comment
Other: Total research and development expenses	476000000		

**Further Information**

**Page: OG7. Methane from the natural gas value chain**

**OG7.1**  
Please indicate the consolidation basis (financial control, operational control, equity share) used to prepare data to answer the questions in OG7

Segment	Consolidation basis
Exploration, production & gas processing	Equity Share
Storage, transportation & distribution	Equity Share
Specialty operations	Equity Share
Refining	Equity Share
Retail & marketing	Equity Share

**OG7.2**  
Please provide clarification for cases in which different consolidation bases have been used

**OG7.3**  
Does your organization conduct leak detection and repair (LDAR), or use other methods to find and fix fugitive methane emissions?

Yes

**OG7.3a**  
Please describe the protocol through which methane leak detection and repair, or other leak detection methods, are conducted, including predominant frequency of inspections, estimates of assets covered, and methodologies employed

Methane accounts for approximately 9 percent of Chevron's total greenhouse gas emissions [CO2-equivalent, direct (Scope 1), operated basis]. Approximately one-quarter of Chevron's enterprise-wide methane emissions are considered fugitive emissions; of the remaining emissions, most are generated by flaring and venting.

It is in Chevron's business interest to minimize fugitive methane and to maximize the volume of natural gas that we can commercialize. We design, construct and operate our facilities with an eye toward reducing emissions from our operations. We also have design requirements to reduce or minimize fugitive emissions from our new major capital projects. We monitor and verify the integrity of our wells and production equipment with regular inspections and safety tests. We have formal programs in a number of locations to inspect our facilities for leaks. To more efficiently track fugitive emissions, we use infrared cameras in select oil and gas operations around the globe to help pinpoint leak locations so that we can address them. In many locations where we operate, we implement procedures to comply with regulatory requirements pertaining to leak detection and repair.

**OG7.4**

Please indicate the proportion of your organization's methane emissions inventory estimated using the following methodologies (+/- 5%)

Methodology	Proportion of total methane emissions estimated with methodology	What area of your operations does this answer relate to?
Direct detection and measurement		
Engineering calculations	>75%	All
Source-specific emission factors (IPCC Tier 3)		
IPCC Tier 1 and/or Tier 2 emission factors		

**OG7.5**

Please use the following table to report your methane emissions rate

Year ending	Segment	Estimate total methane emitted expressed as % of natural gas production or throughput at given segment	Estimate total methane emitted expressed as % of total hydrocarbon production or throughput at given segment

**OG7.6**

Does your organization participate in voluntary methane emissions reduction programs?

Yes

**OG7.6a**

Please describe your organization's participation in voluntary methane emissions reduction programs

It is in Chevron's business interest to minimize fugitive methane and to maximize the volume of natural gas that we can commercialize. We design, construct and operate our facilities with an eye toward reducing emissions from our operations. We also have design requirements to reduce or minimize fugitive emissions from our new major capital projects. We monitor and verify the integrity of our wells and production equipment with regular inspections and safety tests. We have formal programs in a number of locations to inspect our facilities for leaks. To more efficiently track fugitive emissions, we use infrared cameras in select oil and gas operations around the globe to help pinpoint leak locations so that we can address them. In many locations where we operate, we implement procedures to comply with regulatory requirements pertaining to leak detection and repair.

**OG7.7**

Did you have a methane-specific emissions reduction target that was active (ongoing or reached completion) in the reporting year and/or were methane emissions incorporated into targets reported in CC3?

No

**OG7.7c**

Please explain: (i) why you do not have a methane-specific emissions reduction target or do not incorporate methane into your targets reported in CC3; and (ii) forecast how your methane emissions will change over the next five years

**Further Information**

CDP: [D][-, -][D2]