

Climate Accountability Scorecard

*Insufficient Progress from Fossil Fuel
Companies*

www.ucsusa.org/climatescorecard

Appendix E: Fully Disclosing Climate Risks

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TABLE 1. Fully Disclosing Climate Risks Scoring Guide

Regulatory Risks	
Disclosure of regulatory risks: The company discloses laws and regulations that will affect it and discloses the impact of complying with those existing or proposed laws and regulations. ¹	
Advanced (+2)	<p>Company meets all of the criteria for “good” disclosure, and includes:</p> <ol style="list-style-type: none"> 1. An assessment of whether these laws and regulations will have, or are reasonably likely to have, a material impact on the company’s liquidity, capital resources, or results of operations, as well as the basis for the company’s conclusions; 2. Any material estimated capital expenditures for environmental control facilities; and 3. An explanation of how the company will respond.
Good (+1)	<p>Company provides a detailed analysis of existing and proposed laws and regulations relating to climate change and their possible effects on the company, including potential financial impacts (quantified, when feasible).</p>
Fair (0)	<p>Company identifies specific existing and proposed laws and regulations relating to climate change that may affect the company, but it does not address how it in particular will be affected by those regulations.</p>
Poor (-1)	<p>Company mentions the general existence of risk associated with current or proposed laws related to climate change. However, it does not identify specific laws or regulations and/or does not identify effects particular to the company (as opposed to effects that could apply to the sector as a whole).</p>
Egregious (-2)	<p>Company does not disclose its regulatory risks.</p>
Physical Risks	
Disclosure of physical risks: The company discloses physical risks it faces that are caused by or exacerbated by climate change and how the company plans to address these risks.	
Advanced (+2)	<p>Company meets all of the criteria under “good,” and also discloses:</p> <ol style="list-style-type: none"> 1. An assessment of whether these physical risks will have, or are reasonably likely to have, a material impact on the company’s liquidity, capital resources or results of operations, as well as the basis for the company’s conclusions; and 2. Past physical impacts, if material.
Good (+1)	<p>Company discusses the physical climate-related risks it faces, with some specific details, including at least one of the following:</p> <ol style="list-style-type: none"> 1. The operational segments and/or specific company facilities that might be impacted; 2. The magnitude and time frames of the anticipated impacts (quantified, when feasible); and 3. How the company plans to respond to physical impacts.

Fair (0)	Company acknowledges physical risks it faces and includes some discussion of climate change as a contributor to those risks, but with few or no details about the nature of those risks, their magnitude, or how they may impact the company.
Poor (-1)	Company generally acknowledges physical risks it faces, such as weather, but does not include discussion of climate change as a contributor to those risks.
Egregious (-2)	Company does not disclose its physical risks.
Market and Other Risks and Opportunities	
Disclosure of market and other indirect risks and opportunities: The company discloses indirect risks associated with climate change, such as impacts on demand or reputation, and how the company will anticipate and respond to these risks.	
Advanced (+2)	<p>Company provides a detailed analysis of how its financial condition or operations may be affected by climate-related developments in the marketplace, including all points under “good” disclosure, as well as:</p> <ol style="list-style-type: none"> 1. Impacts on suppliers and customers (e.g., changes in demand for new and existing products and services due to their greenhouse gas emissions profiles); 2. Impacts on the company’s reputation; 3. Magnitude of the anticipated risks and opportunities (quantified, when feasible); and 4. Basis for the company’s conclusions.
Good (+1)	<p>Company provides some details or examples of how it may be affected by indirect risks and opportunities, including:</p> <ol style="list-style-type: none"> 1. An assessment of whether identified risks and opportunities will have, or are reasonably likely to have, a material impact on the company’s liquidity, capital resources, or results of operations; and 2. Key variables and other qualitative and quantitative factors (e.g., financial data, anticipated external macro-economic conditions, interest rate, or economic growth trends) that are particular to and necessary for an understanding and evaluation of the individual company.
Fair (0)	Company provides some details or examples of how it may be affected by indirect risks and opportunities from climate change, but it provides limited analysis of their potential financial impacts for the company. If the company is a defendant in climate-related lawsuit(s), it cannot receive a score of “fair” or above without explicitly discussing the lawsuit(s) and associated risks.
Poor (-1)	Company broadly mentions shifting market and other indirect risks and opportunities from climate change, but it does not specify potential impacts on the company.
Egregious (-2)	Company does not disclose its market or indirect risks.
Corporate Governance	
Disclosure of corporate governance on climate-related risks by board and senior management: The company discloses how its board	

and executives will monitor and manage climate-related risks. ²	
Advanced (+2)	Company meets all four of the criteria under “good” disclosure.
Good (+1)	Company discloses some details of corporate governance on greenhouse gas emissions management and climate risks and opportunities, including disclosing at least two of the following: <ol style="list-style-type: none"> 1. How the board is engaged on climate risks and opportunities; 2. Which executives are in charge of addressing these risks and opportunities; 3. Whether and how executive compensation is tied to meeting corporate climate objectives; and 4. How senior management and the board monitor and gauge the effectiveness of the company’s climate change strategies and goals.
Fair (0)	Company mentions or makes generic statements about climate-related environmental governance.
Poor (-1)	Company mentions or makes generic statements about environmental governance, but it does not specifically describe climate-related governance.
Egregious (-2)	Company provides no disclosure of corporate governance on climate issues.

¹ Where the necessity and certainty of eventual regulatory action to address global climate goals are clear, the absence of a specific regulatory proposal should not relieve companies of their disclosure obligations.

² Company scores may have improved because proxy statements were considered as a source in 2018 if referenced in the US Securities and Exchange Commission (SEC) 10-K/20-F governance disclosure.

DATA SOURCES: 2017 SEC 10-KS OR 20-F FILINGS; CDP DISCLOSURES AND PROXY STATEMENTS, ONLY IF DISCUSSED IN SEC 10-K/20-F.

TABLE 2. Fully Disclosing Climate Risks Scoring Bands

Area Aggregate Score	Definition	Point Range
Advanced	Company is demonstrating best practice in the area	+6 – +8
Good	Company is meeting emerging societal expectations in this area	+3 – +5
Fair	Company’s performance in this area is neither positive nor negative	(-2) – +2
Poor	Company is falling short of emerging societal expectations in this area	(-5) – (-3)
Egregious	Company is acting very irresponsibly in this area	(-8) – (-6)

TABLE 3. Fully Disclosing Climate Risks 2016 v 2018 Scores

Company	2016 Area Score	2018 Area Score
Arch Coal	Poor	Fair
BP	Fair	Fair
Chevron	Fair	Fair
ConocoPhillips	Fair	Good
CONSOL Energy	Fair	Fair
ExxonMobil	Poor	Fair
Peabody Energy	Poor	Poor
Royal Dutch Shell	Poor	Fair

Arch Coal

DISCLOSURE OF REGULATORY RISK

SCORE:

Good (1)

RATIONALE:

Arch Coal provides a detailed analysis of existing and proposed laws and regulations relating to climate change and their possible effect on the company, including potential financial impacts.

SOURCE DATA:

- Our profitability and the value of our coal reserves depend upon the prices we receive for our coal. The contract prices we may receive in the future for coal depend upon factors beyond our control, including the following:
 - domestic and foreign air emission standards for coal-fueled power plants and the ability of coal-fueled power plants to meet these standards;
 - domestic and foreign legislative, regulatory and judicial developments, environmental regulatory changes or changes in energy policy and energy conservation measures that would adversely affect the coal industry, such as legislation limiting carbon emissions or providing for increased funding and incentives for alternative energy sources (Arch Coal 2018).
- The amount of coal consumed for electric power generation is affected primarily by the overall demand for electricity, the availability, quality and price of competing fuels (particularly, natural gas) for power generation and governmental regulations which may dictate an alternate source of fuel regardless of economics (Arch Coal 2018).
- We expect that many of the new power plants needed in the United States to meet increasing demand for electricity generation will be fueled by natural gas because gas-fired plants are cheaper to construct and permits to construct these plants are easier to obtain as natural gas is seen as having a lower environmental impact than coal-fueled generation. In addition, state and federal mandates for increased use of electricity from renewable energy sources also have an impact on the market for our coal. Several states have enacted legislative mandates requiring electricity suppliers to use renewable energy sources to generate a certain percentage of power. There have been numerous proposals to establish a similar uniform, national standard although none of these proposals have been enacted to date. Possible advances in technologies and incentives, such as tax credits, to enhance the economics of renewable energy sources could make these sources more competitive with coal (Arch Coal 2018).
- In January 2016, the federal government imposed a moratorium on new leases for coal mined from federal lands as part of a review of the government's management of federally-owned coal. For example, the federal Clean Air Act and similar state and local laws extensively regulate the amount of sulfur dioxide, particulate matter, nitrogen oxides, and other compounds emitted into the air from electric power plants, which are the largest end users of our coal. A series of more stringent requirements relating to particulate matter, ozone, haze, mercury, sulfur dioxide, nitrogen oxide and other air pollutants is in the process of being developed and implemented. For instance, the Clean Power Plan, if implemented in its current form, would severely limit emissions of carbon dioxide which would adversely affect our ability to sell coal. However, in April 2017, the EPA announced that it was initiating a review of the Clean Power Plan consistent with President Trump's Executive Order 13783, and, in October 2017, the EPA published a proposed rule to formally repeal the Clean Power Plan (Arch Coal 2018).
- In December 2015, the United States and 195 other countries reached an agreement (the "Paris Agreement" during the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change, a long-term, international framework convention designed to address climate change over the next several decades. In June 2017, President Trump announced that the United States plans to withdraw from the Paris Agreement and to seek negotiations either to reenter the Paris Agreement on different terms or to establish a new framework agreement. The earliest permitted exit date under the Paris Agreement is four years from when the agreement

took effect in November 2016, or November 2020. Whether the United States will adhere to the Paris Agreement's exit process is, and the terms on which the United States may reenter the Paris Agreement or a separately negotiated agreement are, uncertain at this time. However, any efforts to control and/or reduce greenhouse gas emissions by the United States or other countries that have also pledged "Nationally Determined Contributions," or concerted conservation efforts that result in reduced electricity consumption, could adversely impact coal prices, our ability to sell coal and, in turn, our financial position and results of operations (Arch Coal 2018).

- Considerable uncertainty is associated with these air emissions initiatives. The content of regulatory requirements in the United States continues to evolve and develop and many new regulatory initiatives remain subject to review by federal or state agencies or the courts. Stringent air emissions limitations are either in place or are likely to be imposed in the short to medium term, and these limitations will likely require significant emissions control expenditures for many coal-fueled power plants. As a result, these power plants may switch to other fuels that generate fewer of these emissions, may install more effective pollution control equipment that reduces the need for low sulfur coal, or may cease operations, possibly reducing future demand for coal and a reduced need to construct new coal-fueled power plants. Any switching of fuel sources away from coal, closure of existing coal-fired plants, or reduced construction of new plants could have a material adverse effect on demand for and prices received for our coal (Arch Coal 2018).
- The demand for our products or our securities, as well as the number and quantity of viable financing alternatives, may be significantly impacted by increased governmental regulations and unfavorable lending and investment policies by financial institutions and insurance companies associated with concerns about environmental impacts of coal combustion, including perceived impacts on the global climate (Arch Coal 2018).
- Future regulation of greenhouse gas emissions in the United States could occur pursuant to future U.S. treaty obligations, statutory or regulatory changes and the federal, state or local level or otherwise. Enactment of laws or passage of regulations regarding greenhouse emissions from the combustion of coal by the U.S., some of its states or other countries, or other actions to limit emissions could result in electricity generators switching from coal to other fuel sources or coal-fueled power plant closures (Arch Coal 2018).
- The United States and a number of international development banks, such as the World Bank, the European Investment Bank and European Bank for Reconstruction and Development, have announced that they will no longer provide financing for the development of new coal-fueled power plants, subject to very narrow exceptions (Arch Coal 2018).
- 25 states and other parties filed lawsuits challenging the EPA's final New Source Performance Standards rules, which we refer to as NSPS, for carbon dioxide emissions from new, modified, and reconstructed power plants under the Clean Air Act. One of the primary issues in these lawsuits is the EPA's establishment of standards of performance based on technologies including carbon capture and sequestration, which we refer to as CCS. New coal plants cannot meet the new standards unless they implement CCS, which reportedly is not yet commercially available or technically feasible. In conjunction with EPA's proposal to rescind the Clean Power Plan, EPA also requested a stay of the NSPS litigation. The D.C. Circuit granted the request, and the litigation has been held in abeyance since then (Arch Coal 2018).
- Nine northeastern states currently are members of the Regional Greenhouse Gas Initiative, which is a mandatory cap-and-trade program established in 2005 to cap regional carbon dioxide emissions from power plants. Six midwestern states and one Canadian province entered into the Midwestern Regional Greenhouse Gas Reduction Accord to establish voluntary regional greenhouse gas reduction targets and develop a voluntary multi-sector cap-and-trade system to help meet the targets, although it has been reported that the members no longer are actively pursuing the group's activities. Lastly, California and Quebec remain members of the Western Climate Initiative, which was formed in 2008 to establish a voluntary regional greenhouse gas reduction goal and develop market-based strategies to achieve emissions reductions, and those two jurisdictions have adopted their own greenhouse gas cap-and-trade regulations. Several states and provinces that originally were members of these organizations, as well as some current members, have joined the new North America 2050 initiative, which seeks

Arch Coal cont.

to reduce greenhouse gas emissions and create economic opportunities aside from cap-and-trade programs (Arch Coal 2018).

DISCLOSURE OF PHYSICAL RISK

SCORE:

Poor (-1)

RATIONALE:

Arch Coal broadly mentions the physical risks it faces, such as severe weather, but it does not discuss climate change as a contributor to those risks.

SOURCE DATA:

- Our profitability and the value of our coal reserves depend upon the prices we receive for our coal. The contract prices we may receive in the future for coal depend upon factors beyond our control, including the following:
 - adverse weather, climatic or other natural conditions, including unseasonable weather patterns (Arch Coal 2018).
- We mine coal at underground and surface mining operations. Certain factors beyond our control, including those listed below, could disrupt our coal mining operations, adversely affect production and shipments and increase our operating costs:
 - adverse weather and natural disasters, such as heavy rains or snow, flooding and other natural events affecting operations, transportation or customers (Arch Coal 2018).

DISCLOSURE OF MARKET AND OTHER RISKS

SCORE:

Poor (-1)

RATIONALE:

Arch Coal broadly mentions shifting market and other indirect risks from climate change, such as renewables, but does not specify potential impacts on the company.

SOURCE DATA:

- Possible advances in technologies and incentives, such as tax credits, to enhance the economics of renewable energy sources could make these sources more competitive with coal. Any reduction in the amount of coal consumed by electric power generators could reduce the price of coal that we mine and sell. (Arch Coal 2018)
- The demand for our products or our securities, as well as the number and quantity of viable financing alternatives, may be significantly impacted by increased governmental regulations and unfavorable lending and investment policies by financial institutions and insurance companies associated with concerns about environmental impacts of coal combustion, including perceived impacts on the global climate. (Arch Coal 2018)
- Further, the United States and a number of international development banks, such as the World Bank, the European Investment Bank and European Bank for Reconstruction and Development, have announced that they will no longer provide financing for the development of new coal-fueled power plants, subject to very narrow exceptions. (Arch Coal 2018)
- Additionally, coal competes with other fuels, such as natural gas, nuclear energy, hydropower, wind, solar and petroleum, for steam and electrical power generation. Costs and other factors relating to these alternative fuels, such as safety and environmental considerations, affect the overall demand for coal as a fuel. (Arch Coal 2018)
- In addition, certain banks, other financing sources and insurance companies have taken actions to limit available financing and insurance coverage for the development of new coal-fueled power plants and coal miners and utilities that derive a majority of their revenue from thermal coal, which also may adversely impact the future global demand for coal. Further, there have been recent efforts by members of the general financial and

investment communities, such as investment advisors, sovereign wealth funds, public pension funds, universities and other groups, to divest themselves and to promote the divestment of securities issued by companies involved in the fossil fuel extraction market, such as coal producers. Those entities also have been pressuring lenders to limit financing available to such companies. (Arch Coal 2018)

CORPORATE GOVERNANCE

SCORE:

Poor (-1)

RATIONALE:

Arch Coal makes generic statements about environmental governance but does not specifically describe climate-related governance.

SOURCE DATA:

- Environmental and Safety Responsibility
 - Safety and environmental stewardship are core values of the Company. Additional information regarding these core values and our long-standing commitment to sustainability is available on the Company's website at archcoal.com. (Arch Coal 2018)
 - Management actively engages with stakeholders on sustainability, environmental and safety matters. (Arch Coal 2018)
 - A significant portion of the Company's executive at-risk compensation is tied to environmental and safety matters. (Arch Coal 2018)

FULLY DISCLOSING CLIMATE RISKS SCORE: FAIR (-2)

BP

DISCLOSURE OF REGULATORY RISK

SCORE:

Good (1)

RATIONALE:

BP provided a detailed analysis of existing and proposed laws and regulations relating to climate change and their possible effects on the company, including potential financial impacts.

SOURCE DATA:

- Climate change and the transition to a lower carbon economy – policy, legal, regulatory, technology and market change related to the issue of climate change could increase costs, reduce demand for our products, reduce revenue and limit certain growth opportunities. Changes in laws, regulations, policies, obligations, social attitudes and customer preferences relating to the transition to a lower carbon economy could have a cost impact on our business, including increasing compliance and litigation costs, and could impact our strategy. Such changes could lead to constraints on production and supply and access to new reserves. Technological improvements or innovations that support the transition to a lower carbon economy, and customer preferences or regulatory incentives related to such changes that alter fuel or power choices, such as towards low emission energy sources, could impact demand for oil and gas. Depending on the nature and speed of any such changes and our response, this could adversely affect the demand for our products, investor sentiment, our financial performance and our competitiveness (BP PLC 2018).
- To help anticipate greater regulatory requirements affecting our GHG emissions, we use a carbon cost when evaluating our plans for large new projects and those for which emissions costs would be a material part of the project. In industrialized countries, this is currently \$40 per tonne of CO₂ equivalent, and we also stress test at a carbon price of \$80 per tonne (BP PLC 2018).
- More stringent national and regional measures relating to the transition to a lower carbon economy can be expected in the future. These measures could increase BP's production costs for certain products, increase compliance and litigation costs, increase demand for competing energy alternatives or products with lower-carbon intensity, and affect the sales and specifications of many of BP's products. Further, such measures could lead to constraints on production and supply and access to new reserves, particularly due to the long term nature of many of BP's projects (BP PLC 2018).
- In the US, the Obama administration adopted its Climate Action Plan in 2013 and had been using existing statutory authority to implement that plan, including the Clean Air Act (CAA) and the Mineral Leasing Act (MLA). On 28 March 2017 the Trump administration issued Executive Order (EO) 13783 rescinding major elements of the Climate Action Plan, and instructing the Environmental Protection Agency (EPA) to review and then commence the process of suspending, revising or rescinding certain regulations, including the Clean Power Plan and the EPA new source methane rule. EO 13783 also instructed the Department of Interior (DOI) to review and possibly suspend, revise or rescind the Bureau of Land Management (BLM) methane rule. The EPA and the DOI are taking steps to implement these aspects of EO 13783 and legal challenges have been brought by some US states and private parties regarding these proposed changes (BP PLC 2018).
 - Stricter GHG regulations, stricter limits on sulphur in fuels, emissions regulations in the refinery sector and a revised lower ambient air quality standard for ozone, finalized by the EPA in October 2015, are affecting our US operations (BP PLC 2018).
 - EPA regulations aimed at methane emissions are in place for new and modified sources and the BLM has issued methane regulations for existing sites located on federal lands. The

Trump administration is seeking to rescind both of these rules but the timing of any rescission is subject to legal challenges and regulatory requirements (BP PLC 2018).

- It is possible that EPA will be required by statute to propose regulations on existing sources of methane from onshore oil and natural gas sector activities, unless the EPA new source methane rule is revised or rescinded (BP PLC 2018).
- States may also have separate, stricter air emission laws in addition to the CAA. Despite the US withdrawal from the Paris Agreement, a number of US states, cities and private organizations remain committed to meeting Paris Agreement goals. A number of states also belong to or are considering joining carbon trading markets (e.g. California) (BP PLC 2018).
- The Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007 impose a renewable fuel mandate (the federal Renewable Fuel Standard) as well as state initiatives that impose low GHG emissions thresholds for transportation fuels (currently adopted in California, through the California Low Carbon Fuel Standard and Oregon) (BP PLC 2018).
- EPA regulations impose light, medium and heavy duty vehicle emissions standards for GHGs and permitting requirements for certain large GHG stationary emission sources. California and a number of other states impose different, stricter GHG emission limits on vehicles. These varying standards impact BP's product mix and overall demand (BP PLC 2018).
- On 9 October 2017 the EPA announced its intention to repeal the Clean Power Plan (CPP) which was an important element of the Obama administration's Climate Action Plan. The CCP regulations are currently stayed pending resolution of existing legal challenges; the EPA may decline to defend certain of these legal challenges. The EPA's repeal proposal is likely to face legal challenges as well and repeal of the CPP regulations, or adoption of a narrower replacement rule, may not occur until well after 2018. The outcome with respect to these rules will affect electricity generation practices and prices, reliability of electricity supply, and regulatory requirements affecting other GHG emission sources in other sectors and have potential impacts on combined heat and power installations (BP PLC 2018).
- In June 2016 the EPA finalized rules aimed at limiting methane emissions from new and modified sources in the oil and natural gas sector in the US by 40-45% from 2012 levels by 2025 that would apply to existing sources in the sector. In January 2017 the BLM's methane rule, aimed at limiting methane emissions from oil and gas operations on federal lands also came into effect. Following the Trump administration's EO 13783, on 16 June 2017 the EPA proposed a two-year stay of portions of the methane regulations for new and modified oil and gas sources. In December 2017, the BLM proposed a 13 month delay of its methane rule. In February 2018, a federal court in California ruled against that 13 month delay. Also in February 2018, the BLM proposed to revise its methane rule. The final outcome of the rule revisions and legal challenges with respect to implementation of EO 13783 regarding these EPA and BLM rules is uncertain, but may affect our US upstream businesses' management of methane emissions in the US (BP PLC 2018).
- The EU Fuel Quality Directive affects our production and marketing of transport fuels. Revisions adopted in 2009 mandate reductions in the life cycle GHG emissions per unit of energy and tighter environmental fuel quality standards for petrol and diesel (BP PLC 2018).

DISCLOSURE OF PHYSICAL RISK

SCORE:

Poor (-1)

RATIONALE:

BP generally acknowledges the physical risks it faces, such as severe weather, but it does not discuss climate change as a contributor to those risks.

SOURCE DATA:

- Technical integrity failure, natural disasters, extreme weather or a change in its frequency or severity, human error and other adverse events or conditions could lead to loss of containment of hydrocarbons or other hazardous materials or constrained availability of resources used in our operating activities, as well as fires, explosions or other personal and process safety incidents, including when drilling wells, operating facilities and those associated with transportation by road, sea or pipeline (BP PLC 2018).
- Our activities require high levels of investment and are sometimes conducted in challenging environments such as those prone to natural disasters and extreme weather, which heightens the risks of technical integrity failure. We may be required to curtail, delay or cancel drilling operations because of a variety of factors, including unexpected drilling conditions, pressure or irregularities in geological formations, equipment failures or accidents, adverse weather conditions and compliance with governmental requirements (BP PLC 2018).

DISCLOSURE OF MARKET AND OTHER RISKS**SCORE:**

Poor (-1)

RATIONALE:

BP provides some examples of how it may be affected by indirect risks from climate change, including decreased demand and technological improvements, but it does not mention the climate liability lawsuits in which the company is a defendant.

SOURCE DATA:

- Climate change and the transition to a lower carbon economy – policy, legal, regulatory, technology and market change related to the issue of climate change could increase costs, reduce demand for our products, reduce revenue and limit certain growth opportunities. Changes in laws, regulations, policies, obligations, social attitudes and customer preferences relating to the transition to a lower carbon economy could have a cost impact on our business, including increasing compliance and litigation costs, and could impact our strategy. Such changes could lead to constraints on production and supply and access to new reserves (BP PLC 2018).
- Technological improvements or innovations that support the transition to a lower carbon economy, and customer preferences or regulatory incentives related to such changes that alter fuel or power choices, such as towards low emission energy sources, could impact demand for oil and gas. Depending on the nature and speed of any such changes and our response, this could adversely affect the demand for our products, investor sentiment, our financial performance and our competitiveness (BP PLC 2018).
- New technologies can help pave the way to a lower carbon future. We are building low carbon into what we do, across the business – in ways that can help generate value over the long term. We are an investor and an end-user of the technologies we invest in. Our approach is not about trying to do everything, but to focus on the areas that have the greatest potential value to our business now and in the future. Our venturing partnerships help us to understand and develop solutions for the future (BP PLC 2018).
- The world will continue to need supplies of hydrocarbons. We need the understanding and trust of society to make these investments to meet this global demand. Renewables cannot be developed quickly enough to meet the increasing need for energy (BP PLC 2018).
- Renewables are the fastest-growing energy source and could account for at least 14% of all energy in 2040. We are building up our renewable portfolio – focusing on biofuels, biopower, wind energy and solar energy (BP PLC 2018).
- Through new technologies, energy will be produced more efficiently and in new ways, helping to meet the expected rise in demand. And the world is working towards a lower carbon future. Our strategy allows us to be

BP cont.

competitive at a time when prices, policy, technology and customer preferences are evolving. We believe having a balanced portfolio with advantaged oil and gas, competitive downstream and low carbon activities, as well as a dynamic investment strategy give us resilience (BP PLC 2018).

- We have been investing in renewables for many years – and our focus today is on biofuels, biopower, wind energy and solar energy. Renewables are the fastest growing form of energy. They account for around 4% of energy demand today (excluding large-scale hydroelectricity). By 2040 that could grow to at least 14% – an exceptional rate of growth for the energy industry. As part of our approach to building our alternative energy business, we are looking to grow our existing businesses and to develop further new businesses and partnerships to deliver sustainable value (BP PLC 2018).
- We could be adversely affected if competitors offer superior terms for access rights or licences, or if our innovation in areas such as exploration, production, refining, manufacturing, renewable energy or new technologies lags the industry. (BP PLC 2018)

CORPORATE GOVERNANCE

SCORE:

Poor (-1)

RATIONALE:

BP makes generic statements about a “transition to a low-carbon economy” but does not provide sufficient details on climate-related governance by its board and senior management.

SOURCE DATA:

- During the year the board provided input on the group’s strategy to senior management. This included a two-day strategy session in September where it examined developments in the wider environment and debated strategic themes relating to BP’s segments, key functions and the impact of the lower carbon transition on the group’s business model. The board discussed the transition to a lower carbon world frequently during the year (BP PLC 2018).
- The board reviewed the BP Energy Outlook, updated in February 2018, which looks at long-term energy trends and projections for world energy markets (BP PLC 2018).
- Actions arising from the 2016 evaluation and how these were addressed included: Focus on implementing the strategy, in particular the opportunities relating to the transition to a lower carbon economy: reporting on the implementation of the strategy was further developed and as a result the board receives updates from management and a strategic progress report at each meeting. The board held a number of discussions on the transition to a lower carbon economy, including a session at the strategy away day, with further sessions scheduled for 2018. The group’s quarterly results announcement was amended in 2017 to include narrative on the implementation of strategy (BP PLC 2018).

FULLY DISCLOSING CLIMATE RISKS SCORE: FAIR (-2)

Chevron

DISCLOSURE OF REGULATORY RISK

SCORE:

Good (1)

RATIONALE:

Chevron has provided a detailed analysis of existing and proposed laws and regulations relating to climate change and their possible effects on the company, including potential financial impacts.

SOURCE DATA:

- Regulation of greenhouse gas (GHG) emissions could increase Chevron's operational costs and reduce demand for Chevron's hydrocarbon and other products. 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. Like any significant changes in the regulatory environment, GHG 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 oil and gas continuing to make up a significant portion of the global energy mix through 2040 and beyond 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 company and its financial condition (Chevron Corporation 2018).
- International agreements and national, regional and state legislation (e.g., California AB32, SB32 and AB398) and regulatory measures 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 studying and adopting policies to meet their Paris Agreement goals. In some jurisdictions, the company is already subject to currently implemented programs such as the U.S. Renewable Fuel Standard program, the European Union Emissions Trading System, and the California cap-and-trade program and related low carbon fuel standard obligations. Other jurisdictions are considering adopting or are in the process of implementing laws or regulations to directly regulate GHG emissions through similar or other mechanisms such as, for example, via a carbon tax (e.g., Singapore and Canada) or via a cap-and-trade program (e.g., Mexico and China). The landscape continues to be in a state of constant re-assessment and legal challenge with respect to these laws and regulations, making it difficult to predict with certainty the ultimate impact they will have on the company in the aggregate (Chevron Corporation 2018).
- 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 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. (Chevron Corporation 2018).
- Consideration of GHG issues and the responses to those issues through international agreements and national, regional or state legislation or regulations are integrated into the company's strategy and planning, capital

investment reviews, and risk management tools and processes, 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. Additionally, the company assesses carbon pricing risks by considering carbon costs in these forecasts. 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 (Chevron Corporation 2018).

- 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 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 (Chevron Corporation 2018).
- The company is subject to various international, federal, state and local environmental, health and safety laws, regulations and market-based programs. These laws, regulations and programs continue to evolve and are expected to increase in both number and complexity over time and govern not only the manner in which the company conducts its operations, but also the products it sells. For example, international agreements and national, regional, and state legislation (e.g., California AB32, SB32 and AB398) 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 regulations are integrated into the company's strategy and planning, capital investment reviews and risk management tools and processes, 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. In addition, legislation and regulations intended to address hydraulic fracturing also continue to evolve at the national, state and local levels. Refer to "Risk Factors" in Part I, Item 1A, on pages 19 through 22 for a discussion of some of the inherent risks of increasingly restrictive environmental and other regulation that could materially impact the company's results of operations or financial condition (Chevron Corporation 2018).

DISCLOSURE OF PHYSICAL RISK

SCORE:

Poor (-1)

RATIONALE:

Chevron generally acknowledges physical risks it faces (such as changes in air and water temperature, sea level rise, and storm severity and frequency) and specifies which operations would be affected. However, it has not discussed climate change as a contributor to those risks.

Chevron cont.

SOURCE DATA:

- Demand for crude oil and its products and for natural gas is largely driven by the conditions of local, national and global economies, although weather patterns and taxation relative to other energy sources also play a significant part (Chevron Corporation 2018).
- The company's operations are 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 (Chevron Corporation 2018).
- While capital investment reviews and decisions incorporate potential ranges of physical risks such as storm severity and frequency, sea level rise, air and water temperature, precipitation, fresh water access, wind speed, and earthquake severity, among other factors, it is difficult to predict with certainty the timing, frequency or severity of such events, any of which could have a material adverse effect on the company's results of operations or financial condition (Chevron Corporation 2018).

DISCLOSURE OF MARKET AND OTHER RISKS

SCORE:

Poor (-1)

RATIONALE:

Chevron has broadly mentioned shifting market risks and opportunities related to climate change, particularly renewable fuel penetration, but it does not specify the potential impacts on the company. It acknowledged in its 2017 financial filing that "increasing attention to climate change risks has resulted in an increased possibility of governmental investigations and additional private litigation against the company", but it did not in 2018 explicitly mention that Chevron had been named as a defendant in multiple climate liability lawsuits.

SOURCE DATA:

- 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 (Chevron Corporation 2018).
- Additionally, the company assesses carbon pricing risks by considering carbon costs in these forecasts. 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 (Chevron Corporation 2018).
- Consideration of GHG issues and the responses to those issues through international agreements and national, regional or state legislation or regulations are integrated into the company's strategy and planning, capital investment reviews and risk management tools and processes, 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 (Chevron Corporation 2018).
- 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 (Chevron Corporation 2018).

CORPORATE GOVERNANCE

SCORE:

Poor (-1)

RATIONALE:

Chevron mentions that the board provides oversight and guidance on environmental matters but does not specifically describe climate-related corporate governance.

SOURCE DATA:

- Chevron operates using four environmental principles that define how we develop energy in an environmentally responsible manner: include environmental impact in decision making, reduce our environmental footprint, operate responsibly, and steward our sites. A description of these principles can be found at www.chevron.com/corporate-responsibility/environment. The Board of Directors, and the Public Policy Committee (the “Committee”) in particular, provide oversight and guidance on environmental matters in connection with Chevron’s projects and operations and are regularly briefed by professionals whose focus is on environmental protection and stewardship. Members of the Board regularly visit Chevron operations across the globe and discuss environmental matters specific and relevant to these locations. Significant environmental and process safety issues are reviewed by the Board to ensure compliance with the Company’s rigorous processes. The Committee assists the Board in identifying, evaluating, and monitoring public policy trends and environmental issues that could impact the Company’s business activities and performance. It also reviews and makes recommendations for Chevron’s strategies related to corporate responsibility and reputation management. The Board of Directors and the Committee regularly receive reports of stockholder engagements related to sustainability and incorporate these into the direction they provide to management (Seeking Alpha 2018).

FULLY DISCLOSING CLIMATE RISKS SCORE: FAIR (-2)

ConocoPhillips

DISCLOSURE OF REGULATORY RISK

SCORE:

Good (1)

RATIONALE:

ConocoPhillips has provided a detailed analysis of existing proposed laws and regulations relating to climate change, their possible effects on the company, and how the company will respond. However, it does not include a statement of material impact on company liquidity, capital resources, or operations, or on estimated capital expenditures for environmental control facilities.

SOURCE DATA:

- We expect to continue to incur substantial capital expenditures and operating costs as a result of our compliance with existing and future environmental laws and regulations. Likewise, future environmental laws and regulations, such as limitations on greenhouse gas emissions, may impact or limit our current business plans and reduce demand for our products (ConocoPhillips 2018a).
- Our businesses are subject to numerous laws and regulations relating to the protection of the environment. These laws and regulations continue to increase in both number and complexity and affect our operations with respect to, among other things:
 - The discharge of pollutants into the environment.
 - Emissions into the atmosphere, such as nitrogen oxides, sulfur dioxide, mercury and greenhouse gas emissions.
 - Carbon taxes.
 - The handling, use, storage, transportation, disposal and cleanup of hazardous materials and hazardous and nonhazardous wastes.
 - The dismantlement, abandonment and restoration of our properties and facilities at the end of their useful lives.
 - Exploration and production activities in certain areas, such as offshore environments, arctic fields, oil sands reservoirs and tight oil plays (ConocoPhillips 2018a).
- We have incurred and will continue to incur substantial capital, operating and maintenance, and remediation expenditures as a result of these laws and regulations. To the extent these expenditures, as with all costs, are not ultimately reflected in the prices of our products and services, our business, financial condition, results of operations and cash flows in future periods could be materially adversely affected. (ConocoPhillips 2018a)
- Demand for our products may also be adversely affected by conservation plans and efforts undertaken in response to global climate change, including plans developed in connection with the Paris climate conference in December 2015. Many governments also provide, or may in the future provide, tax advantages and other subsidies to support the use and development of alternative energy technologies. Our operations and the demand for our products could be materially impacted by the development and adoption of these technologies (ConocoPhillips 2018a).
- The ultimate financial impact arising from environmental laws and regulations is neither clearly known nor easily determinable as new standards, such as air emission standards, water quality standards and stricter fuel regulations, continue to evolve. However, environmental laws and regulations, including those that may arise to address concerns about global climate change, are expected to continue to have an increasing impact on our operations in the United States and in other countries in which we operate. Notable areas of potential impacts include air emission compliance and remediation obligations in the United States and Canada (ConocoPhillips 2018a).

- An example is the use of hydraulic fracturing, an essential completion technique that facilitates production of oil and natural gas otherwise trapped in lower permeability rock formations. A range of local, state, federal or national laws and regulations currently govern hydraulic fracturing operations, with hydraulic fracturing currently prohibited in some jurisdictions. Although hydraulic fracturing has been conducted for many decades, a number of new laws, regulations and permitting requirements are under consideration by the U.S. Environmental Protection Agency (EPA), the U.S. Department of the Interior, and others which could result in increased costs, operating restrictions, operational delays and/or limit the ability to develop oil and natural gas resources. Governmental restrictions on hydraulic fracturing could impact the overall profitability or viability of certain of our oil and natural gas investments (ConocoPhillips 2018a).
- There has been a broad range of proposed or promulgated state, national and international laws focusing on greenhouse gas (GHG) reduction. These proposed or promulgated laws apply or could apply in countries where we have interests or may have interests in the future. Laws in this field continue to evolve, and while it is not possible to accurately estimate either a timetable for implementation or our future compliance costs relating to implementation, such laws, if enacted, could have a material impact on our results of operations and financial condition (ConocoPhillips 2018a).
- Examples of legislation or precursors for possible regulation that do or could affect our operations include:
 - European Emissions Trading Scheme (ETS), the program through which many of the European Union (EU) member states are implementing the Kyoto Protocol. Our cost of compliance with the EU ETS in 2017 was approximately \$1.5 million (net share before-tax).
 - The Alberta Specified Gas Emitter regulations require any existing facility with emissions equal to or greater than 100,000 metric tonnes of carbon dioxide or equivalent per year to reduce its net emissions intensity from its baseline. The reduction requirement increased from 15 percent in 2016 to 20 percent in 2017. The total cost of compliance with these regulations in 2017 was approximately \$3 million.
 - The U.S. Supreme Court decision in *Massachusetts v. EPA*, 549 U.S. 497, 127 S.Ct. 1438 (2007), confirming that the EPA has the authority to regulate carbon dioxide as an “air pollutant” under the Federal Clean Air Act.
 - The U.S. EPA’s announcement on March 29, 2010 (published as “Interpretation of Regulations that Determine Pollutants Covered by Clean Air Act Permitting Programs,” 75 Fed. Reg. 17004 (April 2, 2010)), and the EPA’s and U.S. Department of Transportation’s joint promulgation of a Final Rule on April 1, 2010, that triggers regulation of GHGs under the Clean Air Act, may trigger more climate-based claims for damages, and may result in longer agency review time for development projects.
 - The U.S. EPA’s announcement on January 14, 2015, outlining a series of steps it plans to take to address methane and smog forming volatile organic compound emissions from the oil and gas industry. The former U.S. administration established a goal of reducing the 2012 levels in methane emissions from the oil and gas industry by 40 to 45 percent by 2025.
 - Carbon taxes in certain jurisdictions. Our cost of compliance with Norwegian carbon tax legislation in 2017 was approximately \$29 million (net share before-tax). We also incur a carbon tax for emissions from fossil fuel combustion in our British Columbia and Alberta Operations totaling just over \$1 million (net share before-tax).
 - The agreement reached in Paris in December 2015 at the 21st Conference of the Parties to the United Nations Framework on Climate Change, setting out a new process for achieving global emission reductions (ConocoPhillips 2018a).
- Compliance with changes in laws and regulations that create a GHG tax, emission trading scheme or GHG reduction policies could significantly increase our costs, reduce demand for fossil energy derived products, impact the cost and availability of capital and increase our exposure to litigation. Such laws and regulations could also increase demand for less carbon intensive energy sources, including natural gas. The ultimate impact on our financial performance, either positive or negative, will depend on a number of factors, including but not limited to:
 - Whether and to what extent legislation or regulation is enacted.

ConocoPhillips cont.

- The timing of the introduction of such legislation or regulation.
- The nature of the legislation (such as a cap and trade system or a tax on emissions) or regulation.
- The price placed on GHG emissions (either by the market or through a tax).
- The GHG reductions required.
- The price and availability of offsets.
- The amount and allocation of allowances.
- Technological and scientific developments leading to new products or services.
- Any potential significant physical effects of climate change (such as increased severe weather events, changes in sea levels and changes in temperature).
- Whether, and the extent to which, increased compliance costs are ultimately reflected in the prices of our products and services (ConocoPhillips 2018a).
- The company has responded by putting in place a corporate Climate Change Action Plan, together with individual business unit climate change management plans in order to undertake actions in four major areas:
 - Equipping the company for a low emission world, for example by integrating GHG forecasting and reporting into company procedures; utilizing GHG pricing in planning economics; and developing systems to handle GHG market transactions.
 - Reducing GHG emissions—In 2016, the company reduced or avoided GHG emissions by approximately 114,000 metric tonnes by carrying out a range of programs across our business units. In 2017, we set a long-term target to reduce our greenhouse gas emissions intensity between 5 percent and 15 percent by 2030 from a 2017 baseline. Setting such a target demonstrates our continuing systematic approach to managing climate-related risks throughout the business.
 - Evaluating business opportunities such as the creation of offsets and allowances, the use of low carbon energy and the development of low carbon technologies.
 - Engaging externally—The company is a sponsor of MIT's Joint Program on the Science and Policy of Global Change; constructively engages in the development of climate change legislation and regulation; and discloses our progress and performance through the Carbon Disclosure Project and the Dow Jones Sustainability Index (ConocoPhillips 2018a)
- Product efficiency regulations and standards
 - Bitumen from Surmont Oil Sands assets represents 2.5% of ConocoPhillips' net proved reserves as of December 31, 2016. Two regulations issued by the Alberta government in 2007 under the Climate Change and Emissions Act require any existing facility with emissions equal to or greater than 100,000 metric tons of carbon dioxide or equivalent per year to reduce the net emission intensity of that facility by 2 percent per year beginning July 1, 2007, with an ultimate reduction target of 12 percent of baseline emissions. The reduction requirement increased from 12 percent in 2015, to 15 percent in 2016 and will increase again to 20 percent in 2017. The cost of compliance and investment in emissions intensity reductions will continue to influence decisions in our Canada Business Unit.
 - Increased operational cost
 - 2016 cost of compliance US\$8 million pre-tax equity share including compliance with the British Columbia carbon tax.
 - Our focus is on energy efficiency and implementing technologies that can reduce carbon intensity. We are evaluating technology opportunities for existing and new facilities, and purchasing carbon offsets. For example, Flow Control Devices (FCDs) support even steam distribution into the reservoir and help prevent steam production into the well that could damage the liner and cause it to fail. FCDs may also improve Steam Oil Ratio (SOR) by 10 percent. Using less steam helps us reduce SOR and therefore greenhouse gas intensity. As a founding member of the Oil Sands Leadership Initiative and the Canadian Oil Sands Innovation Alliance (COSIA), we have demonstrated both leadership and willingness to collaborate in the development of new technologies, expected to accelerate the reduction of GHG emissions across the sector. We participate in the regional emissions reduction scheme in the province of Alberta and manage a number of compliance mechanisms of that program: • Making

internal improvements to operations to reduce emissions; • Purchasing or using Emission Performance Credits; • Purchasing Alberta-based offset credits; and Contributing to the Climate Change and Emissions Management Fund. In recent years, our operations group completed 460 energy efficiency and GHG reduction projects saving approximately 180,000 m3 of gas per day and reducing GHG emissions by approximately 145,000 tonnes of CO2(e) per year.

- Cost of management is integrated into our cost structure. (CDP 2017)
- Carbon taxes
 - Carbon taxes in certain jurisdictions including Norway, which affects the ConocoPhillips Greater Ekofisk Area.
 - Increased operational cost
 - 2016 cost of compliance US\$28 million pre-tax equity share. Financial implications depend on timing, amount, and amount of pass-through to consumer. For example, at 2016 production rates a \$50/Tonne carbon price with 95% pass through would impact our bottom line less than \$70MM per year.
 - In our Norway Business Unit, we set internal absolute emission reduction targets to improve environmental footprint and manage increased costs due to carbon taxes. We exceeded our business unit target and achieved emission reductions of 55,000 tonnes of CO2 equivalent at our Ekofisk and Eldfisk complexes, mainly through the optimization of compression and power usage. The modification of the water injection system at Eldfisk allowed us to shut down one of the water injection turbines, which reduced emissions by 17,500 tonnes of CO2 equivalent for the latter half of the year. The projects also helped us to reduce power costs and carbon taxes of \$57 per tonne.
 - Cost of management is integrated into our cost structure. (CDP 2017)
- Cap and trade schemes
 - Oil, NGLs, and natural gas from Europe assets represent 8% of ConocoPhillips' net proved reserves as of December 31, 2016. Cap and trade programs in certain jurisdictions, including the EU Emissions Trading Scheme, influence our business decisions in Europe.
 - Increased operational cost
 - 2016 cost of compliance US\$1.4 million pre-tax equity share. Financial implications depend on timing, amount, and amount of pass-through to consumer.
 - Since 2005, ConocoPhillips facilities across Europe have participated in the European Union's emissions-trading program (ETS). Our Commercial organization trades allowances on the secondary market exchanges.
 - Cost of management is integrated into our cost structure. (CDP 2017)
- General environmental regulations, including planning
 - The EPA's announcement on March 29, 2010 (published as "Interpretation of Regulations that Determine Pollutants Covered by Clean Air Act Permitting Programs," 75 Fed. Reg. 17004 (April 2, 2010)), and the EPA's and U.S. Department of Transportation's joint promulgation of a Final Rule on April 1, 2010, that triggers regulation of GHGs under the Clean Air Act, may trigger more climate-based claims for damages, and may result in longer agency review time for development projects.
 - Increased operational cost
 - Not knowable until events occur.
 - We monitor the development of regulations as a company and through our membership in trade associations.
 - Cost of management is integrated into our cost structure. (CDP 2017)
- International agreements
 - Demand for our products may be adversely affected by conservation plans and efforts undertaken in response to global climate change, including plans developed in connection with the Paris climate conference in December 2015.
 - Reduced demand for goods/services

ConocoPhillips cont.

- Nationally Determined Contributions have been offered to 2025/30 and could have a range of effects on hydrocarbon demand. Subsequent revisions to NDCs beyond this date may have a greater impact.
- Equipping the company for a low emission world, for example by integrating GHG forecasting and reporting into company procedures; utilizing GHG pricing in planning economics; developing systems to handle GHG market transaction. Evaluating business opportunities such as the creation of offsets and allowances, the use of low carbon energy and the development of low carbon technologies. Engaging externally – ConocoPhillips is a sponsor of MIT’s Joint Program on the Science and Policy of Global Change; constructively engages in the development of climate change legislation and regulation.
- Cost of management is integrated into our cost structure. (CDP 2017)

DISCLOSURE OF PHYSICAL RISK

SCORE:

Good (1)

RATIONALE:

ConocoPhillips identifies business units that might be affected by the physical impact of climate change, specifies the magnitude and time frames of the anticipated impacts, and provides a framework for how the company intends to respond.

SOURCE DATA:

- Although our business operations are designed and operated to accommodate expected climatic conditions, to the extent there are significant changes in the Earth’s climate, such as more severe or frequent weather conditions in the markets we serve or the areas where our assets reside, we could incur increased expenses, our operations could be materially impacted, and demand for our products could fall (ConocoPhillips 2018a).
- The scope and nature of our operations present a variety of significant hazards and risks, including operational hazards and risks such as explosions, fires, crude oil spills, severe weather, geological events, labor disputes, terrorist attacks, sabotage, civil unrest or cyber-attacks (ConocoPhillips 2018a).
- The ultimate impact on our financial performance, either positive or negative, will depend on a number of factors, including but not limited to:
 - Any potential significant physical effects of climate change (such as increased severe weather events, changes in sea levels and changes in temperature) (ConocoPhillips 2018a).
- Project teams are required to assess the potential risks and opportunities associated with GHG emissions, GHG regulation and a physically changing climate. This assessment is a requirement for project and investment approval. (CDP 2017)
- Some ConocoPhillips assets in the U.S have identified storm severity as a risk in future operations based on previous storms and flooding. Science suggests that extreme weather events may be more intense or more frequent in the future.
 - Potential impact: Reduction/disruption in production capacity
 - Timeframe: >6 years
 - Magnitude of impact: Low-medium
 - Implication: The costs associated with interrupted operations will depend on the duration and severity of any physical event and the damage and remedial work to be carried out. Financial implications could be caused business interruption, damages or loss of production uptime, delayed access to resource, and/or delayed access to market. (CDP 2017)
- Rising sea levels could impact facilities located on coasts and some rivers, forcing investment to reduce flooding potential and/or improve storm water / wastewater management. There are numerous facilities located along the coasts and along rivers close to sea level, including ConocoPhillips facilities.
 - Potential impact: Reduction/disruption in production capacity
 - Timeframe: >6 years

- Magnitude of impact: Low-medium
 - Implication: The costs associated with interrupted operations will depend on the duration and severity of any physical event and the damage and remedial work to be carried out. Financial implications could be caused business interruption, damages or loss of production uptime, delayed access to resource, and/or delayed access to market. (CDP 2017)
- Severe drought could affect operations relying on a steady source of water. Alternately, excessive rainfall can lead to flooding and disrupt facility operation, including ConocoPhillips facilities.
 - Potential impact: Reduction/disruption in production capacity
 - Timeframe: Up to 1 year
 - Magnitude of impact: Low-medium
 - Implication: The costs associated with interrupted operations will depend on the duration and severity of any physical event and the damage and remedial work to be carried out. Financial implications could be caused business interruption, damages or loss of production uptime, delayed access to resource, and/or delayed access to market. (CDP 2017)
- Change in temperature extremes could impact facilities located in Arctic regions due to excessive warm spells reducing the ice road season and reducing construction time. Oil, NGLs, and natural gas from Alaska assets represent 20% of ConocoPhillips’ net proved reserves as of December 31, 2016. In hotter climates we could see the impact of reduced cooling capacity and heat waves impacting local communities potentially causing power shortages.
 - Potential impact: Reduction/disruption in production capacity
 - Timeframe: 1 to 3 years
 - Magnitude of impact: Low-medium
 - Implication: The costs associated with interrupted operations will depend on the duration and severity of any physical event and the damage and remedial work to be carried out. Financial implications could be caused business interruption, damages or loss of production uptime, delayed access to resource, and/or delayed access to market. (CDP 2017)

DISCLOSURE OF MARKET AND OTHER RISKS

SCORE:

Fair (0)

RATIONALE:

ConocoPhillips has acknowledged climate liability lawsuits filed against the company in the United States and identified other indirect risks and opportunities from climate change (such as availability of capital, development of new technologies, energy conservation, and reduced demand for fossil fuels). However, it provides limited analysis of the potential financial impacts on the company associated with these risks and opportunities.

SOURCE DATA:

- *Lawsuits:* “In 2017 and early 2018, cities and/or counties in California and New York have filed lawsuits against oil and gas companies, including ConocoPhillips, seeking compensatory damages and equitable relief to abate alleged climate change impacts. ConocoPhillips will be vigorously defending against these lawsuits.” (ConocoPhillips 2018a)
- Demand for our products may also be adversely affected by conservation plans and efforts undertaken in response to global climate change, including plans developed in connection with the Paris climate conference in December 2015. Many governments also provide, or may in the future provide, tax advantages and other subsidies to support the use and development of alternative energy technologies. Our operations and the demand for our products could be materially impacted by the development and adoption of these technologies (ConocoPhillips 2018a).

ConocoPhillips cont.

- The company has responded by putting in place a corporate Climate Change Action Plan, together with individual business unit climate change management plans in order to undertake actions in four major areas: Evaluating business opportunities such as the creation of offsets and allowances, the use of low carbon energy and the development of low carbon technologies (ConocoPhillips 2018a)
- Compliance with changes in laws and regulations that create a GHG tax, emission trading scheme or GHG reduction policies could significantly increase our costs, reduce demand for fossil energy derived products, impact the cost and availability of capital and increase our exposure to litigation. Such laws and regulations could also increase demand for less carbon intensive energy sources, including natural gas. The ultimate impact on our financial performance, either positive or negative, will depend on a number of factors, including but not limited to:
 - The price placed on GHG emissions (either by the market or through a tax).
 - The price and availability of offsets.
 - Technological and scientific developments leading to new products or services (ConocoPhillips 2018a).
- Changing consumer behavior
 - Shift in consumer preference towards alternative energy options.
 - Reduced demand for goods/services
 - Timeframe: >6 years
 - The costs associated with changes in consumer preferences will largely depend on technology development and the cost of alternatives. (CDP 2017)

CORPORATE GOVERNANCE

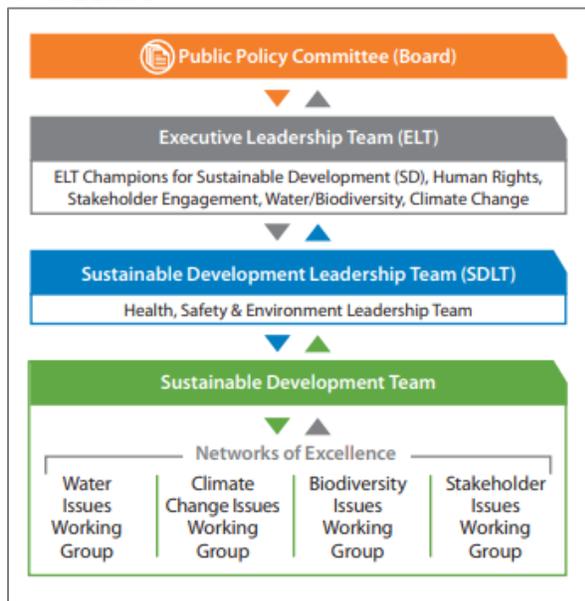
SCORE:

Good (1)

RATIONALE:

ConocoPhillips has disclosed some details of corporate governance on greenhouse gas emissions management and climate risks and opportunities, including how the board is engaged and which executives are accountable. However, the company has not disclosed whether and how executive compensation is tied to meeting climate objectives or how the company gauges the effectiveness of its climate change strategies.

SOURCE DATA:



(ConocoPhillips 2018b)

Strategic Objectives	20%	Maintain financial strength and flexibility and optimize portfolio	Transformed the company and its portfolio by developing and executing a returns-focused strategy to achieve a sustaining price of <\$40/bbl through strategic asset sales of \$18 billion, reducing debt by almost 30% to <\$20B and improving our credit rating		
		Achieve \$1B controllable cost reduction from 2014 actuals and deliver overall controllable cost per BOE reduction	Exceeded \$1B target, reducing controllable costs by \$4B since 2014; reduced cost of supply across the portfolio; <\$35/bbl average cost of supply	120%	24%
		Improve three-year HSE performance	Maintained our focus on sustainability resulting in climate change scenario planning and strategy, inclusion of development risks into business planning and decision-making, and setting a long-term greenhouse gas emissions intensity reduction target. Improved safety and environmental performance over the three-year period.		

(ConocoPhillips 2018b)

- The Public Policy Committee oversees our position on public policy issues, including climate change, and on matters that may affect our reputation as a responsible corporate citizen, including sustainable development actions and reporting. (ConocoPhillips 2018b)
- Climate Change Governance includes direction and oversight from the Public Policy Committee of the Board of Directors and the Executive Leadership Team (ELT). There is an executive champion (that reports directly to the CEO) for each of the key focus areas of sustainability – human rights, stakeholder engagement, water, biodiversity and climate change. To ensure alignment between functions and businesses, and to provide for practical operational insight into key actions, we established a Sustainable Development Leadership Team. This team works with the Climate Change Issues Working Group, Climate Change Public Policy Working Group and Climate Change Policy & Planning Network of Excellence to build consistency and quality into our approach to sustainable development implementation.
 - The committee makes recommendations to the board, and monitors compliance with the company’s programs and practices regarding health, safety and environmental protection, including climate change, water and biodiversity management; business operations in sensitive countries; government relations and political contributions; human rights and social issues; corporate philanthropy; and corporate advertising.
 - The committee, currently comprised of 4 independent directors, convenes at least quarterly and is regularly updated on sustainability issues. (CDP 2017)

FULLY DISCLOSING CLIMATE RISKS SCORE: GOOD (3)

CONSOL Energy

DISCLOSURE OF REGULATORY RISK

SCORE:

Good (1)

RATIONALE:

CONSOL Energy has provided a detailed analysis of existing and proposed laws and regulations relating to climate change and their possible effects on the company, including potential financial impacts.

SOURCE DATA:

- The electric power generation industry is subject to extensive regulation regarding the environmental impact of its power generation activities, which could affect demand for our coal. Compliance with these laws has substantially increased the cost of coal mining, and the possibility exists that new legislation or regulations may be adopted which would have a significant impact on our coal mining operations or our customers' ability to use our coal and may require us or our customers to change their operations significantly or incur substantial costs (CONSOL Energy Inc 2018a).
- The CAA also indirectly and more significantly affects the U.S. coal industry by extensively regulating the air emissions of coal-fired electric power generating plants operated by our customers. Coal contains impurities, such as sulfur, mercury and other constituents, many of which are released into the air when coal is burned. Carbon dioxide ("CO2"), a regulated greenhouse gas ("GHG"), is also emitted when coal is burned. Environmental regulations governing emissions from coal-fired electric generating plants increase the costs to operate and could affect demand for coal as a fuel source and affect the volume of our sales. Moreover, additional environmental regulations increase the likelihood that existing coal-fired electric generating plants will be decommissioned, including plants to which the Company sells coal, and reduce the likelihood that new coal-fired plants will be built in the future (CONSOL Energy Inc 2018a).
- On October 1, 2015, the EPA finalized the NAAQS for ozone pollution and reduced the limit to 70 parts per billion ("ppb") from the previous 75 ppb standard. The final rule could have a large impact on the coal mining industry as states would be required to update their permitting standards to meet these potentially unachievable limits. Several states have filed a petition for review in the D.C. Circuit of Appeals. On April 7, 2017, the EPA advised the Court that it intended to reconsider the final rule. On April 11, 2017, the Court stayed the litigation pending further action by the EPA. On August 10, 2017, EPA withdrew a previously-announced one-year extension to the compliance deadline (CONSOL Energy Inc 2018a).
- The amount of coal consumed by the electric power generation industry is affected by, among other things:
 - environmental and other governmental regulations, including those impacting coal-fired power plants; and
 - energy conservation efforts and related governmental policies (CONSOL Energy Inc 2018a).
- Federal and state mandates for increased use of electricity derived from renewable energy sources could affect demand for our coal. Such mandates, combined with other incentives to use renewable energy sources, such as tax credits, could make alternative fuel sources more competitive with coal. A decrease in coal consumption by the electric power generation industry could adversely affect the price of coal, which could have a material adverse effect on our business, financial condition, results of operations and cash flows. (CONSOL Energy Inc 2018a).
- Finally, uncertainty caused by federal and state regulations could cause coal customers to be uncertain of their coal requirements in future years, which could adversely affect our ability to sell coal to our customers under multi-year sales contracts (CONSOL Energy Inc 2018a).
- The characteristics of coal may make it costly for electric power generators and other coal users to comply with various environmental standards regarding the emissions of impurities released when coal is burned which could

cause utilities to replace coal-fired power plants with alternative fuels. In addition, various incentives have been proposed to encourage the generation of electricity from renewable energy sources. A reduction in the use of coal for electric power generation could decrease the volume of our domestic coal sales and adversely affect our results of operations (CONSOL Energy Inc 2018a).

- In order to meet the federal Clean Air Act limits for sulfur dioxide emissions from electric power plants, coal users will need to install scrubbers, use sulfur dioxide emission allowances (some of which they may purchase) or switch to other fuels. Because higher sulfur coal currently accounts for a significant portion of our sales, the extent to which electric power generators switch to alternative fuel could materially affect us. (CONSOL Energy Inc 2018a).
- Recent EPA rulemaking proceedings requiring additional reductions in permissible emission levels of impurities by coal-fired plants will likely make it more costly to operate coal-fired electric power plants and may make coal a less attractive fuel alternative for electric power generation in the future. Examples are (i) implementation of the CrossState Air Pollution Rule to require reductions of seasonal nitrogen oxides emissions from power plants in the eastern United States to address ozone pollution; and (ii) the Utility Maximum Achievable Control Technology rule, better known as the Mercury and Air Toxics Standard rule, which included more stringent new source performance standards for particulate matter, mercury, sulfur dioxide and nitrogen oxides, for new and existing coal-fired power plants (CONSOL Energy Inc 2018a).
- State and federal mandates for increased use of electricity from renewable energy sources could have an impact on the market for our coal. Several states have enacted legislative mandates requiring electricity suppliers to use renewable energy sources to generate a certain percentage of power. Possible advances in technologies and incentives, such as tax credits, to enhance the economics of renewable energy sources could make these sources more competitive with coal. Any reductions in the amount of coal consumed by domestic electric power generators as a result of current or new standards for the emission of impurities or incentives to switch to alternative fuels or renewable energy sources could reduce the demand for our coal, thereby reducing our revenues and adversely affecting our business and results of operations (CONSOL Energy Inc 2018a).
- Regulation of greenhouse gas emissions may increase our operating costs and reduce the value of our coal assets and such regulation, as well as uncertainty concerning such regulation could adversely impact the market for coal, as well as for our securities (CONSOL Energy Inc 2018a).
- Numerous proposals have been made and are likely to continue to be made at the international, national, regional and state levels of government that are intended to limit emissions of GHGs. Several states have already adopted measures requiring reduction of GHGs within state boundaries. Other states have elected to participate in voluntary regional cap-and-trade programs like the Regional Greenhouse Gas Initiative in the northeastern U.S. Additionally, increasing attention to climate change risk has resulted in an increased possibility of governmental investigations and, potentially, private litigation against the Company (CONSOL Energy Inc 2018a).
- Additionally, coalbed methane must be expelled from our underground coal mines for mining safety reasons and is vented into the atmosphere when the coal is mined. If regulation of GHG emissions does not exempt the release of coalbed methane, we may have to further reduce our methane emissions, pay higher taxes, incur costs to purchase credits that permit us to continue operations as they now exist at our underground coal mines or perhaps curtail coal production. In 2010, the EPA declined a petition to regulate methane emissions from coal mines, and on May 13, 2014 the U.S. Court of Appeals upheld the EPA's denial of the petition (CONSOL Energy Inc 2018a).
- Adoption of comprehensive legislation or regulation focusing on GHG emission reductions for the United States or other countries where we sell coal, or the inability of utilities to obtain financing in connection with coal-fired plants, may make it more costly to operate fossil fuel fired (especially coal-fired) electric power generation plants and make fossil fuels less attractive for electric utility power plants in the future (CONSOL Energy Inc 2018a).
- Apart from actual regulation, uncertainty over the extent of regulation of GHG emissions may inhibit utilities from investing in the building of new coal-fired plants to replace older plants or investing in the upgrading of existing coal-fired plants. Any reduction or substantial delay in the amount of coal consumed by domestic electric power generators as a result of actual or potential regulation of greenhouse gas emissions could decrease

CONSOL cont.

demand for our fossil fuels, thereby reducing our revenues and materially and adversely affecting our business and results of operations. Our customers may also have to invest in carbon dioxide capture and storage technologies in order to burn coal and comply with future GHG emission standards (CONSOL Energy Inc 2018a).

DISCLOSURE OF PHYSICAL RISK

SCORE:

Poor (-1)

RATIONALE:

CONSOL Energy has generally acknowledged physical risks it faces, such as weather, but does not include discussion of climate change as a contributor to those risks.

SOURCE DATA:

- The operating risks that may have a significant impact on our coal operations include: environmental hazards; inclement or hazardous weather conditions and natural disasters or other force majeure events (CONSOL Energy Inc 2018a)

DISCLOSURE OF MARKET AND OTHER RISKS

SCORE:

Fair (0)

RATIONALE:

CONSOL Energy has provided some details and examples of how it may be affected by indirect risks and opportunities from climate change but provides limited analysis of their potential financial impacts for the company. CONSOL Energy was included as a defendant in the Rhode Island state climate liability lawsuit, but the date of the filing was outside our study period.

SOURCE DATA:

- *Lawsuits:* CONSOL Energy is currently involved in certain legal proceedings. The Company has accrued its estimate of the probable costs for the resolution of these claims. This estimate has been developed in consultation with legal counsel involved in the defense of these matters and is based upon the nature of the lawsuit, progress of the case in court, view of legal counsel, prior experience in similar matters, and management's intended response. Future results of operations for any particular quarter or annual period could be materially affected by changes in the Company's assumptions or the outcome of these proceedings. Legal fees associated with defending these various lawsuits and claims are expensed when incurred (CONSOL Energy Inc 2018a).
- In addition, there have also been efforts in recent years affecting the investment community, including investment advisers, sovereign wealth funds, public pension funds, universities and other groups, promoting the divestment of fossil fuel equities and also pressuring lenders to limit funding to companies engaged in the extraction of fossil fuel reserves. The impact of such efforts may adversely affect the demand for and price of securities issued by us, and impact our access to the capital and financial markets (CONSOL Energy Inc 2018a).
- In addition, demand can fluctuate widely due to a number of matters beyond our control, including the price and availability of alternative fuels and sources for electricity generation, especially natural gas and renewable energy sources technological advances affecting energy consumption; the amount of coal consumed by the electric power generation industry is affected by, among other things: indirect competition from alternative fuel sources for power generation, such as natural gas, fuel oil, nuclear, hydroelectric, wind and solar power, and the location, availability, quality and price of those alternative fuel sources; energy conservation efforts and related governmental policies (CONSOL Energy Inc 2018a).
- Such mandates, combined with other incentives to use renewable energy sources, such as tax credits, could make alternative fuel sources more competitive with coal. A decrease in coal consumption by the electric power

generation industry could adversely affect the price of coal, which could have a material adverse effect on our business, financial condition, results of operations and cash flows (CONSOL Energy Inc 2018a).

- In addition, various incentives have been proposed to encourage the generation of electricity from renewable energy sources. A reduction in the use of coal for electric power generation could decrease the volume of our domestic coal sales and adversely affect our results of operations (CONSOL Energy Inc 2018a).
- Possible advances in technologies and incentives, such as tax credits, to enhance the economics of renewable energy sources could make these sources more competitive with coal. Any reductions in the amount of coal consumed by domestic electric power generators as a result of current or new standards for the emission of impurities or incentives to switch to alternative fuels or renewable energy sources could reduce the demand for our coal, thereby reducing our revenues and adversely affecting our business and results of operations (CONSOL Energy Inc 2018a).
- Apart from governmental regulation, investment banks based both domestically and internationally have announced that they have adopted climate change guidelines for lenders. The guidelines require the evaluation of carbon risks in the financing of electric power generation plants which may make it more difficult for utilities to obtain financing for coal-fired plants (CONSOL Energy Inc 2018a).
- Demand for our coal by our principal customers is affected by the delivered price of competing coals, other fuel supplies and alternative generating sources, including nuclear, natural gas, oil and renewable energy sources, such as hydroelectric, wind and solar power (CONSOL Energy Inc 2018a).

CORPORATE GOVERNANCE

SCORE:

Poor (-1)

RATIONALE:

CONSOL Energy has mentioned or made generic statements about environmental governance but does not specifically describe climate-related governance.

SOURCE DATA:

- Health, Safety and Environmental Committee: Oversees CEIX's monitoring and enforcement of its policies to protect the health and safety of employees, contractors, customers, the public and the environment and identifying, assessing, monitoring and managing the principal risks in CEIX's business associated with health, safety, protection of the environment and security matters; and Reviews material compliance issues with health, safety and environmental laws, and material pending or threatened administrative, regulatory or judicial proceedings regarding health, safety, environmental or security matters and management's response to the foregoing. (CONSOL Energy Inc 2018b)

FULLY DISCLOSING CLIMATE RISKS SCORE: FAIR (-1)

ExxonMobil

DISCLOSURE OF REGULATORY RISK

SCORE:

Poor (-1)

RATIONALE:

ExxonMobil mentions the general existence of risk associated with current or proposed laws relating to climate change, but it does not identify specific laws or regulations or effects particular to the company.

SOURCE DATA:

- Regulatory and litigation risks. Even in countries with well-developed legal systems where ExxonMobil does business, we remain exposed to changes in law (including changes that result from international treaties and accords) that could adversely affect our results, such as: changes in environmental regulations or other laws that increase our cost of compliance or reduce or delay available business opportunities (including changes in laws related to offshore drilling operations, water use, methane emissions, or hydraulic fracturing); adoption of regulations mandating efficiency standards, the use of alternative fuels or uncompetitive fuel components (ExxonMobil Corporation 2018).
- Climate change and greenhouse gas restrictions. Due to concern over the risks of climate change, a number of countries have adopted, or are considering the adoption of, regulatory frameworks to reduce greenhouse gas emissions. These include adoption of cap and trade regimes, carbon taxes, restrictive permitting, increased efficiency standards, and incentives or mandates for renewable energy. These requirements could make our products more expensive, lengthen project implementation times, and reduce demand for hydrocarbons, as well as shift hydrocarbon demand toward relatively lower-carbon sources such as natural gas. Current and pending greenhouse gas regulations or policies may also increase our compliance costs, such as for monitoring or sequestering emissions (ExxonMobil Corporation 2018).
- Government sponsorship of alternative energy. Many governments are providing tax advantages and other subsidies to support alternative energy sources or are mandating the use of specific fuels or technologies. Governments and others are also promoting research into new technologies to reduce the cost and increase the scalability of alternative energy sources (ExxonMobil Corporation 2018).
- We are implementing cost-effective new technologies and adopting new operating practices to reduce air emissions, not only in response to government requirements but also to address community priorities. (p.4)
- ExxonMobil's research and development organizations must be successful and able to adapt to a changing market and policy environment, including developing technologies to help reduce greenhouse gas emissions (ExxonMobil Corporation 2018).
- International accords and underlying regional and national regulations covering greenhouse gas emissions continue to evolve with uncertain timing and outcome, making it difficult to predict their business impact. For many years, the Corporation has taken into account policies established to reduce energy-related greenhouse gas emissions in its long-term Outlook for Energy. The climate accord reached at the Conference of the Parties (COP 21) in Paris set many new goals, and many related policies are still emerging. Our Outlook reflects an environment with increasingly stringent climate policies and is consistent with the aggregation of Nationally Determined Contributions which were submitted by signatories to the United Nations Framework Convention on Climate Change (UNFCCC) 2015 Paris Agreement. Our Outlook seeks to identify potential impacts of climate related policies, which often target specific sectors, by using various assumptions and tools including application of a proxy cost of carbon to estimate potential impacts on consumer demands. For purposes of the Outlook, a proxy cost on energy-related CO₂ emissions is assumed to reach about \$80 per tonne on average in 2040 in OECD nations (ExxonMobil Corporation 2018).

- Actual future financial and operating results or conditions, including demand growth and energy source mix; government policies relating to climate change; project plans, capacities, schedules and costs; production growth and mix; rates of field decline; asset carrying values; proved reserves; financing sources; the resolution of contingencies and uncertain tax positions; and environmental and capital expenditures; could differ materially depending on a number of factors, such as changes in the supply of and demand for crude oil, natural gas, and petroleum and petrochemical products and resulting price impacts; the outcome of commercial negotiations; the impact of fiscal and commercial terms; political or regulatory events; the outcome of **exploration and development** projects, and other factors discussed herein and in Item 1A. Risk Factors (ExxonMobil Corporation 2018).
- Nevertheless, as people and nations look for ways to reduce risks of global climate change, they will continue to need practical solutions that do not jeopardize the affordability or reliability of the energy they need (ExxonMobil Corporation 2018).
- Practical solutions to the world's energy and climate challenges will benefit from market competition as well as well informed, well designed, and transparent policy approaches that carefully weigh costs and benefits. Such policies are likely to help manage the risks of climate change while also enabling societies to pursue other high priority goals around the world – including clean air and water, access to reliable, affordable energy, and economic progress for all people. All practical and economically viable energy sources, both conventional and unconventional, will need to be pursued to continue meeting global energy demand, recognizing the scale and variety of worldwide energy needs as well as the importance of expanding access to modern energy to promote better standards of living for billions of people (ExxonMobil Corporation 2018).
- As described in more detail in Item 1A. Risk Factors, proposed carbon policy and other climate-related regulations in many countries, as well as the continued growth in biofuels mandates, could have negative impacts on the Downstream business (ExxonMobil Corporation 2018).

DISCLOSURE OF PHYSICAL RISK

SCORE:

Fair (0)

RATIONALE:

ExxonMobil acknowledges the physical risks it faces and discusses climate change as a contributor to those risks, but it includes few details about the nature of those risks, their magnitude, or how they may impact the company.

SOURCE DATA:

- Our operations may be disrupted by severe weather events, natural disasters, human error, and similar events. For example, hurricanes may damage our offshore production facilities or coastal refining and petrochemical plants in vulnerable areas. Our facilities are designed, constructed, and operated to withstand a variety of extreme climatic and other conditions, with safety factors built in to cover a number of engineering uncertainties, including those associated with wave, wind, and current intensity, marine ice flow patterns, permafrost stability, storm surge magnitude, temperature extremes, extreme rain fall events, and earthquakes. Our consideration of changing weather conditions and inclusion of safety factors in design covers the engineering uncertainties that climate change and other events may potentially introduce. Our ability to mitigate the adverse impacts of these events depends in part upon the effectiveness of our robust facility engineering as well as our rigorous disaster preparedness and response and business continuity planning (ExxonMobil Corporation 2018).

DISCLOSURE OF MARKET AND OTHER RISKS

SCORE:

Poor (-1)

ExxonMobil cont.

RATIONALE:

ExxonMobil acknowledges the risks posed by competition from renewable energy resources, changing consumer preferences, and changing technology, but it does not mention reputational risks or the climate-related litigation in which the company is a defendant.

SOURCE DATA:

- These include adoption of cap and trade regimes, carbon taxes, restrictive permitting, increased efficiency standards, and incentives or mandates for renewable energy. These requirements could make our products more expensive, lengthen project implementation times, and reduce demand for hydrocarbons, as well as shift hydrocarbon demand toward relatively lower-carbon sources such as natural gas. Current and pending greenhouse gas regulations or policies may also increase our compliance costs, such as for monitoring or sequestering emissions (ExxonMobil Corporation 2018).
- Government sponsorship of alternative energy. Many governments are providing tax advantages and other subsidies to support alternative energy sources or are mandating the use of specific fuels or technologies. Governments and others are also promoting research into new technologies to reduce the cost and increase the scalability of alternative energy sources. Our future results may depend in part on the success of our research efforts and on our ability to adapt and apply the strengths of our current business model to providing the energy products of the future in a cost-competitive manner (ExxonMobil Corporation 2018).
- Other factors that may affect the demand for oil, gas, and petrochemicals, and therefore impact our results, include technological improvements in energy efficiency; seasonal weather patterns, which affect the demand for energy associated with heating and cooling; increased competitiveness of alternative energy sources that have so far generally not been competitive with oil and gas without the benefit of government subsidies or mandates; changes in technology or consumer preferences that alter fuel choices, such as technological advances in energy storage that make wind and solar more competitive for power generation or increased consumer demand for alternative fueled or electric vehicles; and broad-based changes in personal income levels (ExxonMobil Corporation 2018).
- To maintain our competitive position, especially in light of the technological nature of our businesses and the need for continuous efficiency improvement, ExxonMobil's research and development organizations must be successful and able to adapt to a changing market and policy environment, including developing technologies to help reduce greenhouse gas emissions (ExxonMobil Corporation 2018).

CORPORATE GOVERNANCE

SCORE:

Fair (0)

RATIONALE:

ExxonMobil makes generic statements about climate-related environmental governance.

SOURCE DATA:

- Risk oversight is the responsibility of the full Board of Directors. The Board throughout the year participates in reviews with management on the Company's business, including identified risk factors. As a whole, the Board reviews include litigation and other legal matters; political contributions, budget, and policy; lobbying costs; developments in climate science and policy; the Energy Outlook, which projects world supply and demand to 2040; stewardship of business performance; and long-term strategic plans (ExxonMobil Corporation 2018).

FULLY DISCLOSING CLIMATE RISKS SCORE: (FAIR -2)

Peabody Energy

DISCLOSURE OF REGULATORY RISK

SCORE:

Fair (0)

RATIONALE:

Peabody Energy has identified specific existing and proposed laws and regulations relating to climate change that may affect the company but does not address how it in particular will be affected by those regulations.

SOURCE DATA:

- Coal prices are dependent upon factors beyond our control, including:
 - governmental regulations and taxes, including those establishing air emission standards for coal-fueled power plants or mandating or subsidizing increased use of electricity from renewable energy sources;
 - regulatory, administrative and judicial decisions, including those affecting future mining permits and leases (Peabody Energy Corporation 2018a).
- Concerns about the environmental impacts of coal combustion, including perceived impacts on global climate issues, are resulting in increased regulation of coal combustion in many jurisdictions, unfavorable lending policies by government-backed lending institutions and development banks toward the financing of new overseas coal-fueled power plants and divestment efforts affecting the investment community, which could significantly affect demand for our products or our securities (Peabody Energy Corporation 2018a).
- Enactment of laws or passage of regulations regarding emissions from the combustion of coal by the U.S., some of its states or other countries, or other actions to limit such emissions, could result in electricity generators switching from coal to other fuel sources or coal-fueled power plant closures. Further, policies limiting available financing for the development of new coal-fueled power plants could adversely impact the global demand for coal. The potential financial impact on us of future laws, regulations or other policies will depend upon the degree to which any such laws or regulations force electricity generators to diminish their reliance on coal as a fuel source. That, in turn, will depend on a number of factors, including the specific requirements imposed by any such laws, regulations or other policies, the time periods over which those laws, regulations or other policies would be phased in, the state of commercial development and deployment of CCUS technologies and the alternative markets for coal. From time to time, we attempt to analyze the potential impact on the Company of as-yet-unadopted potential laws, regulations and policies. Such analyses require that we make significant assumptions as to the specific provisions of such potential laws, regulations and policies. These analyses sometimes show that certain potential laws, regulations and policies, if implemented in the manner assumed by the analyses, could result in material adverse impacts on our operations, financial condition or cash flow, in view of the significant uncertainty surrounding each of these potential laws, regulations and policies. We do not believe that such analyses reasonably predict the quantitative impact that future laws, regulations or other policies may have on our results of operations, financial condition or cash flows (Peabody Energy Corporation 2018a).
- In the U.S., Congress has considered legislation addressing global climate issues and greenhouse gas emissions, but to date nothing has been enacted. While it is possible that the U.S. will adopt legislation in the future, the timing and specific requirements of any such legislation are uncertain. In the absence of new U.S. federal legislation, the EPA is undertaking steps to regulate greenhouse gas emissions pursuant to the Clean Air Act. In response to the 2007 U.S. Supreme Court ruling in *Massachusetts v. EPA*, the EPA commenced several rulemaking projects as described under “Regulatory Matters-U.S. - Environmental Laws and Regulations.” In particular, on August 3, 2015, the EPA announced the final rules (which were published in the Federal Register on October 23, 2015) for regulating carbon dioxide emissions from existing and new fossil fuel-fired EGUs. The EPA has set emission performance rates for existing plants to be phased in over the period from 2022 through 2030. This rule is intended to reduce carbon dioxide emissions from the 2005 baseline by 28% in 2025 and 32% in 2030. The EPA has also set standards applying to new, modified and reconstructed sources beginning in 2015 (Peabody Energy Corporation 2018a).

Peabody cont.

- A number of states in the U.S. have adopted programs to regulate greenhouse gas emissions. For example, 10 northeastern states (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont) entered into the Regional Greenhouse Gas Initiative (RGGI) in 2005, which is a mandatory cap-and-trade program to cap regional carbon dioxide emissions from power plants. In 2011, New Jersey announced its withdrawal from RGGI effective January 1, 2012. Six mid-western states (Illinois, Iowa, Kansas, Michigan, Minnesota and Wisconsin) and one Canadian province have entered into the Midwestern Regional Greenhouse Gas Reduction Accord (MGGRA) to establish voluntary regional greenhouse gas reduction targets and develop a voluntary multi-sector cap-and-trade system to help meet the targets. It has been reported that, while the MGGRA has not been formally suspended, the participating states are no longer pursuing it. Seven western states (Arizona, California, Montana, New Mexico, Oregon, Utah and Washington) and four Canadian provinces entered into the Western Climate Initiative (WCI) in 2008 to establish a voluntary regional greenhouse gas reduction goal and develop market-based strategies to achieve emissions reductions. However, in November 2011, the WCI announced that six states had withdrawn from the WCI, leaving California and four Canadian provinces as the remaining members. Of those five jurisdictions, only California and Quebec have adopted greenhouse gas cap-and-trade regulations to date and both programs have begun operating. Many of the states and provinces that left WCI, RGGI and MGGRA, along with many that continue to participate, have joined the new North America 2050 initiative, which seeks to reduce greenhouse gas emissions and create economic opportunities in ways not limited to cap-and-trade programs (Peabody Energy Corporation 2018a).
- In the U.S., several states have enacted legislation establishing greenhouse gas emissions reduction goals or requirements. In addition, several states have enacted legislation or have in effect regulations requiring electricity suppliers to use renewable energy sources to generate a certain percentage of power or that provide financial incentives to electricity suppliers for using renewable energy sources. Some states have initiated public utility proceedings that may establish values for carbon emissions (Peabody Energy Corporation 2018a).
- We participated in the Department of Energy's Voluntary Reporting of Greenhouse Gases Program until its suspension in May 2011, and regularly disclose in our Corporate and Social Responsibility Report the quantity of emissions per ton of coal produced by us in the U.S. The vast majority of our emissions are generated by the operation of heavy machinery to extract and transport material at our mines and fugitive emissions from the extraction of coal (Peabody Energy Corporation 2018a).

DISCLOSURE OF PHYSICAL RISK

SCORE:

Poor (-1)

RATIONALE:

Peabody Energy generally acknowledged physical risks it faces, such as weather, but it does not include discussion of climate change as a contributor to those risks.

SOURCE DATA:

- Coal prices are dependent upon factors beyond our control, including weather patterns and natural disasters (Peabody Energy Corporation 2018a)
- Our mining operations are subject to conditions that can impact the safety of our workforce, or delay coal deliveries or increase the cost of mining at particular mines for varying lengths of time. These conditions include weather, flooding and natural disasters (Peabody Energy Corporation 2018a).

DISCLOSURE OF MARKET AND OTHER RISKS

SCORE:

Poor (-1)

RATIONALE:

Peabody Energy has acknowledged climate liability lawsuits filed in the United States and broadly mentioned other indirect risks and opportunities from climate change (such as competition with alternative fuels, divestment, lack of funding, and technological developments). However, it has not specified the potential impact on the company.

SOURCE DATA:

- *Lawsuit:* County of San Mateo, County of Marin, City of Imperial Beach. The Company was named as a defendant, along with numerous other companies, in three nearly identical lawsuits. The lawsuits seek to hold a wide variety of companies that produce fossil fuels liable for the alleged impacts of the greenhouse gas emissions attributable to those fuels. The lawsuits primarily assert that the companies' products have caused a sea level rise that is damaging the plaintiffs. The complaints specifically alleged that the defendants' activities from 1965 to 2015 caused such damage. The Company filed a motion to enforce the Confirmation Order in the Bankruptcy Court because the Confirmation Order enjoins claims that arose before the effective date of the Plan. The motion to enforce was heard on October 5, 2017 and granted on October 24, 2017. The Bankruptcy Court ordered the plaintiffs to dismiss their lawsuits against the Company. On November 26, 2017, the plaintiffs appealed the Bankruptcy Court's October 24, 2017 order to the U.S. District Court for the Eastern District of Missouri. On November 28, 2017, plaintiffs sought a stay pending appeal from the Bankruptcy Court, which was denied December 8, 2017. On December 19, 2017, the plaintiffs moved the U.S. District Court for the Eastern District of Missouri for a stay pending appeal. In the underlying cases pending in California, the parties are litigating whether the complaints should be heard in federal or state court (Peabody Energy Corporation 2018a).
- Coal prices are dependent upon factors beyond our control, including:
 - the demand for electricity;
 - the relative price of natural gas and other energy sources used to generate electricity;
 - changes in the fuel consumption and dispatch patterns of electric power generators;
 - competition within our industry and the availability, quality and price of alternative fuels, including natural gas, fuel oil, nuclear, hydroelectric, wind, biomass and solar power;
 - governmental regulations and taxes, including those establishing air emission standards for coal-fueled power plants or mandating or subsidizing increased use of electricity from renewable energy sources;
 - technological developments, including those related to alternative energy sources, those intended to convert coal-to-liquids or gas and those aimed at capturing, using and storing carbon dioxide. (Peabody Energy Corporation 2018a)
- We compete with producers of other low cost fuels used for electricity generation, such as natural gas and renewables. Declines in the price of natural gas, or continued low natural gas prices, could cause demand for coal to decrease and adversely affect the price of coal. Sustained periods of low natural gas prices or other fuels may also cause utilities to phase out or close existing coal-fired power plants or reduce construction of new coal-fired power plants (Peabody Energy Corporation 2018a).
- In the United States, natural gas is the most significant substitute for thermal coal for electricity generation and can be one of the largest drivers of shifts in supply and demand and pricing. The competitiveness of natural gas as a generation fuel source has been strengthened by accelerated growth in domestic natural gas production over the last five years and comparatively low natural gas prices versus historic levels. The build out of renewable generation and subsidized power can also be a key driver of power market pricing and hence coal prices (Peabody Energy Corporation 2018a).
- U.S. electricity generation from coal was unfavorably affected during that period by mild weather and weaker total electricity generation, coal plant retirements, stronger hydro generation and continued gains by renewables in the electricity generation mix (Peabody Energy Corporation 2018a).
- Looking ahead to 2018, changes in demand for electric power sector consumption of coal are expected to be most impacted by changes in natural gas prices and availability of renewable generation. (Peabody Energy Corporation 2018a).
- Concerns about the environmental impacts of coal combustion, including perceived impacts on global climate issues, are resulting in increased regulation of coal combustion in many jurisdictions, unfavorable lending policies by government-backed lending institutions and development banks toward the financing of new overseas coal-fueled power plants and divestment efforts affecting the investment community (Peabody Energy Corporation 2018a).

Peabody cont.

- There have also been efforts in recent years affecting the investment community, including investment advisors, sovereign wealth funds, public pension funds, universities and other groups, promoting the divestment of fossil fuel equities and also pressuring lenders to limit funding to companies engaged in the extraction of fossil fuel reserves. (Peabody Energy Corporation 2018a).

CORPORATE GOVERNANCE

SCORE:

Poor (-1)

RATIONALE:

Peabody Energy makes generic statements about environmental governance but does not specifically describe climate-related governance.

SOURCE DATA:

- Health, Safety, Security and Environmental Committee
 - Responsible for reviewing with management our significant risks or exposures in the health, safety, security and environmental areas, and steps taken by management to address such risks;
 - Reviews our health, safety, security and environmental objectives, policies and performance, including processes to ensure compliance with applicable laws and regulations;
 - Reviews our efforts to advance our progress on sustainable development;
 - Reviews and discusses with management any material noncompliance with health, safety, security and environmental laws, and management's response to such noncompliance;
 - Considers and advises the Board on health, safety, security and environmental matters and sustainable development;
 - Considers and advises the Compensation Committee on our performance with respect to incentive compensation metrics relating to health, safety, security or environmental matters;
 - Reviews and discusses significant legislative, regulatory, political and social issues and trends that may affect our health, safety, security and environmental management process and system, and management's response to such matters; and
 - Makes regular reports on its activities to the Board ([Peabody Energy Corporation 2018b](#)).

FULLY DISCLOSING CLIMATE RISKS SCORE: POOR (-3)

Royal Dutch Shell

DISCLOSURE OF REGULATORY RISK

SCORE:

Poor (-1)

RATIONALE:

Shell mentions risks associated with existing or proposed laws relating to climate change and how those risks may affect the company, but it has not identified specific laws or regulations.

SOURCE DATA:

- Rising climate change concerns have led and could lead to additional legal and/or regulatory measures which could result in project delays or cancellations, a decrease in demand for fossil fuels, potential litigation and additional compliance obligations. In December 2015, 195 nations adopted the Paris Agreement, which we fully support. The Paris Agreement aims to limit increases in global temperatures to well below two degrees Celsius. As a result, we expect continued and increased attention to climate change from all sectors of society. This attention has led, and we expect it to continue to lead, to additional regulations designed to reduce greenhouse gas (GHG) emissions (Royal Dutch Shell PLC 2018).
- We expect that a growing share of our GHG emissions will be subject to regulation, resulting in increased compliance costs and operational restrictions. If our GHG emissions rise alongside our ambitions to increase the scale of our business, our regulatory burden will increase proportionally. We also expect that GHG regulation will focus more on suppressing demand for fossil fuels, either through taxes, fees, incentives to promote the sale of electric vehicles or even through the future prohibition of sales of new diesel or gasoline vehicles. This could result in lower revenue and, in the long term, potential impairment of certain assets (Royal Dutch Shell PLC 2018).
- If we are unable to find economically viable, as well as publicly acceptable, solutions that reduce our GHG emissions and/or GHG intensity for new and existing projects or for the products we sell, we could experience additional costs or financial penalties, delayed or cancelled projects, and/or reduced production and reduced demand for hydrocarbons, which could have a material adverse effect on our earnings, cash flows and financial condition (Royal Dutch Shell PLC 2018).
- Our portfolio exposure is reviewed annually against changing GHG regulatory regimes and physical conditions to identify emerging risks. We test the resilience of our portfolio against externally published future pathways, including a low emissions pathway (Royal Dutch Shell PLC 2018).
- In certain countries, these estimated GHG costs can exceed \$100/tonne (in real terms) in the post 2030 environment, reflecting our presumption that governments will eventually take aggressive action to regulate GHG emissions in accordance with their Paris Agreement ambitions. Projects in the most GHG-exposed asset classes have GHG intensity targets that reflect standards sufficient to allow them to compete and prosper in a more GHG-regulated future. These processes can lead to projects being stopped, designs being changed, and potential GHG mitigation investments being identified, in preparation for when regulation would make these investments commercially compelling (Royal Dutch Shell PLC 2018).
- Our strategy to assess and manage risks and opportunities resulting from climate change includes consideration of different time horizons and specific: regulatory risk: the potential for strengthening of existing and introduction of new regulations (Royal Dutch Shell PLC 2018).
- In November, we announced a net carbon footprint reduction ambition covering not just emissions from our own operations but also those produced by customers when they use the energy products we sell. We plan to do this in step with society's drive to align with the Paris climate agreement. We aim to reduce the overall footprint of our energy products by around 20% by 2035 and by around half by 2050. This measure will be reviewed every five years to ensure progress is in line with wider society's progress towards the reductions required to meet the Paris goals (Royal Dutch Shell PLC 2018).

DISCLOSURE OF PHYSICAL RISK

Royal Dutch Shell cont.

SCORE:

Poor (-1)

RATIONALE:

Shell generally acknowledges physical risks it faces (such as severe weather) and specifies which operations would be affected, but it does not discuss climate change as a contributor to those risks.

SOURCE DATA:

- The nature of our operations exposes us, and the communities in which we work, to a wide range of health, safety, security and environment risks. The health, safety, security and environment (HSSE) risks to which we, and the communities in which we work, are potentially exposed cover a wide spectrum, given the geographic range, operational diversity and technical complexity of our operations. These risks include the effects of natural disasters (including weather events), earthquakes, social unrest, personal health and safety lapses, and crime. If a major HSSE risk materialises, such as an explosion or hydrocarbon spill, this could result in injuries, loss of life, environmental harm, disruption of business activities, and loss or suspension of our licence to operate or ability to bid on mineral rights. Accordingly, this would have a material adverse effect on our earnings, cash flows and financial condition (Royal Dutch Shell PLC 2018).

DISCLOSURE OF MARKET AND OTHER RISKS

SCORE:

Fair (0)

RATIONALE:

Shell has acknowledged climate liability lawsuits filed in the United States and discussed how it may be affected by other indirect risks from climate change (such as diminished demand for fossil fuels), but it provides limited analysis of the risks' potential financial impacts on the company.

SOURCE DATA:

- *Lawsuits:* Further, in some countries, governments and regulators have filed lawsuits seeking to hold fossil fuel companies liable for costs associated with climate change. While we believe these lawsuits to be without merit, losing any of these lawsuits could have a material adverse effect on our earnings, cash flows and financial condition (Royal Dutch Shell PLC 2018).
- Our New Energies unit, which we created in 2016, invested in commercial opportunities linked to the energy transition in 2017. We acquired NewMotion, one of Europe's largest electric vehicle charging providers, in October. And, in December, we agreed to buy First Utility, a household energy provider in the UK (Royal Dutch Shell PLC 2018).
- Our strategy is to strengthen our position as a leading energy company by providing oil and gas and low-carbon energy as the world's energy system changes (Royal Dutch Shell PLC 2018).
- Rising climate change concerns have led and could lead to additional legal and/or regulatory measures which could result in project delays or cancellations, a decrease in demand for fossil fuels, potential litigation and additional compliance obligations (Royal Dutch Shell PLC 2018).
- Additionally, some groups are pressuring certain investors to divest their investments in fossil fuel companies. If this were to continue, it could have a material adverse effect on the price of our securities and our ability to access equity capital markets. The World Bank has also announced plans to stop financing upstream oil and gas projects in 2019. Similarly, according to press reports, other financial institutions also appear to be considering limiting their exposure to certain fossil fuel projects. Accordingly, our ability to use financing for future projects may be adversely impacted. This could also adversely impact our potential partners' ability to finance their portion of costs, either through equity or debt (Royal Dutch Shell PLC 2018).
- If we are unable to find economically viable, as well as publicly acceptable, solutions that reduce our GHG emissions and/or GHG intensity for new and existing projects or for the products we sell, we could experience additional costs or

financial penalties, delayed or cancelled projects, and/or reduced production and reduced demand for hydrocarbons, which could have a material adverse effect on our earnings, cash flows and financial condition (Royal Dutch Shell PLC 2018).

- While we aspire to reduce our GHG intensity, as energy demand increases and easily accessible oil and gas resources decline, we may develop resources that require more energy and advanced technologies to produce. If our production becomes more energy intensive, this could result in an associated increase in direct GHG emissions from our upstream facilities (Royal Dutch Shell PLC 2018).
- Our strategy to assess and manage risks and opportunities resulting from climate change includes consideration of different time horizons and specific: societal risk: the potential for a deteriorating relationship with the public, other companies, and governments in countries where Shell operates; commercial risk: the potential for structural shifts in demand profiles for industry products (Royal Dutch Shell PLC 2018)
- Power is the fastest-growing segment of the energy system. We expect that people and companies around the world will use more electricity to power transport and industry, instead of coal and oil, as part of the drive to lower carbon emissions. To help meet this demand, Shell aims to become an integrated power player and grow, over time, a material new business. We are working to deliver more electricity generated by renewable energy, from developing wind and solar projects to selling electricity generated by renewable sources (Royal Dutch Shell PLC 2018).
- In the period to 2035, we believe that all forms of GHG reduction measures must be accelerated and increased in scale. Major improvements in energy efficiency and new sources of energy, such as renewables, combined with the use of cleaner fossil fuels, such as replacing coal with natural gas, are needed to meet the growing global population's energy needs while reducing GHG emissions. In addition, the world will need significant growth in CCS and sustained reductions in demand (Royal Dutch Shell PLC 2018).

CORPORATE GOVERNANCE

SCORE:

Good (1)

RATIONALE:

Shell has disclosed some details of corporate governance on greenhouse gas emissions management and climate risks and opportunities (including how the board is engaged, which executives are accountable, and whether and how executive compensation is tied to meeting corporate climate objectives). However, it has not disclosed in sufficient detail how senior management and the board monitor and gauge the effectiveness of the company's climate change goals and strategies.

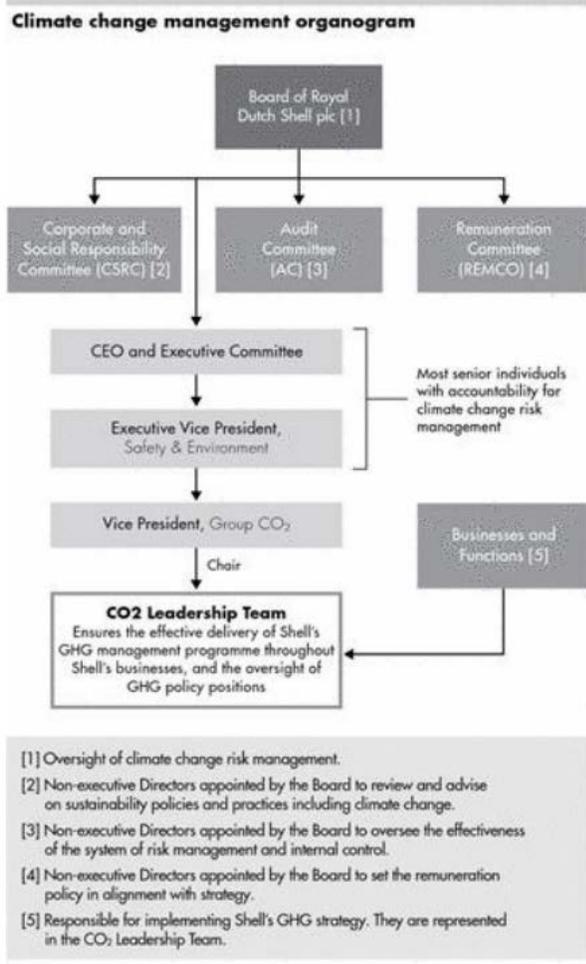
SOURCE DATA:

- Climate change and risks resulting from GHG emissions have been identified as a significant risk factor for Shell and are managed in accordance with other significant risks through the Board and Executive Committee. Shell has a climate change risk management structure in place which is supported by standards, policies and controls (Royal Dutch Shell PLC 2018).
- This includes the work of the Board, which discusses a number of regular agenda items, among them reporting on environmental topics. Throughout 2017, the Board held strategy sessions in the context of the changing global energy market, energy transition and climate change, and considered risks and opportunities of the current and future shape of Shell's portfolio for different timescales. The top priorities identified for 2018 in this area include the energy transition and implementation of our strategy for the New Energies business (Royal Dutch Shell PLC 2018).
- The Board committees play an important role in assisting the Board with regard to governance and management of climate change risks and opportunities. The responsibilities of the Corporate and Social Responsibility Committee (CSRC) include the review of the management of environmental and social impacts of projects and operations. In 2017, among the key topics were the energy transition, GHG emission targets, and other carbon dioxide (CO₂) and methane-related developments, such as Shell's net carbon footprint ambition and guiding principles on reducing methane emissions (Royal Dutch Shell PLC 2018).
- The Remuneration Committee (REMCO) is responsible for setting the Directors' Remuneration Policy in alignment with strategy. In 2017, activities for REMCO included setting annual bonus performance measures and targets, for example,

Royal Dutch Shell cont.

introducing GHG metrics in the scorecard following recommendations by the CSRC, and embedding the energy transition into the Chief Executive Officer's (CEO) personal performance targets (Royal Dutch Shell PLC 2018).

- The CEO is the most senior individual with accountability for climate change risk. We have set up several dedicated climate change and GHG-related forums at different levels of the organisation where climate change issues are addressed, monitored and reviewed, and each Shell subsidiary has operational responsibility for implementing climate change policies and strategies (Royal Dutch Shell PLC 2018).
- A senior manager – the Executive Vice President for Safety and Environment – reporting directly to an Executive Director (the Projects & Technology Director) is accountable, among other things, for oversight of GHG issues. This manager's department includes the dedicated Group CO₂ team, which is accountable for monitoring and examining the strategic implications of climate change for Shell and the impact of developments in governmental policy and regulation. The Group CO₂ team is responsible for preparing proposed policy positions based on analysis within Shell and external input. The team also ensures consistency in application of our core principles and policy tasks in interactions with policy makers. Reporting to the same manager is the HSSE & SP Assurance and Reporting team, which is accountable for the delivery of Shell's nonfinancial reporting and for auditing the businesses' performance against our HSSE & SP Control Framework requirements, including climate change risk management (Royal Dutch Shell PLC 2018).



(Royal Dutch Shell PLC 2018)

FULLY DISCLOSING CLIMATE RISKS SCORE: FAIR (-1)

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