

The Climate Accountability Scorecard

*Ranking Major Fossil Fuel Companies on
Climate Deception, Disclosure, and Action*
www.ucsusa.org/climatescorecard

Appendix: Planning For a World Free From
Carbon Pollution

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Scoring Guide

TABLE 1. Planning For a World Free From Carbon Pollution Scoring Guide

Planning	
Support for the Paris Climate Agreement	
Good (+1)	Company acknowledges and accepts global goals laid out in the international climate agreement made in Paris in December 2015, in which world leaders committed to limit “the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels” (UNFCCC 2015). The company has made a public statement or taken a public action that illustrates its intention to align its own business model with the goals of the Paris Climate Agreement.
Fair (0)	Company has made a general statement expressing support for the Paris Climate Agreement and its global temperature goals, but has not specified that it will align its business model with Paris goals.
Poor (-1)	Company has not publicly expressed support for the Paris Climate Agreement and its global temperature goals.
Company-wide commitments and targets to reduce greenhouse gas emissions	
Advanced (+2)	<p>Company meets all of the criteria for “good,” and:</p> <ol style="list-style-type: none"> 1. The company has near-term benchmark and long-term transition metrics to measure progress toward the long-term goal, involving a credible plan to ultimately reduce the net greenhouse gas emissions of its business activities to zero. 2. If it envisages a substantial role for offsetting of residual greenhouse gas emissions, the company provides details of that offset mechanism, including its reliability, its availability at sufficient scale for the global transition, and identification of who is going to pay for it. 3. If carbon dioxide removal plays a substantial role in the company’s plans, the company provides details on how such removal will be achieved, paid for, monitored, and maintained—in effect, permanently.
Good (+1)	Company has set a strong, viable, long-term science-based target for reducing greenhouse gas emissions resulting from company-wide operations and the use of its products and has developed a concrete action plan to achieve those reductions in service of the Paris Climate Agreement’s global temperature goal and net-zero emissions. The plan is grounded in available technologies, or, if it depends on future technology, specifies how the company intends to contribute to the development of new technology.
Fair (0)	Company has made a company-wide commitment to reduce greenhouse gas emissions in the service of

	the Paris Climate Agreement's global temperature goal, but has not set a science-based target or developed a concrete action plan to achieve the target.
Poor (-1)	Company has a plan for reducing greenhouse gas emissions, but the plan is not company-wide and is not in the service of a specific temperature goal or target; or company has a greenhouse gas emissions reduction target that expires in the reporting year or earlier.
Egregious (-2)	Company has no company-wide plan for reducing greenhouse gas emissions.
Use of an internal price on carbon in investment decisions	
Advanced (+2)	Company meets all of the criteria for "good" and extends the use of the price on carbon to components of the supply chain that the company does not directly control.
Good (+1)	Company has set a price on carbon that it uses in investment decisions. The price reflects carbon emitted during all components of the supply chain over which the company has control (including refining and processing of fuels).
Fair (0)	Company has set a price on carbon that it uses in investment decisions, but the price is based solely on one segment of the supply chain, such as aggregate downstream greenhouse gas emissions (e.g., greenhouse gas emissions from end-user burning of the fuel).
Poor (-1)	Company has set a price on carbon that is used in investment decisions but does not disclose what that price is, or has disclosed a specific price on carbon but does not explain how that price is used in investment decisions.
Egregious (-2)	Company does not use a price on carbon in investment decisions.
Commitment and mechanism to measure and reduce carbon intensity of supply chain	
Good (+1)	Company has a mechanism to measure and reduce greenhouse emissions on a full lifecycle basis (e.g., has made a public commitment not to invest in higher-carbon fuel sources, such as tar sands, because of their high carbon intensity).
Fair (0)	Company has a public commitment to measure and reduce carbon emissions in its own operations (e.g., has signed onto World Bank's "Zero Routine Flaring by 2030" initiative).
Poor (-1)	Company has no public commitment to measure and reduce carbon emissions in its own operations.
Tracking and Disclosure	
Disclosure of investments in low-carbon technology research and development	
Good (+1)	Company meets all of the criteria for "fair" and also reports on low-carbon investments as a proportion of the total research and development budget and in the context of future budget allocations.
Fair (0)	Company reports annually on low-carbon research and development broken down by specific investments, including in renewable energy technologies and carbon capture and storage.
Poor (-1)	Company does not report annually on low-carbon research and development, and/or does not provide a

	breakdown of specific low-carbon investments.
Disclosure of greenhouse gas emissions reduction plans	
Good (+1)	Company discloses to shareholders details of its company-wide, long-term, science-based greenhouse gas emissions reduction plan, as well as its progress toward interim goals and benchmarks. Plan must have received a score of “Good” or better in the above metric, <i>“company-wide commitments and targets to reduce greenhouse gas emissions.”</i>
Fair (0)	Company discloses details of its company-wide greenhouse gas emissions reduction plans to shareholders.
Poor (-1)	Company does not disclose details of its greenhouse gas emissions reduction plans to shareholders.
Disclosure of how company manages greenhouse gas emissions and associated risks	
Advanced (+2)	Company meets all four of the requirements under “good” disclosure.
Good (+1)	Company meets the requirements for “fair” disclosure and at least two of the following: <ol style="list-style-type: none"> 1. Discloses greenhouse gas emissions reduction timelines. 2. Discloses estimated and actual greenhouse gas emissions reductions resulting from emissions reduction activities undertaken by the company. 3. Specifies whether the company has identified any opportunities to benefit financially from its actions to reduce greenhouse gas emissions. 4. When individual greenhouse gas emissions reduction projects are discussed, provides context about larger impacts on the company, such as whether the results are replicable on a larger scale.
Fair (0)	Company provides a detailed description of actions it is taking to reduce, offset, or limit its own greenhouse gas emissions.
Poor (-1)	Company mentions or makes generic claims about greenhouse gas emissions management, but does not provide details or descriptions of actions it is taking to reduce, offset, or limit its own greenhouse gas emissions and associated risks.
Egregious (-2)	Company does not disclose actions it is taking to reduce, offset, or limit its own greenhouse gas emissions and associated risks.
Disclosure of greenhouse gas emissions	
Advanced (+2)	Company discloses adequate data from the entire fuel production supply chain to estimate lifecycle greenhouse gas emissions. It describes the methodology used to calculate greenhouse gas emissions.
Good (+1)	Company meets the requirements for “fair” disclosure and also discloses indirect greenhouse gas emissions from downstream activities (e.g., final use of products, transportation, and distribution).
Fair (0)	Company provides information about direct greenhouse gas emissions from operations as well as indirect greenhouse gas emissions from upstream activities (e.g., purchased goods and services, waste generated in operations, fuel- and energy-related activities) for the current year, as well as the methodology used to

	calculate emissions.
Poor (-1)	Company provides minimal data, insufficient to inform investors of the magnitude and trend of the company's greenhouse gas emissions (e.g., it discusses the company's greenhouse gas emissions trends but does not provide actual greenhouse gas emissions data, or provides direct greenhouse gas emissions data but no information regarding upstream or downstream activities).
Egregious (-2)	Company does not disclose its greenhouse gas emissions.

DATA SOURCES: 2015 AND 2016 SEC 10-KS OR 20-FS, CDP DISCLOSURES, SUSTAINABILITY REPORTS, AND ANNUAL REPORTS; COMPANY WEBSITES AND COMPANY PRESS RELEASES FOR THE PERIOD JANUARY 1, 2015, TO MAY 31, 2016

TABLE 2. Planning For a World Free From Carbon Pollution Scoring Bands

Area Aggregate Score	Definition	Point range
Advanced	Company is demonstrating best practice in the area	+8 - +12
Good	Company is meeting emerging societal expectations in this area	+3 - +7
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	(-7) - (-3)
Egregious	Company is acting very irresponsibly in this area	(-12) - (-8)

Arch Coal

SUPPORT FOR THE PARIS CLIMATE AGREEMENT

SCORE:

Poor (-1): Company has not publicly expressed support for the Paris Climate Agreement and its global temperature goals.

RATIONALE:

Arch Coal has not publicly expressed support for the Paris Climate Agreement and its global temperature goals.

SOURCE DATA

Arch Coal has not publicly expressed support for the Paris Climate Agreement and its global temperature goals.

COMPANY-WIDE COMMITMENTS AND TARGETS TO REDUCE GREENHOUSE GAS EMISSIONS

SCORE:

Egregious (-2): Company has no company-wide plan for reducing greenhouse gas emissions.

RATIONALE:

Arch Coal has no company-wide plan for reducing greenhouse gas emissions.

SOURCE DATA

Arch Coal has no company-wide plan for reducing greenhouse gas emissions.

USE OF AN INTERNAL PRICE ON CARBON IN INVESTMENT DECISIONS

SCORE:

Egregious (-2): Company does not use a price on carbon in investment decisions.

RATIONALE:

The company does not use a price on carbon in investment decisions.

SOURCE DATA

The company does not use a price on carbon in investment decisions.

COMMITMENT AND MECHANISM TO MEASURE AND REDUCE CARBON INTENSITY OF SUPPLY CHAIN

SCORE:

Poor (-1): Company has no public commitment to measure and reduce carbon emissions in its own operations.

RATIONALE:

Arch Coal has no public commitment to measure and reduce carbon emissions in its own operations.

SOURCE DATA:

Arch Coal has no public commitment to measure and reduce carbon emissions in its own operations.

DISCLOSURE OF INVESTMENTS IN LOW-CARBON TECHNOLOGY RESEARCH AND DEVELOPMENT

SCORE:

Poor (-1): Company does not report annually on low-carbon research and development, and/or does not provide a breakdown of specific low-carbon investments.

ARCH COAL CONTINUED

RATIONALE:

Arch Coal has not reported on low-carbon research development during the study period.

SOURCE DATA

Arch Coal has not reported on low-carbon research development during the study period. A 2011 company presentation provided information on company investments in so-called “clean coal” technologies (Bonacorsi 2011).

DISCLOSURE OF GREENHOUSE GAS EMISSIONS REDUCTION PLANS

SCORE:

Poor (-1): Company does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

RATIONALE:

Arch Coal does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

SOURCE DATA

Arch Coal does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

DISCLOSURE OF HOW COMPANY MANAGES GREENHOUSE GAS EMISSIONS AND ASSOCIATED RISKS

SCORE:

Poor (-1): Company mentions or makes generic claims about greenhouse gas emissions management, but does not provide details or descriptions of actions it is taking to reduce, offset, or limit its own greenhouse gas emissions and associated risks.

RATIONALE:

Company makes generic claims about greenhouse gas emissions management, but does not provide details or descriptions of actions it is taking to reduce, offset, or limit its own greenhouse gas emissions and associated risks.

SOURCE DATA

“On the operations side, Arch is continually evaluating how to reduce our own greenhouse gas emissions and increase the efficiency of our fuel use, while also assessing the most effective approaches for managing our business in a carbon-constrained economy” (Arch Coal 2016).

DISCLOSURE OF GREENHOUSE GAS EMISSIONS

SCORE:

Egregious (-2): Company does not disclose its greenhouse gas emissions.

RATIONALE:

Arch Coal does not disclose its greenhouse gas emissions.

SOURCE DATA

Arch Coal does not disclose its greenhouse gas emissions.

PLANNING FOR A WORLD FREE FROM CARBON POLLUTION TOTAL SCORE: EGREGIOUS (-11)

BP

SUPPORT FOR THE PARIS CLIMATE AGREEMENT

SCORE:

Fair (0): Company has made a general statement expressing support for the Paris Climate Agreement and its global temperature goals, but has not specified that it will align its business model with Paris goals.

RATIONALE:

BP has expressed support for the Paris Climate Agreement and its global temperature goals, both directly and through its membership in the Oil and Gas Climate Initiative (BP PLC 2016a; BP PLC 2016d; OGCI 2015).

SOURCE DATA

- “We welcome the direction provided by the historic agreement reached at the UN climate conference in Paris. Governments, companies and consumers all have to make an appropriate contribution and we will continue to play our part through means including energy efficiency, renewable energy and increasing the share of natural gas in our portfolio” (BP PLC 2016a).
- “BP welcomes the direction provided by the Paris Agreement for countries to determine their contributions to holding temperature rise well below 2°C” (BP PLC 2016d).
- “With the UN-led conference on climate change in Paris approaching, it’s important that we explain our view. In BP, as we and several other companies made clear in a letter to the UN in June, we believe the best mechanism to drive a shift to a lower carbon future is to put a price on carbon. That can be done via taxes or by cap-and-trade systems. Either can be effective if well-constructed” (Dudley 2015).
- “The members of the Oil and Gas Climate Initiative (OGCI) welcome and support the historic result achieved by 195 nations at the 21st Conference of the Parties” [...] “**In alignment with the Paris Agreement, the OGCI’s Joint Declaration issued October 2015 recognized the general ambition to limit global average temperature rise to less than 2C**, and that the current trend of the world’s net greenhouse gas (GHG) emissions is not consistent with this ambition. The Paris Agreement, which strives to limit the global average temperature rise to well below 2C offers the world a clear signal that will help all actors to take actions and make investments towards a lower carbon future. The OGCI believes that this offers significant opportunity for innovation and investments in lower GHG emission solutions” (OGCI 2015).

COMPANY-WIDE COMMITMENTS AND TARGETS TO REDUCE GREENHOUSE GAS EMISSIONS

SCORE:

Egregious (-2): Company has no company-wide plan for reducing greenhouse gas emissions.

RATIONALE:

BP has no company-wide plan for reducing greenhouse gas emissions.

SOURCE DATA

“A company’s GHG emissions can be influenced by a variety of factors that may result from shifts in business activity, production or assets. This makes it difficult to establish an appropriate GHG target that can be cascaded throughout the organization with the objective of achieving cost-effective emission reductions. For these reasons, BP – like some of our peers – does not set enterprise-wide GHG targets and instead requires performance management at a local level through our operating management system” (BP PLC 2016b).

USE OF AN INTERNAL PRICE ON CARBON IN INVESTMENT DECISIONS

SCORE:

Fair (0): Company has set a price on carbon that it uses in investment decisions, but the price is based solely on one segment of the supply chain, such as aggregate downstream greenhouse gas emissions (e.g., greenhouse gas emissions from end-user burning of the fuel).

RATIONALE:

The company has set a cost assumption of \$40 per tonne of CO₂-equivalent for larger projects in industrialized countries (BP PLC 2016c). It is unclear whether the price is applied to all components of the supply chain.

SOURCE DATA

“We require larger projects, and those for which emissions costs would be a material part of the project, to apply a standard carbon cost to the projected GHG emissions over the life of the project. In industrialized countries, our standard cost assumption is currently \$40 per tonne of CO₂ equivalent” (CDP 2015a).

COMMITMENT AND MECHANISM TO MEASURE AND REDUCE CARBON INTENSITY OF SUPPLY CHAIN

SCORE:

Fair (0): Company has a public commitment to measure and reduce carbon emissions in its own operations (e.g., has signed onto World Bank's "Zero Routine Flaring by 2030" initiative).

RATIONALE:

The company signed on to the World Bank's "Zero Routine Flaring by 2030" pledge (World Bank 2015a; World Bank 2015b).

SOURCE DATA:

The company signed on to the World Bank's "Zero Routine Flaring by 2030" pledge (World Bank 2015a; World Bank 2015b). “This ‘Zero Routine Flaring by 2030’ initiative (the Initiative), introduced by the World Bank, brings together governments, oil companies, and development institutions who recognize the flaring situation described above is unsustainable from a resource management and environmental perspective, and who agree to cooperate to eliminate routine flaring no later than 2030.

The Initiative pertains to routine flaring and not to flaring for safety reasons or non-routine flaring, which nevertheless should be minimized. Routine flaring of gas is flaring during normal oil production operations in the absence of sufficient facilities or amenable geology to re-inject the produced gas, utilize it on-site, or dispatch it to a market. Venting is not an acceptable substitute for flaring.

[...] Oil companies that endorse the Initiative will develop new oil fields they operate according to plans that incorporate sustainable utilization or conservation of the field's associated gas without routine flaring. Oil companies with routine flaring at existing oil fields they operate will seek to implement economically viable solutions to eliminate this legacy flaring as soon as possible, and no later than 2030” (World Bank 2015b).

DISCLOSURE OF INVESTMENTS IN LOW-CARBON TECHNOLOGY RESEARCH AND DEVELOPMENT

SCORE:

Fair (0): Company reports annually on low-carbon research and development broken down by specific investments, including in renewable energy technologies and carbon capture and storage.

RATIONALE:

The company reports annually on low- carbon research and development broken down by specific investments and as a proportion of the total research and development budget.

SOURCE DATA

- *CDP disclosures CC2.3f: Please describe the work and how it aligns with your own strategy on climate change:* “We deepen our understanding of future energy, technology and climate change trends through in-house research and in

partnership with leading academics. For example, we review potential long-term energy and low-carbon technology developments out to 2050 and we invest in the UK Energy Technologies Institute. We support energy and climate-related technology and policy research at universities including Oxford, Cambridge, Princeton, Tsinghua, Berkeley, Illinois, Harvard, San Diego, MIT, Tufts and the University of Texas at Austin” (CDP 2016a).

- *CDP disclosure CC5.1a: Please describe your inherent risks that are driven by changes in regulation:* “General environmental regulations, including planning; renewable energy generation; other regulatory drivers: The costs of our public support for certain policies and undertaking education and outreach activities are modest. The costs of our support to technology and policy research is in the hundreds of millions of dollars. For example we committed to investing \$500m over 10 years to the Energy BioSciences Institute in 2006. We also sponsor the Carbon Mitigation Initiative approximately \$2.2 million per annum and have committed to this through to 2020” (CDP 2015a).
- “We employ scientists and technologists at seven major technology centres in the US, UK and Germany. In 2014 we invested \$663 million in research and development (2013 \$707 million, 2012 \$674 million)” (BP PLC 2016a).

DISCLOSURE OF GREENHOUSE GAS EMISSIONS REDUCTION PLANS

SCORE:

Poor (-1): Company does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

RATIONALE:

BP does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

SOURCE DATA

“A variety of factors – such as shifts in business activity, production or assets – can influence a company’s GHG emissions. This makes it difficult to establish an appropriate GHG target that can be cascaded throughout the organization with the objective of achieving cost-effective emission reductions. For these reasons, BP, like some of our peers, does not set enterprise-wide GHG targets” (BP PLC 2016d).

DISCLOSURE OF HOW COMPANY MANAGES GREENHOUSE GAS EMISSIONS AND ASSOCIATED RISKS

SCORE:

Poor (-1): Company mentions or makes generic claims about greenhouse gas emissions management, but does not provide details or descriptions of actions it is taking to reduce, offset, or limit its own greenhouse gas emissions and associated risks.

RATIONALE:

The company mentions energy efficiency efforts and reduction of natural-gas flaring, but does not provide detailed descriptions of these efforts (BP PLC 2016b; BP PLC 2016c).

SOURCE DATA

- “The decrease in our GHG emissions is primarily due to the sale of our Carson and Texas City refineries in the US as part of our divestment programme. See bp.com/greenhousegas for more information about our GHG emissions from upstream production, refining throughput and chemicals produced” (BP PLC 2016a).
- “We aim to manage our greenhouse gas (GHG) emissions through operational energy efficiency, reductions in flaring and venting, and by factoring a carbon cost into our investment appraisals and the engineering design of new projects. (more information on flaring and energy efficiency on linked pages). We report GHG emissions on a CO₂-equivalent basis, including CO₂ and methane for direct emissions and CO₂ for indirect emissions. Indirect emissions are associated with the purchase of electricity, heat, steam or cooling into our operations. We report GHG emissions from all BP’s consolidated entities as well as our share of equity-accounted entities other than BP’s share of Rosneft. Rosneft’s emissions data can be found on its website. Our direct GHG emissions were 48.6 million tonnes (Mte) in 2014 (2013 50.3Mte, 2012 59.8Mte). The decrease in our GHG emissions is primarily due to the sale of our Carson and Texas City refineries in the US as part of our divestment programme. Actions taken by our businesses to sustainably reduce their

emissions amounted to a reduction of 0.1Mte. We have been measuring such sustainable reductions in our operational GHG emissions every year since 2002, and the running total by the end of 2014 was approximately 8.8Mte” (BP PLC 2016b).

- “Following increased emissions in 2013 resulting from start-up activities at our Whiting refinery in the US, overall GHG emissions have decreased in 2014. We expect the GHG intensity of our refining portfolio to remain relatively flat or to decrease at certain refineries due to efficiency projects in progress, even with the trend towards processing heavier crudes.” (BP PLC 2016b).
- “The increase in the GHG intensity of our petrochemicals business was primarily a result of changes to fuel usage at two facilities and a small fire at one plant. The overall downward trend over the past few years reflects ongoing efficiency gains in our aromatics and acetyls businesses.” (BP PLC 2016b).
- “We recognize the role GHGs play in climate change and aim to manage our GHG emissions through operational energy efficiency, reductions in flaring and venting, and by factoring a carbon cost into our investment appraisals and the engineering design of new projects. We also participate in global GHG reduction initiatives. We review our emissions and assess possible mitigation measures at a company-wide level, and provide guidance to our businesses to manage emissions in line with applicable local requirements” (BP PLC 2016d).
- “We take a holistic approach to our GHG management by tracking and understanding our CO2 and methane emissions. We recognize the short-term warming effects of methane, the long-term effects of CO2, and their combined role in climate change” (BP PLC 2016d).
- “GHG regulation is increasing globally with a focus on reducing flaring and methane emissions in many jurisdictions. We expect that GHG regulation will continue to have an impact on our businesses, operating costs and strategic planning, but may also offer opportunities for the development of lower-carbon technologies and businesses” (BP PLC 2016d).

DISCLOSURE OF GREENHOUSE GAS EMISSIONS

SCORE:

Fair (0): Company provides information about direct greenhouse gas emissions from operations as well as indirect greenhouse gas emissions from upstream activities (e.g., purchased goods and services, waste generated in operations, fuel- and energy-related activities) for the current year, as well as the methodology used to calculate emissions.

RATIONALE:

BP provides information about direct greenhouse gas emissions from its operations as well as indirect greenhouse gas emissions from the consumption of purchased electricity, heat, and steam for the current year, and describes the methodology used to calculate emissions. However, disclosure of other indirect emissions, such as purchased goods and services, waste generated in operations, and other transport-related costs, is very limited (BP PLC 2016b; BP PLC 2016c; BP PLC 2016d; CDP 2015a)..

SOURCE DATA

- *CDP disclosure 2015 CC7-10; CC14: GHG emissions accounting, energy and fuel use, and trading*
 - Data reported for scope 1 and 2 for 2014 with details on methodology.
 - Discloses emissions from use of sold products, but no other scope 3 emissions. (CDP 2015a)

TABLE 3. BP’s Greenhouse Gas Emissions

	2010	2011	2012	2013	2014
Direct carbon dioxide (CO₂) Million tonnes	60.2	57.7	56.4	47.0 *	45.5

Direct methane (CH₄) Million tonnes	0.22	0.20	0.17	0.16 *	0.15
Direct greenhouse gas Million tonnes CO₂ equivalent	64.9	61.8	59.8	50.3 *	48.6
Indirect carbon dioxide (CO₂) Million tonnes	10.0	9.0	8.4	6.6	6.6

DATA SOURCES: BP PLC 2016C

- “We report on direct and indirect GHG emissions on a carbon dioxide-equivalent (CO₂e) basis. Direct emissions include CO₂ and methane from the combustion of fuel and the operation of facilities, and indirect emissions include those resulting from the purchase of electricity, heat, steam or cooling. In 2014 we changed our GHG reporting boundary from a BP equity-share basis to an operational control basis. Our approach to reporting GHG emissions broadly follows the IPIECA/API/IOGP Petroleum Industry Guidelines for Reporting GHG Emissions (the IPIECA guidelines). We calculate emissions based on the fuel consumption and fuel properties for major sources rather than the use of generic emission factors. We do not include nitrous oxide, hydro-fluorocarbons, perfluoro-carbons and sulphur hexafluoride as they are not material and it is not practical to collect this data. The decrease in our GHG emissions is primarily due to the sale of our Carson and Texas City refineries in the US as part of our divestment programme. See bp.com/greenhousegas for more information about our GHG emissions from upstream production, refining throughput and chemicals produced.” (BP PLC 2016c).
- “In 2014 we changed the intensity ratio we report on from a financial to a production-based one. The ratio of our total GHG emissions reported on an operational control-based boundary to gross production was 0.25teCO₂e/te production in 2014. Gross production comprises upstream production, refining throughput and petrochemicals produced. In 2013 we reported the ratio of our total GHG emissions on a BP equity-share basis to adjusted revenue of those entities or share of entities included in GHG reporting. This was 0.15kte/ \$million. Adjusted revenue reflects total revenues and other income, less gains on sales of businesses and fixed assets. GHG regulation is increasing globally. For example, we are seeing the growth of emission pricing schemes in Europe, California and China, additional monitoring regulations in the US and increased focus on reducing flaring and methane emissions in many jurisdictions. We expect that GHG regulation will have an increasing impact on our businesses, operating costs and strategic planning, but may also offer opportunities for the development of lower-carbon technologies and businesses. Accordingly, we require larger projects, and those for which emissions costs would be a material part of the project, to apply a standard carbon cost to the projected GHG emissions over the life of the project. In industrialized countries, our standard cost assumption is currently \$40 per tonne of CO₂ equivalent. We use this cost as a basis for assessing the economic value of the investment and as one consideration in optimizing the way the project is engineered with respect to GHG emissions” (BP PLC 2016c).
- “We report GHG emissions on a CO₂-equivalent basis, including CO₂ and methane for direct emissions and CO₂ for indirect emissions. Indirect emissions are associated with the purchase of electricity, heat, steam or cooling into our operations. We report GHG emissions from all BP’s consolidated entities as well as our share of equity-accounted entities other than BP’s share of Rosneft. Rosneft’s emissions data can be found on its website. Our direct GHG emissions were 48.6 million tonnes (Mte) in 2014 (2013 50.3Mte, 2012 59.8Mte). The decrease in our GHG emissions is primarily due to the sale of our Carson and Texas City refineries in the US as part of our divestment programme. Actions taken by our businesses to sustainably reduce their emissions amounted to a reduction of 0.1Mte. We have been measuring such sustainable reductions in our operational GHG emissions every year since 2002, and the running total by the end of 2014 was approximately 8.8Mte” (BP PLC 2016b).
- “We report GHG emissions from all BP’s consolidated entities as well as our share of equity-accounted entities other than BP’s share of Rosneft” (BP PLC 2016d).

BP CONTINUED

- “Our direct GHG emissions were 48.9 million tonnes (Mte) in 2015 (2014 48.6Mte, 2013 50.3Mte). The increase in our reported emissions is due to updating the global warming potential for methane. Without this update, our emissions would have decreased primarily due to divestments in Alaska” (BP PLC 2016d).
- “Each year since 2002 we have estimated the reduction in our reported annual GHG emissions due to efficiency projects – those not driven by regulatory requirements. These projects include reductions in flaring and venting, as well as energy efficiency projects, such as process optimization and waste-heat recovery. By the end of 2015 the running total of these real sustainable reductions exceeded 8.8Mte” (BP PLC 2016d).

RENOUNCING DISINFORMATION ON CLIMATE SCIENCE AND POLICY TOTAL SCORE: POOR (-4)

Chevron

SUPPORT FOR THE PARIS CLIMATE AGREEMENT

SCORE:

Poor (-1): Company has not publicly expressed support for the Paris Climate Agreement and its global temperature goals.

RATIONALE:

Chevron has called the Paris Climate Agreement “a good first step,” but has not expressed support for global temperature goals (Baker 2016).

SOURCE DATA

“And while [Chevron CEO John]Watson praised last year’s international climate agreement in Paris as ‘a good first step,’ he argued that any attempt to set an international price for carbon dioxide emissions would hurt the world’s poor, who need affordable energy to improve their lives. ‘When people talk about a price on carbon, you’re talking about raising the price of energy—you’re talking about raising the price of everything you consume,’ he told reporters at Chevron’s San Ramon headquarters. ‘The people arguing for a price on carbon should be prepared to say what they’re willing to meet without.’” [...] “Watson told shareholders that even in the wake of the Paris accord, worldwide demand for oil will continue to rise for decades. ‘Under any scenario going forward, our products are going to be needed’” (Baker 2016).

COMPANY-WIDE COMMITMENTS AND TARGETS TO REDUCE GREENHOUSE GAS EMISSIONS

SCORE:

Poor (-1): Company has a plan for reducing greenhouse gas emissions, but the plan is not company-wide and is not in the service of a specific temperature goal or target; or company has a greenhouse gas emissions reduction target that expires in the reporting year or earlier.

RATIONALE:

The company has a plan for reducing greenhouse gas emissions, but the plan is not in the service of a specific temperature goal; it also has a reduction target for greenhouse gas emissions that expires in the reporting year or earlier (Chevron Corporation 2016a).

SOURCE DATA

CDP CC3 Targets and initiatives: Chevron has set absolute targets. One target expired in 2014 and the other expired in 2015 (Chevron Corporation 2016a).

USE OF AN INTERNAL PRICE ON CARBON IN INVESTMENT DECISIONS

SCORE:

Poor (-1): Company has set a price on carbon that is used in investment decisions but does not disclose what that price is, or has disclosed a specific price on carbon but does not explain how that price is used in investment decisions.

RATIONALE:

Chevron uses an internal price on carbon, but it pertains only to direct emissions and is not publicly disclosed. The company does not disclose a specific price, stating only that it varies by geographical location depending on existing and expected level of regulation (Chevron Corporation 2016c).

SOURCE DATA

- *CDP CC2.2c Does your company use an internal price on carbon? Yes*
- *CDP CC2.2d Please provide details and examples of how you company uses an internal price on carbon:*
“i) Scope that the emissions pertain to: Scope 1

ii) Rationale for employing a price: Consideration of greenhouse gas (GHG) issues, climate change related risks and carbon pricing risks are integrated into Chevron's strategy, business planning, and risk management tools and processes. Consistent with Chevron's approach to managing greenhouse gases, the company recognizes the need to reduce GHG emissions where possible. We identify and incorporate into our business planning anticipated financial and operational impacts of carbon regulation.

iii) Actual price used: the price varies by geographical location depending on the existing and expected level of regulation.

iv) Variances in prices over time and across geographies: When assessing the risk of a carbon restricted world, Chevron considers the world's energy demand, the role fossil fuels play in providing that energy, the evolution of energy and climate policies, advancement of energy and climate policies and advancement of new energy technologies. In view of the continuing global demand for oil and gas, the substantial future investment required to meet that demand, and investment decisions to explore for and/or develop resources that are phased and made with a market view in mind, the risk exposure to current assets and capital investments in such a scenario is minimal. Chevron is well positioned to provide affordable energy in a lower carbon energy future. Further, Chevron conducts periodic scenario analyses that incorporate the cost of future carbon emissions. Indicative carbon price forecasts allow estimation of potential financial risk on a consistent basis. We developed tools to identify, assess and rank emissions reduction methods; conduct economic analysis; and integrate GHG factors into decision making and overall project development and management.

v) Who is responsible for determining the price: Chevron's Carbon Markets Team, facilitated by Corporate HES, has developed tools to assess the exposure of the company to existing and future laws, policies and regulations.

vi) Examples of how carbon pricing affects investment decisions: For example, one tool helps identify and assess the viability of potential Clean Development Mechanism (CDM) carbon emissions reduction projects. The CDM is an agreement under the Kyoto Protocol that encourages investment in ventures to reduce emissions in developing countries. Our CDM tool offers a systematic approach to prioritizing opportunities and assessing the likelihood of their success. For major capital project development and approval, we estimate a project's incremental emissions profile, assess the financial impact of GHG regulations, and describe the emissions reduction options considered and implemented. All capital projects of more than \$5 million must conduct an initial analysis to estimate emissions and their potential range of carbon costs and benefits. Analyses are then integrated into the capital projects planning process" (Chevron Corporation 2016a).

COMMITMENT AND MECHANISM TO MEASURE AND REDUCE CARBON INTENSITY OF SUPPLY CHAIN

SCORE:

Poor (-1): Company has no public commitment to measure and reduce carbon emissions in its own operations.

RATIONALE:

Chevron has no public commitment to measure and reduce carbon emissions in its own operations.

SOURCE DATA:

Chevron has no public commitment to measure and reduce carbon emissions in its own operations.

DISCLOSURE OF INVESTMENTS IN LOW-CARBON TECHNOLOGY RESEARCH AND DEVELOPMENT

SCORE:

Poor (-1): Company does not report annually on low-carbon research and development, and/or does not provide a breakdown of specific low-carbon investments.

RATIONALE:

The company does not provide an annual breakdown of specific low-carbon investments.

SOURCE DATA

Has investments in "research and development of carbon capture and storage, solar technologies, waste heat and waste pressure to energy, energy storage and transmission, bioenergy, geothermal power, and water treatment and reuse technologies," but does not disclose amount of total R&D spending that went towards low-carbon investments (Chevron Corporation 2016a).

DISCLOSURE OF GREENHOUSE GAS EMISSIONS REDUCTION PLANS**SCORE:**

Poor (-1): Company does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

RATIONALE:

Chevron does not disclose details of its company-wide plans for reducing greenhouse gas emissions to shareholders.

SOURCE DATA

Chevron does not disclose details of its company-wide plans for reducing greenhouse gas emissions to shareholders.

DISCLOSURE OF HOW COMPANY MANAGES GREENHOUSE GAS EMISSIONS AND ASSOCIATED RISKS**SCORE:**

Fair (0): Company provides a detailed description of actions it is taking to reduce, offset, or limit its own greenhouse gas emissions.

RATIONALE:

Chevron provides a detailed description of efforts to reduce natural-gas flaring and to improve efficiency in its operations, which it identifies as its two primary sources of greenhouse gas emissions. It also provides data on emissions reduced reductions and total emissions from management activities (Chevron Corporation 2016a; Chevron Corporation 2016c).

SOURCE DATA

"At Chevron, we are taking significant steps to manage greenhouse gases (GHGs) while supporting the growth of the global economy. We are committed to managing our carbon emissions by improving energy efficiency in our day-to-day operations. We conduct inventories of our emissions, we undertake projects to manage operating emissions and we apply innovative technologies to continually improve the energy efficiency of our operations. We also assess the GHG emissions of our capital projects. When developing and approving major capital projects, we estimate a project's incremental emissions profile, assess the final financial impact of GHG regulations and describe the emissions reduction options considered and implemented. We have developed tools to identify, assess, and rank emissions reductions methods, conduct economic analysis, and integrate GHG factors into decision making and overall project development and management. For more information about Chevron's position on climate change, see our Climate Change page.

What we're doing:

The two primary sources of our GHG emissions are combustion of fuels during our operations and, in some locations, flaring of the natural gas that is extracted along with crude oil. In 2014, emissions were 56 million metric tons of CO₂ equivalent, better than our goal of 58 million metric tons. Chevron consistently ranks among the best in our industry when it comes to leadership in disclosing information about climate change practices and greenhouse gas (GHG) emissions by CDP (formerly the Carbon Disclosure Project). CDP is an international, not-for-profit organization providing a system for companies to measure, disclose, manage and share vital environmental information. In CDP's 2014 analysis (783 KB), our score of 95 of 100 was the highest of all our integrated oil and gas competitors. Our high score indicates we are providing robust climate data and have a good understanding of climate change-related issues affecting Chevron. Recognizing the importance of independent review and verification of our emissions inventory process and results, we engaged Ernst & Young to conduct a third-party verification of our operated assets' GHG emissions for 2010 through 2012. In 2013, we began an

annual independent review of our GHG emissions inventory. Every year we audit one-third of the inventory. Read Ernst & Young's report (191 KB).

Reductions in Flaring

Chevron is reducing natural gas flaring and venting and the greenhouse gas emissions that result from this practice. As a member of the World Bank-led Global Gas Flaring Reduction Partnership, Chevron has helped develop country-specific plans to minimize gas flaring. We seek feasible opportunities to reduce flaring and venting in our global operations. In early 2010, Tengizchevroil in Kazakhstan—of which Chevron has a 50 percent interest—stopped flaring natural gas except when necessary for safety. Through the four-year, \$258 million gas utilization project, Tengizchevroil has achieved a 94 percent reduction in the volume of gas flared when compared to 2000. For more than 15 years, Chevron has invested in a series of flare-reduction efforts in western Africa. Since 2009, our Agbami facility off the shores of Nigeria has been operating with no routine flaring because the associated gas is reinjected, demonstrating the ability to develop new oil production facilities without routine flaring. Chevron continues to work with its production partners in Nigeria on a series of additional projects to address the remaining flares. Projects that focus on the capture and delivery of natural gas from existing flares and other sources to serve new gas markets throughout western Africa are included in these efforts. The Angola Liquefied Natural Gas (LNG) facility will reduce natural gas flaring and greenhouse gas emissions from offshore producing areas. To learn more about our greenhouse gas management efforts, read Additional Information on Chevron's Greenhouse Gas Management Activities (132 KB). For an in-depth look at Chevron emissions data, refer to our Corporate Responsibility Report (3.3 MB).

Carbon Dioxide Injection

Chevron Australia Pty Ltd continues construction of the Gorgon Liquefied Natural Gas Project on Barrow Island, off the northwest coast of Australia. Gorgon includes one of the largest carbon dioxide injection projects in the world. The carbon dioxide present in the natural gas will be injected into a sandstone reservoir more than 1.5 miles (2.4 km) below Barrow Island. This carbon dioxide is extracted from the natural gas as a part of normal gas-processing operations and would otherwise have been vented to the atmosphere. Over the life of the project, approximately 120 million tons of carbon dioxide is expected to be safely injected. We also are participating in a similar project in Alberta, Canada, called Quest. This joint venture injects carbon dioxide from the Athabasca oil sands project” (Chevron Corporation 2016b).

DISCLOSURE OF GREENHOUSE GAS EMISSIONS

SCORE:

Fair (0): Company provides information about direct greenhouse gas emissions from operations as well as indirect greenhouse gas emissions from upstream activities (e.g., purchased goods and services, waste generated in operations, fuel- and energy-related activities) for the current year, as well as the methodology used to calculate emissions.

RATIONALE:

The company provides information about direct greenhouse gas emissions from operations as well as indirect greenhouse gas emissions from consumption of purchased electricity, heat, or and steam for the current year, and also describes the methodology used to calculate emissions. However, Chevron’s disclosure of other indirect emissions, such as purchased goods and services, waste generated in operations, and other transport-related costs, is very limited (Chevron Corporation 2016a).

SOURCE DATA

- *CDP disclosure 2015 CC7-10; CC14: GHG emissions accounting, energy and fuel use, and trading*
 - Data reported for scope 1 and 2 for 2014 with details on methodology.
 - Discloses emissions from use of sold products, but no other scope 3 emissions (Chevron Corporation 2016a).

TABLE 4. Chevron's 2014 Greenhouse Gas Emissions (metric tonnes CO₂e)

	Scope 1	Scope 2
Upstream	35493910	2603378
Downstream	19896100	1886720
Other	356112	196604

DATA SOURCES: CHEVRON CORPORATION 2016A

PLANNING FOR A WORLD FREE FROM CARBON POLLUTION TOTAL SCORE: POOR (-6)

ConocoPhillips

SUPPORT FOR THE PARIS CLIMATE AGREEMENT

SCORE:

Poor (-1): Company has not publicly expressed support for the Paris Climate Agreement and its global temperature goals.

RATIONALE:

ConocoPhillips expressed conditional support for the Paris Climate Agreement in advance of its adoption but has not explicitly endorsed the agreement or its global temperature goals since they were finalized (Volcovici 2015).

SOURCE DATA

“Oil and gas producer ConocoPhillips on Friday said it would support a UN climate change agreement if it met its own policy principles, including creating a ‘level playing among energy sources and between countries.’

The comments by the Houston-based company were a clarification of its position on the proposed UN agreement after it earlier in the week answered ‘yes’ to a question in a climate change survey that asked whether it backed a 2015 UN accord.

The company's partial endorsement comes as pressure grows on U.S. oil majors to follow the lead of European counterparts who backed the UN climate negotiation process and called for a global carbon pricing system to tackle carbon emissions.

The survey by the Carbon Disclosure Project (CDP) asked 2,000 companies whether their boards of directors would support a UN deal that would limit the rise in global temperatures to 2 degrees C.

The CDP on Wednesday pointed to ‘yes’ responses by Conoco Phillips and Russian energy giant Gazprom. By Thursday the CDP dropped the mention of ConocoPhillips and changed the company’s ‘yes’ answer on the survey to a blank after the oil major complained the UK-based organization had not accurately reflected its position.

‘In hindsight, had we known CDP would only include one part of our answer, we would not have responded with an unqualified ‘yes,’” the company said in a statement.

Among Conoco's other conditions for supporting a global deal are that an agreement that avoids technology mandates and promotes investment in research and development.

EUROPEAN-US DIVIDE

Six European majors, including Shell and Total, tried to get US peers to join them in a global sector-wide response to the climate talks and back a global carbon pricing system, but they declined.

‘This move by ConocoPhillips highlights the widening gap between European majors who have called for a carbon price and the North American majors,’ said Shanna Cleveland, senior manager at environmental advocacy nonprofit Ceres.

The Obama administration has been reaching out to the U.S. private sector for political and financial support to bolster its quest for a deal at the conclusion of the Nov. 30-Dec. 11 UN climate summit.

In July, more than a dozen well-known companies, including Apple, GM and Google, signed on to the American Business Act on Climate Pledge to support U.S. efforts to secure a climate deal. None of those were fossil fuel companies.

Tim Smith, director of shareholder engagement at Walden Asset Management, a responsible investment portfolio management firm, said investors have been pressing ConocoPhillips to improve its climate position by challenging some of the trade groups it belongs to, such as the U.S. Chamber of Commerce.

The Chamber wants to block the regulations needed for the U.S. to meet its Paris emission reduction pledge.

Smith said Conoco faces competing demands from green and investor-activist groups and from industry lobby groups worried that a UN deal will call for a total phase-out of fossil fuels.

‘They are looking over both shoulders to see where the pressures are coming from,’ he said.” (Volcovici 2015)

COMPANY-WIDE COMMITMENTS AND TARGETS TO REDUCE GREENHOUSE GAS EMISSIONS

SCORE:

Poor (-1): Company has a plan for reducing greenhouse gas emissions, but the plan is not company-wide and is not in the service of a specific temperature goal or target; or company has a greenhouse gas emissions reduction target that expires in the reporting year or earlier.

RATIONALE:

The company has set limited, short-term emissions reduction goals, but not in the service of a long-term temperature goal (ConocoPhillips 2015a).

SOURCE DATA

- *CDP CC3 Targets and initiatives:* ConocoPhillips has disclosed absolute and intensity targets. The absolute target expired in 2014; the intensity targets expired in 2014 and 2016 (ConocoPhillips 2015a).
- “We delivered GHG emission reductions in the range of 2.5 to 5% against our forecast for each of the last 5 years. In order to increase our focus on emission reductions, we have set an overall company GHG emission reduction target of 3 to 5% against our business-as-usual forecast for 2015” (ConocoPhillips 2015b).
- “Approximately 100% of our facilities are covered by GHG-related reporting and/or permitting requirements, and 24% of ConocoPhillips facilities operate in countries with specific GHG emission reduction targets, including emission control legislation or regulation in Canada, Europe and the United States. For example, the Specified Gas Emitters Regulation (SGER) in Alberta, Canada requires large facilities to reduce facility emissions intensity by 12% after eight years of commercial operation. We are on track to meet the emission reduction targets before the compliance deadline.

We continue to demonstrate our commitment to addressing climate change by taking action to reduce GHG emissions by:

- Implementing reduction plans at the operational level.
- Complying with existing regulatory GHG targets.
- Investing in lower-carbon energy and through active participation in efforts to develop sound government policy for GHG regulation.

In support of our commitment, the company implements a corporate-wide Climate Change Action Plan that requires business units and major assets to develop and maintain climate change management plans. Each plan includes:

- GHG emission measurements and forecast.
- Identification of key risks and opportunities.
- Business appropriate goals and metrics.

We will continue to report progress on our plans, emissions data, emission reduction results, investments, and policy engagement as part of our regular updates to the Sustainable Development Report. The report is updated annually with consideration of feedback from stakeholders.

We also report progress through organizations such as CDP (formerly Carbon Disclosure Project), which assesses companies on both their actions and disclosure related to GHG emissions and climate change related activities.

ConocoPhillips was placed in performance band ‘B’ with a disclosure score of 89 out of 100 for its 2014 CDP response, reflecting positive performance and disclosure” (ConocoPhillips 2016d).

USE OF AN INTERNAL PRICE ON CARBON IN INVESTMENT DECISIONS

SCORE:

Poor (-1): Company has set a price on carbon that is used in investment decisions but does not disclose what that price is, or has disclosed a specific price on carbon but does not explain how that price is used in investment decisions.

RATIONALE:

The company uses an estimated market cost of greenhouse gas emissions ranging from \$6 to \$51 per tonne to evaluate future project opportunities. The price varies based on timing and geography, and it is unclear how the price is used in investment decisions (ConocoPhillips 2016c; ConocoPhillips 2015a).

SOURCE DATA

- CDP CC2.2c-d

- *Does your company use an internal price on carbon? “Yes”*
- *Please provide details and examples of how your company uses an internal price on carbon* “For operations in countries with existing or imminent GHG regulation, the cost of regulatory compliance is evaluated based on specific regulation and local greenhouse gas pricing information. This information is incorporated into the basecase economic analysis for ongoing and new capital expenditures. For operations in countries without existing or imminent GHG regulation, all capital projects with a total installed cost of \$150 million or greater or that result in a change to annual emissions in excess of 25,000 metric tons of CO₂ equivalent are required to perform a sensitivity analysis that includes carbon cost as part of the project’s economic analysis. The company uses an estimated market cost of greenhouse gas emissions in the range of \$6 to \$51 per tonne (in 2014 uninflated terms) depending on the timing and country or region to evaluate future project opportunities.” (ConocoPhillips 2015a)
- “The company uses an estimated market cost of GHG emissions in the range of \$8 to \$35 per tonne depending on the timing and country or region to evaluate future opportunities” (ConocoPhillips 2016c).

COMMITMENT AND MECHANISM TO MEASURE AND REDUCE CARBON INTENSITY OF SUPPLY CHAIN

SCORE:

Poor (-1): Company has no public commitment to measure and reduce carbon emissions in its own operations.

RATIONALE:

The company has no public commitment to measure and reduce carbon emissions in its own operations.

SOURCE DATA:

The company has no public commitment to measure and reduce carbon emissions in its own operations.

DISCLOSURE OF INVESTMENTS IN LOW-CARBON TECHNOLOGY RESEARCH AND DEVELOPMENT

SCORE:

Poor (-1): Company does not report annually on low-carbon research and development, and/or does not provide a breakdown of specific low-carbon investments.

RATIONALE:

ConocoPhillips does not report annually on low-carbon research and development, and does not provide a breakdown of specific low carbon investments (ConocoPhillips 2016c; ConocoPhillips 2015a).

SOURCE DATA

- *CDP CC2.2a: Please describe the process of how climate change is integrated into your business strategy and any outcomes of this process*
 - “We believe that this gains a strategic advantage as follows: our focus on our existing and future GHG footprint gives us long term data to help us make better long term decisions; our focus on operations and projects enables us to take advantage of low cost and revenue generating efficiency improvements and emission reductions which reduce our compliance costs today and into the future; our focus on research and development of technology helps us to understand advances in GHG mitigation and alternative energy technologies which may help or pose a risk to the demand for our products in the future; Our focus on stakeholder engagement helps us to adapt to rapidly changing societal needs” (ConocoPhillips 2015a).
- *CDP CC2.4a: Please describe your board’s position on what an effective agreement would mean for your organization and activities that you are undertaking to help deliver this agreement at the 2015 United Nations Climate Change Conference in Paris (COP21).*
 - “We believe that effective climate change policy must be aligned with the following principles: [...] promote government and private sector investment in energy research and development” (ConocoPhillips 2015a).

- “At the end of 2014, we held a total of 912 active patents in 56 countries worldwide, including 367 active U.S. patents. During 2014 we received 51 patents in the United States and 74 foreign patents. Our products and processes generated licensing revenues of \$46 million in 2014. The overall profitability of any business segment is not dependent on any single patent, trademark, license, franchise or concession. Company-sponsored research and development activities charged against earnings were \$263 million, \$258 million and \$221 million in 2014, 2013 and 2012, respectively” (ConocoPhillips 2016c).

DISCLOSURE OF GREENHOUSE GAS EMISSIONS REDUCTION PLANS

SCORE:

Poor (-1): Company does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

RATIONALE:

The company does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

SOURCE DATA

The company does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

DISCLOSURE OF HOW COMPANY MANAGES GREENHOUSE GAS EMISSIONS AND ASSOCIATED RISKS

SCORE:

Fair (0): Company provides a detailed description of actions it is taking to reduce, offset, or limit its own greenhouse gas emissions.

RATIONALE:

The company provides details about efforts to improve energy efficiency, reduce natural-gas flaring, and reduce the intensity of emissions from oil sands (ConocoPhillips 2016c; ConocoPhillips 2015b).

SOURCE DATA

- “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; developing systems to handle GHG market transactions.
 - Evaluating business opportunities such as the creation of offsets and allowances; carbon capture and storage; 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.

The Company uses an estimated market cost of GHG emissions in the range of \$7 to \$47 per tonne depending on the timing and country or region to evaluate future opportunities” (ConocoPhillips 2016c)
- “In 2014, ConocoPhillips businesses worldwide completed numerous projects to improve energy efficiency, recover product and reduce GHG emissions. Examples include:
 - Reduced methane venting during well completions
 - Plunger lift optimization
 - Optimized compression
 - Replacement of high bleed controllers
 - Electrification of central facilities

These projects are estimated to have reduced or avoided 0.9 million tonnes of CO₂e emissions in 2014, bringing our cumulative emissions reductions since the implementation of our first Climate Change Action Plan in 2009 to 6.2 million tonnes of CO₂ equivalent – an annual average reduction of 3.8% against the forecast for each year

It is important to note that emission reductions resulting from some projects, for example reduced methane venting during well completions, occur only at the time that the activity takes place, whereas others will continue to deliver energy efficiency and GHG reduction benefits for a number of years into the future.

The list above does not represent a complete inventory of ConocoPhillips GHG reduction activities and the resulting emission reductions have not all been third-party verified.” (ConocoPhillips 2016d).

- “2015 Greenhouse Gas Reduction Target

We delivered GHG emission reductions in the range of 2.5 to 5% against our forecast for each of the last 5 years. In order to increase our focus on emission reductions, we have set an overall company GHG emission reduction target of 3 to 5% against our business-as-usual forecast for 2015” (ConocoPhillips 2016d).

- “Oil Sands GHG Intensity

We recognize that there are questions about GHG emissions from oil sands production.

Industry has successfully reduced the GHG intensity per barrel of oil sands crude produced by 28% since 1990. To capture both economic and environmental benefits, we continue to work to reduce per-barrel GHG intensity. We are investigating technologies focused on running our facilities more efficiently, using less energy, and reducing greenhouse gas and other air emissions. We are also designing plans for improved heat integration and testing an enhanced oil production technology, both aimed at maximizing fuel efficiency while reducing air emissions associated with steam generation.

We are evaluating technologies that address environmental performance including:

- Flow Control Device (FCD). This technology improves how efficiently the steam injected in a well flows to the bitumen resource. This reduces the steam required to produce each barrel of bitumen (known as the steam-to-oil ratio, or SOR) and the associated GHG emissions intensity. While still in early testing, flow control devices may help us reduce our GHG emissions and water use intensity by approximately 10—20%.
- Enhanced steam-assisted gravity drainage (e-SAGD). Injecting lighter hydrocarbons along with steam reduces the viscosity of the bitumen in our wells using less steam and, therefore, less fuel gas. This technology may reduce our steam-to-oil ratio compared to a typical SAGD process, which could reduce our GHG emissions and water use by 15—35% on an intensity basis.
- Fishbone well configuration. A fishbone well configuration involves drilling a channel and extending 30-centimetre-wide "ribs" between a producing well and adjacent steam chambers. The process distributes heat more evenly, reducing our fuel consumption and related GHG emissions per barrel of bitumen produced. This technology is currently being piloted at our Surmont site, and could reduce our GHG emissions intensity by 10—20% if successful.
- Gas turbine once-through steam generator (GT-OTSG). In conventional steam generation, natural gas is burned to heat water and turn it into steam. A GT-OTSG reuses waste heat that comes from a gas-powered turbine, reducing the amount of natural gas that must be burned in a steam generator. The turbine also produces electricity, reducing our demands on grid-purchased electricity. GT-OTSG increases the efficiency of steam generation from approximately 80 percent to between 90 and 95 percent. We anticipate that this technology could reduce our GHG emissions intensity by 10—15% and oxides of nitrogen (NO_x) emissions intensity by 40—50%, compared to a baseline of using a once-through steam generator and a natural gas combined-cycle turbine for generating electricity” (ConocoPhillips 2016d).

DISCLOSURE OF GREENHOUSE GAS EMISSIONS

SCORE:

Good (+1): Company provides information about direct greenhouse gas emissions from operations as well as indirect greenhouse gas emissions from upstream activities (e.g., purchased goods and services, waste generated in operations, fuel- and energy-related activities) for the current year, as well as the methodology used to calculate emissions, and also

discloses indirect greenhouse gas emissions from downstream activities (e.g., final use of products, transportation, and distribution).

RATIONALE:

The company provides information about direct greenhouse gas emissions from its operations; indirect greenhouse gas emissions from consumption of purchased electricity, heat, or steam for the current year; and other indirect emissions such as those resulting from downstream transportation and distribution, processing and use of sold products, and upstream transportation and distribution. The company discloses the methodology used to calculate emissions (ConocoPhillips 2015a).

SOURCE DATA

- *CDP CC7-10; CC14: GHG emissions accounting, energy and fuel use, and trading*
 - Data reported for scope 1 and 2 for 2014 with details on methodology.
 - Discloses emissions from use of sold products, as well as other categories of scope three emissions such as upstream/downstream transportation and distribution and processing (ConocoPhillips 2015b)
- “In 2014, total CO₂ equivalent GHG emissions (CO₂e) were approximately 27.5 million metric tons, representing a decrease of 0.34% or 0.1 million metric tons from 2013. In 2013 the company adopted the 100-year global warming potentials from the IPCC 4th Assessment Report in the calculation of carbon dioxide equivalents in all voluntary external reporting. Both 2013 and 2014 reflect the accounting change; prior years do not. Values reflecting the old basis for 2013 and 2014 are shown as a dash line on the charts. Total GHG Emissions depicted in the chart represent Scope 1 emissions of CO₂ from operations plus the CO₂ equivalent (CO₂e) emissions of Methane and Nitrous Oxide plus Scope 2 emissions of CO₂ emitted from the generation of purchased energy from third-party suppliers. In 2014, CO₂ from operations increased 0.94 million metric tons from 2013. Methane emissions decreased 0.82 million metric tons CO₂e. Nitrous Oxide emissions decreased 0.01 million metric tons CO₂e. CO₂ emissions from purchased energy declined 0.20 million metric tons. Analysis of each GHG follows. Primary drivers for the CO₂ from operations increase was increased gas production and flaring, and increased drilling. Primary drivers for the methane reduction were plunger lift optimization, improved equipment inventory and calculation methodology. (Emissions from 2010-2014, in total and per unit of production, including E&P and other. Also detail on flaring and energy consumption)” (ConocoPhillips 2016a).
- “Reducing GHG emissions—In 2013 the Company reduced or avoided GHG emissions by approximately 1,200,000 metric tonnes by carrying out a range of programs across a number of business units” (ConocoPhillips 2016c).
- “The approaches used by the company's businesses in reporting emissions data for greenhouse gases and other compounds are selected from combinations of the following principles that are listed in order of accuracy.
 - Conduct continuous emission monitoring, and with measured exhaust gas flow, compute instantaneous mass emission rate and integrate over the reporting period.
 - Conduct periodic monitoring of exhaust gas flow and composition and estimate mass emission over the reporting period using plant operating records.
 - Estimate emissions using a mass balance and process flow knowledge.
 - Estimate emissions using emission factors provided by the manufacturer's specification, local regulatory authority, AP-42 (Fifth Edition and updates indicated by the EPA website), API Compendium or other industry standard. Businesses are expected to adopt the most accurate reporting methodologies, which may result in changes to data from prior years” (ConocoPhillips 2016a).

PLANNING FOR A WORLD FREE FROM CARBON POLLUTION TOTAL SCORE: POOR (-5)

CONSOL Energy

SUPPORT FOR THE PARIS CLIMATE AGREEMENT

SCORE:

Poor (-1): Company has not publicly expressed support for the Paris Climate Agreement and its global temperature goals.

RATIONALE:

CONSOL Energy has not publicly expressed support for the Paris Climate Agreement and its global temperature goals.

SOURCE DATA

CONSOL Energy has not publicly expressed support for the Paris Climate Agreement and its global temperature goals.

COMPANY-WIDE COMMITMENTS AND TARGETS TO REDUCE GREENHOUSE GAS EMISSIONS

SCORE:

Egregious (-2): Company has no company-wide plan for reducing greenhouse gas emissions.

RATIONALE:

CONSOL Energy has no company-wide plan for reducing greenhouse gas emissions.

SOURCE DATA

CONSOL Energy has no company-wide plan for reducing greenhouse gas emissions.

USE OF AN INTERNAL PRICE ON CARBON IN INVESTMENT DECISIONS

SCORE:

Egregious (-2): Company does not use a price on carbon in investment decisions.

RATIONALE:

The company does not use a price on carbon in investment decisions.

SOURCE DATA

The company does not use a price on carbon in investment decisions.

COMMITMENT AND MECHANISM TO MEASURE AND REDUCE CARBON INTENSITY OF SUPPLY CHAIN

SCORE:

Poor (-1): Company has no public commitment to measure and reduce carbon emissions in its own operations.

RATIONALE:

CONSOL Energy has no public commitment to measure and reduce carbon emissions in its own operations.

SOURCE DATA:

CONSOL Energy has no public commitment to measure and reduce carbon emissions in its own operations

DISCLOSURE OF INVESTMENTS IN LOW-CARBON TECHNOLOGY RESEARCH AND DEVELOPMENT

SCORE:

Poor (-1): Company does not report annually on low-carbon research and development, and/or does not provide a breakdown of specific low-carbon investments.

RATIONALE:

CONSOL Energy does not report annually on low-carbon research and development, and does not provide a breakdown of specific low-carbon] investments (CONSOL Energy Inc. 2016).

SOURCE DATA

“CONSOL Energy maintains a research and development facility that is devoted to fossil fuel production and use. In addition to supporting the production of CONSOL Energy’s natural gas and coal operations, it also focuses on energy development, improving energy efficiency and emissions reduction. Currently there are many interesting projects underway at the research and development facility, including: Improving coal blends for making steel; Replacing diesel fuel and gasoline with natural gas in CONSOL’s coal and gas operations; Developing and demonstrating innovative water treatment technologies for our coal and gas operations; Storing carbon dioxide in unmineable coal seams” (CONSOL Energy Inc. 2016).

DISCLOSURE OF GREENHOUSE GAS EMISSIONS REDUCTION PLANS

SCORE:

Poor (-1): Company does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

RATIONALE:

CONSOL Energy does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

SOURCE DATA

CONSOL Energy does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

DISCLOSURE OF HOW COMPANY MANAGES GREENHOUSE GAS EMISSIONS AND ASSOCIATED RISKS

SCORE:

Fair (0): Company provides a detailed description of actions it is taking to reduce, offset, or limit its own greenhouse gas emissions.

RATIONALE:

The company provides details about efforts taken to reduce emissions, such as reducing process emissions by installing ventilation air methane abatement systems in mines and switching to hybrid and natural gas vehicles in vehicle fleet (CDP 2015b).

SOURCE DATA

CDP disclosure CC3.3c: What methods do you use to drive investment in emissions reduction activities?

- Compliance with regulatory requirements/standards: Because of continuously evolving regulations, such as the GHG Mandatory Reporting Rule and the New Source Performance Standards, CONSOL Energy continually explores new options to maintain compliance with developing regulatory requirements.
- Dedicated budget for other emissions reduction activities: CONSOL Energy has set aside a portion of our R&D budget for projects dedicated to GHG emissions reduction.
- Partnering with governments on technology development: CONSOL Energy will continue to look for opportunities to partner with federal, state, and local government agencies to develop and implement GHG reduction technologies.
- “CONSOL Energy voluntarily committed to adherence to strict performance standard for drilling, completions, and midstream operations through participation in the Center for Sustainable Shale Development (CCSD). In 2014, CONSOL Energy was awarded certification by CSSD after going through a third-party audit by Bureau Veritas, a world-renowned standards certification and third-party verifier selected by CSSD. CONSOL Energy’s entire operations, from construction, drilling, completions, and production to gathering and compression operations were audited for conformance to the strict, beyond-regulatory requirements for land and water protection, and air and greenhouse gas (GHG) emissions reductions. Key achievements of note include: 1) reduced gas flaring by over 70 percent as compared to 2013, despite flowing back 25 percent more wells in 2014, and 2) utilized flares with 98 percent destruction efficiency as compared to the more standard

95 percent, which allowed CONSOL Energy to further reduce its Volatile Organic Compounds and GHG emissions from flaring by 4.7 tons of VOCs and 2000 metric tons of CO₂e” (CDP 2015b).

DISCLOSURE OF GREENHOUSE GAS EMISSIONS

SCORE:

Fair (0): Company provides information about direct greenhouse gas emissions from operations as well as indirect greenhouse gas emissions from upstream activities (e.g., purchased goods and services, waste generated in operations, fuel- and energy-related activities) for the current year, as well as the methodology used to calculate emissions.

RATIONALE:

The company provides information about direct greenhouse gas emissions from operations as well as indirect greenhouse gas emissions from consumption of purchased electricity, heat, or steam for the current year, and describes the methodology used to calculate emissions (CDP 2015b).

SOURCE DATA

- *CDP CC7-10; CC14: GHG emissions accounting, energy and fuel use, and trading*
 - Data reported for scope 1 and 2 for 2014 with details on methodology.
 - Discloses emissions from use of sold products and employee commuting, but no other scope 3 emissions (CDP 2015b)

TABLE 5. CONSOL Energy’s 2014 Greenhouse Gas Emissions (metric tonnes CO₂e)

	Emissions
Scope 1	7549966.24
Scope 2	7856046.81

DATA SOURCES: CHEVRON CORPORATION 2016A

PLANNING FOR A WORLD FREE FROM CARBON POLLUTION TOTAL SCORE: EGREGIOUS (-8)

ExxonMobil

SUPPORT FOR THE PARIS CLIMATE AGREEMENT

SCORE:

Poor (-1): Company has not publicly expressed support for the Paris Climate Agreement and its global temperature goals.

RATIONALE:

ExxonMobil has called the Paris Climate Agreement a “step forward” (McCarron 2016), but has not expressed support for its global temperature goals.

SOURCE DATA

“Signing the Paris accord a step forward. Leaders and representatives from governments around the world gathered at United Nations headquarters in New York this morning to put their signatures on the agreement worked out last December at the COP21 climate conference.

Climate change is a global issue that requires the collaboration of governments, companies, consumers, and other stakeholders to create global solutions. The risks of climate change are real and those risks warrant constructive action by policymakers, the business community, and everyone who uses energy.

What is particularly significant about today’s signing is that this is the first major international agreement to address climate change that features emissions reduction pledges from both developed and developing economies. That’s good news.

Pledges are helpful, but they are just a start. The real test will lie in how they are carried out in the years to come.

With that in mind, it is worth pointing out that policies designed to address climate change need to be clear and guard against duplicative, overlapping, and conflicting regulations, which send mixed signals to the market and impose unnecessary costs on consumers.

This is something we have thought quite a lot about at ExxonMobil. We believe that effective policies are those that:

- Promote global participation
- Let market prices drive the selection of solutions
- Ensure a uniform and predictable cost of greenhouse gas emissions across the economy
- Minimize complexity and administrative costs
- Maximize transparency
- And provide flexibility for future adjustments to react to developments in climate science and the economic impacts of climate policies

These principles can provide a responsible policy framework for structuring society’s response to climate change risk. There is also a role for private industry, in particular for energy companies like ours” (McCarron 2016)

COMPANY-WIDE COMMITMENTS AND TARGETS TO REDUCE GREENHOUSE GAS EMISSIONS

SCORE:

Egregious (-2): Company has no company-wide plan for reducing greenhouse gas emissions.

RATIONALE:

ExxonMobil has no company-wide plan for reducing greenhouse gas emissions.

SOURCE DATA

ExxonMobil has no company-wide plan for reducing greenhouse gas emissions.

USE OF AN INTERNAL PRICE ON CARBON IN INVESTMENT DECISIONS

SCORE:

Poor (-1): Company has set a price on carbon that is used in investment decisions but does not disclose what that price is, or has disclosed a specific price on carbon but does not explain how that price is used in investment decisions.

RATIONALE:

The company has set a price on carbon that is used in investment decisions, requiring an estimate of greenhouse gas-related emissions costs for capital investments. However, it does not disclose that price; only stating that it varies based on geography and may be as much as \$80/ton by 2040. Due to this geographic variation, it is unclear based on current disclosures what aspects of the supply chain must be included in these estimates (ExxonMobil Corporation 2016).

SOURCE DATA

“We update our long-term energy outlook each year — taking into account the most up-to-date demographic, economic and technological information available. This analysis serves as a foundation for our long-term business strategies and investments. We address the potential for future climate change policy, including the potential for restrictions on emissions, by estimating a proxy cost of carbon. This cost, which in some geographies may approach \$80 per ton by 2040, has been included in our Outlook for several years. This approach seeks to reflect potential policies governments may employ related to the exploration, development, production, transportation or use of carbon-based fuels. We believe our view on the potential for future policy action is realistic and, by no means represents a “business as usual” case. We require all of our business lines to include, where appropriate, an estimate of GHG-related emissions costs in their economics when seeking funding for capital investments” (ExxonMobil Corporation 2016).

COMMITMENT AND MECHANISM TO MEASURE AND REDUCE CARBON INTENSITY OF SUPPLY CHAIN

SCORE:

Poor (-1): Company has no public commitment to measure and reduce carbon emissions in its own operations.

RATIONALE:

The company has no public commitment to measure and reduce carbon emissions in its own operations

SOURCE DATA:

The company has no public commitment to measure and reduce carbon emissions in its own operations

DISCLOSURE OF INVESTMENTS IN LOW-CARBON TECHNOLOGY RESEARCH AND DEVELOPMENT

SCORE:

Poor (-1): Company does not report annually on low-carbon research and development, and/or does not provide a breakdown of specific low-carbon investments.

RATIONALE:

ExxonMobil describes carbon capture and sequestration operations and research on advanced biofuels, but does not provide an annual breakdown of specific low-carbon investments (ExxonMobil Corporation 2015b).

SOURCE DATA

- *CDP disclosures CC2.3a: On what issues have you been engaging directly with policy makers?:*
“In addition to our own extensive internal research and development, we sponsor research organizations that are involved in fundamental clean energy technology R&D such as Stanford's GCEP program and MIT's Carbon Sequestration Initiative” (ExxonMobil Corporation 2015b).
- *CDP disclosures CC5.1a: Please describe your inherent risks that are driven by changes in regulation:*
“Response to: International agreements; carbon taxes; cap and trade schemes; emission reporting obligations; produce efficiency regulations and standards; uncertainty surrounding new regulation; general environmental regulations, including planning; renewable energy regulation: ExxonMobil will respond to these uncertainties

- and developments using our traditional approach: disciplined planning and investment, financial strength, efficient and reliable operations, and research and development” (ExxonMobil Corporation 2015b).
- *CDP disclosures CC6.1a: Please describe your inherent opportunities that are driven by changes in regulation:*
 “Response to: general environmental regulations, including planning; emissions reporting obligations; product efficiency regulations and standards; other regulatory drivers: ExxonMobil will respond to these uncertainties and developments using our traditional approach: disciplined planning and investment, risk management, financial strength, efficient and reliable operations, and research and development” (ExxonMobil Corporation 2015b)
 - *CDP disclosure OG6.3: Please describe your current expenses in research and development (R&D) and future R&D expenditure plans for different strategic development areas:*
 “ExxonMobil addresses the risk of climate change in several concrete and meaningful ways. We do so by improving energy efficiency and reducing emissions at our operations, and by enabling consumers to use energy more efficiently through the advanced products we manufacture. In addition, we conduct and support extensive research and development in new technologies that promote efficiency and reduce emissions. In our operations, we apply a constant focus on efficiency that enables us to produce energy to meet society’s needs using fewer resources and at a lower cost. For example, ExxonMobil is a leader in cogeneration at our facilities, with equity ownership in more than 100 cogeneration units at more than 30 sites with over 5500 megawatts of capacity. This capacity, which is equivalent to the electricity needs of approximately 2.5 million U.S. households, reduces the burden on outside power and grid suppliers and can reduce the resulting emissions by powering ExxonMobil’s operations in a more efficient and effective manner. We also constantly strive to reduce the emission intensity of our operations. Cumulative savings between 2005 and 2014 were 21.5 million metric tons (net equity) of CO₂e from ExxonMobil actions, including flare reduction, cogeneration and energy efficiency. Many of ExxonMobil’s products also enable consumers to be more energy efficient and therefore reduce greenhouse gas emissions. Advancements in tire liner technology developed by ExxonMobil allow drivers to save fuel. Our synthetic lubricants also improve vehicle engine efficiency. And lighter weight plastics developed by ExxonMobil reduce vehicle weights, further contributing to better fuel efficiency. ExxonMobil is also the largest producer of natural gas in the United States, a fuel with a variety of consumer uses, including heating, cooking and electricity generation. Natural gas emits up to 60 percent less CO₂ than coal when used as the source for power generation. Research is another area in which ExxonMobil is contributing to energy efficiency and reduced emissions. We are on the forefront of technologies to lower greenhouse gas emissions. For example, ExxonMobil operates one of the world’s largest carbon capture and sequestration (CCS) operations at our LaBarge plant in Wyoming. In a coventurer in another project, the Gorgon natural gas development in Australia, which when operational will have the largest saline reservoir CO₂ injection facility in the world. The company is leveraging its experience with CCS in developing new methods for capturing CO₂, which can reduce costs and increase the application of carbon capture for society. ExxonMobil also is actively engaged, both internally and in partnership with renowned universities and institutions, in research on new breakthrough technologies for energy. ExxonMobil routinely conducts life cycle assessments (LCAs), which are useful to understand whether a technology can result in environmental improvements across a broad range of factors. For example, in 2011 we conducted a LCA in concert with Massachusetts Institute of Technology and Synthetic Genomics Inc. to assess the impact of algal biofuel production on GHG emissions, land use, and water use. The study demonstrated the potential that algae fuels can be produced with freshwater consumption equivalent to petroleum refining, and enable lower GHG emissions. A more recent LCA demonstrated that “well-to-wire” GHG emissions from shale gas are about half that of coal, and not significantly different than emissions of conventional gas. In addition, ExxonMobil is involved in researching emerging technologies that can help mitigate the risk of climate change. For example, the company has conducted research into combustion fundamentals with automotive partners in order to devise concepts to improve the efficiency and reduce emissions of internal combustion engines. ExxonMobil has also developed technology for an onboard hydrogen-powered fuel cell that converts other fuels into hydrogen directly under a vehicle’s hood, thereby eliminating the need for separate facilities for producing and distributing hydrogen. This technology can be up to 80 percent more fuel efficient and emit 45 percent less CO₂ than

conventional internal combustion engines. The company is also a founding member of the Global Climate and Energy Project at Stanford University, a program that seeks to develop fundamental, game-changing scientific breakthroughs that could lower GHG emissions” (ExxonMobil Corporation 2015b)

- Company discloses research and development funding to SEC, but does not disclose how much of their investment goes towards low-carbon technology (ExxonMobil Corporation 2016)

DISCLOSURE OF GREENHOUSE GAS EMISSIONS REDUCTION PLANS

SCORE:

Poor (-1): Company does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

RATIONALE:

The company does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

SOURCE DATA

The company does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

DISCLOSURE OF HOW COMPANY MANAGES GREENHOUSE GAS EMISSIONS AND ASSOCIATED RISKS

SCORE:

Fair (0): Company provides a detailed description of actions it is taking to reduce, offset, or limit its own greenhouse gas emissions.

RATIONALE:

The company provides details about energy efficiency improvements, efforts to reduce natural-gas flaring, expanding cogeneration, and increasing investment in natural gas, with data on emissions reductions and total emissions from management activities (ExxonMobil Corporation 2015a; ExxonMobil Corporation 2015b).

SOURCE DATA

- “Throughout ExxonMobil’s businesses, new and ongoing measures are taken to prevent and minimize the impact of our operations on air, water and ground. These include a significant investment in refining infrastructure and technology to manufacture clean fuels, as well as projects to monitor and reduce nitrogen oxide, sulfur oxide and greenhouse gas emissions, and expenditures for asset retirement obligations. Similarly, 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” (ExxonMobil Corporation 2015c)
- “Mitigating greenhouse gas emissions in our operations (pg 35)
 - We have a robust set of processes designed to improve efficiency, reduce emissions and contribute to effective long-term solutions to manage climate change risks. These processes include, where appropriate, setting tailored objectives at the business, site and equipment levels, and then stewarding progress toward meeting those objectives. Based on decades of experience, ExxonMobil believes this rigorous bottom-up approach is a more effective way to drive efficiency improvement and GHG emissions reduction than simply setting high-level corporate targets. We also believe that continuing to use this approach will yield further improvements in all sectors of our business.
 - Our chairman and members of the management committee have primary responsibility for — and are actively engaged in — managing climate change risks. The board of directors receives annual in-depth briefings that cover updates on public policy, scientific and technical research, and company positions and actions related to climate change. To drive improvement, our merit-driven employee development and compensation systems integrate performance in environmental areas, including emissions and energy efficiency.
 - In the near term, we are working to increase energy efficiency while reducing flaring, venting and fugitive emissions in our operations. In the medium term, we are deploying proven technologies such as cogeneration

and, where technically and economically feasible, carbon capture and sequestration. Longer term, we are conducting and supporting research to develop breakthrough, game-changing technologies.

- In 2014, ExxonMobil's net equity GHG emissions were 122 million CO₂-equivalent metric tons. Over the past several GHG emissions years, our GHG emissions have remained relatively flat, as our efficiency improvements have essentially offset increases in production intensity. Relative to our 2013 performance, our 2014 emissions decreased by approximately 3 million CO₂-equivalent metric tons. This decrease was primarily driven by efficiency improvements outpacing production intensity increases, as well as asset divestments" (ExxonMobil Corporation 2015a)
- "Energy efficiency
 - In 2014, energy used in our operations totaled 1.6 billion gigajoules, which is similar to our 2013 energy usage. Despite an increase in energy intensity in some parts of our business, our focus on efficiency has allowed energy consumption to remain essentially flat over the past five years. Energy consumed in our operations generates more than 80 percent of our direct GHG emissions and is one of our largest operating costs. As such, we have focused on energy efficiency for several decades. Since 2000, we have used our Global Energy Management System in the Downstream and Chemical businesses, and our Production Operations Energy Management System in our Upstream businesses to identify and act on energy-savings opportunities.
 - Between 2002 and 2012, we improved energy efficiency by more than 10 percent in our global refining and chemical manufacturing operations. This began as a U.S. refining industry 10-year objective in 2002 as part of an initiative with the API, which we expanded to include our global refining and chemical manufacturing operations. In the 2012 Solomon Survey, ExxonMobil had five of the 10 most energy-efficient refineries in the Americas, with our Joliet (Illinois) Refinery being the most energy-efficient in the United States. This is an example of how our bottom-up approach has yielded industry-leading energy efficiency and GHG emissions reduction results" (ExxonMobil Corporation 2015a)
- "Flaring
 - In 2014, flaring volume from our combined Upstream, Downstream and Chemical operations totaled 4.5 million metric tons. This represents an increase of 0.8 million metric tons compared with our 2013 performance.
 - The increase in flaring in 2014 was primarily due to typical startup activities at our new LNG facility in Papua New Guinea, and assuming operatorship of the existing Usan production field in Nigeria, where we previously did not report flaring emissions since we did not operate the field. As we begin to apply our operating practices and procedures in the Usan field, we anticipate flaring to decrease. Consistent with the Global Gas Flaring Reduction Initiative, of which ExxonMobil is a charter member, and as specified in our Upstream Flaring and Venting Reduction Environmental Standard for Projects, our aim is to avoid routine flaring and venting of natural gas in new projects and reduce flaring in our existing operations" (ExxonMobil Corporation 2015a).
- "Up Close: Managing the business risks of climate change
 - ExxonMobil believes producing our existing hydrocarbon reserves is essential to meeting growing global energy demand. We enable consumers — especially those in the least-developed and most-vulnerable economies — to pursue higher living standards and greater economic opportunity. We believe all economic energy sources will be necessary to meet growing demand, and the transition of the energy system to lower carbon sources will take many decades due to its enormous scale, capital intensity and complexity. As such, we believe that none of our proven hydrocarbon reserves are, or will become, stranded.
 - ExxonMobil makes long-term investment decisions based in part on our comprehensive annual analysis that underpins our global Outlook for Energy. We project an energy-related CO₂ emissions profile through 2040. This can be compared with the energy-related CO₂ emissions profiles from various scenarios outlined by the IPCC. When we do this, our Outlook emissions profile would closely approximate the IPCC's intermediate Representative Concentration Pathways 4.5 emissions profile in shape, but is slightly under it in magnitude.
 - We address the potential for future climate change policy, including the potential for restrictions on emissions, by estimating a proxy cost of carbon. This cost, which in some geographies may approach \$80 per ton by 2040, has been included in our Outlook for several years. This approach seeks to reflect potential policies governments may employ related to the exploration, development, production, transportation or use of carbon-based fuels. We

believe our view on the potential for future policy action is realistic and, by no means represents a “business as usual” case. We require all of our business lines to include, where appropriate, an estimate of GHG-related emissions costs in their economics when seeking funding for capital investments.

- We evaluate potential investments and projects using a wide range of economic conditions and commodity prices. We apply prudent and substantial margins in our planning assumptions to help ensure competitive returns over a wide range of market conditions. We also financially “stress test” our investment opportunities, which provides an added margin against uncertainties, such as those related to technology development, costs, geopolitics, availability of required materials, services and labor. Stress testing, which differs from alternative scenario planning, further enables us to consider a wide range of market environments in our planning and investment process” (ExxonMobil Corporation 2015a).
- “Venting and fugitive emissions
 - In 2014, our venting and fugitive emissions totaled 3 million CO₂-equivalent metric tons. This represents an increase of 0.8 million metric tons of CO₂-equivalent GHG emissions compared with our 2013 performance. While venting and fugitive emissions, most of which are methane, represent less than 3 percent of our direct GHG emissions, we recognize the importance of reducing these emissions. We continue to look for cost-effective ways to reduce methane and other hydrocarbon emissions in our operations, such as replacing high-bleed pneumatic devices with lower-emission technology and conducting green well completions in targeted Upstream operations.
 - Additionally, we are working with academia, NGOs and governments to better understand the magnitude and characteristics of oil and gas industry methane emissions. One example is XTO Energy’s participation in University of Texas and Environmental Defense Fund studies. These studies quantified the methane leakage rate in the United States from Upstream gas production activities at 0.4 percent of the total gas produced, validating Environmental Protection Agency estimates” (ExxonMobil Corporation 2015a).
- “Cogeneration
 - Through the ongoing incorporation of cogeneration into many of our facilities, ExxonMobil is able to generate power more efficiently than many local utilities. Cogeneration captures heat generated from the production of electricity for use in production, refining and chemical processing operations. Due to its inherent energy efficiency, the use of cogeneration also leads to reduced GHG emissions; our cogeneration facilities alone enable the avoidance of approximately 7 million metric tons per year of GHG emissions.
 - We have interests in approximately 5,500 megawatts of cogeneration capacity in more than 100 installations at more than 30 locations around the world. This capacity is equivalent to the annual energy needs of 2.5 million U.S. homes. In 2014, we added 250 megawatts of additional capacity at our Kearl and Cold Lake sites in Alberta, Canada, as well as 30 megawatts of additional capacity at our Grossenkneten facility in Germany. Since 2005, we have invested more than \$1 billion in cogeneration projects, and we continue to develop additional investment opportunities” (ExxonMobil Corporation 2015a).
- “Carbon capture and sequestration
 - Carbon capture and sequestration (CCS) involves capturing, transporting and sequestering CO₂ in underground geologic formations such as saline reservoirs, depleted oil or gas reservoirs, or deep coal beds. In the future, CCS will likely be one of several important technologies used to help reduce CO₂ emissions, with the greatest opportunity being in the coal- and natural gas-fired power sectors.
 - ExxonMobil has extensive operating experience with the component technologies of carbon capture and sequestration; we captured more than 6 million metric tons for sequestration in 2014 alone. Our LaBarge plant in Wyoming, which sells CO₂ to third parties for enhanced oil recovery, is one of the largest CO₂ capture operations in the world. We have also successfully concluded operations at our Controlled Freeze Zone™ (CFZ™) commercial demonstration unit at LaBarge. The technology is ready for commercial deployment and could provide a more cost-efficient approach to separating CO₂ from natural gas, allowing for the CO₂ to be geosequestered or used in enhanced oil recovery.
 - Additionally, together with partners, we have been capturing and sequestering CO₂ at the Sleipner field in Norway since 1996. ExxonMobil is also a joint-venture participant in the Gorgon natural gas project in Australia,

which includes CCS. Once operational, Gorgon will have the largest reservoir CO₂ injection facility in the world. We continue to look for economic opportunities to expand the use of existing CCS technologies and are pursuing proprietary research aimed at developing more efficient and cost-effective methods for CCS than traditional techniques have demonstrated” (ExxonMobil Corporation 2015a).

DISCLOSURE OF GREENHOUSE GAS EMISSIONS

SCORE:

Fair (0): Company provides information about direct greenhouse gas emissions from operations as well as indirect greenhouse gas emissions from upstream activities (e.g., purchased goods and services, waste generated in operations, fuel- and energy-related activities) for the current year, as well as the methodology used to calculate emissions.

RATIONALE:

The company provides information about direct greenhouse gas emissions from operations as well as indirect greenhouse gas emissions from consumption of purchased electricity, heat, or steam for the current year, and describes the methodology used to calculate emissions. Its disclosure of other indirect emissions, such as purchased goods and services, waste generated in operations, and other transport-related costs, is very limited (ExxonMobil Corporation 2016; ExxonMobil Corporation 2015b).

SOURCE DATA

- *CDP CC7-10; CC14: GHG emissions accounting, energy and fuel use, and trading*
 - Data reported for scope 1 and 2 for 2014 with details on methodology.
 - Discloses emissions from use of sold products, but no other scope 3 emissions (ExxonMobil Corporation 2015b)

TABLE 6. ExxonMobil’s Greenhouse Gas Emissions

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Greenhouse gas emissions, absolute (net equity, CO ₂ -equivalent emissions), millions of metric tons	136	139	135	126	123	126	128	125	125	122
Direct (excluding emissions from exported power and heat)	127	129	125	117	114	117	119	117	117	114
Emissions associated with imported power	9	10	10	9	9	9	9	8	8	8
CO ₂ (excluding emissions from exported power and heat)	131	134	131	122	119	122	125	122	122	118
Methane (CO ₂ -equivalent)	4	4	3	3	3	3	2	2	2	3
Other gases (CO ₂ -equivalent)	1	1	1	1	1	1	1	1	1	1
Emissions from exported power and heat	12	14	14	13	14	13	15	15	16	7
Upstream	22.5	22.6	21.7	21.0	20.1	20.5	20.7	22.3	22.4	23.0
Downstream	22.0	21.8	21.5	21.0	21.0	20.8	20.1	19.5	19.7	19.7
Chemical	63.9	60.9	62.1	59.8	60.7	57.9	57.2	56.3	57.0	53.5
Energy use (billion gigajoules)	1.5	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.6
Energy intensity, normalized versus <i>Global Energy Management System (GEMS)</i> base year (2002)—refining	95.1	94.8	94.2	93.7	92.8	91.8	90.9	90.0	90.5	90.3
Energy intensity, normalized versus GEMS base year	91.2	90.4	89.6	90.4	88.6	87.6	87.3	88.2	88.8	86.4

EXXONMOBIL CONTINUED

(2002)—chemical steam cracking										
Hydrogen flaring (worldwide activities), millions of metric tons	7.7	8.2	8.0	5.7	4.4	3.6	4.1	3.6	3.7	4.5
Cogeneration capacity in which we have interest, gigawatts	4.3	4.3	4.5	4.6	4.7	4.7	5.0	5.2	5.3	5.5

DATA SOURCES: EXXONMOBIL 2015A

PLANNING FOR A WORLD FREE FROM CARBON POLLUTION TOTAL SCORE: POOR (-7)

Peabody Energy

SUPPORT FOR THE PARIS CLIMATE AGREEMENT

SCORE:

Poor (-1): Company has not publicly expressed support for the Paris Climate Agreement and its global temperature goals.

RATIONALE:

Peabody Energy has not publicly expressed support for the Paris Climate Agreement and its global temperature goals.

SOURCE DATA

Peabody Energy has not publicly expressed support for the Paris Climate Agreement and its global temperature goals.

COMPANY-WIDE COMMITMENTS AND TARGETS TO REDUCE GREENHOUSE GAS EMISSIONS

SCORE:

Egregious (-2): Company has no company-wide plan for reducing greenhouse gas emissions.

RATIONALE:

Peabody has no company-wide plan for reducing greenhouse gas emissions.

SOURCE DATA

Peabody has no company-wide plan for reducing greenhouse gas emissions.

USE OF AN INTERNAL PRICE ON CARBON IN INVESTMENT DECISIONS

SCORE:

Egregious (-2): Company does not use a price on carbon in investment decisions.

RATIONALE:

The company does not use a price on carbon in investment decisions.

SOURCE DATA

The company does not use a price on carbon in investment decisions.

COMMITMENT AND MECHANISM TO MEASURE AND REDUCE CARBON INTENSITY OF SUPPLY CHAIN

SCORE:

Poor (-1): Company has no public commitment to measure and reduce carbon emissions in its own operations.

RATIONALE:

The company has no public commitment to measure and reduce carbon emissions in its own operations

SOURCE DATA:

The company has no public commitment to measure and reduce carbon emissions in its own operations

DISCLOSURE OF INVESTMENTS IN LOW-CARBON TECHNOLOGY RESEARCH AND DEVELOPMENT

SCORE:

Poor (-1): Company does not report annually on low-carbon research and development, and/or does not provide a breakdown of specific low-carbon investments.

RATIONALE:

Peabody Energy generally mentions its investments in clean coal technology, but has not provided a breakdown of specific low-carbon investments.

SOURCE DATA

“Clean Coal Technology. We continue to support clean coal technology development and initiatives seeking to reduce global atmospheric levels of carbon dioxide and other emissions. In China, we are the only non-Chinese equity partner in Green-Gen, an integrated gasification combined cycle coal-fueled power plant near Tianjin, China that began electric generation for commercial consumption in 2012 and plans to utilize carbon capture and storage (CCS) in its next stage of development. We are also a founding member of the U.S.-China Energy Cooperation Program. In Australia, we have an ongoing commitment to the Australian COAL21 Fund, an industry effort to pursue a collection of low-carbon emission technologies in Australia, and are also a founding member of the Global Carbon Capture and Storage Institute, an international initiative launched by the Australian government. In the U.S., we are a founding member of the Future-Gen Alliance in Illinois and continue to support the development of the Future-Gen 2.0 project. We are also a founding member of the Consortium for Clean Coal Utilization at Washington University in St. Louis and support technology development at the University of Wyoming School of Energy Resources. In addition to our support of clean coal technology development, we are evaluating Btu Conversion projects that are designed to expand the uses of coal, such as through conversion to transportation fuels and coal gasification technologies” (Peabody Energy Corporation 2015a).

DISCLOSURE OF GREENHOUSE GAS EMISSIONS REDUCTION PLANS

SCORE:

Poor (-1): Company does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

RATIONALE:

Peabody Energy does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

SOURCE DATA

Peabody Energy does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

DISCLOSURE OF HOW COMPANY MANAGES GREENHOUSE GAS EMISSIONS AND ASSOCIATED RISKS

SCORE:

Poor (-1): Company mentions or makes generic claims about greenhouse gas emissions management, but does not provide details or descriptions of actions it is taking to reduce, offset, or limit its own greenhouse gas emissions and associated risks.

RATIONALE:

Peabody Energy mentions energy efficiency and waste reduction initiatives, but does not provide details or descriptions of actions it is taking to reduce, offset, or limit its own greenhouse gas emissions and associated risk (Peabody Energy Corporation 2015b).

SOURCE DATA

“Robust energy efficiency and waste reduction initiatives also characterize Peabody’s approach to environmental responsibility. Total greenhouse gas emissions and greenhouse gas intensity continued a six-year downward trend, falling from 10.3 to 9.9 pounds of carbon dioxide equivalent (CO₂e) per unit of production from 2014 to 2015” (Peabody Energy Corporation 2015b).

DISCLOSURE OF GREENHOUSE GAS EMISSIONS

SCORE:

Poor (-1): Company provides minimal data, insufficient to inform investors of the magnitude and trend of the company's greenhouse gas emissions (e.g., it discusses the company's greenhouse gas emissions trends but does not provide actual greenhouse gas emissions data, or provides direct greenhouse gas emissions data but no information regarding upstream or downstream activities).

RATIONALE:

Peabody Energy mentions greenhouse gas emissions management, but does not provide details or descriptions of actions it is taking to reduce, offset, or limit its own greenhouse gas emissions and associated risks.

SOURCE DATA

- “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 2015b).
- “Total greenhouse gas emissions and greenhouse gas intensity continued a six-year downward trend, falling from 10.3 to 9.9 pounds of carbon dioxide equivalent (CO₂e) per unit of production from 2014 to 2015” (Peabody Energy Corporation 2015a).

PLANNING FOR A WORLD FREE FROM CARBON POLLUTION TOTAL SCORE: EGREGIOUS (-10)

Royal Dutch Shell

SUPPORT FOR THE PARIS CLIMATE AGREEMENT

SCORE:

Fair (0): Company has made a general statement expressing support for the Paris Climate Agreement and its global temperature goals, but has not specified that it will align its business model with Paris goals.

RATIONALE:

Shell has expressed support for the Paris Climate Agreement and its global temperature goals, both directly and through its membership in the Oil and Gas Climate Initiative (Royal Dutch Shell PLC 2016e; OGCI 2015).

SOURCE DATA

- “It was a significant year for the global community in 2015 with the adoption of the historic Paris Agreement by 195 countries demonstrating a commitment to bring about a lower-carbon energy system.” (p. 1)
“The meeting of states at COP 21 in Paris at the end of 2015 has set the ambition to limit the increase in global temperature to under 2°C, even if countries move at different paces to achieve their targets.” (p.1)
“The historic Paris Agreement adopted by 195 countries in late 2015, and expected to be ratified over the coming year, established a goal to limit the global temperature rise this century to well below 2 °C.” (p. 11)
“The Paris Agreement has set the global direction for the energy transition. Government and business need to deliver policies and products in support of this. The energy transition will require a mixture of vision and realism, urgency and long-term planning.” (p.12)
“The Paris Agreement provides a way forward for governments and society to find effective policy and cultural changes that can drive low-carbon business and consumer choices. Shell supports long-term climate goals that address environmental pressures and provide development opportunities for communities. We all need to work together to achieve the ambitions set in the Paris Agreement. Targets for countries are a good place to start and set the direction for the significant global undertaking ahead” (Royal Dutch Shell PLC 2016e).
- “The members of the Oil and Gas Climate Initiative (OGCI) Oil and Gas Climate Initiative (OGCI), which "welcome and support the historic result achieved by 195 nations at the 21st Conference of the Parties" [...] "In alignment with the Paris Agreement, the OGC's Joint Declaration issued October 2015 recognized the general ambition to limit global average temperature rise to less than 2C, and that the current trend of the world's net greenhouse gas (GHG) emissions is not consistent with this ambition. The Paris Agreement, which strives to limit the global average temperature rise to well below 2C offers the world a clear signal that will help all actors to take actions and make investments towards a lower carbon future. The OGCI believes that this offers significant opportunity for innovation and investments in lower GHG emission solutions” (OGCI 2015).

COMPANY-WIDE COMMITMENTS AND TARGETS TO REDUCE GREENHOUSE GAS EMISSIONS

SCORE:

Poor (-1): Company has a plan for reducing greenhouse gas emissions, but the plan is not company-wide and is not in the service of a specific temperature goal or target; or company has a greenhouse gas emissions reduction target that expires in the reporting year or earlier.

RATIONALE:

The company has a plan for reducing greenhouse gas emissions, but the plan is not company-wide and is not in the service of a specific temperature goal or target (Royal Dutch Shell PLC 2016c; CDP 2015c).

SOURCE DATA

- “Reducing our emissions. We continue to look for ways to further reduce Shell’s greenhouse gas (GHG) emissions. Our direct GHG emissions have fallen by 40 million tonnes of CO2 equivalent or 35% since their peak in 2003, partly

reflecting our portfolio actions and efficiency programmes. We strive for improved energy efficiency across all our upstream and downstream operations. Better energy efficiency can be achieved by improving the reliability of our equipment, by smart scheduling of maintenance activities or by installing more energy-efficient equipment. For example, Shell-operated refineries identify measures to improve energy efficiency each year. In 2015, we installed a cogeneration unit at our Bukom refinery in Singapore. This unit improves energy efficiency by recovering waste heat from the gas turbine's exhaust to generate steam. Between 2009 and 2015, the energy intensity of our refineries decreased by about 6%. In addition to reducing our own emissions, we work to help our customers conserve energy through the development and sale of advanced fuels, lubricants and chemicals.

[...] Carbon intensity, and potential changes in carbon prices and the regulatory environment all have an important role to play when we look at how we want to shape our portfolio for the future" (Royal Dutch Shell PLC 2016c).

- *CDP CC3 Targets and initiatives*: Shell has set absolute targets. One target expired in 2014 and the other expired in 2016 (CDP 2015c).

USE OF AN INTERNAL PRICE ON CARBON IN INVESTMENT DECISIONS

SCORE:

Fair (0): Company has set a price on carbon that it uses in investment decisions, but the price is based solely on one segment of the supply chain, such as aggregate downstream greenhouse gas emissions (e.g., greenhouse gas emissions from end-user burning of the fuel).

RATIONALE:

The company screens projects using a carbon value of \$40 per tonne when making investment decisions (CDP 2015c). It is unclear based on current disclosures what aspects of the supply chain must be included in these estimates.

SOURCE DATA

"At Shell, we assess the CO₂ risks on all our planned ventures, including existing operations that undergo substantial modifications using a CO₂ project screening value (PSV). A value of CO₂ has been applied to the base case economics of all of our projects since 2000. Since 2008, our CO₂ PSV has been \$40 per tonne. This means that new projects are assessed for the financial impact should a price of \$40 for CO₂ emissions be implemented. In addition to applying the base case CO₂ PSV, we also consider CO₂ price sensitivities, both in the case of upsides and downsides e.g. for projects with a high exposure to carbon pricing or legislation, we consider the impact of higher CO₂ prices. The screening value can influence the design and operations of projects to increase their resilience to future CO₂ regulation. For example, at our Carmon Creek project in Alberta, Canada, the CO₂ screening value led to the inclusion of process equipment to use energy more efficiently, as well as the capture and disposal of CO₂. As well as guiding investment decisions, our CO₂ PSV is used as a reference to guide business planning assumption when current CO₂ costs are unknown or expected to change within the planning period" (CDP 2015c)

COMMITMENT AND MECHANISM TO MEASURE AND REDUCE CARBON INTENSITY OF SUPPLY CHAIN

SCORE:

Fair (0): Company has a public commitment to measure and reduce carbon emissions in its own operations (e.g., has signed onto World Bank's "Zero Routine Flaring by 2030" initiative).

RATIONALE:

The company signed on to the World Bank's "Zero Routine Flaring by 2030" pledge (World Bank 2015a; World Bank 2015b).

SOURCE DATA:

The company signed on to the World Bank's "Zero Routine Flaring by 2030" pledge (World Bank 2015a; World Bank 2015b). "This 'Zero Routine Flaring by 2030' initiative (the Initiative), introduced by the World Bank, brings together governments, oil companies, and development institutions who recognize the flaring situation described above is

unsustainable from a resource management and environmental perspective, and who agree to cooperate to eliminate routine flaring no later than 2030.

The Initiative pertains to routine flaring and not to flaring for safety reasons or non-routine flaring, which nevertheless should be minimized. Routine flaring of gas is flaring during normal oil production operations in the absence of sufficient facilities or amenable geology to re-inject the produced gas, utilize it on-site, or dispatch it to a market. Venting is not an acceptable substitute for flaring.

[...] Oil companies that endorse the Initiative will develop new oil fields they operate according to plans that incorporate sustainable utilization or conservation of the field's associated gas without routine flaring. Oil companies with routine flaring at existing oil fields they operate will seek to implement economically viable solutions to eliminate this legacy flaring as soon as possible, and no later than 2030" (World Bank 2015b).

DISCLOSURE OF INVESTMENTS IN LOW-CARBON TECHNOLOGY RESEARCH AND DEVELOPMENT

SCORE:

Fair (0): Company reports annually on low-carbon research and development broken down by specific investments, including in renewable energy technologies and carbon capture and storage.

RATIONALE:

The company reports annually on low-carbon research and development broken down by specific investments. (CDP 2015c)

SOURCE DATA

- *CDP CC2.2a: Please describe the process of how climate change is integrated into your business strategy and any outcomes of this process.*
 - “Shell is also working on the development of selected alternative and renewable energy options as well as making existing types of energy cleaner. Since 2009, we have invested more than \$1 billion annually in research and development, which includes investments in solar, wind power and hydrogen storage as well as new, cleaner transport solutions such as hydrogen fuels and infrastructure for electric vehicles” (CDP 2015c).
- *CDP CC5.1c: Please describe your inherent risks that are driven by changes in other climate-related developments.*
 - “Reputation: Shell has implemented the following actions: a) Use energy more efficiently. b) Build capability in CCS. c) Continue to invest in R&D to deliver technologies that reduce emissions from our operations. [...] a) We have aCO₂ and energy management programme that includes monitoring the energy efficiency of equipment. b) We have secured final investment decisions for CCS projects, including Mongstad and the Gorgon LNG project. The Quest project has an estimated cost of US\$1.35 billion. c) We spent over \$1.2 billion on all our research and development (R&D) activities in 2014. Since 2009, around US\$1 billion of our research and development investment has been in lower-carbon technologies.” (CDP 2015c).
- *CDP CC6.1a: Please describe your inherent opportunities that are driven by changes in regulation.*
 - “Carbon taxes: Energy typically accounts for around half of all costs at refineries and chemical plants. We continue to research and develop technologies that increase efficiency and reduce emissions in hydrocarbon production. In 2014, we spent \$1.2 billion on R&D. Since 2009, around US\$1 billion of our research and development investment has been in lower-carbon technologies.
 - Changing consumer behavior: We have a range of more efficient regular priced fuels. They are designated to help motorists save fuel. Our range of regular priced transport fuels includes Shell FuelSave Diesel. These contain ingredients designed to improve the combustion process in vehicle engines which can help drivers to use less fuel. These fuels are not available in 20 markets across Asia, Africa, and Europe. In 2014, we spent \$1.2 billion on R&D; since 2009, around US\$1 billion of our research and development investment has even in lower-carbon technologies. In 2014, Shell became the first company to offer natural gas-based fluids and solvents for the chemical industry, globally. These products are biodegradable and less harmful to the environment. [...] Our Raízen joint venture with Cosan in Brazil produced over 2 billion litres of low-carbon biofuel from sugar cane in

2014. Over 420,000 motorists across 18 countries had taken part of the Shell FuelSave Target One Million programme by the end of 2014.” (CDP 2015c).

- “Since 2007, we have spent more to research and develop innovative technology than any other international oil and gas company. In 2014, research and development (R&D) expenses were \$1,222 million, slightly down from \$1,318 million in 2013 and \$1,307 million in 2012. Such levels of investment in R&D enable us to advance technologies that help us access new resources and better meet the needs of our customers and partners. This includes: seismic processing and visualisation software that reveal previously unnoticed geological details; drilling-rig equipment that delivers wells more quickly and more safely; oil-recovery methods that increase production from fields; processes that refine crude oil and liquefy natural gas more efficiently; as well as fuel and lubricant formulations that perform better. As in 2014, in 2015 we continue to focus strongly on technologies that support our various businesses and reduce the environmental footprint of our operations and products” (Royal Dutch Shell 2016d).
- “In terms of technological choices, for example, the report outlines Shell investments in carbon capture and storage (CCS), transportation alternatives based on hydrogen and biofuels, and even renewables. Yet is it not clear whether these efforts are being pursued with the urgency and scale required to meaningfully shift Shell’s operations in the timeframe implied by the Paris Agreement” (Royal Dutch Shell 2016f).

DISCLOSURE OF GREENHOUSE GAS EMISSIONS REDUCTION PLANS

SCORE:

Poor (-1): Company does not disclose details of its greenhouse gas emissions reduction plans to shareholders.

RATIONALE:

Shell does not disclose details of its greenhouse gas emissions reduction plans to shareholders

SOURCE DATA

Shell does not disclose details of its greenhouse gas emissions reduction plans to shareholders

DISCLOSURE OF HOW COMPANY MANAGES GREENHOUSE GAS EMISSIONS AND ASSOCIATED RISKS

SCORE:

Fair (0): Company provides a detailed description of actions it is taking to reduce, offset, or limit its own greenhouse gas emissions.

RATIONALE:

The company provides a detailed description of actions that it is taking to reduce, offset, or limit its own greenhouse gas emissions, including developing low-carbon biofuels, advancing carbon capture and storage, improving energy efficiency, and reducing natural-gas flaring (Royal Dutch Shell PLC 2016a; Royal Dutch Shell PLC 2016b; Royal Dutch Shell PLC 2016d).

SOURCE DATA

- “We are seeking cost-effective ways to manage CO₂ emissions and see potential business opportunities in developing such solutions. Our main contributions to reducing CO₂ emissions are in four areas: supplying more natural gas; supplying more biofuels; progressing carbon capture and storage (CCS) technologies; and implementing energy efficiency measures in our operations. To support this, we continue to advocate the introduction of effective carbon pricing. According to the International Energy Agency (IEA), almost 40% of global primary energy is currently used to generate electricity. For many countries, using more gas in power generation instead of coal can make the largest contribution, at the lowest cost, to meeting their CO₂ emission reduction objectives. We expect that, in combination with renewables and use of CCS, natural gas will be essential for significantly lower CO₂ emissions beyond 2020. With Shell’s leading position in liquified natural gas (LNG) and new technologies for recovering gas from tight rock formations, we can supply natural gas to replace coal in power generation. We believe that low-carbon biofuels are one of the most viable ways to reduce CO₂ from transport fuels in the coming years. Our Raízen joint venture in Brazil produces low-carbon biofuel from sugar cane. We are also investing in research to help develop and commercialise advanced biofuels. The IEA has stated that CCS

could contribute around 15% of the CO2 mitigation effort required by 2050. To advance CCS technologies, Shell is involved in CCS projects including the Quest project in Canada, the Mongstad test centre in Norway and the Gorgon CO2 injection project in Australia. In 2012, we submitted a proposal for a project in Peterhead, in the UK, to store CO2 in a depleted gas reservoir in the North Sea. In 2014, Shell signed an agreement with the UK government to progress detailed design of the Peterhead CCS project. It could potentially capture and store around 10 million tonnes of CO2 over 10 years from a gas-fired power station. These projects are part of an important demonstration phase for CCS, during which government support is essential. Initiatives such as the European Union’s acceptance of CCS as an offsetting activity under the Clean Development Mechanism are a positive step in progressing such technologies. We continue to work on improving energy efficiency at our oil and gas production projects, oil refineries and chemical plants. Measures include our CO2 and energy management programme that focuses on the efficient operation of existing equipment by using monitoring systems which give us instant information that we can use to make energy-saving changes. In addition, we work to help our customers conserve energy and reduce their CO2 emissions, including through the development and sale of advanced fuels and lubricants” (Royal Dutch Shell 2016d)

- “We believe that flaring and venting (releasing gas to the atmosphere) of natural gas associated with oil production should be minimised as this is a waste of valuable resources, increases GHG emissions and contributes to climate change. Our HSSE & SP Control Framework sets out our flaring policy including the requirement for new facilities to be designed so as not to continuously flare or vent. When we acquire or become the operator of an existing facility that is already flaring or venting, it can take time before these activities can be stopped. In our existing facilities, our policy is to reduce any continuous flaring or venting to as low a level as reasonably practical. Operational flaring occurs for safety reasons or during the start-up of Upstream facilities. We aim to minimise this operational flaring. After several years of flaring reductions, the flaring of natural gas in our Upstream business increased in 2014 to 13.0 million tonnes of CO2 equivalent, from 7.4 million tonnes of CO2 equivalent in 2013. This was due to increased production at Majnoon in Iraq, in Nigeria and at the Pearl GTL plant in Qatar, as well as the start-up of Gumusut-Kakap in Malaysia. We are working on projects to reduce flaring at these locations. At Gumusut-Kakap we are installing equipment that will start capturing the gas for reinjection into the wells, by the end of 2015. Overall, flaring made up around 17% of the total direct GHG emissions in 2014. Iraq accounted for around 35%, Nigeria for 30%, Qatar for 13% and Malaysia for 8% of this flaring in 2014. Outside of Nigeria, Iraq and Malaysia, the few facilities that continuously flare accounted for less than 2% of our total direct GHG emissions in 2014. Some of these facilities are at ageing oil fields where the associated gas pressure is too low to power the compressors used to gather the gas and avoid flaring. In 2014, the venting of hydrocarbons amounted to around 1% of our total direct GHG emissions. In line with our commitment to long-term flaring reduction, we have been a member of the World Bank’s Global Gas Flaring Reduction (GGFR) partnership for many years. Through the GGFR partnership, the World Bank has developed a Zero Routine Flaring by 2030 initiative that is designed to help governments and companies end continuous flaring by 2030. We have signed up to this World Bank initiative and believe it will be an important enabler to reduce continuous flaring by bringing together governments, companies and development organisations to work collaboratively towards this common goal” (Royal Dutch Shell 2016a).

DISCLOSURE OF GREENHOUSE GAS EMISSIONS

SCORE:

Good (+1): Company provides information about direct greenhouse gas emissions from operations as well as indirect greenhouse gas emissions from upstream activities (e.g., purchased goods and services, waste generated in operations, fuel- and energy-related activities) for the current year, as well as the methodology used to calculate emissions. Company discloses indirect greenhouse gas emissions from downstream activities (e.g., final use of products, transportation, and distribution).

RATIONALE:

The company provides information about direct greenhouse gas emissions from operations; indirect greenhouse gas emissions from consumption of purchased electricity, heat, or steam for the current year; and other indirect emissions such as those resulting from waste generated in operations, upstream transportation and distribution, employee commuting,

downstream transportation and distribution, and use of sold products. The company also discloses the methodology used to calculate emissions (Royal Dutch Shell PLC 2016b; Royal Dutch Shell PLC 2016d; CDP 2015c).

SOURCE DATA

- *CDP CC7-10; CC14: GHG emissions accounting, energy and fuel use, and trading*
 - Data reported for scope 1 and 2 for 2014 with details on methodology.
 - Discloses emissions from “use of sold products,” as well as other categories of scope three emissions such as upstream/downstream transportation and distribution, processing, and employee commuting (CDP 2015c).
- “The direct greenhouse gas (GHG) emissions from facilities we operate were 76 million tonnes on a CO₂-equivalent basis in 2014, up from 73 million tonnes of CO₂ equivalent in 2013. The main reasons for this increase were the restart of production at Majnoon in Iraq following completion of refurbishment activities and start-up of the new Central Processing Facility in September 2013, and higher production at the Pearl GTL plant in Qatar leading to increased operational flaring of excess waste gas. The indirect GHG emissions from the energy we purchased (electricity, heat and steam) were 10 million tonnes on a CO₂-equivalent basis in 2014, the same as in 2013. We expect that maintaining the energy efficiency levels of recent years will be more difficult in the future as existing fields age and new production comes from more energy-intensive sources. This is expected to increase our GHG emissions over time. Our focus is on the direct and indirect emissions of the companies and joint ventures where we are the operator. For information on the limitations of our GHG data see the GHG Assurance data tab. We have achieved external verification of our 2014 direct and indirect GHG data from facilities we operate” (Royal Dutch Shell 2016b).
- “Our direct greenhouse gas (GHG) emissions increased from 73 million tonnes of CO₂ equivalent in 2013 to 76 million in 2014. The increase in flaring, or burning off, of gas in our Upstream business was the main contributor to this increase. The majority of this flaring takes place at facilities where there is no infrastructure to capture the gas produced with oil, known as associated gas. Gas flaring from these operations may rise further in coming years if oil production increases. Most of the increase in flaring in 2014 relates to Majnoon in Iraq in line with increased oil production. Majnoon represented around 35% of our flaring in 2014. We have agreed two projects to capture most of the associated gas from future production. The first project is scheduled to be completed in 2015. We expect lower flaring levels starting in 2016 when gas gathering equipment is operational. In parallel, our involvement in Basrah Gas Company (BGC), a joint venture between Shell, South Gas Company and Mitsubishi Corporation in the south of Iraq, continues to reduce flaring in the country. It is the largest gas project in Iraq’s history and the world’s largest flaring reduction project. BGC captures associated gas that would otherwise be flared from three non-operated oil fields in southern Iraq (Rumaila, West Qurna 1 and Zubair) for use in the domestic market. Around 30% of our flaring takes place in Nigeria, where a challenging operating environment and shortfalls in funding from the government-owned Nigerian National Petroleum Company – which has the majority interest in a joint arrangement operated by Shell Petroleum Development Company of Nigeria Ltd (SPDC) – has slowed progress on projects that are expected to gather additional associated gas currently flared. Greenhouse gas emissions data are provided below in accordance with UK regulations introduced in 2013. Greenhouse gas emissions comprise carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. The data are calculated using locally regulated methods where they exist. Where there is no locally regulated method, the data are calculated using the 2009 API Compendium which is the recognised industry standard under the GHG Protocol Corporate Accounting and Reporting Standard. There are inherent limitations to the accuracy of such data. Oil and gas industry guidelines (IPIECA/API/OGP) indicate that a number of sources of uncertainty can contribute to the overall uncertainty of a corporate emissions’ inventory” (Royal Dutch Shell 2016d).

PLANNING FOR A WORLD FREE FROM CARBON POLLUTION TOTAL SCORE: FAIR (-1)

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