Advancing environmental and social performance across oil and gas

Module 3
Climate change and energy
Legal note

This voluntary guidance document (Guidance) is designed to serve as a resource for interested companies; the indicators and information referenced in this work do not establish an industry standard as to the nature of a company’s public reporting practice. The recommendations in this Guidance on how to report on a particular issue are addressed to those companies who choose to voluntarily include that issue in their sustainability reporting and terms such as ‘the reporting company should …’ are to be understood in this sense.

The terms and definitions used in this document are not necessarily the same as terms and definitions used in various statutes, rules, codes or other legal documents. Users and readers of this document should refer to relevant legal sources or consult their own legal counsel for explanations as to how the terms and definitions used in this document may differ from the legal terms and definitions (e.g., spills and hazardous wastes) used in their particular areas of operation. Anything in this document regarding voluntary reporting of indicators is not intended to imply that any of the indicators are required to be reported under any national, local or other law. Furthermore, it is not intended to serve as a substitute for applicable public reporting requirements and regulations. Any company reporter that has a question as to whether or not reports that follow the information contained herein will meet any specific reporting requirements applicable to their particular operations should consult with the reporter’s own legal counsel.

A cautionary statement regarding performance indicators

Aggregated, company-level, non-financial performance data, developed using the indicators in this Guidance, can be informative for comparing relative performance among different companies, such as benchmarking safety incident statistics across the oil and gas industry. A company can use such comparisons to evaluate its own performance relative to peers, and identify areas for potential improvement. However, limitations to comparability exist due to various factors including the different methods companies may use to measure, normalize and report specific indicators. Although efforts have been made throughout the Guidance to improve comparability, report users are advised to exercise caution when using data from sustainability reports to compare performance. For example, comparing two companies that report greenhouse gas emissions on a different basis (e.g. equity share vs. operated) could be misleading regarding actual performance. Specific indicators from similar operations can sometimes be usefully compared to help performance management. However, the company-level, aggregate data typically reported in sustainability reports may not provide adequate comparability for some metrics. Where this Guidance mentions comparability, it is not intended to imply that data in sustainability reports, and therefore companies’ performance, are always directly comparable.

Furthermore and separate from company sustainability reporting, industry associations and others may choose to implement specific performance benchmarking studies, which may build upon the indicators in this Guidance.

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Structure of the guidance

The Guidance in its entirety is made up of the following inter-connected modules. All modules, except for ‘Reporting process’ are accompanied by performance indicators.

- Reporting process (REP)
- Governance and business ethics (GOV)
- **Climate change and energy (CCE)**
- Environment (ENV)
- Safety, health and security (SHS)
- Social (SOC)

The REP module provides good practice guidance on how and what to report. The guidance covers important processes such as stakeholder engagement, determining materiality, developing narrative and reporting indicators.

Each of the other five modules introduces a set of related sustainability issues and provide guidance on developing your narrative supported by relevant industry specific indicators on these issues. In general terms, depending on materiality, your report’s narrative should provide an overview of:

- how you manage each issue;
- your overall approach to the issue and any policies you have in place;
- your management of risk and opportunity;
- key initiatives and actions;
- how you measure and monitor the issue; and
- how you review and learn in pursuit of continuous improvement.
KEY POINTS TO ADDRESS

The key points listed in this section have been developed through input from external stakeholders and industry subject matter experts. The overarching points are intended to inform your narrative, supported by the data and facts provided by the indicators that follow. Unlike indicators that primarily aim to establish consistency of reporting, these points provide an opportunity for your narrative to convey your company’s individual characteristics and unique culture that underpins how you address impacts and contribute to sustainability.

INDICATORS

To support your narrative, informed by the key points above, you should report on any or all of the suggested indicators, based on your material issues. Each indicator is defined by its Scope and its core and additional Elements, supported by any specific definitions of terms. A set of general Guidance definitions are provided in the Glossary.

INDICATOR DETAILS

<table>
<thead>
<tr>
<th>Why this matters</th>
<th>Summarizes why this indicator may be important to you, and what the indicator is seeking to show.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope</td>
<td>Describes the indicator and its associated reporting elements, in terms of their applicability and relevance; a separate list of ‘out of scope’ aspects may also be provided.</td>
</tr>
<tr>
<td>Basis (if needed)</td>
<td>For relevant indicators, this defines measurement units, as well as data consolidation / reporting boundary considerations.</td>
</tr>
<tr>
<td>Definition of terms (if needed)</td>
<td>Offers definitions that clarify terms specific to the indicator. More general terms are included in the Glossary.</td>
</tr>
<tr>
<td>Elements</td>
<td>See Step 5 in ‘How to report’ for how we number and summarize reporting elements.</td>
</tr>
</tbody>
</table>

Website and Supporting Materials (including the Glossary)

All modules of the Guidance can be downloaded from our website: www.sustainability-reporting.org. In addition to module downloads, the website also contains Supporting Materials. This includes the Glossary for the Guidance, which helps define many of the common terms used throughout all of the modules. In addition a useful list of Measurement Units and Conversion Factors is also available as a download.
Introduction

Analyses from the Intergovernmental Panel on Climate Change (IPCC) have stated that since the industrial revolution, economic and population growth, coupled with the beneficial use of fossil fuels, have driven increases in anthropogenic greenhouse gas (GHG) emissions, contributing to global warming. In its Fifth Assessment Report [1] in 2014, the IPCC concluded that it is extremely likely that more than half of the global warming increase during the 40-year period to 2010 was caused by human activity and that about 78% of the anthropogenic GHG emissions were CO₂ derived from fossil fuel combustion and industrial processes [1].

In December 2015, almost 200 United Nations Framework Convention on Climate Change (UNFCCC) member states met in Paris [2] and agreed to combat climate change with a central aim of ‘holding 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.’ IPIECA welcomed the landmark Paris Agreement and, in 2016, published a paper titled Exploring low emissions pathways: advancing the Paris puzzle [3] which discussed the possible routes to transform the energy system over the course of this century. The paper highlights three common elements: efficiency and saving energy; reducing emissions from power generation; and deploying alternative low-emissions options in end-use sectors.

The International Energy Agency (IEA) World Energy Outlook 2018 [4] stated ‘Oil and natural gas are set to remain part of the energy system for decades to come’ predicting, that oil and gas together will provide 48% of the total final energy demand in 2040 (based on IEA’s Sustainable Development Scenario that includes delivering on the Paris Agreement). Thus, the industry is likely to continue to have a global role in supplying affordable, reliable energy that is essential for economic development, quality of life, healthy livelihoods and eradication of poverty. Equally, this role needs to support the transition to a lower carbon future.

INFORMED BY OTHERS – TCFD

In relation to public reporting, stakeholders have driven the development of several reporting frameworks that focus on climate-related disclosures (see references). One such initiative is the Task Force on Climate-related Financial Disclosures (TCFD) [5], a working group with representation from investors, banks and industry, set up by the Financial Stability Board. The TCFD’s voluntary recommendations broaden the focus of financial reporting to include more forward-looking disclosures and decision-useful information on climate change-related governance, strategy, risk management and performance. The focus of the TCFD is to support mainstream financial reporting and, consequently, this Guidance on sustainability reporting is not intended to satisfy the recommended disclosures of the TCFD. However, this revision of the Guidance has taken into consideration TCFD’s themes and terminology to assist companies who have chosen to follow the TCFD’s recommendations for their public reporting.
Given this global role, there is increasing scrutiny of the way in which oil and gas companies adapt business models to align with a low carbon energy transition. Reflecting this growing interest, many companies are already reviewing the breadth and depth of their climate reporting within the context of their own business. Financial institutions – under pressure from their clients and regulators to demonstrate the climate-related impact and climate resiliency of their portfolios – are seeking access to consistent, transparent, comparable climate-related decision-useful information in reports.

In this edition of the Guidance, we have increased the focus on a number of climate-related areas. This includes increased emphasis on methane, recognizing its important role in responding to climate change risks in the short term. Other areas of growing importance include the transition to lower carbon energy sources, carbon capture and storage (CCS) application, the health of natural ecosystems, the application of offsets, fostering of energy efficiency and conservation, and the roles of natural gas and renewables.

Module 3 Climate change and energy supersedes and replaces the 2019 update of the IPIECA Climate change reporting framework [6] by incorporating the 10 topics and constituent elements of the framework into the following key points and indicators.
Key points to address

A. Governance: responsibilities, accountabilities, processes and assurance for managing climate change risks and opportunities.
   i. Your Board processes, including frequency, for board oversight of climate change issues. Refer to Board committees and any members of the Board or executive management with specific responsibilities and competences for managing climate change risks and opportunities.
   ii. Senior management roles and responsibilities related to assessment, management and monitoring of climate-related risks and opportunities. This can include specific positions, committees and organizational structures, including their relationship with the Board.
   iii. Your company’s highest-level position or role with responsibility and accountability for managing climate change issues.
   iv. The nature and frequency of climate-based discussion at Board or senior management level. Example topics might include:
      a. strategy review, action plans, risk management;
      b. operating budgets, capital expenditures, acquisitions and divestments;
      c. objectives, goals and targets;
      d. performance monitoring;
      e. executive / management incentivization; and
      f. communication with shareholders and stakeholders.
   v. Your internal and / or external assurance approaches for GHG emissions and other applicable climate-related disclosures. If used, explain your rationale for seeking third-party assurance and whether it is mandatory, voluntary or a combination of both. If you use third-party assurance, set out its scope, including its boundaries, level and a link to your assurance statement, if applicable.

B. Strategy: positions and policies related to climate change related science, impacts, risks, opportunities, financial planning and resilience.
   i. Your climate change and energy positions, policies or principles, including the related risks and opportunities for your company. The significance of these risks and opportunities for society and ecosystems, and how you and society can address these through positions and policies on risk mitigation, adaptation, technology and energy transition.
   ii. Your views on future global energy demand and the supply mix in terms of addressing climate-related risks and opportunities. In terms of the timing and geographical spread of your activities, describe your views on specific risks and opportunities. This could include those related to government policy, carbon pricing mechanisms and energy markets, that could have a material impact on your business strategy, financial performance and asset values. Explain the process you use to determine these views.
   iii. Your strategy’s resilience, taking into account different climate-related scenarios, including a 2°C scenario. This would cover ‘energy transitions’: the short-, medium- and long-term implications of shifting energy supply / demand and climate policy towards a lower-carbon economy. This could include actual or potential effects on your strategy, businesses, products and services, supply chain, business performance, financial planning and value, including a view on the future use of non-hydrocarbon energy sources.
C. Risk management: the processes used to manage transition and physical climate-related risks.
   i. Your risk management approaches and how they apply to climate-related risks. How you identify, assess and manage transition risk and physical climate-related risk, and how you integrate those processes into your overall risk management approach for existing operations and new projects. Include:
      a. sources of climate change-related risks and opportunities;
      b. investment evaluation and risk management approaches, such as scenario planning and/or proxy cost of carbon; and
      c. your approach to physical risks and adaptation to protect facilities and operations.
   Consider breaking down risks and opportunities by business or geography, if appropriate.

D. Metrics and targets: goals, measures and performance to evaluate progress in addressing climate-related risks and opportunities.
   i. The primary corporate metrics you use to assess climate-related risks and opportunities, in line with your strategy and risk management process.
   ii. Performance data (dating back long enough to allow trend analysis) should include GHG emissions, energy use and flared gas. Disclosures typically include Scope 1, Scope 2 and, as appropriate, Scope 3 GHG emissions (see CCE-4).
   iii. Your key commitments or targets to manage climate-related risks and opportunities, outlining timescales, indicators and progress (see CCE-2).
   iv. Historical Scope 1 and 2 GHG emissions performance and the relationship between changes in performance and your past strategy, acquisitions/divestments and planned mitigation initiatives (see CCE-4).
   v. Whether and if so, how, climate-related performance metrics and/or targets are incorporated within remuneration policies.

E. Mitigation and energy transition: activities, initiatives, technologies and regulatory programmes that address climate change-related risks and opportunities.
   i. Your overall approach to reducing CO₂ and methane emissions, and other GHG emissions, if significant. Include commentary on historical performance, planned activities and estimated costs.
   ii. Emission reduction projects on combustion/energy efficiency, flaring, venting and fugitive leaks. Additional initiatives could include:
      a. carbon capture and storage (CCS);
      b. carbon offsets;
      c. nature-based solutions, such as reforestation and enhanced forest management; and
      d. initiatives to improve help customers improve the efficient use of the company’s products.
   iii. Your approach to existing or emerging GHG reduction regulatory programmes in terms of risks and opportunities. This can include participation in market-based systems such as emissions trading or offset schemes, or non-market-based systems defined by government policies.
iv. Information on existing or planned supply of lower carbon products, such as gas and alternative energy sources, including scale, geographic spread, technologies and timescales. You can discuss the impact on Scope 3 emissions in relation to your products in this context.

v. Application of technologies and/or research and development (R&D) investment that:
   a. reduces GHG emissions in oil and gas sector operations; and
   b. supplies lower or zero carbon energy and fuel products.

vi. The impact of climate-related risks and opportunities related to future technology and R&D investments, including quantification of the GHG reduction benefits that might be achieved.

F. Engagement and collaboration: with stakeholders, including advocacy and lobbying.

   i. Relevant public policy engagement (see GOV-6 in Module 2 Governance and business ethics), as well as other significant voluntary initiatives and types of individuals or organizations you interact with on climate policy.

   ii. Work conducted by research organizations on your behalf.

   iii. Alignment of your engagement and advocacy with your internal climate change policy objectives.

   iv. Collaborations, partnerships, initiatives with NGOs, universities, institutions and international organizations that address climate-related risks and opportunities.

To support your narrative, informed by these key points, you should report on any or all of the following indicators, based on your material issues.
**INDICATORS**

**CCE-1**
Climate governance and strategy

**CCE-2**
Climate risk and opportunities

**CCE-3**
Lower-carbon technology

**CCE-4**
Greenhouse gas emissions

**CCE-5**
Methane emissions

**CCE-6**
Energy use

**CCE-7**
Flared gas

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**CCE-1**

**Climate governance and strategy**

**WHY THIS MATTERS**

Communicating your governance approach allows investors and other stakeholders to build confidence in the company’s capability to be part of the global energy transition and to meet climate change challenges. This includes addressing climate-related risks and opportunities in terms of market positions, policies and strategies, regulatory frameworks, and the influence of scenarios on future energy supply and demand.

**SCOPE**

This indicator provides a description of your principal positions and policies on climate-related risks and opportunities. In describing your stance, you can discuss your interpretation of different climate change scenarios, the significance of any impact on society and ecosystems and how climate-related risks should be addressed and opportunities be leveraged. In addition, you can describe the level at which your company sets the accountabilities for policy, positions and strategy, including board oversight and management review of climate-related issues.

You may also outline how you have applied scenario analysis to support strategic decision making and planning. You might consider a range of different climate-related scenarios, including a 2°C scenario, to help explain potential climate risks and opportunities. This process can also help you communicate your understanding of your strategic options for addressing these risks and opportunities.

Where government policy exists, you might also need to address GHG regulation in different countries or regions. You should outline your approach to GHG regulatory programmes, including participation in market-based mechanisms, such as emissions trading and offset programmes.

Where applicable, you might refer to other company publications and communication that relate to climate change science and scenarios, governance and policies, and your positions on regulations and market mechanisms. Where appropriate, you might also indicate how your policies and regulations apply to joint ventures or other commercial arrangements.
REPORTING ELEMENTS

CORE

C1 Describe your approach to governance and management of climate-related risks and opportunities, including board-level accountabilities and processes that allow related issues and impacts to be considered when making strategic business decisions.

C2 Report the highest-level position in your company that is accountable for policy and strategy on addressing climate-related risks and opportunities.

C3 Disclose your positions and any related policies that address climate-related risks and opportunities for society and ecosystems.

C4 Discuss the relationship between future energy supply / demand balances and your climate policy and strategy, including how the transition risk to lower-carbon energy may influence your asset base, business performance and value.

ADDITIONAL

A1 State your views on the relationship between public climate change policy and climate-related scenarios, including future energy supply / demand balances.

A2 Discuss your views and responses to approaches undertaken by governments, private sector and civil society to mitigate GHG emissions and adapt to climate-related risks.

A3 Describe how you address GHG emissions regulations, including any participation in market based systems and application of an internal carbon pricing mechanism for investment decisions.

A4 Outline your position and initiatives on GHG offset programmes, including specific examples or case studies of current and planned offset projects.
CCE-2
Climate risks and opportunities

WHY THIS MATTERS
To make their own judgements, stakeholders, particularly investors, need confidence and understanding about how you assess and address climate-related risks and opportunities. It is also helpful to clarify how you plan to manage these risks and opportunities to provide a basis for your strategic decisions, including risk mitigation of GHG impacts. This indicator describes your approach, including relevant plans, programmes, initiatives and activities for managing climate-related risks and opportunities, including GHG emission management.

SCOPE
This indicator covers the management of all significant corporate strategies and plans related to operational measures to tackle climate-related risks and opportunities, including:

- how you assess, prioritize and address climate-related risks and opportunities at both a corporate and operational level;
- context on historical emissions management and reduction performance;
- how you integrate climate-related risk and opportunity management into your long-term strategies and annual plans;
- how you describe the impact of climate-related risks, including the valuation of financial impact;
- climate-related targets and/or commitments;
- the relationship between your climate-related performance targets, incentives and reward, and
- description of planned activities and estimated costs, for example to:
  - reduce CO₂ and methane emissions;
  - reduce GHG intensity;
  - improve energy efficiency;
  - invest in renewables;
  - reduce impacts on, and enhancement of, carbon-rich habitats such as forests, mangroves and peat bogs;
  - reduce flaring;
  - increase use of cogeneration;
  - carbon capture and storage (CCS); or
  - help customers reduce the impact of/improve the efficient use of the company’s products.

As noted in indicator CCE-1, scenario analysis may provide useful context (including methodology and benchmark used, e.g. IEA scenarios as well as assumptions, e.g. carbon price, oil price, demand trends) for outlining the climate-related risks and their potential impact and for communicating your strategic options to address risks and opportunities.
You might want to provide quantitative information, as outlined in indicators CCE-4, 5, 6 and 7, to demonstrate the effectiveness and performance of your strategies and plans in managing climate risks and opportunities.

Your narrative might refer to other company publications that provide more detail on your approach and activities for managing climate-related risks and opportunities.

**REPORTING ELEMENTS**

**CORE**

<table>
<thead>
<tr>
<th>C1</th>
<th>Describe your general approach to managing climate-related risks and opportunities, including discussion on:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• identification and evaluation of risks and opportunities;</td>
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<tr>
<td></td>
<td>• incorporation of risks and opportunities into business strategies and planning for existing operations and new projects;</td>
</tr>
<tr>
<td></td>
<td>• risks and opportunities related to energy transition;</td>
</tr>
<tr>
<td></td>
<td>• risk mitigation opportunities through nature based solutions; and</td>
</tr>
<tr>
<td></td>
<td>• physical climate-related risks, such as rising sea levels or flood risk.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C2</th>
<th>Outline your GHG emissions management strategy, including plans, commitments, investments and activities to mitigate GHG emissions within your operations.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>C3</th>
<th>Explain how you assess, prioritize and manage methane risks and impacts as part of your overall GHG emissions management strategy.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>C4</th>
<th>If you have quantitative GHG emission or energy-related targets, describe the:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• scope of your targets – total GHG, CO₂, methane, other GHGs, energy use, and / or flaring;</td>
</tr>
<tr>
<td></td>
<td>• type of targets (absolute or intensity);</td>
</tr>
<tr>
<td></td>
<td>• targets already underway or planned;</td>
</tr>
<tr>
<td></td>
<td>• approach used to measure progress towards these targets; and</td>
</tr>
<tr>
<td></td>
<td>• baseline period and timescale, along with progress towards meeting your targets.</td>
</tr>
</tbody>
</table>

**ADDITIONAL**

<table>
<thead>
<tr>
<th>A1</th>
<th>Outline the tools and methodologies (including explicit description of underlying assumptions, e.g. carbon pricing, global policy development and associated temperature increases estimates) you use to manage climate-related financial risks and opportunities, such as stress testing, ‘shadow’ cost of carbon, or scenario planning.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>A2</th>
<th>Outline your approach to incentivize the management of climate-related risks and opportunities and, if relevant, describe how you incorporate climate-related performance targets within remuneration for senior management and your workforce.</th>
</tr>
</thead>
</table>
CCE-3
Lower-carbon technology

WHY THIS MATTERS
To meet future global energy demand, the world will need a variety of commercially viable energy sources, combined with energy efficiency. Stakeholders are seeking information that enables greater understanding of the technological advances needed for the energy transition. This indicator helps you report on your company’s activities and plans on research initiatives or projects to apply technology that aim to reduce the carbon footprint of your operations and products, including the use and / or supply of lower-carbon energy such as alternative energy sources.

SCOPE
This indicator covers activities related to:
• lower-carbon energy derived from fossil fuels but having low or zero CO₂ impacts; and
• alternative energy sources that are non-fossil fuel based, including renewable sources.

When reporting your plans and activities you might include:
• research, development and application of lower and zero-carbon and alternative energy solutions;
• collaboration and participation in technology programmes with third parties;
• production of lower-carbon / alternative / renewable energy, either for internal use or sale, reported by source;
• development of alternative forms of transportation, such as vehicle electrification;
• if producing biomass or biofuel energy, a breakdown by source. You might also discuss associated material issues, such as lifecycle assessment of carbon reductions (considering all carbon emission inputs and outputs from initial production through transportation, storage and eventual use on an energy equivalent basis), direct and indirect land-use changes, water use, impact on air quality, food and social issues. Where appropriate, include any third-party certification systems;
• technology development and emission reductions from any relevant carbon capture and storage (CCS) projects that are planned, under construction or already operational;
• advanced technologies that you offer or supply as services that reduce CO₂ impacts though improved efficiency, such as for operations, logistics, maintenance and transportation; or
• management of social and / or environmental issues associated with deployment of alternative energy technologies.

BASIS
This indicator can have both qualitative and quantitative aspects as well as case studies to demonstrate progress at a local level. When reporting alternative / renewable energy production, the preferred unit is gigajoules and data should be consolidated within your reporting boundary using the ‘operational approach’ (see Detailed guidance on developing a reporting boundary in Module 1 Reporting process).
## REPORTING ELEMENTS

### CORE

<table>
<thead>
<tr>
<th>C1</th>
<th>Describe how you introduce and apply technologies that reduce CO₂ emissions, that relate to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• operations (Scope 1);</td>
</tr>
<tr>
<td></td>
<td>• imported electricity and steam (Scope 2); and</td>
</tr>
<tr>
<td></td>
<td>• as applicable, consumer use of products (Scope 3).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C2</th>
<th>As applicable, discuss your approach to supply of lower-carbon and / or alternative energy, including descriptions of relevant operational activities, plans or projects. If relevant, include:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• data on amount and type of energy supplied; and</td>
</tr>
<tr>
<td></td>
<td>• management of any associated social or environmental impacts.</td>
</tr>
</tbody>
</table>

### ADDITIONAL

<table>
<thead>
<tr>
<th>A1</th>
<th>Discuss your technology outlook on the transition to lower-carbon and renewable energy solutions, including any technology investment plans and the impact of technologies on energy supply and demand.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2</td>
<td>Describe your initiatives and plans to develop or implement CCS technologies.</td>
</tr>
<tr>
<td>A3</td>
<td>Disclose your engagement with third-party institutions or programmes to promote lower-carbon technology development and application.</td>
</tr>
<tr>
<td>A4</td>
<td>Report the amount of alternative energy generated for sale or for internal use.</td>
</tr>
<tr>
<td>A5</td>
<td>Describe the potential GHG emissions reduction benefits that might be achieved by applying the technologies that you are investigating or piloting.</td>
</tr>
<tr>
<td>A6</td>
<td>Report on amounts of CO₂ sold as product, used for enhanced oil recovery, or captured and sequestered from CCS technologies.</td>
</tr>
<tr>
<td>A7</td>
<td>Report on use of renewable energy bought from third parties, such as renewable energy purchased from a utility supplier.</td>
</tr>
<tr>
<td>A8</td>
<td>Describe new investments, operational or capital, or initiatives, in lower-carbon transport technologies, including vehicle electrification. Provide information on benefits, including reduction in Scope 3 emissions.</td>
</tr>
<tr>
<td>A9</td>
<td>If your company is involved in nuclear energy activities, describe them and report on nuclear energy produced, used or traded.</td>
</tr>
</tbody>
</table>

### DEFINITIONS

- **Alternative energy**: energy derived from non-fossil fuel sources, including renewables such as wind and solar. Nuclear energy can be included as an alternative fuel.
- **Renewable energy**: energy sources that are constantly renewed by natural processes. These include non-carbon technologies such as solar energy, hydropower and wind, as well as technologies based on biomass. Lifecycle analyses are required to assess the extent to which biomass-based technologies may limit net carbon emissions.
- **Biofuel**: fuel produced from organic matter produced by plants. Examples of biofuels include alcohol (from fermented sugar), black liquor from the paper manufacturing process, wood, palm and soybean oil.
- **Biomass**: total dry organic matter or stored energy content of living organisms. Biomass can be used for fuel directly by burning it (e.g. wood), indirectly by fermentation to an alcohol (e.g. sugar) or extraction of combustible oils (e.g. soybeans).
CCE-4
Greenhouse gas emissions

WHY THIS MATTERS
Most oil and gas industry operations emit greenhouse gas (GHG) emissions, contributing to global atmospheric GHG concentrations. GHG emissions are also generated by customer use of sold fuels and other products. This indicator demonstrates how your company measures and monitors GHG emissions, including CO₂ and methane, from combustion and other processes.

SCOPE
The following scope summarizes key aspects of the IPIECA / API / IOGP Petroleum industry guidelines for reporting greenhouse gas emissions [7], which are recommended for estimating, accounting and reporting GHG emissions in the industry and should be referred to for more detailed guidance on this indicator.

Oil and gas companies should consider including, if significant, the seven species of GHGs listed by the IPCC:
- carbon dioxide (CO₂);
- methane (CH₄);
- nitrous oxide (N₂O);
- hydrofluorocarbons (HFCs);
- perfluorocarbons (PFCs);
- sulphur hexafluoride (SF₆); and
- nitrogen trifluoride (NF₃).

For oil and gas operations, CO₂ and CH₄ are usually the most significant components of GHG emissions. N₂O is emitted in very small quantities from the combustion of fossil fuels, and its GHG contribution is usually insignificant compared to CO₂. Depending on your operations, other GHGs, such as HFCs and PFCs used in refrigeration and SF₆ used in electrical equipment, may contribute significantly relative to the total GHG emissions from your operations. NF₃ is normally associated with emissions from electronics manufacturing and is not, therefore, expected to be significant for oil and gas reporting.

For each GHG you determine to be a significant contributor to total emissions, it is good practice to report annual emissions in metric tonnes and / or the CO₂ equivalent (CO₂e). The CO₂e should be calculated in accordance with published global warming potential (GWP) factors. Note that, at present, the preferred source for these factors for this indicator is the IPCC’s Fourth Assessment Report [8] and that for consistent reporting of CO₂e they are based on GWP-100¹. Table 1 provides an example of GHG annual reporting based on the reporting elements of this indicator.

¹The 2010 version of the Guidance recommended use of the GWP factors in the IPCC’s 1995 publication, Second Assessment Report (SAR). This recommendation has been revised to use of the GWP-100 factors (time horizon of 100 years) from the IPCC’s 2007 publication, Fourth Assessment Report (AR4) that, inter alia, increases the GWP for methane from 21 to 25, which is of significance for this indicator. In 2013 the IPCC issued its Fifth Assessment Report (AR5) with further modifications to GWP factors including methane, for which two revised, alternative, factors of 28 or 34 are provided, depending on whether carbon-cycle feedbacks are taken into account. Because of this additional complexity, and because national and international inventories have generally not yet taken into account the GWP factors in AR5, this Guidance recommends use of the AR4 factors in order to maintain consistency in reporting with prior data and transparency on performance. The recommendation of which IPCC GWP factors to use for sustainability reporting will continue to be reviewed. It is good practice for companies to state the source of GWP factors used to report GHG emissions in their reports.
GHG emissions from all your business activities should be included:

- combustion emissions, such as fuel use in gas compression, power generation, heating, coke burn, transport;
- flaring and venting;
- process emissions, such as vessel loading, tank storage and flushing, glycol dehydration, sulphur recovery units, hydrogen production;
- fugitive emissions, including piping and equipment leaks; and
- non-routine events, such as pipeline maintenance and equipment, gas releases related to safety events, equipment maintenance.

GHG emission estimates should include stationary and mobile sources from your business activities:

- Stationary sources should include equipment at well sites, production facilities, refineries, chemical plants, terminals, fixed site drilling rigs and office buildings.
- Mobile sources should include marine vessels transporting products, tank truck fleets, mobile drilling rigs, and moveable equipment at drilling and production facilities.

*The GHG Protocol Corporate Accounting and Reporting Standard*[9], updated in 2015, is a partnership between the World Resources Institute (WRI) and the World Business Council on Sustainable Development (WBCSD). The standard classifies GHG emissions as either direct or indirect based on three categories; Scope 1, 2 and 3:

- **Scope 1 emissions** are reported as Direct GHG emissions from equipment or other sources owned (partly or wholly) and / or operated by the company. For increased clarity when reporting Direct GHG emissions, those Scope 1 emissions associated with energy sold to others can be reported separately as Direct emissions from exported energy.

- Where an operation purchases energy already transformed into electricity, heat or steam, the GHGs emitted to produce this energy are Scope 2 and reported as Indirect GHG emissions from imported energy. The 2015 update of the GHG Protocol distinguishes between two calculation approaches, ‘location’ and ‘market based’ for Scope 2 emissions and it is helpful for companies using this standard to highlight which method is used in their reporting.

- **You can report Scope 3 emissions** as Other indirect emissions, which refer to GHG emissions related to your company’s value chain (see Module 1 Reporting process). The GHG Protocol supplemented its standard with its 2011 publication of the *Corporate Value Chain (Scope 3) Accounting and Reporting Standard*[10]. Of the 15 categories of Scope 3 emissions defined in this standard, Category 11 ‘Use of sold products’ is the most relevant to the oil and gas industry. There is a growing stakeholder interest related to Scope 3 disclosures. In 2016, IPIECA published *Estimating petroleum industry value chain (Scope 3) greenhouse gas emissions*[11] to provide additional oil industry methodology guidance for the 15 categories.

If significant, ozone-depleting gases such as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) can be included in your GHG emissions reporting. Although these substances are now included in the GHGs listed by the IPCC in AR5 [1], they are less likely to be significant for your company as the 1987 Montreal Protocol successfully phased out almost all supplies of these ozone depleting gases.
BASIS

Emissions are reported quantitatively at the company level as CO$_2$e (reflecting the global warming potential of all the GHG species) and as emissions of the individual gases expressed in mass and / or CO$_2$e. Measurement units are:

- GHG emissions per species (i.e. when reporting individual gases): metric tonnes and / or metric tonnes CO$_2$ equivalent (where CO$_2$e = metric tonnes of the GHG species of interest multiplied by its GWP relative to CO$_2$).
- Total GHG emissions (direct or indirect): metric tonnes CO$_2$ equivalent (where CO$_2$e = the sum of the emissions for each GHG species multiplied by its respective GWP relative to CO$_2$, in metric tonnes); and

Clearly identify the specific GHG species included in your emission estimates and the GWP for each species.

When reporting Scope 3 emissions related to consumer use of oil and gas products, you should state the types of product, such as crude oil, gas or other production, fuels and other refinery outputs or direct retail sales, used to estimate the GHG emissions and also state the source of emission factors applied.

The GHG protocol does not address carbon capture and storage (CCS) or use of CO$_2$. You can report separately on the amount of CO$_2$ sold as product, used for enhanced oil recovery, or captured and stored.

Data should be consolidated within your reporting boundary using either the ‘operational control’ or the ‘equity share’ approach, or both approaches (see Detailed guidance on developing a reporting boundary in Module 1 Reporting process). You can also consider the alternative ‘Financial control’ approach. Reporting boundaries and these data consolidation approaches are defined and discussed in more detail in Chapter 3 of the IPIECA / API / IOGP Petroleum industry guidelines for reporting greenhouse gas emissions [7]. You should clearly state the consolidation approaches that you have used. If non-operated joint ventures are significant in terms of climate change risks and opportunities for your organization, it should be noted that these emissions are, by definition, excluded under the operational control approach but included under equity share or financial control reporting (see also Module 1 Reporting process guidance on Joint venture reporting.)

REPORTING ELEMENTS

CORE

<table>
<thead>
<tr>
<th>C1</th>
<th>Report your company-wide direct GHG emissions (Scope 1), using your preferred approach (operational, equity share or other) to include:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• direct CO$_2$;</td>
</tr>
<tr>
<td></td>
<td>• direct CH$_4$;</td>
</tr>
<tr>
<td></td>
<td>• direct other greenhouse gases.</td>
</tr>
</tbody>
</table>

| C2 | Report your company-wide indirect GHG emissions related to imported energy (Scope 2), separate from direct emissions, using the same approach as for C1. |
| C3 | Report your GHG emissions, disaggregated by business activity. For example, oil and gas production, refining. |
| C4 | Report your GHG emissions intensity, company-wide and, if appropriate, disaggregated by business activity. |
# Module 3
Climate change and energy

## ADDITIONAL

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A1</strong></td>
<td>Report your company-wide direct GHG emissions (Scope 1), using both operational and equity share approaches.</td>
</tr>
<tr>
<td><strong>A2</strong></td>
<td>Report your company-wide indirect GHG emissions related to consumer use of your oil and gas products (GHG Protocol, Scope 3, Category 11), as appropriate.</td>
</tr>
<tr>
<td><strong>A3</strong></td>
<td>Provide a breakdown of major source categories for both CO₂ and CH₄ emissions. For example, combustion (stationary and mobile equipment), flaring, venting, process / fugitive leaks and product transport.</td>
</tr>
<tr>
<td><strong>A4</strong></td>
<td>Emissions that relate to activities of special interest to your stakeholders, such as oil sands, can be noted separately if these represent a substantial portion of your GHG profile.</td>
</tr>
<tr>
<td><strong>A5</strong></td>
<td>Separately report substantial direct GHG emissions associated with the cogeneration of heat and power, including information on emissions avoided through cogeneration.</td>
</tr>
<tr>
<td><strong>A6</strong></td>
<td>Separately report substantial direct GHG emissions related to the generation of energy exported.</td>
</tr>
<tr>
<td><strong>A7</strong></td>
<td>Report other Scope 3 categories of indirect GHG emissions as listed within the GHG Protocol.</td>
</tr>
</tbody>
</table>

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### A note on reporting activity and intensity data for element C4

When reporting emissions by activity and intensity for element C4, use of a consistent normalization factor will allow performance comparison between companies. For intensity disclosures reported by activity:

- For upstream activities, the IOGP annual Environmental performance indicators data series[12] reports use consistent environmental data collection definitions that are recommended. This requires hydrocarbon production to be reported in thousands of tonnes based on the gross hydrocarbon production at the wellhead. Production per thousand barrels of oil equivalent may also be disclosed when seeking consistency with the company’s statutory annual reporting disclosures.

- Annual refinery throughput per thousand tonnes is a consistent normalization factor for downstream refining operations.

- Annual production per thousand tonnes is generally employed for petrochemical facilities.

- You may also disclose intensity measures based on more complex indices that more accurately account for differences in operational activities and facilities. Such indices can provide more advanced intensity factors, e.g. Solomon Associates’ Utilized Equivalent Distillation Capacity (UEDC™) [13], which have been established for downstream refining operations. Advanced factors for GHG and Energy intensity are the subject of work by IOGP to investigate applicability to upstream activities.

In general, you should report emissions at least annually together with data from past years to show performance trends and state a base year against which you are assessing that performance. It is also good practice to indicate the basis for the methodology you have used to report Scope 1 and 2 emissions data (e.g. the GHG Protocol, IPIECA / API / IOGP or other). Table 3.1 provides an example of how a company might record GHG emissions performance over five years, to include activity and intensity data, as well as energy use (see CCE-6) and flaring data (see CCE-7).
### Definitions

- **Direct GHG emissions**: total GHGs emitted from sources at a facility owned (partly or wholly) and/or operated by the company.
- **Indirect GHG emissions from imported energy**: GHG emissions that occur at the point of energy generation (owned or operated by a third party) for electricity, heat or steam bought by your company for use at your facilities.
- **Direct GHG emissions from exported energy**: GHG emissions related to energy production in the form of electricity, heat or steam that you sell to a facility owned or operated by a third party. This is a subset of direct GHG emissions.
- **GHG intensity**: GHG emissions divided by the appropriate normalization factor for the business segment. This metric can be useful in comparing performance within a company’s business segments.
- **Direct GHG emissions from cogeneration**: GHG emissions related to the production of electricity and steam in cogeneration (simultaneous production of power and useful heat). This subset of direct GHG emissions typically results in a reduction of GHG emissions from a public utility.
- **Other indirect emissions**: emissions that are not covered by Scope 2 and are not the direct result of your activities. Examples include emissions from the manufacture of purchased raw materials, such as hydrogen or steel, emissions from third-party vehicles, or emissions from customer use of your fuel products.
CCE-5
Methane emissions

WHY THIS MATTERS
Methane is what is known as a short-lived climate forcer (SLCF) with a significantly higher global warming potential (GWP) than CO2. Therefore, industry action on methane offers an important opportunity to address the overall challenge of limiting the impact of GHG emissions over a more immediate period. Companies throughout the industry are contributing to such action by identifying, monitoring and reducing their methane emissions, while participating in industry initiatives to develop and introduce improved measurement and mitigation technology. This indicator provides an opportunity to overview your plans and progress to assess and mitigate methane emissions from your operations, including participation in collaborative initiatives.

SCOPE
Your report should provide an overview of your company’s strategic management of methane including, for example, your top priorities for estimating or quantifying and mitigating emissions, the reduction technologies you use for methane and / or volatile organic compounds, the impacts of government policy or regulation, participation in collaborative initiatives, and contributions to advancing the understanding of methane science.

You should provide specific information in the following areas:

• Measurement and monitoring: describe how you identify methane sources and estimate or quantify their emissions.

• Risk assessment and mitigation plans: outline how you assess methane-related risks and explain how you incorporate your mitigation plans, including training, into facility design and construction, operations, maintenance, retrofit and decommissioning.

• Fugitive emissions: describe the approaches you have taken to identify, quantify and eliminate fugitive emissions. Indicate the scope and frequency of application, such as continuous monitoring, leak detection and repair (LDAR) or aerial / atmospheric survey techniques.

• Science and technology: describe innovative activities that aim to measure and reduce methane emissions more effectively or efficiently across all your operational activities and contribute to industry and stakeholder understanding of methane science.

Your estimation and mitigation of methane emissions related to flaring may be reported within indicator CCE-7 as part of your company’s overall plans and progress to reduce operational flaring.

BASIS
Qualitative information should be supported by quantitative data. Total methane emissions should be consistent with those reported as Scope 1 and 2 emissions for indicator CCE-4 and reported in metric tonnes of methane and / or CO2 equivalent (CO2e).

When reporting in CO2e, a GWP of 25 is recommended for consistency with that used in CCE-4, which is based on methane’s relative impact over a 100-year timescale as stated in the IPCC’s Fourth Assessment Report – AR4 2007[8] (see also footnote in CCE-4).
For clarity when discussing emissions reduction performance, methane emissions may be broken down by source and business activity. The matrix below for reporting emissions and/or emission intensity might be useful. You may use different categories to better characterize your operations.

<table>
<thead>
<tr>
<th>ENERGY/ COMBUSTION</th>
<th>FLARING</th>
<th>VENTING</th>
<th>FUGITIVE EMISSIONS</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploration</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Onshore production</td>
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<tr>
<td>Offshore production</td>
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<tr>
<td>Coal bed methane</td>
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<tr>
<td>LNG processing and shipping</td>
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<tr>
<td>Refining</td>
<td></td>
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</tr>
<tr>
<td>Petrochemicals</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Distribution (natural gas / products)</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>City gate (natural gas end-user transmission)</td>
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</tr>
</tbody>
</table>

**DEFINITIONS**

- **Short-lived climate forcers (SLCF):** Atmospheric pollutants which have a greater greenhouse potency than carbon dioxide but persist in the atmosphere for a shorter period. SLCFs primarily include methane and black carbon, as well as gases such as hydrofluorocarbons (HFCs).
**CCE-6**  
Energy use

**WHY THIS MATTERS**

Energy efficiency is a key sustainability goal. Demonstrating a clear understanding of energy consumption and resource efficiency also supports commensurate opportunities to mitigate CO₂ emissions. This indicator discloses the total quantity of energy consumed by your operations and information on your related efficiency measures for your oil and gas operations and other business activities.

**SCOPE**

You should state the total energy used to operate your facilities and equipment. This includes any energy your operations produce and use, as well as imported energy (e.g. electricity, heat and steam). To reflect resource use, energy is measured and reported as primary energy, i.e. the energy content of the hydrocarbon fuels or other sources used to produce the energy ultimately consumed as heat, steam or electricity by the company’s operations. The following categories of energy – direct, imported and exported – should all be measured and reported as primary energy.

Direct primary energy results from self-generation of mechanical power, electricity, heat or steam in your operations, as well as in office buildings, marine vessels, trucks, or other stationary or mobile equipment under your operational control. Examples of energy-consuming equipment include boilers, fired heaters, waste incinerators, gas turbines, gas engines and diesel engines. Direct energy use is a measure of the energy content of the fuels or other energy sources used to produce the power or heat generated directly at the facility.

Direct primary energy should include combustion of fuels, whether produced or purchased by you.

Energy from fuel combustion should be determined as follows:

- **Preferred:** calculated based on the fuel volume consumed and the fuel energy content of the fuels used to generate the required energy. Calculation may be carried out by total fuel consumed – if the same fuel is used by all energy sources – or by source if fuel types vary. Use of ‘lower heating value’ is recommended because this reflects the amount of useable energy consumed and its use will promote a consistent reporting basis. Use of ‘higher heating value’ in place of ‘lower heating value’ will increase the reported energy consumption by up to 10%.

- **Alternative:** estimate based on the design energy consumption specifications associated with various processing equipment, augmented with runtime or throughput information if available.

You should include on-site generation of non-fossil energy, sources of electric power or other non-combustion energy sources in your calculations.

Exported energy is a subset of the direct primary energy sold or otherwise exported from your operations for use by others. It includes energy losses from your own power generation equipment.

This indicator quantifies the energy used by your operations and, therefore, excludes exported energy not available to support on-site operations. If your company has significant export contributions from power plants or cogeneration plants, you may choose to report energy use related to generation of exported power separately to provide a clearer picture of overall resource use.
Imported energy should reflect the energy content of the fuels that a supplier has used to produce electricity, heat or steam imported by you. This approach is used to reflect the use of primary energy resources. For example, imported energy derived from a thermal power generation plant would be the primary energy content of the fuel combusted by the provider to produce the electrical power received by the company’s facility. Imported energy takes into account the efficiency loss during the transformation of fuel combusted at the power plant into electricity, heat or steam.

Imported energy is calculated by using the purchased records of electricity, heat or steam, and then using efficiency factors to convert back to the energy content of the fuels or energy sources. For purchased electricity, the imported electricity is converted to an estimate of the energy actually used by applying a local ‘grid factor’ that reflects the average thermal efficiency (i.e. energy content of the fuel versus energy produced) for the mix of electrical generation facilities providing electricity to the local electrical grid. For purchased heat or steam, efficiency factors can typically be obtained from the supplier.

In the absence of efficiency or grid factors, or specific information from the energy provider, it is possible to use published grid factors such as those provided by the 2009 API Compendium of Greenhouse Gas Emission Estimation Methodologies for the Oil and Natural Gas Industry[14] or the US EPA eGRID factors [15] or other sources available in the country of operation. Alternatively, it may be necessary to use published conversion factors and information on the type of generating unit supplying the energy.

In the absence of local or regional information, the following efficiency factors can be used for combustion-based energy sources:

- energy content of the fuel used to generate the electricity = electricity purchased / received in gigajoules (GJ) divided by 0.38;
- energy content of the fuel used to generate the steam = steam purchased / received in GJ divided by 0.8.

The factors provided are conservative values to account for efficiency losses during generation and transportation of power but do not reflect the efficiency of the most recent power generation technology. If imported electricity comes solely from non-combustion and non-nuclear generation (such as wind, hydroelectric, wave, tidal power) there is no need to apply an efficiency factor; simply report the imported energy that you purchased.

Total energy use reported should include direct energy and imported energy but exclude exported energy to quantify energy consumed by your operations:

Total energy use = own energy generated + imported energy – exported energy

Fossil fuel energy-related emissions to the atmosphere are included within indicators CCE-4 and ENV-5 in Module 4 Environment.

OUT OF SCOPE

The energy content of flared or vented gas should be excluded from total energy use estimates. Although these do reflect loss of energy resources, they do not reflect energy use required for production or manufacturing of products. These resource losses are covered by a separate metric (see CCE-7).

BASIS

Energy data should be consolidated within your reporting boundary using the ‘operational control approach’. You should report in gigajoules (one British Thermal Unit (BTU) = 1055 joules; 1 kilowatt-hour (kWh) = 0.0036 gigajoules).
Energy use data should be consolidated within your reporting boundary using the ‘operational control approach (see Detailed guidance on developing a reporting boundary in Module 1 Reporting Process).

As noted for indicator CCE-4, when reporting energy use intensity by activity for reporting element A2, you should, where possible, aim to use a consistent denominator / normalization factor to allow performance comparison between companies.

Recommended normalization factors are provided in Module 1 Reporting process, as well as CCE-4. For reporting element A2, you may also disclose intensity measures based on more complex indices that more accurately account for differences in operational activities and facilities (e.g. Solomon Associates’ Energy Intensity Index) [13]. Such advanced factors for GHG and energy intensity are the subject of work by IOGP to investigate applicability to upstream activities.

### REPORTING ELEMENTS

#### CORE

| C1 | Report your company’s total energy use. |
| C2 | Discuss your initiatives and progress towards improving energy efficiency and consuming less energy. For example, many companies are producing energy on site and using combined heat and power (also known as cogeneration) plants to improve energy efficiency. |

#### ADDITIONAL

| A1 | Report any exported energy. |
| A2 | Report energy intensity by business activity, such as oil and gas production, refining. |
| A3 | Discuss progress in managing energy consumption through your use of energy-use indices, comparing current energy use per unit product produced to a historical reference point. |
| A4 | For refineries and chemical plants that use indices to account for facility-specific infrastructure and operational conditions to provide energy performance comparison, report on progress of energy-use management based on the indices. |
| A5 | Report on your initiatives to promote efficient customer use of energy. |

### DEFINITIONS

- **Total energy use**: own energy generated + imported energy - exported energy.
- **Own energy generated**: energy resource consumption by a facility or its equipment, expressed as the primary energy needed to produce the power or heat required. This includes the energy content of self-generated and purchased fuel used for energy generation, as well as the energy from other renewable (e.g. wind, solar) and non-renewable sources, but excludes the energy content of flared or vented gas.
- **Imported energy**: amount of primary energy required to produce purchased power, most typically as electricity, heat or steam.
- **Exported energy**: amount of direct primary energy exported for use by others, most typically as electricity, heat or steam.
- **Energy intensity**: total energy use divided by the appropriate normalization factor for the business segment (e.g. production volume, refinery throughput).
Flared gas

WHY THIS MATTERS

Although flaring of natural gas is gradually declining, billions of cubic meters are flared annually at oil production sites around the globe, which reduces direct emissions of methane but also releases CO₂ to the atmosphere and results in the loss of energy resources.

SCOPE

This indicator discloses the quantity of hydrocarbon gas flared to the atmosphere from your operations and your approach to reduction measures. Gas flare systems can serve two purposes: they are an essential safety mechanism in many petroleum operations and, when flaring associated gas, they allow a company to dispose of gas when no gathering facilities are available.

Sources and situations that may feed gas into flare systems for safety can include but are not limited to:

- pressure relief valve systems you use to prevent overpressure of equipment;
- emergency depressurizing systems you use for safe plant management;
- operations during plant start-ups and shutdowns;
- tank storage overhead vapours, such as filling and breathing losses;
- glycol dehydrators;
- solution gas from separators or flash tanks at crude oil batteries, terminals or other production facilities;
- well testing, especially at recently drilled wells in frontier areas;
- well completion and clean-up operations where flaring is necessary for well bore and reservoir clean-up;
- blow-down and pigging operations on gas gathering or other pipeline systems;
- blow-downs of vessels, piping, gas compressors or other equipment during maintenance; and
- vessel and tank truck loading emissions, such as the displacement of vapours during tanker loading.

You should report the total quantity of hydrocarbon gas that you send to operational flare systems at a facility. This should include routine flaring operations as well as any non-routine / safety flaring events. Reported flared gas should include purge gas, pilot light fuel and assist gas.

Your calculation of flared gas should be based on the composition of the gas stream involved and, if significant, should exclude the quantity of non-hydrocarbons, such as CO₂, water, hydrogen and nitrogen. In the absence of measured gas composition data, you should apply engineering estimates.

For most oil and gas industry operations, venting of hydrocarbons represents a minor resource use and related emissions are effectively covered by indicator CCE-4 and by the volatile organic compounds (VOC) metric under indicator ENV-5 in Module 4 Environment.
If gas venting is significant, you should report the quantity of vented hydrocarbon gas separately.

**BASIS**
Quantitative reporting uses units of metric tonnes of hydrocarbons flared. Reporting in units of mass is encouraged because this provides a more consistent and comparable measure of product loss.

When reporting on a volume basis use standard cubic metres (Sm³) or alternatively standard cubic feet (SCF), which is commonly used in industry operations and may be better understood by some audiences. When reporting volume, specify units used and the temperature / pressure bases for the standardization.

Flared gas data should be consolidated within your reporting boundary using the ‘operational control approach’ (see Detailed guidance on developing a reporting boundary in Module 1 Reporting Process).

Data should be consolidated for all operational activities that contribute significantly to your total flared gas.

You should determine significance in terms of geographic locations / regions (see Glossary).

**REPORTING ELEMENTS**

**CORE**

| C1 | Report the total quantity of hydrocarbon gas flared from your operations. |
| C2 | Indicate geographical locations of significant flaring. |
| C3 | State any commitments or targets you have set that relate to flaring, including collaboration with cross-industry initiatives. |
| C4 | Report contribution of flaring to your total GHG emissions in CO₂e. |
| C5 | Describe your current and future flare reduction activities, including long-term reduction improvements versus short-term operational fluctuations. |

**ADDITIONAL**

| A1 | Separately report hydrocarbon gas flared for each relevant business activity, such as oil and gas production, refining. |
| A2 | Report flaring by type, such as routine and non-routine flaring, to convey the causes of flaring and indicate areas for operational improvement. |
| A3 | Separately report vented gas if hydrocarbon venting represents a substantial portion of your resource use. |

**DEFINITIONS**

- **Flared gas**: total mass (or volume) of hydrocarbons directed to operational flare systems, where the hydrocarbons are consumed through combustion.
- **Routine flaring**: gas flared 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.
References, links and other sources

References with links


Other sources and links


