

Changes in GHG Emissions Within Oil & Gas Exploration

Case Study: ConocoPhillips

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- A management professional with 25+ years of diversified experience in the fields of drilling waste management, project management, operations management, service engineering, installations on and off shore, tender management, project engineering within the oil and gas industry.
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GHG emissions classification

- Scope 1 – Direct GHG emissions from sources owned or controlled by the reporting entity [RE]
- Scope 2 – GHG emissions from the generation of purchased electricity consumed by RE
- Scope 3 – All other indirect GHG emissions as a result of RE's activities, from sources not owned or controlled by RE

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- Our scope 1 and scope 2 GHG emissions, & emission intensity calculations, directly measure our climate performance and help us understand climate transition risk. Eg, our ability to manage GHG emissions can help us measure resilience to emerging carbon tax regulation.
- In 2019, our total gross operating GHG *emissions*, CO₂ equiv. terms, were ~ 20.5 million tonnes, a decrease of about 1.4% from 2018. The reduction was driven primarily by 1) our UK asset disposition, 2) downtime at Surmont due to a turnaround, and 3) reduced production & LNG plant throughput at Darwin LNG. This was partly offset by a) increases from continued development in Lower 48 and b) increased flaring & LNG plant throughput at APLNG.
- Our overall GHG emissions *intensity* increased by 4.6% in 2019.

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- Corporate reporting system includes scope 2 (emissions from imported electricity) -- not required under regulatory reporting.
- Corporate reporting system uses rules, emission factors and thresholds for regulatory emissions with following amendments. Facility threshold for reporting of 25,000 tonnes/year increasing the corporate emissions reported for Alberta, Canada, uses a regulatory threshold of 100,000 tonnes/year.

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We report our operated emissions in the following regions, countries and provinces in accordance with regulation:

- **Australia:** The National Greenhouse and Energy Reporting Act 2007 (NGER Act) and the National Greenhouse and Energy Reporting (Measurement) Determination 2008.
- **EU:** EU Emissions Trading System, Monitoring and Reporting Regulation Council Directive 2003/87/EC, as amended by Council Directive 2009/29/EC.
- **Norway:** Greenhouse Gas Emission Trading Act of 17 December 2004.
- **UK:** Greenhouse Gas Emissions Trading Scheme Regulations 2012.
- **Alberta, Canada:** Emissions Management and Climate Resilience Act: Specified Gas Reporting Regulation, Alberta Regulation 251/2004...

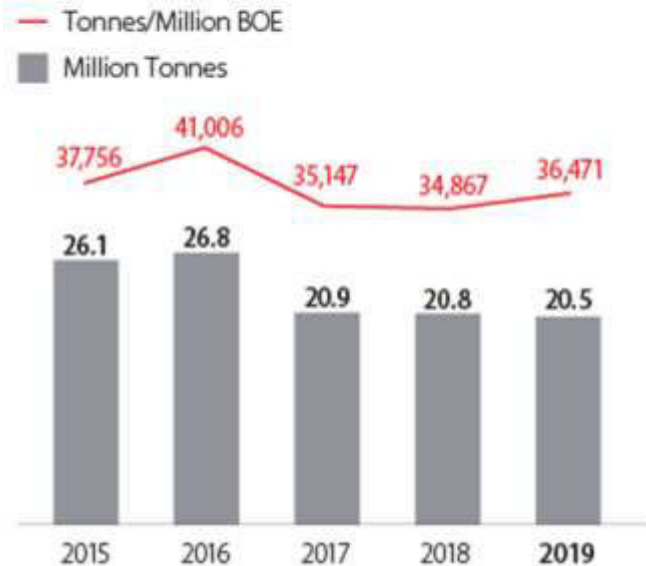
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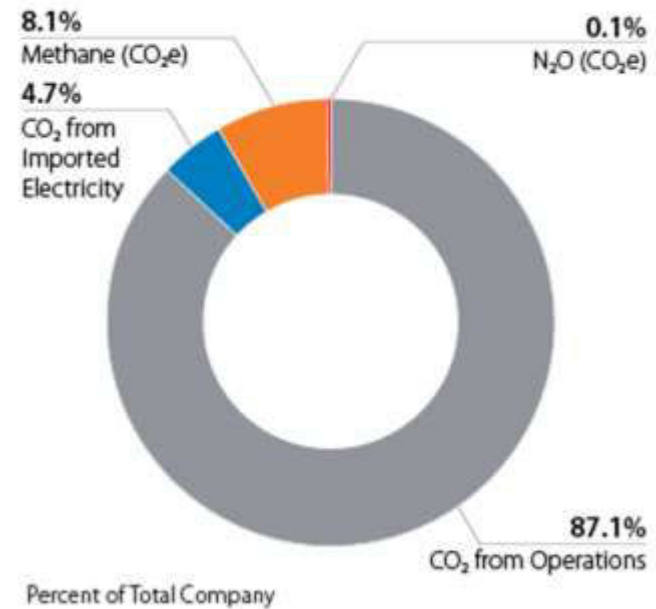
- **British Columbia, Canada:** Greenhouse Gas Industrial Reporting and Control Act: Greenhouse Gas Emission Reporting Regulation, British Columbia Reg. 249/2015.
- **Indonesia:** Minister of Environment Regulation No. 12 of 2012 regarding Guideline for the Emission Load Calculation for Oil and Gas Industry Activities.
- **US:** 40 CFR 98 Subparts C,PP, UU & W — Stationary Combustion Sources; Suppliers of CO₂; Injection of CO₂; Petroleum and Natural Gas Systems.

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Total GHG Emissions and Intensity (CO₂ equivalent)

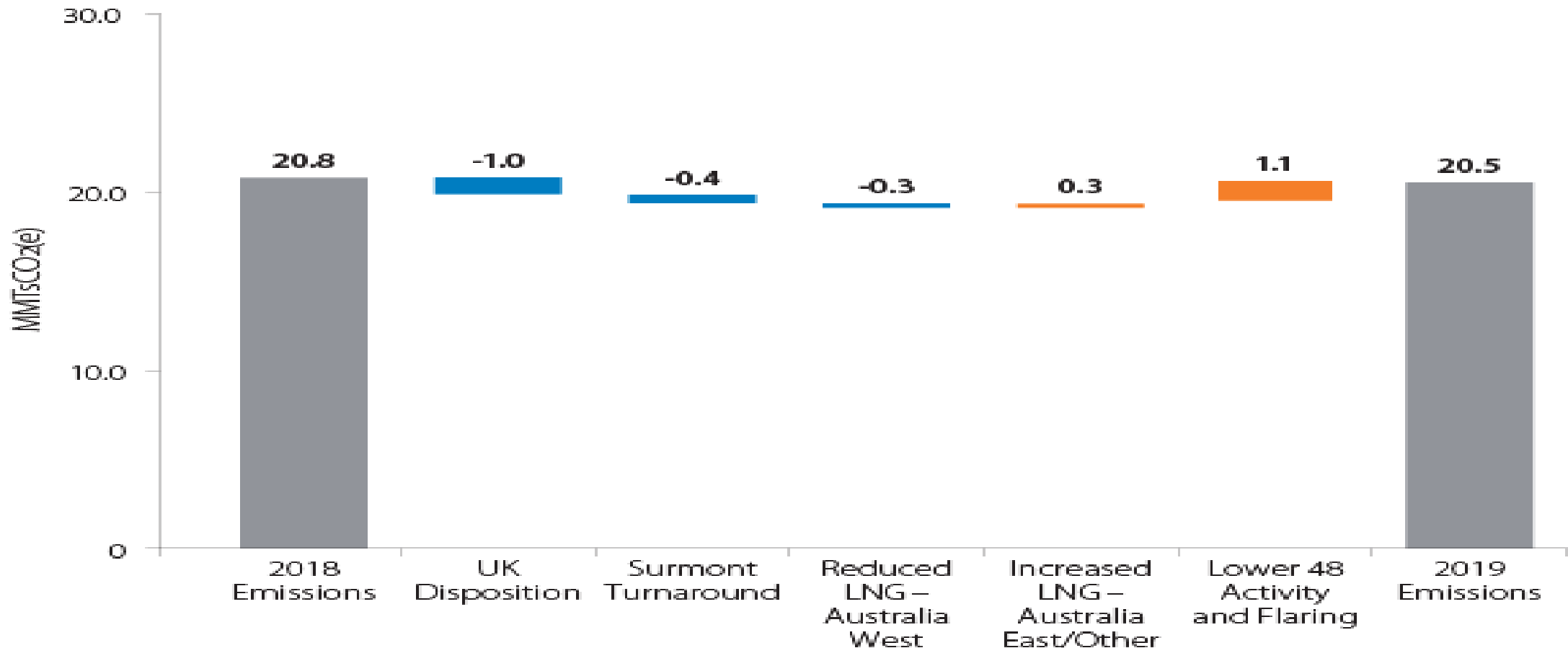


Total GHG Emissions



- In accordance with our aim to improve the disclosure of risk to our stakeholders, we have integrated climate related Sustainability Accounting Standards Board (SASB) metrics into our [2019 performance metrics](#).

GHG Emissions Changes



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PS Comments on Scope 1...

Direct GHG emissions from sources owned or controlled by Conocophilips

1. The impact which Conocophilips has on GHG emissions is most likely representative for the whole industry / competitors.
2. Due the fact that most exploration O&G companies require mainly diesel to be able to operate on and offshore only marginally can these companies reduce their CHG emissions
3. Already, where possible solar panels are being used. Note that the whole life cycle of solar panels need to be accounted for and this will prove that solar panels are not so 'green' as they seem.

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...PS Comments on Scope 1

<https://world-nuclear.org/information-library/energy-and-the-environment/energy-return-on-investment.aspx>

4. The use of modern diesel generators will improve the CHG emissions positive. Other factors such optimal maintenance schedule for all diesel driven equipment onboard, usage of high quality diesel to reduce usage of amount of diesel, intelligent planning of supply boats to reduce the movements to a minimum, same for land locations to reduce unnecessary trips, in stead of
5. Helicopters for crewchange: use crewboats instead etc.
6. Drillingfluids for deep wells oilbasemud is most preferable choice because of faster drilling, less well caving in etc, etc. Waterbase mud option is available but not for ultra deep wells and the longer drilling time to complete the well impacts negatively the CHG emissions.

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PS Comments on Scope 2:

GHG emissions from generation of purchased electricity consumed by Conocophilips.

1. For land operations it is possible to use part of the needed electricity from a local utility company preferabel whom produces its electricity from a nuclear plant so that emissions are zero. Still for some rig equipment diesel generators will be required.
2. For Offshore operations these are mostly stand alone operations which can only be operate by diesel generators.
3. Usage of led lights, modern airco systems, modern boilers etc. will reduce usage of electricity/diesel.

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Scope 3 Emissions...

- For oil and natural gas exploration and production companies, scope 3 emissions fall primarily into the “use of sold products” category. Our GHG intensity target does *not* cover scope 3 emissions. As an exploration and production company with no downstream assets, we have no control over how the raw materials we produce are transformed into other products or consumed. We do, however, calculate our scope 3 emissions annually based on net equity production numbers. In 2019 our scope 3 emissions increased by 9%, primarily due to increased net production.

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...Scope 3 Emissions...

Estimated Million Tonnes CO₂e

- Upstream transportation and distribution 2.7
- Downstream transportation and distribution 4.9
- Processing of sold products 14.2
- Use of sold products 173.4

Another issue with scope 3 emissions: they are *someone else's scope 1 or 2 emissions*. eg scope 3 emissions from refining the oil we produce are a refiner's scope 1 emissions. Combustion of that oil in the form of a finished product eg gasoline is also scope 3 emissions for the producer of the oil, the refiner and the marketer. Double counting throughout the economy. Likewise, our scope 3 combustion emissions for NG might be an electricity producer's scope 1 emissions & our own scope 2 emissions -- one of the reasons that to date, only integrated oil and gas companies have set scope 3 net-zero targets.

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...Scope 3 Emissions...

- As an exploration and production company, we will concentrate on reducing the emissions that we own and control, and then advocate and help develop policy that impacts scope 3 emissions through a price on carbon. This is why we were a part of US Climate Action Partnership in 2007 and a founding member of the Climate Leadership Council in 2018.

Flaring

- Flaring is a regulated and permitted process for the controlled release and burning of natural gas during oil and gas exploration, production and processing operations. Flaring is required to safely dispose of flammable gas released during process upsets or other unplanned events and to safely relieve pressure before performing equipment maintenance.

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...Scope 3 Emissions...

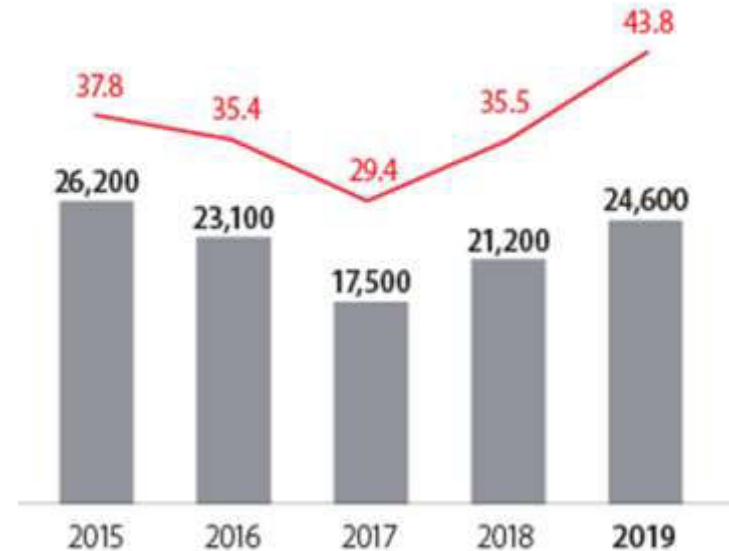
- **Flaring** also used to control & reduce emissions of volatile organic compounds from oil & condensate storage tanks, and to manage emissions at well sites lacking sufficient pipeline infrastructure to capture gas for sale. We have reduced flaring by utilizing closed-loop completions, central gas gathering systems, vapor recovery units, directing condensate to sales pipelines & improving uptime through operational excellence (a major focus for all our operating facilities).
Read more about our 2020 endorsement of the 'World Bank Zero Routine Flaring by 2030' initiative.

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...Scope 3 Emissions

Total Flaring Volume

— Million Cubic Feet/Million BOE
■ Million Cubic Feet



Overall Conclusions:

- Reducing CHG Emissions within the Oil & Gas Industry will be a long process.
- The world runs mostly on O&G and implementation of all green technology depends on fossil fuels.
- Nuclear energy will be essential to reduce GHG Emissions globally as this is the only way to achieve climate goals.
- Developing new technology will be needed to move forward to reduce the footprint of fossil fuels.

- **Thank you!**