Climate Change and the Oil & Gas Industry: Transitioning to a Zero-Carbon World

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Oil & Gas Still Have Significant Roles

Source: BP Statistical Review of World Energy 2020
... and Probably Will for Years to Come

"Solar becomes the new king of electricity...

...but without an additional policy push, it is too soon to see a rapid decline of oil"

- IEA World Energy Outlook 2020

https://www.iea.org/reports/world-energy-outlook-2020
Can’t Forget about Existing Energy Infrastructure

 Avoiding new emissions is not enough: if nothing is done about emissions from existing infrastructure, climate goals are surely out of reach

- IEA World Energy Outlook 2020

https://www.iea.org/reports/world-energy-outlook-2020
Oil & Gas Industry’s Role in GHG Emissions

- Oil & gas industry’s operations account for 9% of all human-made greenhouse gas (GHG) emissions.
- In addition, it produces fuels that create another 33% of global emissions.
- “If the world is to come anywhere near to meeting its climate change goals, the oil & gas industry will have to play a big part” (McKinsey & Co., 2020).

Oil & Gas Industry’s GHG Emissions by Source

Oil & Gas Industry’s Methane Emissions

- Methane is 28-80 times more potent than CO₂ as a greenhouse gas¹-²
- Methane represents only 3% of total greenhouse gases by mass, but historically responsible for 23% of radiative forcing (i.e., key mechanism behind global warming)²
- Oil & gas industry responsible for 20% of global human-made methane emissions³

Sources:
1) https://www.ft.com/content/667cd344-a222-4002-9e2a-dce13d669d33
2) https://ourworldindata.org/greenhouse-gas-emissions
The Energy Industry’s “Other Challenge”

- What can digital technologies do to help the energy sector to reduce emissions in the short- to medium-term with these legacy energy sources?

Continuing Journey to “Smartness”

- Digital “smart fields” technologies and design principles have already been widely adopted throughout the oil & gas industry
- Delivered significant operational efficiencies and cost savings
- Focus increasingly shifting towards reducing emissions, being greener

Goal: Total Transparency and Visibility

- Precipitous decline in price of sensors
- Internet of Things (IoT) makes it increasingly possible to collect vast amounts of operational data from oil & gas production facilities
- A bridge between the physical world and the digital world
- Improves visibility and enterprise-wide transparency

- Moving computation to the “edge” of the network—that is, closer to where the data is being collected
- Reduced latency allows smartness of system to occur in near real-time
- Simpler to audit data
Emergence of a Global Data Standard

- Reference architecture and data standard for all industries, including the oil & gas sector
- Widespread support from many international oil companies, national oil companies, service companies, and digital vendors
- Facilitates interoperability and storing, defining, and sharing GHG data within supply chain and with external stakeholders
- An open source-based reference implementation

Image source: https://www.opengroup.org/openfootprint-forum
Thank you!

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