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# Charting the Road to Energy Transition

A Decision-Focused Approach for Oil & Gas Companies

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**The oil & gas industry is facing unprecedented challenges. Price collapse may be the most familiar in an industry used to responding to frequent price fluctuations. It may take years for oil demand to recover to pre-COVID-19 levels, exposing all segments of the industry’s value chain. And then there is that invisible, yet most discussed, byproduct of burning hydrocarbon—carbon emissions.** Investors, consumers, and regulators are now expecting oil & gas companies to monitor and manage not only direct emissions from their own operations (known as “Scope 1”), but also emissions from the energy sourced to run their operations (Scope 2). If Scope 3 emissions—those that result from the end-user’s use of refined hydrocarbon<sup>1</sup>—were to be included as well, it would fundamentally alter the oil & gas business and require companies to transform their operation.

The senior leadership of a carbon-intensive upstream oil operator was deeply concerned that, without significant progress in decarbonization and visible investments in new energy sources, the company’s social license to operate<sup>2</sup> would be at risk. The company had a wide range of levers to reduce the carbon intensity of its operation such as reducing steam injection, installing solar panels to power operations, and capturing and injecting CO<sub>2</sub> to

**“It is not easy to find a profitable path to energy transition.”**

increase oil recovery, but each came with a very different set of tradeoffs between economic viability and contribution to decarbonization. Some required significant technological advancement to become commercially viable before they would materially reduce carbon emissions. Investment in new energy sources would provide opportunities for growth, but

the company’s core capability was in oil & gas operations—raising considerable uncertainty as to whether the company could achieve an acceptable rate of return. This operator’s challenge is a good illustration of what many oil & gas companies are experiencing: it is not easy to find a profitable path to energy transition.

Even among the world’s largest oil companies, the approach to energy transition—the shift from fossil fuels to renewable energy sources—diverges widely. Some have announced ambitious emission-reduction targets and are spending billions of dollars to decarbonize their portfolios and invest in new energy sources. BP declared that the company is on a rapid transition to net zero,<sup>3</sup> while Repsol was the first oil & gas company to announce that it would become a net zero company—including Scope 3 emissions—and invest in 7,500 MW of renewable energy by 2025.<sup>4</sup> Ørsted, formerly DONG Energy, managed to exit completely from oil & gas and transform itself into a renewable energy company with a leading offshore wind farm business.<sup>5</sup>

Not every large oil company subscribes to setting a net zero target. Until recently, ExxonMobil had publicly stated that it did not intend to set time-based carbon-reduction targets: “While we continue to make progress in finding ways to mitigate greenhouse gas emissions from our operations, emissions may increase or decrease over time as a result of the changing nature of our business.”<sup>6</sup> Nonetheless, ExxonMobil has reportedly spent \$10 billion to develop lower-emission energy solutions and is the world leader in carbon capture, with 40% of cumulative CO<sub>2</sub> captured since 1970.<sup>7</sup> Chevron and ExxonMobil are continuing to reduce flaring from their operations and, along with Shell, are equity partners in the largest carbon-capture and -storage project in the world, Gorgon LNG.<sup>8</sup>

## Paving a Successful Path

How the world’s largest oil & gas companies are approaching energy transition is a good illustration that committing to a net zero target is not the only viable path to energy transition. While industry executives embrace the need for energy transition and recognize the challenges ahead for their businesses, they

“Committing to a net zero target is not the only viable path.”

expect fossil fuel to remain a reliable and affordable part of the energy portfolio far into the future. These leaders emphasize a practical and realistic approach to energy transition. For example, natural gas can be the bridge fuel between crude oil and renewable forms of energy and reducing and capturing methane emissions can produce immediate environmental benefits and generate profits. Industry executives argue for balancing the efficiency and economics of fossil fuels against the anticipated environmental and financial impact. For oil & gas companies, these considerations provide a necessary framework for developing a successful energy transition strategy.

Setting a path to energy transition will depend on the following factors:

- **The company’s energy transition goals.** Scope and time frame of emission reduction, carbon intensity vs. total emissions, carbon dioxide vs. methane reduction.
- **The current portfolio of assets and the carbon intensity of the operation.** Oil vs. gas, heavy vs. light, recovery technologies used.
- **Options available within the company’s existing assets to reduce carbon emissions.** Reducing flaring, capturing methane leaks, using non-hydrocarbon sources to generate steam for thermal injection, sourcing power from renewable sources.
- **The company’s ability to implement technologies to reduce carbon emission.** Availability of a suitable reservoir for carbon injection and storage, operating experience in CO<sub>2</sub> enhanced oil recovery.
- **The regulatory and political environment in the regions where the company operates.** Local carbon tax regulations, incentives for investing in decarbonization projects, pressure from local stakeholders to monitor and reduce carbon emissions.
- **Suitability of investments in new energy sources.** The company’s capability to execute non-oil & gas projects, access to land for solar or wind farms, access to capital to invest in adjacent businesses.

An upstream company with a portfolio predominantly of heavy oil, for example, could benefit from setting specific near-term targets to reduce carbon intensity by cutting steam injection while balancing loss of revenue. A midstream operator with strong project-execution capability and access to land might be better suited to launch a

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renewables business and invest in new forms of energy such as hydrogen. A refinery could partner with a provider to capture carbon emissions from its operation for carbon capture, utilization, and storage projects. While it may be appropriate for some companies to declare aggressive reduction targets and invest heavily in renewables, it could be equally prudent to set incremental near-term targets, evaluating the most cost-

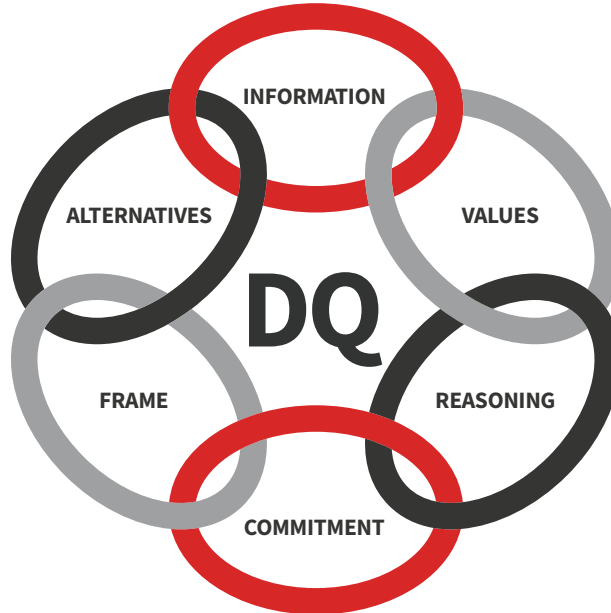
effective path toward achieving such targets. The challenge is not a lack of options; it is in figuring out which ones are best for the company. Constructing the optimal path requires a careful analysis of choices while considering a complex web of technical, regulatory, political, and market uncertainties. Another challenge lies in reconciling multiple perspectives and overcoming conflicts and underlying biases among key stakeholders.

## A Decision-Focused Approach

Energy transition is a classic example of a decision at the intersection of high analytical and high organizational complexity. While these types of decisions are the most difficult, they also offer the greatest benefits from the application of decision quality<sup>9</sup> (Figure 1), in the form of value creation and organizational alignment. Achieving decision quality has six requirements:

- **Appropriate Frame.** What is the objective? What decisions are in focus? What has already been decided or can be decided later?
- **Creative Alternatives.** Are we considering a wide range of creative alternatives?
- **Relevant and Reliable Information.** Are we likely to be surprised because we have overlooked critical factors or uncertainties?
- **Clear Values and Tradeoffs.** What value metrics are to be used to compare strategies? Are tradeoffs clear?
- **Sound Reasoning.** Are we using a well-structured, logical method of evaluating the alternatives and reflecting uncertainty?
- **Commitment to Action.** Are we involving key stakeholders in the decision from the beginning, building ownership and commitment along the way?

**Figure 1: The Decision Quality Chain**



Following the principles of decision quality, the first step in building a successful strategy for energy transition is to establish a clear frame by building alignment on the objectives and scope of the decisions. Establishing a clear frame will require answering these questions:

- **Why does the company need a strategy for energy transition now?** For example, the company may have already communicated lofty emission-reduction targets and now needs a realistic pathway to meet them. Or the company may be under pressure by external stakeholders to establish emission-reduction targets, leadership wants to make sure such targets are achievable, and they may want to understand value impact, both in terms of costs to achieve the targets and the benefits from improving Environmental, Social, and Governance (ESG) ratings.
- **Who should drive the strategy within the company?** This could be an exercise driven by the strategy team as part of setting broader business strategy for the company, with its top management as decision makers. Or the strategy could be driven by the environmental compliance or investor relations teams, primarily managing compliance and external reporting.
- **Have some decisions already been made regarding energy transition?** The company might have been given mandates from external stakeholders such as local government jurisdictions or investors. Or the company may have contractual obligations to invest in certain assets.
- **What range of levers is the company willing to consider?** The company may want to designate some parts of its portfolio as “core” business: not subject to change from energy transition decisions. Or the company could be willing to make significant changes to its portfolio, including creating new businesses in renewable-energy projects.

- **Is the company willing to accept lower financial returns in exchange for reduced emissions?** Investment in decarbonization could be viewed as a cost of doing business. Or it may be prudent to consider a balance between reduced emissions and value lost.

There are no right or wrong answers to these questions. However, the answers will define the frame for companies to build their own strategies for energy transition. One helpful tool to clarify the frame is the decision hierarchy, which categorizes decisions into three areas: decisions already made, decisions to be made by considering choices and evaluating them, and decisions that can be made separately or later. A sample decision hierarchy for an upstream oil company’s energy transition strategy is shown in Figure 2.

**Figure 2: A Sample Decision Hierarchy for an Upstream Oil Company’s Energy Transition Strategy**



The content of the frame may depend on the company's role in the energy value chain, but the same framework would apply. For example, an equipment manufacturer in the supply chain could approach this from how energy transition would threaten or create opportunities for its main customers in the energy sector. Energy companies that are setting and actively managing emission-reduction targets could create opportunities to invest in equipment that enables innovative carbon-reduction technologies. For electric utilities, the emphasis could be on how renewable-energy assets complement fossil-fuel-based generation assets and how to create value from distributed energy resources.

## Taking the First Step

While there is no universal recipe for success in facing the energy transition mandate, companies with a clear and actionable strategy toward energy transition will gain competitive advantage. This requires effort beyond an annual sustainability report or seeking high

ESG ratings. To maximize the chance of achieving the most desirable outcome, decisions to cope with energy transition require a careful analysis supported by a well-designed process—just like any other decision for core oil & gas operations. As a first step, companies should create a customized frame for their own energy transition strategy by taking these actions:

- Determine who should drive the strategy for energy transition, and identify decision makers.
- Conduct a workshop among key internal stakeholders to align on the objectives of the strategy by crafting a vision statement.
- Continue as a group to identify all relevant decisions the company must make, and use these to build a decision hierarchy.
- Develop a broad set of scenarios for energy transition, built on regulatory and market uncertainties, and explore the impact under each scenario.
- Begin a dialogue among decision makers to align on the objectives and the scope of decisions.

By adopting the decision quality approach, companies can create their own customized frame and begin to navigate toward a successful and practical strategy for transition to a future with reduced emissions.

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# FOOTNOTES

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<sup>1</sup> For detailed definitions of Scope 1, 2, and 3 emissions, please see “Big Oil is finally talking about scope 3 emissions. What the heck is scope 3?” by Emily Pontecorvo, Grist.org, February 12, 2020 <https://grist.org/energy/big-oil-is-finally-talking-about-the-elephant-in-the-room-the-emissions-footprint-of-its-products/>

<sup>2</sup> For a discussion on social license to operate for oil companies, please see “Social License to Operate” by Nathan Meehan, Journal of Petroleum Technology, Volume 68, Issue 3, March 1, 2016 <https://pubs.spe.org/en/jpt/jpt-article-detail/?art=1038>

<sup>3</sup> BP, “Reimagining Energy” <https://www.bp.com/en/global/corporate/who-we-are/reimagining-energy.html>

<sup>4</sup> Repsol Press Release, December 2, 2019 <https://www.repsol.com/en/press-room/press-releases/2019/repsol-will-be-a-net-zero-emissions-company-by-2050.cshtml>

<sup>5</sup> “How Ørsted’s energy transition led the way for oil and gas companies,” Power Technology, April 27, 2020 <https://www.power-technology.com/features/orsted-oersted-energy-transition/>

<sup>6</sup> ExxonMobil, “Managing Climate Change Risks” <https://corporate.exxonmobil.com/Community-engagement/Sustainability-Report/Environment/Managing-climate-change-risks#Overview>. In July, ExxonMobil and other member companies in OGCI (Oil and Gas Carbon Initiative) committed to a 10% reduction in aggregate carbon intensity by 2025 <https://www.reuters.com/article/us-oil-carbon/oil-giants-including-exxon-set-first-joint-carbon-target-idUSKCN24H0GZ>

<sup>7</sup> ExxonMobil, 2018 Sustainability Report <https://corporate.exxonmobil.com/-/media/Global/Files/sustainability-report/publication/2018-Sustainability-Report.pdf>

<sup>8</sup> Chevron Green House Gas Management <https://www.chevron.com/sustainability/environment/greenhouse-gas-management>, ExxonMobil 2018 Sustainability Report <https://corporate.exxonmobil.com/-/media/Global/Files/sustainability-report/publication/2018-Sustainability-Report.pdf>, Chevron Gorgon Carbon Dioxide Injection Project Fact Sheet <https://australia.chevron.com/-/media/australia/publications/documents/gorgon-co2-injection-project.pdf>

<sup>9</sup> Decision Quality: Value Creation from Better Business Decisions. Carl Spetzler, Hannah Winter, and Jennifer Meyer. Published by John Wiley & Sons, 2006 <https://sdg.com/decision-quality-book/>