

Energy Transition and Sustainable Development Goals by O&G Companies

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Introduction

Oil and gas companies around the world are facing severe concerns about transit into an ambitious low-carbon energy sector in order to maintain and improve their economic and reputational resilience. These companies are expected to transform from a traditional fossil fuels economy to a clean renewable energy technologies economy. This would lead the companies to an effective, positive, and sustainable environment that will bring socially and economically sensible outcomes in society. Given the environmental and economic considerations of the oil and gas companies in geo-political and current macroeconomic scenarios, the global energy production and consumption forecast has put forward its suggestion that natural gas and petroleum consumption would play a developmental role in making a sustainable society. Sustainable development through O&G companies driven by the urbanization trends and needs of the growing population across the globe also offers a pivotal role in the sustainable landscape of the energy matrix (Hartmann et al., 2021). The forecast suggests that O&G companies from the past decade have been trying to deploy an extensive variety of investment plans in low-carbon and renewable technologies, but the transition of these companies from traditional fossil fuel economy to renewable energy resources has been relatively slow as O&G companies adapt and expand their business strategies. This paper critically explores and discusses the potential ways in which O&G companies can demonstrate their reputational and financial resilience while successfully adapting to a low-carbon energy sector for the overall sustainability of the O&G industry.

Positioning for Renewable and Clean Energy: O&G Companies in a Low-Carbon World

The operations of the O&G industry account for more than 9% of all human-made GHGs emissions and an estimate of more than 42% of the global emissions as this sector produces the fuels (Krawchenko and Gordon, 2022). This puts many other sectors on the verge to play their role along with the O&G industry to meet the climate-change goals of the world. Mounting pressure on the oil and gas companies regarding the transformation from fossil fuels to clean energy resources has led many companies to adopt and expand a multi-energy focus as well as invest in clean and renewable energies. Based on that, it is commonly believed that a sustainable global economy can only flourish with capital-intensive green energy including biofuels, green hydrogen, and carbon capture transition by the oil and gas sector. The O&G industry is a risk-management and innovation business where the

success of the sector is closely linked to companies that are skillfully managing, accessing, and evaluating risks across their portfolios, leading them to outperform their competitor companies in the market. Moreover, the long-term success of oil and gas companies relies on enhancing this sector's innovation potential and the creation of new occupations with a substantial social and economic influence at the local and regional levels in order to contribute to sustainability (Pickl, 2019). This would generate significant investment in clean energy in multiple value chains including production, provision, and marketing of the oil and gas industry.

A growing number of companies in the oil and gas sector are pledging net-zero goals for the sustainability and development of the O&G business as well as the global economy, but not all corporations are clear about how to achieve that net-zero goal as many of them view it as a complex phenomenon. Many oil and gas companies view energy transition as a mixed bag of investment, risks, and opportunities that can create a spectrum of sustainable opportunities in their long-term business. Hence, the net-zero focus is growing stronger and stronger by the day while governments around the world are focusing on designing policies to achieve net-zero goals with the aim to incentivize a low-carbon future for the coming generations. So, more and more O&G corporations are joining the race to pour in their own share of reducing the use of fossil fuels and transitioning to a higher share of clean and green energy as well as renewable in the energy mix.

Given the imminent shift, net-zero pioneers in the oil and gas sector are coming forward with a bold vision and objective of making sustainability their core business strategy for achieving a green O&G business. These pioneers have the aim to divest or dismantle the hydrocarbons-based business model these companies have built with hard work and efforts over decades although the green traits are hard to embrace with the skyrocketing price of oil around the globe. Despite some of the companies having announced their departure from hydrocarbons and showing the courage to scale their businesses as per net-zero goals, they still account for 25-30% of the market capitalization of the O&G sector. So, they receive fewer stakeholder and market appraisals for adopting clean energy as their primary business feature. In the past decade, many oil and gas companies have optimized their operations according to net-zero goals. Many lean producers with the lowest carbon have made a big change to their resource strategy led by the new normal of oil prices in the market. These lowest-carbon producer companies are likely to continue to play their role in the new future of green energy as these producers align most with the long-term vision of their organizations that strive for both decarbonization and optimization (Cherepovitsyn and Rutenko, 2022).

Potential Ways to Demonstrate Financial and Reputational Resilience of the O&G Sector

To play a significant role in achieving net-zero goals and mitigation of climate change to the degree it is required, the oil and gas companies must reduce their current carbon and greenhouse gas emissions by prioritizing cost-effective interventions as well as clean energy and renewable. By

investing in clean energy (such as solar, hydropower, and wind), oil and gas companies can position themselves as global leaders in the transformation to a low-carbon energy industry. This goal can be accomplished if these oil and gas companies allocate a portion of their capital towards renewable energy projects either through partnerships with established renewable energy corporations or through direct investments in clean and renewable energy sources. This strategy would not only help to mitigate the financial risks associated with declining demand for fossil fuels but also present a prospective opportunity for these companies to enhance their reputation and financial resilience by tapping into the growing market for renewable and green energy (Ionescu, 2021). Moreover, this not only allows the companies to mitigate the environmental and social effects of their operations and reduce their carbon emissions but also helps to future-proof their business by reducing dependence on fossil fuels and aligning with global trends towards renewable energy.

Implement a Diversification Strategy

A prospective way for companies operating in the O&G industry to demonstrate, evaluate, and enhance their financial as well as reputational resilience in the market and successfully adapt to a low-carbon energy sector is by implementing a diversification strategy throughout their value chains (Ahmad et al., 2016). This business strategy involves investing in renewables such as geothermal, solar, etc. as well as exploring opportunities in other emerging industries such as energy storage technologies, electric vehicles, and other sustainable sectors. In this way, by diversifying their portfolio and expanding into net-zero or clean energy markets, oil and gas corporations can mitigate the risks and potential harms that are associated with a transition to a low-carbon industry and position themselves as potential leaders in the energy transition (Poveda and Young, 2015). In a report published by the United States regarding the implementation of Sustainable Development Goals (SDGs) in the O&G companies, the global dependence on the oil and gas sector will continue which needs a transition to a sustainable world. However, many companies in the O&G industry have failed to achieve these SDGs goals because the trade-offs and synergies between the company policies, operations, and sustainability are poorly understood. The report predicts that by the end of 2030, the participation in the energy matrix of the companies in the O&G sector is estimated to decrease to approximately 55% considering the expected capacity and annual growth of the renewable energy resources (Borges et al., 2022). Companies when they diversify their portfolio can expand into the areas of clean energy technology and infrastructure development. Moreover, organizations can demonstrate their commitment to sustainability and showcase their ability to adapt to the changing energy landscape.

Diversify Investments and Expand into Renewable Sector through Renewable Technologies and

Strategic Partnerships

One potential way for oil and gas companies to explore and evaluate their financial and reputational flexibility is by expanding and varying their investments in the renewable energy sector. This goal can be achieved through a combination of research and development efforts in strategic partnerships or acquisitions with established companies or players in the clean energy sector (Zhong and Bazilian, 2018). Oil and gas companies through actively making investments in renewable technologies can showcase their commitment to climate change mitigation and sustainability. Furthermore, O&G companies can leverage their existing expertise in operations and project development by entering the renewable energy market to create a competitive advantage. This will create a more sustainable business model that reduces reliance on fossil fuels, addresses the growing concerns about greenhouse gas emissions, and aligns with global climate goals. Moreover, resilience can be demonstrated by adopting transparent business and reporting practices as well as integrating sustainable practices into their business strategies by majorly focusing on improving their operational efficiency and reducing toxic greenhouse gas emissions throughout the value chain. In addition to diversifying their investments in the strategies market players establish, oil and gas companies can also actively address climate change issues and incorporate sustainability into their core business strategies which would help demonstrate resilience on both financial as well as reputational spectrums.

Adopt Sustainable Business Practices

Another significant way through which oil and gas corporations can enhance the financial and reputational resilience of their business is through the adoption of sustainable business practices. This can involve business practices that ensure sustainability such as optimizing energy efficiency in organizational operations, minimizing water usage, reducing GHG emissions through carbon capture and storage projects throughout their operations, and actively managing the environmental impacts of the emissions. Additionally, companies in the O&G sector can invest in renewable energy projects and low-carbon technologies in their value chains. This will reduce reliance on fossil fuels and diversify their portfolio so that the sector can transition towards a low-carbon energy industry (Ahmad et al., 2017). Furthermore, adopting sustainable business strategies and practices also includes accountability in reporting environmental performance to stakeholders in order to promote transparency in the sector. By implementing practices that are environment-friendly and embrace sustainability, corporations in the oil and gas industry can demonstrate their commitment to reducing their carbon footprint in the atmosphere and mitigating the impacts of climate change on the environment. Moreover, embracing sustainable business practices can also attract partnerships and investments from like-minded investors and organizations that prioritize environmental sustainability.

Decarbonize Oil and Gas Sector

O&G companies can play an effective role in mitigating the detrimental effects of climate change by minimizing emissions including greenhouse gas, methane, and carbon associated with their products and operations. Already, many companies in the O&G industry have adopted cost-effective techniques and interventions that can substantially decarbonize organizational operations which reduce energy consumption. One significant way is by implementing initiatives that offset emissions by removing greenhouse gas emissions from the atmosphere while tapping into natural carbon sinks such as forests, soil, and plants. Decarbonization of the sector involves reducing the carbon footprint of their operations through various means such as implementing more efficient practices and processes, investing in cleaner technologies, and incorporating carbon capture and storage technologies. By actively working towards reducing carbon emissions and promoting sustainability in their operations, oil and gas companies can position themselves as responsible and forward-thinking players in the low-carbon energy industry. This not only helps oil and gas companies adapt to the changing industry landscape but also enhances their reputation among stakeholders including customers, investors, and regulators. Adding to the importance of decarbonizing the oil and gas sector, companies can also demonstrate their reputational and financial resilience by investing in renewable energy sources and diversifying their energy portfolios through which companies can transition towards a low-carbon energy sector. This strategic shift allows companies operating under the umbrella of the O&G industry to adapt to the ever-growing demand for clean and green energy and align their business models with global efforts to minimize carbon footprint, reduce emissions, and mitigate as well as combat climate change.

Enhance Operational Efficiency

The operational efficiency of the oil and gas corporations is another potential way that can demonstrate an organization's financial and reputational resilience which can be adopted to achieve a clean and low-carbon energy industry. This can be achieved through various measures such as adopting best organizational practices, implementing automation, optimizing production processes to minimize energy consumption, implementing advanced technologies, and minimizing greenhouse gas emissions. By improving and enhancing operational efficiency, oil and gas companies can reduce their carbon footprint and minimize waste as well as emissions leading to cost savings and increased profitability (Peng et al., 2019). For instance, implementing green energy technologies that reduce emissions and optimize energy use in refining and extraction processes can lead to significant environmental benefits. Therefore, adopting best practices in resource utilization and energy management can not only reduce the costs of the technologies and other resources used but also enhance the organization's reputation as a sustainable and responsible entity in the O&G sector. Moreover, adopting more efficient extraction and production methods can also lead to effective cost savings for oil and gas companies. Thus, by focusing on operational efficiency, oil and gas companies can showcase their quality of being dedicated to the cause of green energy and net-zero goals for

transitioning towards a low-carbon or zero-carbon energy sector while ensuring a positive reputation and financial stability.

Decarbonization of the Oil and Gas Industry

Following are the strategies that can be adopted and implemented by both downstream and upstream operators that would extend the lifetime of refining assets in the oil and gas sector in an increasingly decarbonizing world:

What Upstream Operators Can Do

Oil and gas corporations can take action depending on the local and geographical conditions as upstream operations account for two-thirds of oil and gas sector-specific carbon emissions. The upstream operators can electrify equipment to cut and reduce methane and fugitive emissions which provides a cost-effective alternative to fossil fuels and diesel fuels. Moreover, oil and gas players can also use “Carbon Capture and Storage Technologies” that are projected to play a very significant role in the decarbonization of the sector as a number of companies are looking for either using or storing captured carbon.

What Downstream Operators Can Do

Downstream operators can adopt distinctive options such as electrification and energy-efficient ideas for the decarbonization of the O&G industry. For instance, medium-temperature heat pumps and waste-heat-recovery technologies can reduce the amount of primary energy emissions. Furthermore, green hydrogen acquired through the process of hydrolysis is a less expensive alternative that can be used in refineries of oil and gas companies to reduce carbon and greenhouse gas emissions. Moreover, replacing conventional oil feedstocks with greener biobased feedstocks can also reduce emissions to a large extent in oil and gas refineries.

Develop Carbon Capture and Storage Technologies

Successfully adapting to a low-carbon and low-GHG energy sector by developing carbon capture and carbon storage technologies is another potential business strategy that oil and gas corporations can develop and implement for demonstrating the financial and reputational resilience of the organization. Carbon capture and storage technologies include capturing toxic emissions of carbon that are derived from fossil fuel-based operations in the energy sector such as industrial facilities or power plants (Gibbins and Chalmers, 2008). These technologies also involve storing carbon underground that is captured during industrial operations or later utilizing that carbon for other purposes in other sectors. Investment in the development of “carbon capture and storage

technologies” through the field of research can help oil and gas organizations to actively contribute to reducing the use of fossil fuels, carbon emissions, and greenhouse gas emissions which they can utilize through the existing infrastructure and expertise of the companies in handling carbon-related operations (Van Alphen et al., 2010). Through these technologies, oil and gas companies can also mitigate their carbon emissions while continuing to utilize fossil fuels which can help the corporations to make progress towards decarbonizing their operations in the industry which would reduce environmental impact. In this way, oil and gas companies can effectively contribute their global efforts to promote a sustainable energy future for the globe and the coming generations.

Conclusion

In conclusion, the market comprising the oil and gas companies that aim to shift from a traditional fossil fuel economy to net-zero goals based on a green energy economy will characterize a low-carbon future which would be a competitive one as compared to the companies that continue to focus on production and consumption of hydrocarbons. For companies that focus on low-carbon or net-zero business models need to master the balance of environment and economics so that they can smoothly win in the green energy market of the future which would undergo a complete innovation and transformation. Thus, participating in the transition to the green environment adopted through net-zero goals can unlock and establish a new and prospective equation for the oil and gas companies across a spectrum that would build new revenue streams, unlike the companies that focus on lean operations, hydrocarbon production, and lower carbon costs in their long run. Last but not least, companies that evolve with time to make sustainability, their key business feature are likely to balance their corporate vision and internal transformation. These companies working on the net-zero goals of reducing carbon footprints from the environment are on the right path to environmental sustainability as they set a strong “low-carbon foundation” and room for innovation for the future.

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