

IMPACT OF SUSTAINABLE ENERGY TRANSITION IN TRANSPORTATION SECTOR ON THE NATIONAL OIL COMPANIES OF EMERGING ECONOMIES - A CASE STUDY OF ONGC OF INDIA.

Athreya Cheppela, +919490722295, ONGC, University of Groningen, a.cheppela@student.rug.nl
Dr. M. Mulder, University of Groningen, machiel.mulder@rug.nl

Overview

Sustainable Energy transition in Transportation (SET) is shifting away from petroleum-based fuels in mobility. Transportation is a major contributor to the global green-house gas emissions and a key sector in achieving climate change mitigation targets. SET impacts various sections of economy, particularly oil and gas producers are highly affected, due to the fall in the demand of oil and gas. However, the progress of SET is dissimilar among the countries, growing economies like India are expected to be the demand centres for the petroleum fuels in coming decades. For the low-cost oil and gas suppliers like MENA countries, India will become a major market, to compensate the loss of demand in the erstwhile markets (Dale & Fattouh, 2020) (Luciani & Moerenhout, 2020). National Oil Companies (NOC) in developing economies like Oil and Natural Gas Corporation (ONGC) of India, a fortune 500 company, will face the increased competition. There will be a conflict with the national governments who give energy security high priority over commercial interest of NOCs and to some extent over the fall in the pay-outs from NOCs to exchequers. Even in moderate growth of SET, price volatility and challenges to find new discoveries, necessitates the shift in strategy. For higher oil & gas price scenarios, the balance of payment pressures of their owner nations will make NOCs to find new and difficult reserves, these assets will face the threat of stranding in future downturns, nevertheless SET will make permanent impacts unlike general commodity cycles. Furthermore, sooner or later low resource base nations also give priority for SET which further shrinks the oil & gas market.

Present study focuses on strategic implications of SET on the ONGC's competitiveness, strategic position of ONGC and strategic options available to the company. ONGC's strategic positions is compared with that of CNPC (China National Petroleum Corporation) and KNOC (Korean National Oil Corporation). This study will be useful for the strategic planning of NOCs. Literature on strategic management of NOCs focuses mainly on the implications of energy transition on NOCs of major oil producing nations and their social contract obligations. Studying the impacts on NOCs of energy importers will be a useful addition to the strategic management literature as well as climate change and energy literature, present study is expected to be a significant contributor in that effect.

Methods

Scenario analysis is used to find drivers and inhibitors of SET in India and around the world. As the exact quantitative projections are impossible to make, one can get direction of growth from the scenario analysis. Projections vary among various organisations, comparisons can be made for the possible impacts on the case under study. Company's prospective plans are analysed in the context of SET for the coming decades. Strategic position as well as strategic options in the low-price regime are analysed in grounded theory methodology. The NOCs need to adopt strategies both for improvement in their oil & gas business as well as greening their portfolio. So, the strategies both for oil & gas business as well as diversification into green business are taken into consideration. As projections SET growth are different among the various studies, impacts are modelled for ONGC in three different scenarios namely, 1. Business as usual- current EV growth 2. Low EV growth in India and High EV growth in rest of the world. 3. High EV growth in India and rest of the world. For each scenario a simple merit order supply model for India is made, where ONGC and low-cost competitors are main competitors. Furthermore, quantitative prediction is modelled by applying various scenarios of the strategic options on the financial outcomes for ONGC. Data is obtained from the primary, secondary literature, which is available in public domain, financial data is taken from the annual reports of the company.

Results

Scenario analysis of impacts on ONGC:

ONGC's profits are highly correlated with the crude oil price as oil market are liberalised and Gas prices are still under administrative control in India. ONGC's capital expenditure & production volumes are almost constant over the years. Worldwide oil demand decline is dependent on the growth of SET, however, impacts on ONGC are analysed in three different scenarios,

1. In the business-as-usual scenario India's SET (Electrical vehicles (EV) can be used as a proxy to SET) growth is moderate compared to regions like Europe. ONGC's profits will stay in accordance with the growing oil demand and price of oil. Strategies improve oil & gas business are important in this regard. As per the concept of "stock effect" the marginal cost will increase with cumulative production (Cynthia & Gernot, 2007), marginal cost of new barrel addition will rise,

which is a challenge to achieve ONGC's targets of doubling the production (ONGC target for 2040). 2. In Low EV growth in India and High EV growth in rest of the world scenario, India's oil demand grows but due to the fall in demand in the world market, low-cost producers to save their volumes in the world market, will shift to Indian market, which will reduce the oil prices. Profits of ONGC will decrease because ONGC's supply stays at the same level, as it struggles to increase the supply. Company must find low-cost reserves and reduce the cost of production to protect itself in the low-price environment. 3. In High EV growth in India and in rest of the world scenario, Oil demand will get drastically reduced, India will show some demand, ONGC keeps its market share. International supply will compete for the rest of the market share, which ONGC is unable to serve. Indian demand reduction will result in lower price level from the business-as-usual-level but the competition with the international supplies will further reduce price levels, if low-cost producers try to prefer quantity over prices to keep their market share intact. ONGC needs to protect its market share from the imports. Low oil prices bring relief to government but ONGC will see its balance sheet shrink, this scenario necessitates ONGC to diversify towards green energy.

Strategic position & options of ONGC and comparison of selected NOCs:

ONGC is exploring collaborations with various firms and academic institutions to progress in its two-part strategy in oil & gas and diversification (Ugal, Nishant, 2021). ONGC profits are highly co-related with oil price, which is well recognised, but the strategies for low oil price scenarios are not made as a thrust area. Global analytical firms give much importance of impacts of low oil prices on oil companies and proposes strategies (Filipe, Scott, Kassia, Giorgio, & Pat, 2020) (Christopher, Scott, & Jannik, 2016). ONGC, CNPC and KNOC face similar issues, they will face growing challenges in fulfilling their core mandate as domestic resources gradually decline, and the energy transition poses new threats. Their strategies are also similar, like efficiency improvement, adaptation of technologies. A limited resource base and relatively high production costs at home suggest that the NOCs will have to look abroad. These NOCs may have to compete among themselves in overseas expansion, However, the increased competition may drive valuations of assets and increase the threat of disadvantaged assets. These NOCs have not announced dramatic strategies for diversification, but are taking steps to align with state goals. NOCs need to cut their own emission(scope 1&2) before making any additions to their portfolios, this will help in capital access. Policy analysis of respective governments do not suggest that the state will support dramatic moves by the NOCs away from their core business. NOCs need to build up campaign to reposition their brands in green energy by creating narrative and with minimum resistance approach with the respective governments.

Strategic options: For low oil price regimes, some of the following strategic options can be explored. Business model innovation like partnerships with resource rich NOCs, as the resource NOCs will compete for the Indian market, they are exploring long-term partnerships with Indian firms (Bhatt, Mollet, & Roychoudhury, 2019). For ex. ONGC, in partnership with cheaper producers can switch crudes in response to prices for its refineries. Volume improvements through improved efficiencies, technology adaptation, digitalisation (WEF & Accenture, 2017). Accelerated monetisation of proved and unconventional assets, to avoid cost over-runs and the high-cost projects vulnerable in the era of low oil prices (Ugal, Nishant, 2022). Furthermore, for GOI has concern over the losing forex, pressurises ONGC. High priority should be given to bring the barrels on-line from the explored fields. Windfall profits, from the heyday should be earmarked for the said purpose. Unconventional resources should be developed quickly. The natural gas seen as a bridge fuel for the growing economies, so far, the development of gas economy not fruitful in India. Low price realization of gas for oil & gas companies discouraged the development of gas fields. Liberalization of gas prices and marketing reforms are right steps in the direction of development of gas economy (CCEA, 2020), which will give strategic advantage to ONGC to substitute losing revenue from oil. Diversify into green technologies associated to oil & gas as initial step for diversification, venturing into green energy vectors in which ONGC will have an advantage, like Hydrogen, CCUS (carbon capture utilization and storage), offshore wind etc. with the advantage of pipeline network, offshore expertise and experience in big projects. Remote locations assets (stranded gas) can be brought on line by developing small power generation projects, which in turn will give an advantage of experience in developing green power generation. A simple model is made for the returns on capital employed for ONGC with various scenarios of oil price decline and percentage diversification. The model gives the result that due to lower returns from green energy, high fall in the oil price has huge impacts even in high diversification, faster diversification in moderate fall in the price will reduce the impacts of oil price drop.

Conclusions

Sustainable energy transition impacts oil and gas producers worldwide. National oil companies of oil importing growing economies face dilemma of energy security for their nations and increasing value from diversification. NOCs face constraints from the government policies. Due to the inefficiencies and increased competition in the sustainable transition, ONGC's profitability will be highly co-related with the path of EV growth in India and the world. This study depicts ONGC's market competitiveness in the various scenarios and focusses on the strategic position and plausible options in comparison with similar NOCs. The energy transition is a non-linear systemic shift, impacts of which will be visible after formation of critical mass, so the strategies should look beyond the current necessities. The present study shall make an addition to the strategic management literature and public sector enterprise literature. There is a scope for future studies by improving the model in the present study with additional variables and deep data analytics.

References

- Arun, P. (2021, August 16). ONGC well prepared for changing environment in oil sector: Alka Mittal. *Gharwal Post*.
- Bazzana, A. M. (2016). *Driving Down Costs in a Digital Oil and Gas Future*. Toptal.
- Beck, C., Kar, J., Hall, S., & Olufan, D. (2021, March 10). *How oil and gas is navigating the energy transition*. Retrieved from McKinsey: <https://www.mckinsey.com/industries/oil-and-gas/our-insights/the-big-choices-for-oil-and-gas-in-navigating-the-energy-transition>
- Ben Cahill. (2022). *National Oil Companies Leaning into the Energy Transition*. Center for Strategic & International Studies.
- Bhatt, Y., Mollet, P., & Roychoudhury, J. (2019). *India's Oil Imports: Achilles' Heel or Economic Javelin*. KAPSARC.
- CCEA. (2020). *Cabinet approves 'Natural Gas Marketing Reforms'*. PIB.
- Christopher, H., Scott, S., & Jannik, W. (2016). *The oil and gas organization of the future*. Mckinsey.
- CNPC. (2020). *Annual Report*. CNPC.
- Cynthia, L., & Gernot, W. (2007). Steady-state growth in a Hotelling model. *Journal of Environment and Economic Management*, 68-63.
- Dale, S., & Fattouh, B. (2020, May 22). *Peak oil demand and long-run oil prices*. Retrieved February 5, 2022, from www.bp.com: <http://www.bp.com>
- Damon, E. (2021, 09 24). Petroleum ministry tells India's ONGC to sell oil fields and find foreign partners. *Energy Voice*.
- Filipe, B., Scott, N., Kassia, Y., Giorgio, B., & Pat, G. (2020). *Oil and gas after COVID-19: The day of reckoning or a new age of opportunity?* Mckinsey.
- Geert, V., & Derk, L. (2012). *Governing the Energy Transition: Reality, Illusion or Necessity?* Taylor & Francis.
- Henk, V., Frans, A., Van, D. B., & Heij, K. (2017). Know Your Business Model. In V. Henk, A. Frans, D. B. Van, & K. Heij, *Reinventing Business models*. Oxford.
- KNOC. (2022). *Better Energy for*. KNOC.
- Luciani, G., & Moerenhout, T. (Eds.). (2020). *When Can Oil Economies Be Deemed Sustainable?* Springer Singapore. Retrieved February 6, 2022
- Margarethe, F. W., & Joseph, B. B. (2017, March 29). Corporate or Product Diversification. *Oxford encyclopedias-Business and Management*.
- Ministry of Finance. (2021). *Policy on strategic disinvestment*. Press Information Bureau.
- MOPNG. (2015). *MoU with Pan IIT by ONGC for Exploration of Hydrocarbon*. Press Information Bureau.
- MOPNG. (2020). *Digitalization Roadmap for Indian Exploration and Production (E&P) Industry*. Ministry of Petroleum and Natural Gas.
- MOPNG. (2022). *ONGC inks MoU with Norway's Equinor to collaborate on E&P, clean energy*. PIB.
- ONGC. (2021). *Annual Report*.
- ONGC. (2021). *Annual Report-20-21*. Retrieved February 5, 2022, from ONGC - Oil and Natural Gas Corporation Limited: <http://www.ongcindia.com>
- ONGC. (2022). *ONGC signed a MoU with Chevron New Ventures PTE Limited*.
- ONGC. (2022). *Subsidiaries*. ONGC.
- Perkins, R. (2019). *State oil companies evolve to face the future*. S&P Platts.
- PIB. (2018, January 21). Acquisition of HPCL by ONGC. *Press Information Bureau*.
- Pratik, D. (2020). Analysing India's Open Acreage Licensing Policy: Problems and Perspectives. *Journal of World Energy Law and Business*, , 483-489.
- Rai, V. (2010). *Adapting to Shifting Government Priorities: An Assessment of the Performance and Strategy of India's ONGC*. Retrieved from <http://dx.doi.org/10.2139/ssrn.1594998>
- Ugal, N. (2021, December 6). ONGC seeks international partners for offshore exploration. *Upstream*.
- Ugal, Nishant. (2022, January 4). Deep-water challenge: ONGC faces fresh delays at \$5bn Indian development. *Upstream*.
- WEF, & Accenture. (2017). *Digital Transformation Initiative Oil and Gas Industry*. World Economic Forum.