The future of Canadian oil & gas
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Executive summary

For decades, the energy industry has gone through important transitions and today is no different. We are in the midst of a structural and technology transition and its effects have been pronounced in Canada’s oil sands. In this uncertain environment, many players in the Canadian oil sands are considering their strategies, in particular what to do with their existing assets and whether it is a good time to pursue new ones. Experts provide different perspectives about what is likely for the future making it challenging for executives in these companies to know which path to pursue.

Monitor Deloitte’s perspective is that it is not possible to predict with certainty how the energy market will evolve or what the implications for the Canadian oil sands will be. Instead, we believe companies should reflect on the critical uncertainties shaping the future of the Canadian oil sands and plan for multiple plausible eventualities. In our research, we isolated several key drivers that we believe will shape the industry going forward and clustered these critical uncertainties around two broad axes (the cost of license to operate and the pace of the global energy transition) to produce four divergent, but plausible ways in which the industry might evolve.
In this uncertain context, Monitor Deloitte identified a set of “no-regrets moves” companies should make regardless of which future scenarios evolve:

01. Optimizing along the carbon value chain to reduce costs while protecting key capabilities

02. Focusing on innovation and launching programs to drive a step change in performance

03. Heightening corporate social responsibility and stakeholder engagement efforts to increase the social license to operate

In addition, companies need to review their asset portfolios and create what we term an **Advantaged Portfolio** consisting of three key elements which are: strategically sound, value creating, and resilient.

Below is a set of practical questions companies can use to assess whether portfolios are set up for ‘advantage’, and to identify where adjustments may be needed in the future:

**Strategically sound**
- How might your business improve its competitive positioning?
- Does your portfolio have the appropriate mix of core, adjacent, and transformational innovation investments?
- Do you have synergies that ensure the value of the portfolio is greater than the sum of the parts?

**Value creating**
- Does your portfolio, as a system, maximize intrinsic value? If not, can you alter the portfolio or change the growth/ROIC profile of the components to do so?
- How might your business articulate its intrinsic value to drive fair market value?
- Are you the value-maximizing owner of each of your portfolio components?

**Resilient**
- How might your portfolio evolve to support your financial objectives while balancing risk-tolerance in the organization?
- How might your portfolio need to evolve to improve organizational resilience in the context of different future scenarios?
- Does the portfolio allow the flexibility to change strategic course in response to uncertain market or company outcomes?
The energy industry has always been in a constant state of transition as the world progressively moved to lower carbon sources. At various times the industry has gone through major inflection points and the question today is whether we are in the midst of one of those inflections. What is known is that the oil and gas industry faces uncertainty in multiple areas and it has been felt far and wide.

**Figure 1. Impact on the global market**

- **350,000** the number of jobs lost in oil and gas production companies globally since 2014\(^1\)
- **↓ 55%** drop in the number of total world oil and gas rigs between 2012 and 2016\(^2\)

**United Kingdom**
- North Sea oil forecasted to lose $1.4 billion USD/year\(^3\)

**United States**
- 35 large and small exploration and production companies filed for bankruptcy protection (July 2014–December 2015)\(^4\)

**Mexico**
- State-owned Pemex announced $3.9 billion USD budget cuts and 13,000 in layoffs\(^5\)

**Norway**
- Forecasted shortfall of offshore investments by $19 billion USD\(^6\)

**Saudi Arabia**
- Lost $390 billion in anticipated oil profits last year\(^7\)

**Sources:**
1. OilPrice.com: Global Oil And Gas Job Losses: 350,000 And Counting (May, 2016).
2. OilPrice.com: Global Rig Count Continues to Tumble (March, 2016).
3. The Telegraph: North Sea oil to post losses of £1 billion a year (March, 2016).
5. Business Insider: Mexico’s struggling oil sector is in ‘the eye of the hurricane’ (January, 2016).
While the industry’s transition has had a global impact, the effect on Canada’s economy has been amplified, resulting in an unprecedented downturn. Current losses include:

- 62% decline in capital investment in the past two years
- 110,000 jobs lost as a result of the downturn in the oil and gas sector
- $17.6 billion forecasted drop in industry cash flow in 2016
- $233 billion loss in aggregate equity market capitalization since June 2014
- 3.1 times more debt than earnings for energy companies – the highest since 2002

For companies that wish to remain competitive in the future, there is a need to assess and potentially shift their strategy, and ultimately their asset portfolio. To inform this assessment, Monitor Deloitte considered the key uncertainties that could shape the future of the Canadian oil sands in the next 10-15 years in order to develop plausible futures for the industry’s evolution. These can be organized into the following categories: Macroeconomic and geopolitical; technological; and socio-demographic, environmental, and regulatory. Key examples include:

### Macroeconomic and geopolitical
- Impact of economic growth (particularly in China and India) on global energy demand
- Global energy mix (and potential “leapfrogging” from developing nations)
- Changing dynamics between global oil suppliers (i.e., OPEC, US shale) and their impact on supply-side volume and political unrest
- Natural gas supply-demand imbalance (including evolution of the LNG market)

### Technological
- Economic feasibility of renewable energy and battery/storage technologies
- Availability of alternative fuel vehicle options such as electric vehicles (EVs) and natural gas vehicles (NGVs), including their supporting infrastructure (e.g., fueling/charging stations)
- Innovative exploration and production and processing/refining technologies that can significantly reduce costs of production

### Socio-demographic, environmental, regulatory
- Impact of climate change policy on global energy demand and mix
- Availability of water and its impact on the cost of energy production
- Impact of public opinion (and recent/upcoming elections in North America) in shaping the social perception of fossil fuels and the energy industry

Sources: 8. Canadian Association of Petroleum Producers (CAPP) News Release Capital investment in Canada’s oil and gas industry down 62% in two years, April 2016.
9. TSX MiGReports.
10. Bloomberg “As Canada’s Oil Debt Soars Record, and Industry Shakeout Looms, August 2015.”
Industry uncertainties  
Macroeconomic and geopolitical  
Future economic growth and global commitments to climate change will have significant implications on global demand and the energy mix moving forward. While global energy demand is expected to increase, driven particularly by economic growth in India and China, both countries are projecting to exhibit lower GDP growth for the foreseeable future, due to economic contraction and bureaucratic hurdles. While a sustained low price environment should imply an increase in global demand for fossil fuels, global climate change commitments will likely impact the mix moving forward.

At this point, it is unclear where economic growth will accelerate (mature versus emerging markets) and how that acceleration will impact energy demand going forward. Additionally, it’s uncertain what proportion of the global energy mix will stem from clean energy by 2030, and how that mix will differ between countries.

OPEC’s influence  
Despite a lack of supply-side discipline from OPEC, global supply has decreased. As prices increase, swing producers may re-enter the market, potentially dampening prices. Continued tension among OPEC countries could also lead to a shortfall of oil.

Regional price differences and new sources of natural gas have opened up a global market for the commodity; however, low oil prices have reduced the prevalence of long-term contracts and decreased profit margins for LNG exports. As such, it is unclear whether LNG prices will decouple from oil in key markets, or how supply regions will develop in a low price environment.

Figure 2. Real GDP Growth (%) in India and China

![Figure 2. Real GDP Growth (%) in India and China](image)

Source: World Economic Outlook Database (April, 2015)

Figure 3. Renewable energy demand (as % of all demand for China)

![Figure 3. Renewable energy demand (as % of all demand for China)](image)

Source: BP Energy Outlook Tables (June, 2014)
The evolution of technology has the potential to significantly reduce costs and trigger a shift in the energy mix. Advances in renewables and battery technologies will likely reduce their cost. However, it is uncertain how quickly battery technology will evolve, particularly storage. These would typically follow more exponential technology curves. In addition, inconsistent political priorities and difficulties with grid integration may hinder mass adoption.

Innovation in the transportation sector has increased the adoption of EVs/NGVs and usage of vehicle sharing platforms (including driverless, and battery powered cars), but low oil prices, a low growth economy, or other factors may shift consumer focus back towards traditional vehicles.

Innovative exploration and production and processing/refining technologies offer the potential to significantly reduce costs of production. However, while technology has the potential to reduce costs, it is uncertain that companies will invest in technology innovation, given the current market.

Environmental issues will continue to shape climate change policy and influence the cost of accessing natural resources, especially water. At the UN Climate Change Conference, 195 countries agreed to limit global warming to 2°C; however, inconsistencies in political agendas and an absence of enforcing mechanisms and infrastructure may make it difficult for countries to meet these targets. It is unclear how these targets and the inability to measure their impact will affect Canada.

With the recent change in the Canadian Federal government, as well as the upcoming US election, environmental policy priorities may be shifting in Canada. The NDP government in Alberta is implementing a Climate Change Plan that includes imposing a $3 billion broad-based carbon tax and an impending cap on oil sands emissions. The Liberal government campaigned on a plan to phase out fossil fuel subsidies and invest billions into clean energy technologies and “green” infrastructure.

On the American political front, Hillary Clinton received funding from fossil fuel companies, but has committed to generating enough renewable energy to power every American home in 10 years. And while Donald Trump is in favour of domestic energy security, he has voiced opposition to Canadian oil imports in the past, “Frankly, we don’t need Canada. We should just be able to drill our own oil.”

So, what is the future of the Canadian oil and gas industry? The answer is a mixed bag. Some believe the future is bright, while others are less optimistic.

As with any industry in transition, there is uncertainty around both the nature and pace of the transition. Therein lies the challenge for Canadian companies – navigating their strategies dynamically while at the same time creating portfolios which are strategically sound, value creating, but most of all resilient to the different likely outcomes as the industry evolves.

Some believe the future is bright...

“The oil price crash is over – let the recovery of Alberta’s hard-hit economy begin”
Financial Post
March 2016

“Canadian oil sees silver lining to decline in U.S. shale”
oilprice.com
March 2016

“The world will rely on oil and gas for the foreseeable future...”
Canadian Chamber of Commerce

...while others are less optimistic

“Fossil fuels are ‘probably dead,’ says Canadian Pacific Railway CEO”
Financial Post
March 2016

“Global oil demand forecasts show why oil sands might never recover”
The Huffington Post Canada
April 2016

“Young Canadians more likely to see a future without oil and gas”
CBC News
March 2016
Creating plausible future scenarios

Monitor Deloitte believes that as companies consider their strategies, they cannot bet on a specific future reality, but should instead anticipate and plan for the possibility of several different plausible industry scenarios. They should make choices regarding their asset portfolios that allow them to create advantage regardless of how the market evolves.

Informed by the set of uncertainties illustrated in the previous section, we have identified four different, but plausible scenarios for the future and considered the implications for Canadian oil and gas companies in each. In creating these scenarios, while different companies may deem some uncertainties more critical than others and come out with different scenarios, we have purposefully chosen to look at these in aggregate and pick ones which could be generalized across the industry. Our scenarios are based on two major uncertainties each with significantly different end points.
Uncertainty 1:
Will the evolution of the cost associated with license to operate (LTO) be more measured or will we see an acceleration?

Accelerated cost of LTO
- Environmental costs accelerate due to scarcity of water, tailings costs, and increased compliance requirements; conditions are not conducive to foreign investment
- Federal and provincial governments are not supportive of oil and gas market access and limit the ability of Canadian oil and gas to participate in global energy markets (e.g., LNG and pipeline projects fail to proceed)
- Regulatory environment works against the adoption of innovative oil and gas technologies (that lower environmental impact and costs)
- Stringent climate change policy (e.g., carbon tax) results from lack of public/community support for Canadian oil and gas

Measured cost of LTO
- Increased social license to operate for Canadian oil and gas as government relies on oil and gas to drive economic growth; foreign investment continues
- Market access increases as LNG and pipeline projects proceed as planned, enabling export of Canadian resources
- Reasonable environmental costs (i.e., low carbon price, water tax) due to public support for Canadian oil and gas (seen as true partner in community development)
- Canadian oil and gas players invest in disruptive technologies to cut costs while reducing environmental impacts

Uncertainty 2:
Will the global energy transition to lower carbon sources be rapid or slow?

Rapid global energy transition
- Coal is displaced by gas and renewable energy for power generation
- Rapid adoption of EVs as all major automotive companies phase out combustion engines in the next 15 years
- Existing base of cars are rapidly retired and key incentives are put in place
- CNG/LNG make rapid inroads into heavy transportation
- Distributed grids get rapid adoption and emerging markets “leapfrog” to renewable energy in order to drive economic growth
- Increased oil and gas price volatility as artificial supply-side constraints are removed (i.e., demise of OPEC) and smaller producers move in and out of the market

Slow global energy transition
- Some energy substitution occurs (coal is displaced by gas) but battery technology does not improve materially, limiting renewable energy applications
- Lower oil price environments limits the adoption of EVs
- Oil and gas continues to dominate global energy mix, especially in transportation
- Renewables fail to get widespread adoption in emerging markets and emerging markets continue to rely on oil and gas
- Global oil and gas supply continues to be regulated by artificial constraints where major oil producers continue to cooperate to regulate the supply side
Bringing these two uncertainties together frames four divergent, yet plausible scenarios for the Canadian oil and gas industry in a 15 year timeframe to 2030:

**Scenario 1: Back to the future**
Canadian oil and gas is at its best: favourable regulatory policies and an increased social license to operate, combined with high global demand and regulated supply of oil and gas, results in a period of prosperity that mirrors its heyday.

**Scenario 2: Head-to-head**
Despite continued global demand for fossil fuels, the Canadian oil and gas industry is unable to participate on a global stage versus lower-cost producers due to stringent policy/regulations and lack of public and political support.

**Scenario 3: Orderly transition**
Although fossil fuels are displaced by lower carbon alternatives, the Canadian oil and gas industry works closely with government to reduce environmental impacts; social acceptance increases and enables Canadian participation in niche global energy markets.

**Scenario 4: Forced transition**
Clean energy experiences an exponential increase in adoption for power generation and transportation; demand for Canadian oil and gas plummets and outside of low cost producers with market access, most Canadian oil is stranded.

**Measured cost of LTO**

- **Rapid global energy transition**
- **Global energy transition**
- **Slow global energy transition**

**Accelerated cost of LTO**
**Scenario 1: Back to the future**

Hydrocarbons continue to play a significant role in the global energy mix, with incremental improvement in battery and renewable energy technology, limiting the rate of energy substitution. Oil prices remain competitive enough to make the conversion to EVs a marginal proposition and the existing stock of cars with internal combustion engines creates a baseload demand. While there is some demand for CNG/LNG in the heavy transportation sector, adoption is not widespread. In power generation in developed economies and emerging markets, coal is substituted for natural gas.

The regulatory environment imposes reasonable environmental costs (e.g., carbon tax, water use) and is supportive of innovative oil and gas technology that reduce environmental impact (and the cost of extraction). Favourable policies enable LNG terminals and pipeline projects to proceed which allow Canadian oil and gas companies to participate in global markets, while demand for downstream oil and gas capabilities continues.

In turn, an improved social license environment prevails as community stakeholders are supportive of Canadian oil and gas in driving economic growth. Improved market access conditions enable lower cost positions for small Canadian oil and gas players, thereby attracting foreign investment and increasing competitiveness in global energy markets.

**Scenario 2: Head-to-head**

Although coal would be displaced by gas for power generation in many developed and developing economies, a lack of innovation in battery technology limits the feasibility of widespread distributed generation. The transportation sector continues to rely on oil with some demand for CNG/LNG in heavy-duty road and marine applications.

Tension with community stakeholders and consumer sentiment regarding the negative environmental impact of fossil fuels results in a strict regulatory environment for oil and gas players (e.g., tax reform, carbon tax). Scarcity of water causes Canadian oil and gas (and other water-intensive industries) to face reduced margins, as the cost of water becomes prohibitively expensive and some companies are forced to reduce operations.

Pipeline and LNG projects fail to gain traction due to lack of consensus and political support. Canadian crude is limited to the domestic market, despite growing demand for fossil fuels in developing and emerging economies. Foreign investment exits Canada due to negative operating conditions and high costs. Market consolidation of small and mid-sized Canadian oil and gas players takes place, as they struggle to compete against integrated oil and gas players and lower-cost producers (e.g., US shale, OPEC, etc.).

**Scenario 3: Orderly transition**

Exponential improvements in battery technology have enabled a transition to renewables for power generation in most developed and developing countries, whereas fossil fuel demand from the transportation sector will see an accelerated decline due to the prevalence of vehicle sharing platforms and an exponential increase in EV and NGV adoption. A continued low oil price environment results from supply overhang and decreased demand, while major producers try to impose supply side constraints to provide pricing support.

Cooperative alliances form between the Canadian oil and gas industry and community stakeholders, where producers demonstrate their commitment to community development and innovative technologies that reduce the environmental impacts of their operations (e.g., disruptive oil and gas technology, reduced water use). The Canadian oil and gas industry will have demonstrated its ability to address environmental and social issues that are top of mind for the Canadian public and other key stakeholders, enabling approval of pipeline projects and access to global energy niche markets.

Consolidation of smaller Canadian players is likely, as the only players that survive in this environment are those with low costs and the capabilities required to demonstrate a willingness to operate in a low carbon future.
Scenario 4: Forced transition

Power generation relies on renewable energy in most developed/developing countries (enabled by significant improvements in battery power). Emerging markets “leapfrog” to clean energy via distributed generation. The future of mobility will be drastically different as the transportation sector experiences an exponential increase in EV adoption (self-driving passenger cars, heavy-duty trucks) and marine transport is powered solely through LNG.

Cost-prohibitive environmental regulations have evolved (e.g., carbon tax, water tax) due to pressure from community stakeholders and water scarcity, and some water-intensive industries are forced to cease operations. Changing social and environmental consciousness in North America creates political obstacles and forces Canadian oil and gas players to account for triple-bottom line impacts, thereby driving real costs of LTO and detracting foreign investment from Canada.

While demand for Canadian crude declines, it does not disappear entirely and is characterized by volatility as marginal players enter and leave the market in response to price swings. Only low-cost producers with access to innovative technology and downstream markets will survive among a wave of market consolidation. The bulk of Canadian oil and gas will be stranded in Canada, as players are unable to export to global energy markets and domestic oil demand relies on US refining/processing and imports to eastern Canada.

If these are all plausible futures on how the Canadian oil sands can evolve, the question for companies is how do they plan for the future and think about their strategies and asset portfolios?
Creating portfolio advantage

Monitor Deloitte believes that to create advantage, Canadian oil and gas companies need to have portfolios that are strategically sound, value creating, and resilient.

Strategically sound
An Advantaged Portfolio is considered strategically sound if it is competitively positioned, balances innovations, and creates synergies. On some dimensions we find that many companies today fall short:

Is your portfolio competitively positioned?
In the current environment, companies need to ensure that their portfolio is sustainable at current prices (i.e., sub $40 WTI); however, oil sands producers have some of the highest production costs. An Advantaged Portfolio requires a strong weighting of competitive businesses in attractive markets.

Does the portfolio balance innovation?
The need to innovate has never been so pressing for the industry. When surveyed, oil and gas executives concede that there’s a 22% shortfall between their targeted and current amount of adjacent and transformational innovation investments. The sector has begun to innovate in select areas, but has yet to make innovation a strategic priority.

Does the portfolio create synergies?
An Advantaged Portfolio creates value. Management must be able to explain clearly and concisely why the company’s various businesses create more value together than apart. Companies can achieve synergies through acquisitions, shared service centres, new types of partnerships, centralized data pools, remote operating centres, etc.

Value creating
To determine if your portfolio is creating more value than alternative portfolio options, consider the following:

Does your portfolio maximize intrinsic value?
Oil and gas industry revenue fell 41% from a record $149.3 billion (2014) to $88 billion (2015). During this period, industry cash flow has fallen 62%. Shareholder value will align with intrinsic value over time; therefore, companies should focus on driving intrinsic value of the portfolio and let share price follow.

Does your portfolio address market value?
The oil and gas sector has lost $233 billion in aggregate equity market capitalization since June 2014. Although intrinsic value is the most important measure of value creation for an Advantaged Portfolio, capital market value must be taken into account when shaping the portfolio.

Is your portfolio in the hands of the right owner?
In an Advantaged Portfolio, the portfolio as a whole as well as its component businesses creates the most value in the hands of the current owner. If another owner (strategic or financial) could extract more value from the portfolio or a component of it, the owner should consider selling that asset in order to maximize value.

Resilient
Monitor Deloitte views an Advantaged Portfolio as a strategic differentiator because of its resiliency. Key areas for consideration are:

Does the portfolio balance risk?
A resilient portfolio is one whose feasibility and risk is consistent with the owner’s risk tolerance and the expected upside. Oil and gas players should identify and assess risks across a number of dimensions and measure these risks against the tolerance of their organization.

Does the portfolio survive different scenarios?
Oil and gas companies will need to stress test their strategies and portfolios to ensure that they’re resilient under divergent scenarios. An Advantaged Portfolio is one that—in aggregate—is more likely to perform well in a variety of different, plausible, future environments, not just one that might reflect an executive team’s official future.

Does the portfolio have optionality?
To thrive, companies should build optionality in their portfolios. This may be accomplished by finding the right balance between oil, natural gas, and renewables assets. Through this, and by monitoring early warning indicators, companies can adapt to an ever-changing world.

Carbon value chain optimization
Optimize the carbon value chain by making sustainable cost reduction choices that find efficiencies while protecting the key capabilities required in the future. We have seen too many instances where cost creeps back into the system within a few months of initiating restructuring efforts. Sustainable operating models are required.

Focus on innovation
We conducted a survey of Canadian producers this year and found that while most companies believed innovation was key to driving a step change in performance, very few were driving systemic innovation programs. 17

CSR and stakeholder engagement
Increase CSR and stakeholder engagement efforts and internal capabilities aimed towards increasing social license to operate. Too many companies see this as a compliance issue and not one that creates a competitive advantage. Earning the license to operate will only get harder and the expectation for triple bottom line performance will become key.

Creating an Advantaged Portfolio for 2030
Taking into consideration the components that create an Advantaged Portfolio, Monitor Deloitte has identified three no regrets moves that winning Canadian oil sands companies should consider regardless of which of the four scenarios unfold. Making these moves could involve adjusting a company’s existing asset portfolio.

In addition to the no regrets moves, companies should reflect on what actions they might take today to provide resilience in the face of different future scenarios. The actions a company might take will depend on which scenario is seen as coming to fruition in the timeframe discussed.

Below we outline typical elements of actions that companies may consider for each scenario. It is important to note that any action taken by a company should be based on appropriate analysis and due diligence and should be informed by its existing asset portfolio.

**Scenario 1: Back to the future**
- Sustain crude oil and gas operations
- Increase vertical integration through M&A, with a focus on LNG and pipeline capabilities
- Work with key stakeholders to earn the LTO
- Investment into renewable energy startups to increase knowledge and experience

**Scenario 2: Head-to-head**
- Focus on driving innovation into stakeholder management as a strategic priority
- Focus M&A into downstream and natural gas, limit investments into midstream
- Develop innovative business models to manage the cost of environmental compliance

**Scenario 3: Orderly transition**
- Create a balanced portfolio between oil, gas, and renewables
- Create commodities trading/marketing groups to leverage potential arbitrage opportunities
- Build foreign partnerships and invest in diverse modes of transport
- Build renewable capabilities through acquisitions and talent recruitment

**Scenario 4: Forced transition**
- Focus investment into decarbonized substitutes
- Significantly reconfigure asset portfolio by investing heavily on natural gas and renewables through M&A and divestitures
- Build platforms to share talent and resources with industry peers

Actions taken by companies will depend on their own alignment of what they believe is the scenario most likely to occur. They should also create dashboards of leading indicators which give the teams a sense of how the market is unfolding year to year. If portfolios have been structured correctly to create advantage, companies will have the ability to exercise those options if different futures evolve.

In a time where many uncertainties exist, companies that are considering restructuring their portfolios, should do so to drive them to be more competitive, value creating, and resilient across a set of plausible industry scenarios.
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