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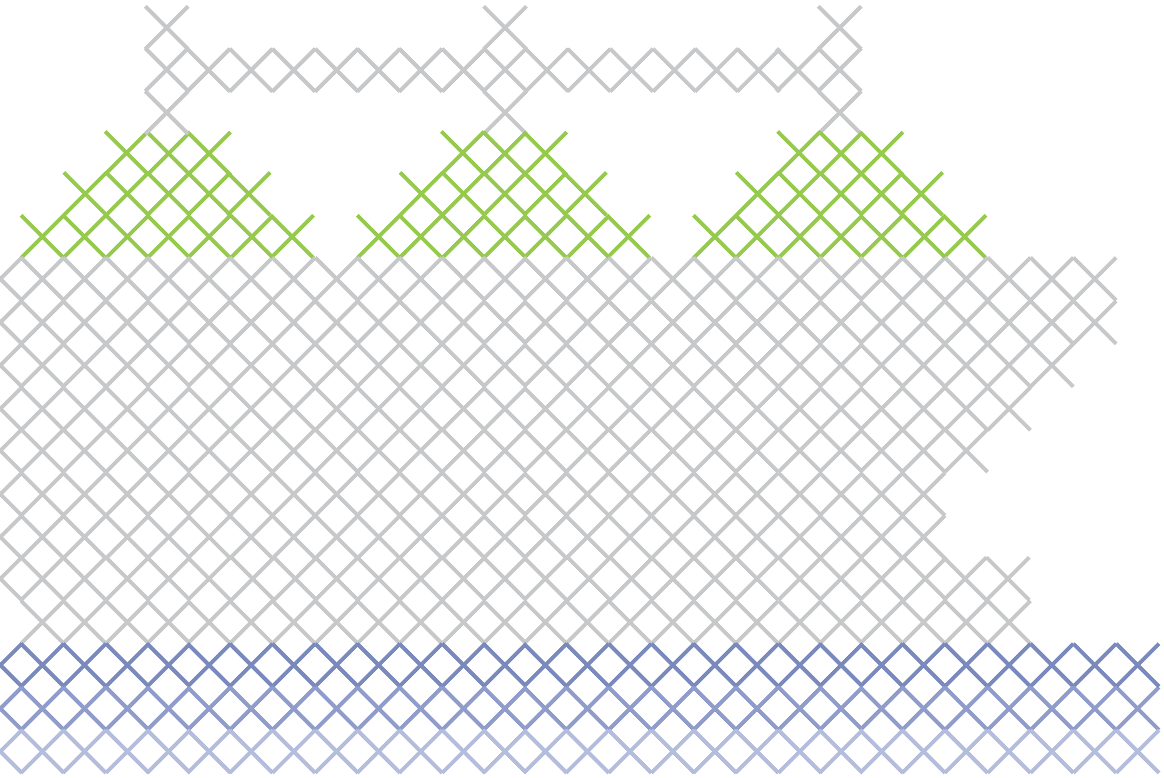


Sea change?
LNG on the horizon

A once-in-a-lifetime opportunity to survey the global tides, learn from others and realize the potential of LNG for all Canadians, or to dither and watch fortune sail past

Across the Pacific, we see a country struggling with the fallout of Fukushima's nuclear challenges. Japan, like other countries in Asia, sees natural gas as a cleaner, more environmentally friendly energy source. These countries are looking to secure long-term, stable and cost-competitive natural gas supplies and to strategically reduce their dependence on nuclear energy and coal.

In Canada, we have been a major natural gas producer and exporter for decades. Not surprisingly, these countries are now considering our vast reserves, stable political landscape and even our cool weather for a steady supply of Liquefied Natural Gas (LNG). The opportunity is clear. However, as with any large, capital-intensive program, LNG developments in Western Canada will face a host of challenges that could either sink the proverbial ship before it's christened or, if addressed, could see that ship sailing safely off into the sunset…and on to Asia.

As we have learned in Alberta, the energy industry brings significant economic growth and prosperity as well as potential risks associated with development of this scale and intensity of focus. This includes the risk of over-heating the local market and accentuating the impacts of other issues. Global investors will also be looking for acceptable return on their investment and are assessing LNG investment in Canada against investment in other regions of the world. They are wondering whether the benefit will outweigh the high costs of initial LNG infrastructure development and will be looking for reliable supply at acceptable long-term prices. There is little doubt that global buyers are putting pressure on higher LNG oil-indexed pricing methods, looking instead for lower Henry-Hub or North American natural gas based pricing.

Additionally, First Nations expect to be engaged in the LNG infrastructure development on their lands in a manner that will provide sustainable economic, environmental and cultural benefits to their communities.

So, while there is a real opportunity, we need to realize that the window through which we can seize it is closing.

All hands on deck

More specifically, key near-term challenges that Canada's rapidly emerging LNG sector will need to address include:

- Environmental stewardship
- Strain on local infrastructure and communities
- Labour shortages and skills constraints
- Scrutiny over local content and skills development versus offshore alternatives.

Again we can turn to the energy sector in Alberta for guidance. To say that their development has been entirely smooth sailing would be to insist on the existence of mermaids – it's just not true. But it has been learning and continuously improving in most key operational and social license respects. Certainly the sector continues to face vocal opposition, and it will also be the first to acknowledge that it hasn't always done the best job of communicating its value to the country. But that, too, is improving. Leading companies have learned to embrace a collaborative spirit, increasingly working together and with First Nations, environmental groups and local communities to solve mutual challenges in ways that not only support the bottom line but also address the needs of those stakeholders.

The LNG consortiums and their stakeholders would benefit from quickly understanding and applying these lessons in the context of LNG.

Managing its impact on land, water and air remains the single greatest challenge for Alberta energy producers, and these efforts have in recent years spawned an impressively widening array of extraction, transportation and manufacturing technologies. The extraction and transportation of natural gas and conversion to LNG is, in some regards, a similar manufacturing process whose operations will disturb the land and consume resources, not least of which is the electricity required to power the liquefaction facilities and the steel and other materials used to construct and maintain those facilities. We're setting aside for the moment the relative cleanliness of gas and oil at the burner tip and are focused on the broader impacts of industrial development in general. With LNG, there's also the necessary increased shipping and the corresponding risk to pristine coastal shores and waters that are of considerable pride and value to Canadians and First Nations alike.

Where strain on local infrastructure is concerned, Fort McMurray is a nearby cautionary tale. As *The Economist* reported in 2007 at the height of the oil sands boom, "The town's population has grown by 9% a year for the past six years, says Sheldon Germain, the deputy mayor. In all directions, swampy forests are giving way to sprawling rows of clapboard houses that cost more than they would in the suburbs of Toronto."[1] Here, too, the differences are important: because Kitimat won't be a gas-*producing* hub with huge nearby reserves awaiting exploitation by a large and growing number of parties, pressure on its infrastructural limits is likely to be less intense than it has been in Fort Mac. However, especially during construction phases when workforce populations are at their densest, the pressure will be similar and very real – bottlenecks in basic services, inflated real estate costs, municipal budget shortfalls and corresponding degradation of existing infrastructure, rising crime and drug use, and so on. What's more, depending on how many projects proceed and how closely together they are staged, these issues could amplify. On this as well as on the environment, we highly encourage LNG stakeholders to work together to address both the short- and long-term needs, in a sustainable manner.

That goes for managing workforce needs, as well. The worst kept secret in all of Canada is that we don't have enough people with the right skills to get these kinds of projects built on time or on budget. Thus industry's growing dependence on approaches such as temporary foreign worker programs and fly-in, fly-out workforces. In the oil sands, Deloitte has forecast the labour supply and demand imbalance to peak at a need for 52,000 new workers in 2015 alone. That is "more than half (55%) of the total labour supply projected to be available in Alberta for the majority of required core skills over the same period,"[2] without taking demand from other sectors into account. Meanwhile, B.C. has declared[3] its commitment to ensuring that residents have access to appropriate training and corresponding job opportunities, which will indeed

[1]*The Economist.* "Boomtown on a bender." http://www.economist.com/node/9410672. Accessed 08/20/13.
[2]Deloitte. 2012. *Balancing the people equation.*
[3]*B.C. Natural Gas and Workforce Strategy. http://www.rtobc.com/Assets/RTO+Assets/About+RTO/BC+NG+Strategy+2013JUL.pdf.* Accessed 09/9/2013.

number in the thousands during construction. What's more, as LNG development ramps up, it will be competing for talent directly with other energy and resource extraction initiatives. These waters are therefore ideal for collaboration not only between industry and government but also *within* the industry, including direct investment in training programs, workforce sharing arrangements and what we have called the "people supply chain." [4,5]

Know your course

Collaboration, however, is no panacea, and individual companies are wise to take early advantage of tools and strategies that can help ensure success. Strategic capital allocation programs, for instance, allow companies to implement tailored processes that can deliver greater control over the assignment of resources to strategic priorities, more insight into project risk and return, and a clear rationale for investment choices.

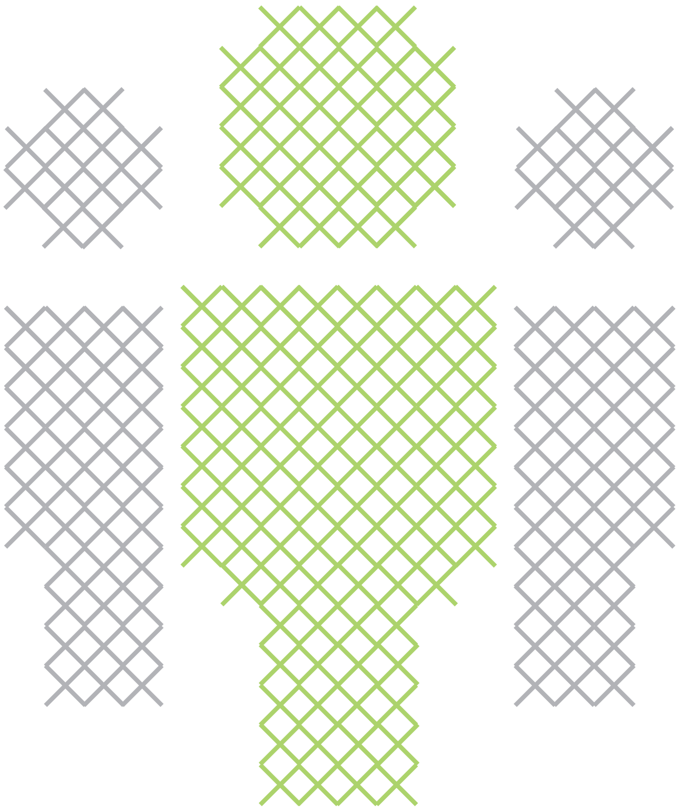
Note as well that emerging LNG consortiums likely won't be able to rely on sky-high commodity prices to absorb cost overruns. What's more, changes to Canada's foreign investment rules pertaining to the oil sands also have some Asian investors feeling especially cautious about getting involved in LNG, lest the same concerns that led the Canadian government to update the Investment Canada Act also accrue to that sector.

While LNG export appears to have the benefit of being more palatable to Canadians than the oil sands have been, largely owing to the comparative carbon-friendliness of natural gas, the LNG supply and value chains will still be relatively carbon-intense and fraught with many of the same problems that apply to any large industrial project.

Better to get out in front of the tide now than let history repeat itself.

[4]Deloitte. 2012. *Balancing the people equation.*
[5]Deloitte. 2011. *Get back to the ABCs: Connect airplanes, buses and camps in the "people supply chain"*

Out in front with First Nations



Creating value through genuine engagement

Foreign investors are wondering which Canada will emerge: one where we are divided and at odds with ourselves, or a global leader where we respect our differences and forge a common and prosperous future.

Much like the government of British Columbia, First Nations are looking to responsible energy development not simply as a way to ensure the sustainability of their communities and the environment but also to fuel economic independence. It’s about shared prosperity as much as, if not more than, accommodation, commercial opportunities as much social ones. And though we highly recommend collaborative enterprise wherever possible, we would be remiss not to acknowledge that effective collaboration in a competitive environment is fraught with challenges.

But it is likewise important to realize that organizations do have influence over how solutions to problems are developed and that competitive advantage can be gained not just from better management but also from better engagement. Too often, companies, governments and stakeholders undertake a zero-sum game where entrenched attitudes can prevent collective solutions and accretive value creation. How? It could be that each organization maintains a kind of “secret strategy” and advances its interests for no other reason than to reach its own goals. Even in such a case, however, positive returns are only generated if the other organizations behave in a certain way.

And those other organizations will tend to react defensively to those purely self-interested and “secret” tactics.

Well thought-out engagement strategies should be core business processes that enable a higher return-on-investment and provide the certainty needed for investments that will span generations. Consider the $200 million Pacific Trail Pipeline commercial agreement signed in February 2013 with 15 First Nations: this is shared prosperity at work.[6] To mitigate risks and to gain both social and competitive strength, industry, government and First Nations need just the kind of engagement mindset that led to that agreement – all oars in the water, so to speak – rather than the management mindset of the past.

You get out only what you put in

To achieve the best outcomes, organizations must be pro-active, first-movers on the most pressing issues. An engagement-minded dealmaker will look for an authentic win-win scenario for the key stakeholders at every opportunity. In that way, more preferred outcomes are both more likely and more assured, including:

- Shorter time to market than rivals with lower "all-in" costs
- Faster permitting and higher probability of successful reviews for capital projects/products
- Better reputation and stronger social license
- Insights about constituent concerns handled upstream (less rework)
- Better perceived quality or value than rivals.

Consider the extreme example of at least one oil and gas company learning the approach the hard way – after significant reputational and fiscal damage in the 1990s from failing to engage a native African tribe and obtaining the community's license to operate. Concerned about unequal distribution of wealth and the environmental effects of oil operations, the community staged a protest and the company eventually ceased production. Since then, the company has gotten fully involved in community development programs and builds a deep and broad stakeholder network from the outset, realizing that its engagement strategy is a fundamental competitive advantage.

In Australia, meanwhile, a significant proportion of the coal seam gas that feeds the region's LNG facilities is located under prime agricultural land, and local farmers and landowners have expressed concerns about potential impacts on water quality from hydraulic fracturing. But the willingness on the part of the stakeholders – including industry and government – to engage one another on governance and monitoring requirements has improved not only relations but also outlook.

In other words, when stakeholders pursue a collaborative strategy, they set themselves up for an optimized future in which prosperity – economic and social alike – is shared.

The rewards far outweigh the risks

Risk exists in many forms: social dissatisfaction with project returns, environmental pollution and cost overruns, all of which can lead to regulatory and project delays, inability to secure LNG supply contracts and also discontinuity of that supply. LNG development will require us all to build new ways to work together to share risk and prosperity alike – we're all in the same boat after all. And the precedent for how development can progress to the greater benefit of all involved is called *engagement*, which generates more than simply a social license to operate; it provides secure, significant, reliable and long-term economic benefits for all parties.

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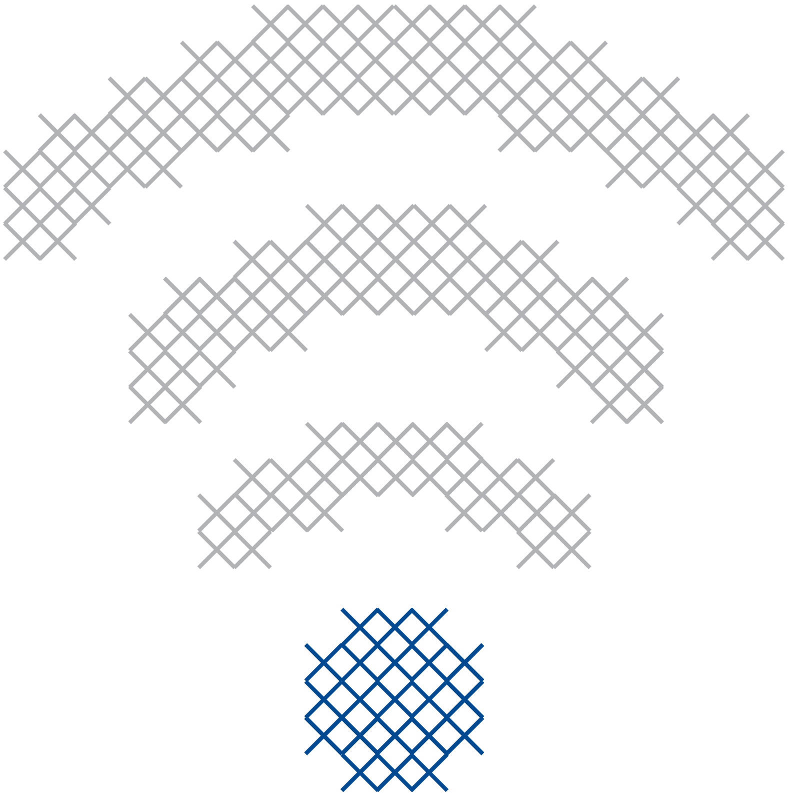
[6] *Invest in Northwest BC.* http://investnorthwestbc.ca/major-projects-and-investment-opportunities/map-view/kitimat/kitimat-lng. Accessed 09/09/2013.

Out in front on capital projects



Time is *not* on your side

The window is closing, the race is on and there are key things all stakeholders, but especially companies, need to know about the capital project outlook for global LNG initiatives. Increasing project complexity is limiting the extent to which experience from previous projects can be transferred. Effective management expertise is increasingly limited. Overall cost and schedule performance is deteriorating. Project overhead is increasing but improvements in systems are showing diminishing returns and capital efficiency or effectiveness is impacted.

These conditions and others have put the industry's focus squarely on increasing project management effectiveness and efficiency, on increasing the use of prefabricated modular construction techniques and on change in the management selection process.

For LNG specifically, the Canadian Energy Research Institute (CERI) has noted the following:

> In the 1980s, overnight construction costs [for LNG facilities] were around $350/tonne (t) declining to $200/t in the early 2000s. Since then construction costs have surged to $1,000-$1,600/t and beyond. As mentioned previously, global LNG trade has grown quickly with many forecasting a doubling of current LNG capacity by 2020 from 36.5 BCFPD (278 MTPA) in 2011 to 69.2 BCFPD (526 MTPA) in 2020. However, such growth has not been without problems. The increasing costs are primarily a result of the increasing costs of steel and the rising wages of workers.[7]

Completing projects on time and budget is more critical in Canada now than it was a decade ago. Alberta oil producers at the time, benefiting from record-high oil prices, could essentially throw money at their problems. Even with the commodity price cushion, however, these producers still found themselves dealing with an over-heated market. Managing that way just isn't going to be an option for the LNG consortiums.

[7] CERI. 2013. *Global LNG: Now, never or later?*

Later is not an option

In Deloitte's estimation, the window to secure LNG contracts and get to market is about five years and it's closing fast. The U.S. is hesitant but so flush with product it's in the midst of what it calls an "Energy Renaissance," while Australia is making very aggressive moves and is expected to overtake Qatar in world LNG exports leadership within the decade. Canada has a bit of an edge over the U.S., but the projects *must* come in on time. Indeed, Canada is viewed favourably as a potential LNG exporter compared to the U.S., but serious considerations with regards to contractual timing as well as geographical, aboriginal, environmental and regulatory issues could lead to severe delays and cost impacts. This is especially true once projects are through regulatory approval, at which point the magnitude of risk will escalate dramatically.

Modularization is among the most game-changing solutions companies have been adopting. Pre-fabricating whole sections of the facilities that then only need to be shipped and installed allows companies to streamline the necessary on site workforce and increase construction speeds, thereby reducing the risk of delay and overrun. The approach has been highly successful in Australia and is certain to be used in Canada. We don't, however, expect it to detract from B.C.'s desire for local content and skills development: not only is LNG module installation high-skill work, the economic and infrastructural development that will result will also present opportunities for skills enhancement and new talent alike.

But reliance on modules can put its own kinds of strain on the local infrastructure. Port facilities and roads, for instance, may require upgrading or simply a higher degree of maintenance. As it happens, an engagement mindset is also vital when module transportation involves a significant overland component, as the oil sands sector learned shipping modules north from the U.S.

Almost doesn't count

Ultimately, project success is related to having project and organizational risk management controls in place. As a result, organizations are implementing mega-project management programs and tapping into tools such as predictive project analytics. These programs and tools are helping companies analyze specific project characteristics in comparison with other projects around the world and assess and then manage the chances of success across a range of dimensions, including governance, ownership, delivery management and contract management. Accordingly, the ability to adjust, implement, monitor and enforce governance execution characteristics is significantly enhanced, along with the likelihood of overall project success.

Even with the commodity price cushion {oil sands} producers still found themselves dealing with an over-heated market. Managing that way just isn't going to be an option for the LNG consortiums.

A rising tide lifts all boats

The world continues to change. Pressures are only rising, and getting things done – on time, within budget and with the right level of quality and engagement – has never been more important. Canadian LNG development can be a successful fast follower, applying lessons from international LNG projects and the oil sands experience closer to home to enable a smooth launch and steady navigation throughout the journey. And with wise engagement between companies, governments, First Nations and local communities, the potential for increased investor certainty and shared prosperity can be realized for generations to come.

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