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Gaining ground in the sands 2012

A deeper look at major trends and opportunities in the oil sands sector

Contents

Introduction

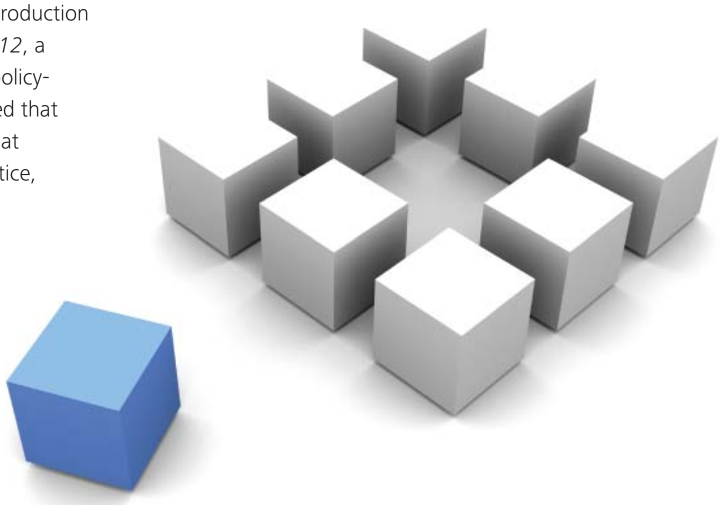
What a difference a year makes. When we released *Gaining ground in the sands 2011* last fall, Deloitte introduced a new approach to bringing constructive focus to key trends and opportunities facing Canada's oil sands producers.

Among the matters addressed at that time were:

1. Finding economic viability
2. Cost escalation
3. Minimizing carbon footprint
4. Impacts on earth, water and air
5. Talent supply and demand
6. National oil companies
7. Economic and environmental implications of upgrading
8. Reliance on the U.S. market
9. Sharing technology successes
10. Moving toward optimized collaboration

Since then, oil sands industry leaders, the media and public stakeholders alike have told us consistently how much they value truly independent and rational thinking about this increasingly important resource.

As we headed in to research and production of *Gaining ground in the sands 2012*, a number of high-level reports and policy- and discussion papers were released that underscore our original intuition that fundamental shifts in industry practice, structure and perceptions are not only well underway, but demanding still closer attention. Starting in December 2010 with the Royal Society report on the environmental and health impacts of oil sands, our position was validated that sustainable resource development, while requiring more innovation and collaborative attention from the industry, is not only achievable but to a significant degree already at hand. Then, in an April 2011 cascade of important reports on community engagement (e.g., CAPP's *Report on the Dialogues*) and on policy (e.g., the Alberta Government's *Draft Lower Athabasca Integrated Implementation Plan, 2011-2012*), the conversation around oil sands went even deeper, bringing a greater range of issues, voices and ideas to the table.



We applaud, encourage and look forward to following these important discussions. We also feel that our original objective to provide focused and directly relevant review and recommendations on the business of oil sands production is still the shortest and most effective route from A to B in managing barriers and opportunities that address issues across the board. In this manner, we look to touch on labour and management, environmental protection, technology development and deployment, strategic marketing and a sustainable, long-term social license to operate.

To that end, in *Gaining ground in the sands 2012*, we're doing things a little differently by focusing on three relatively broad areas of importance that oil sands producers, regulators and public stakeholders will need to consider going forward. Each of these areas is tied to what we believe is the relevant timeline for action – in other words, whether they are best pursued in the short-term, the medium-term or the long-term.

The first two areas are discussed in the more specific terms of individual trends (accordingly identified via a numbering system throughout) that may or may not have featured in the 2011 edition. We suggest that the third area, which takes the long-term view, is akin to the destination or "the prize."

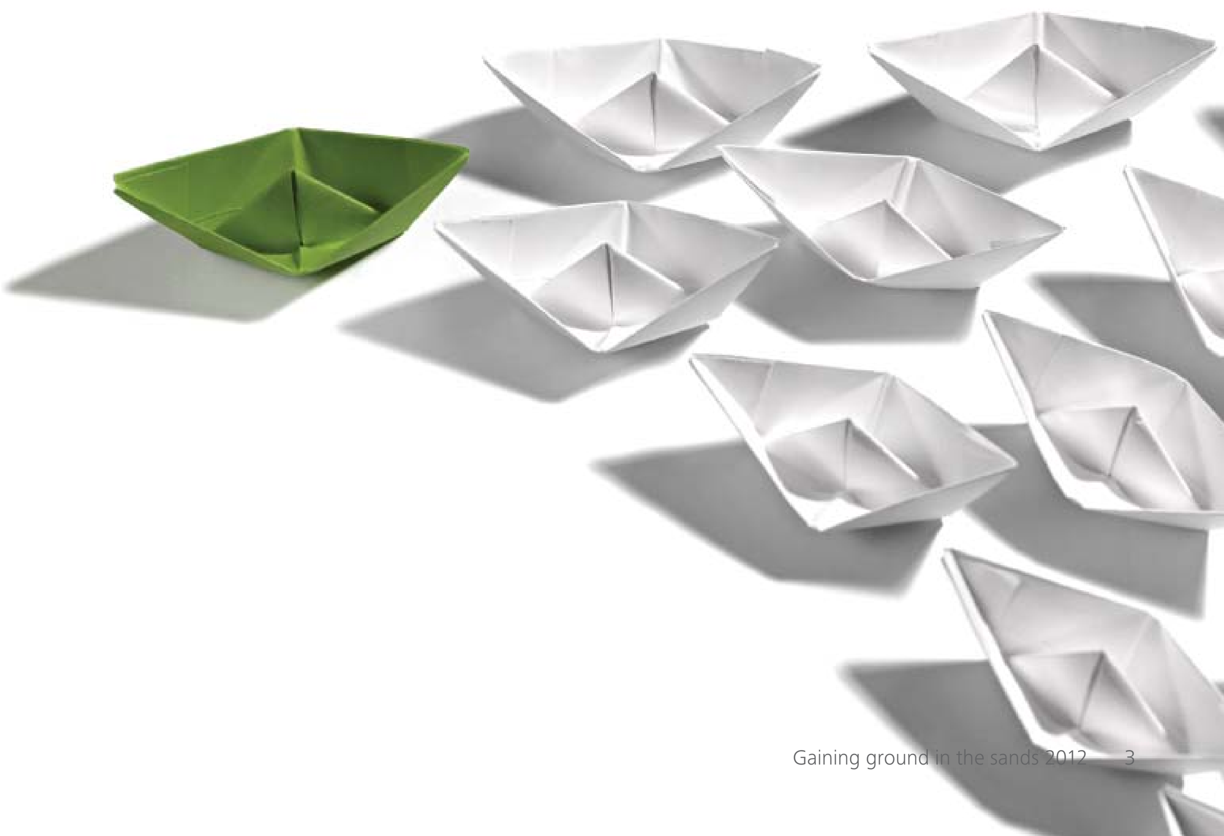
You can get there from here

We see 2012 as bringing into sharp relief the need for producers to adopt entirely new approaches to recruiting, managing and retaining skilled people across the sector. In our section on the ***People equation***, we stand by the opinion held across our practice groups – and with some urgency – that while some gains in the area of workforce management have been made, the old ways of doing things are by necessity coming to a close in 2012. The four trends discussed in this section should be your short-term concerns. And not a moment too soon, given the sheer scale of potential development – not only in the oil sands itself but also in emerging resource plays such as oil sands carbonates deposits or possibly in upgrading, both of which are poised to further drive already-rising labour and material costs.

But it's not only in workforce management that we see fundamental shifts already taking place. The year ahead will require the fleshing out of ***New thinking, new approaches*** in six areas critical to orderly and sustainable development of oil sands resources for the medium-term, including cutting waste from the system, realizing better collaboration in a number of key areas, and creating and managing public perception of the industry.

Continuing with the logic that changes are coming by necessity, we nonetheless go beyond our discussion of specific structural and operational opportunities to focus on the bigger, longer-term picture for the industry and for Canada going forward. In ***Going to the next level***, we describe the industry in terms of where there are clear opportunities for Canada to make good on its promise as an energy superpower. We see some of those opportunities as at hand now to expand not only markets but also Canada's global stature in technology development, while also raising the country's profile and influence as a world leader in socially and environmentally responsible resource development. We also review the one area that has been the chief enabler of oil sands development in the first place – technology. We overview technologies that are at play today that could make significant differences tomorrow – in terms of both resource potential and of mitigating labour, material and environmental/social costs and impacts.

Thank you for reading *Gaining ground in the sands 2012*. We look forward to continuing these discussions with you.



The people equation

A convergence of complications

"The value of our organization lies in its people."

If ever there was a top candidate for some hypothetical Academy of Lip Service Awards, this cliché is perhaps it. Yet, no other industry on the planet today knows how true the basic sentiment is more than Canada's oil sands sector. And in 2012, the matter will increasingly involve a lot more than just labour shortages and the accompanying rise in talent recruitment, management and retention costs.

Not that the talent shortage issue has diminished in either scale or impact.

According to a Canadian Energy Research Institute report from spring 2011, if all new oil sands projects were to proceed as proposed or already in planning, the approximately $2.1 trillion investment they represent would grow the direct and indirect labour force in North America from its current 75,000 to more than 900,000 – a workforce demand roughly equivalent to the population of metro Edmonton. And this doesn't include workforce demand growth from the expansion of existing projects.

Indeed, the situation is much more complicated and will be further complicated in 2012 by a variety of factors.

1 Demographic transformation

As we reported last year, we continue to anticipate a problematic convergence of labour shortages, an aging management and governance population and the emergence into leadership roles of so-called Generation Y. These 20- and 30-year-olds bring with them a different mindset as well as different values, including non-traditional ideas about career paths, reward and loyalty systems and corporate social responsibility.

An internal Deloitte study completed in April 2011 indicates Alberta will not only remain an "employee-driven market" through 2020, but that looming waves of Baby Boomer retirements combined with relatively few established plans to retain talent and institutional memory suggests skill shortages will persist and will worsen industry-wide. Further, the well-known trends (and, therefore, risks of turnover) among Generations X and Y are expensive: separation and replacement costs for talent in the oil and gas industry can vary from 25% to 200% of the positions' annual compensation – about $58M for a company of 5,000 employees based on less than 10% turnover.

This issue, however, is about much more than turnover and replacement costs. While Generation Y – the largest group of 20-34-year-olds to enter a labour force since the original Baby Boom itself – arrives with technology skills, its constituents also tend to exhibit non-traditional social behaviours and expectations. Companies will be challenged to create cultures where incoming Gen Y feels accepted and valued, as well as happy to collaborate with and learn from older employees.

Indeed, just as significant is the issue of knowledge transfer. Layoff strategies in the last decade that eliminated middle management are resulting in intellectual capital deficits as senior managers retire, taking vast stocks of knowledge with them. Companies that invest in internal communications and Knowledge Management programs based in mentoring and leadership will fare better than those putting most or all of their eggs in IT systems that too often serve only to orphan knowledge in rapidly obsolescing and low-interaction information networks.

2 Logistical disentanglement

Following our work in helping the industry think through systematic collaboration in key areas, we still see waste and therefore money being left on the table through contemporary practices involving workforce housing and transportation. Small steps are being made in the right direction, but the industry as a whole cannot afford to entertain existing attitudes and ways of doing things that are overwhelmingly part of the problem rather than the solution. This includes "but that's the way we've always done it" notions about using housing/transportation perks as employee retention strategies and perpetuating roll-your-own infrastructures (such as private airstrips) for getting people in and out of the region.

As we have advocated elsewhere, industry and all levels of government would do well to collaborate over the coming decade on developing a sustainable model for long-term workforce management in the region. This is apt to be some variation of the Fly-in Fly-out (FIFO) model used in the remote resources sector since at least the 1950s, starting with early offshore exploration of the Gulf of Mexico. That model remains a preferred one in jurisdictions where the short-term cost benefits versus town construction are clear and where the sheer remoteness and short lives of projects are dominating factors. However, because Canada's oil sands region differs substantially – the Wood Buffalo region is not that remote, a thriving city anchors the region and the resource play has a life of up to a century going forward – we believe our situation demands taking a longer view.

Indeed, to learn from the experiences in Australia – a jurisdiction that has been dealing with remoteness, harsh conditions and FIFO labour supply and demand issues in its main resource plays for three decades – we argue that industry-government involvement in the region needs to go beyond infrastructure and recreational contributions to include significant education opportunities and expanded community support mechanisms.

3 The spirit of automation

For a sector enabled at the ground level almost entirely through technical capacity and technology, it is somewhat paradoxical that industry has not paid more attention to advanced technologies developed elsewhere in the world and/or in other sectors that carry potential benefits to oil sands operations – especially when many of these technologies can help mitigate labour crunches.

Technologies like advanced remote-sensing equipment or remotely-controlled vehicles could even play double or triple roles, such as enhancing data flow and safety performance through non-human monitoring while then also freeing up human capital for more challenging and value-added employment. Remote sensing in particular, for example, could eliminate the need for both human and vehicle deployment while at the same time generating data that's often better integrated with wider systems, such as geographic information system (GIS) modeling and analysis. GIS is a particularly useful application for tracking industrial operations in boreal and ecologically sensitive regions, which in turn fulfills key monitoring functions that can aid in both regulatory compliance and in earning the broader social license to operate.

Companies that successfully address the new challenges of workforce recruitment and management will also be those that train some intelligence on maximizing technology internally. Social media, for example, is both automatically global in its reach and an indispensable information management tool for younger employees on whom the onus for their development as knowledge workers increasingly falls to themselves. Managed effectively, a corporate culture supportive of personal knowledge management technologies creates not only empowered and engaged employees, but also highly networked ones – potentially fertile ground for further sourcing of workers from home and abroad.

4 The NOC wildcard

National oil companies with an expressed interest or current investment in Canadian oil sands will continue in 2012 to play an evolving (if somewhat unpredictable) role in development of the resource – and, therefore, as potentially both a demand for, and supplier of, human capital. Indeed, we anticipate that Canada could see one or two major, non-Chinese deals struck in the next year, raising not only the prospect of opportunities but also the spectre of challenges that NOC operations in the sands have typically had to face. These include understanding Canadian law and its culture of transparency; understanding the regulatory, tax and public oversight dimensions involved in earning a social license to operate; and even just finding and retaining the type of "A-team" workers projects like these require.

Aside from driving demand for even more people, however, one silver lining in expanded NOC involvement in the sands could very well be the increased sourcing and development of design and operational talent from NOC home bases. This would require something of a paradigm shift within Canada in terms of immigration policies, but we see the election of a majority government in 2011 as an encouraging and necessary first step. This would also align with the three-fold strategy of most NOCs operating in Canada to begin with: earn a reasonable return on investments; have a foothold in the play for longer-term reasons; and acquire knowledge. Further, an industry starting to collaborate more in ways that eliminate waste while enhancing operational, environmental and social performance will quickly create its own center of gravity into which NOCs, and the vast pools of venture capital they represent, would likely be drawn.

A house with many rooms

Facilitating a widening of the net through immigration policy review, however, is hardly a mere concession to the NOCs and the bare hope of secondary economic benefits in general.

While temporary foreign-worker allowances do enable Canadian industry to fill gaps for skilled labour on a short-term basis – indeed, the number of temporary foreign workers in Alberta rose more than three-fold between 2005 to 2008 from 15,747 to 57,707 – the program suffers a major drawback in recent amendments that require qualified individuals to leave Canada after four years and then wait a further four years before being eligible again.

Going global in sourcing human capital is hardly a magic bullet solution, nor would the intent be to establish a “less expensive” workforce as much as simply a broader base from which to draw. It can create as many problems as it solves – not the least of which are language and social barriers to comfortable transition for workers needing to adapt to the harsh Canadian climate, as well as inevitable cultural shocks. Existing and future operating companies in Canadian oil sands wanting to source workers from abroad would benefit in particular from tighter linkage with post-secondary education institutions that already draw foreign nationals into relevant technical, management and strategic consulting degree programs.

Indeed, companies and industry groups that partner with universities in particular can help build networks of potential employees while accomplishing a number of other socially relevant goals, including breaking down barriers between private and public sector research communities and strengthening an increasingly diverse set of ties to the world beyond our largest trading partner.

As one *Harvard Business Review* blogger put it in May 2010: "As we enter the 21st century, the closed and insulator innovation models of the 20th century are giving way to open and globally-networked approaches fit for a knowledge economy."

This reflects a key operational message throughout this report, but pertains most immediately to solving workforce issues in ways we've just described. However, companies effectively managing the people equation will also then be oriented to re-thinking other dimensions of their corporate process, values and structures.

Medium-term

New thinking, new approaches

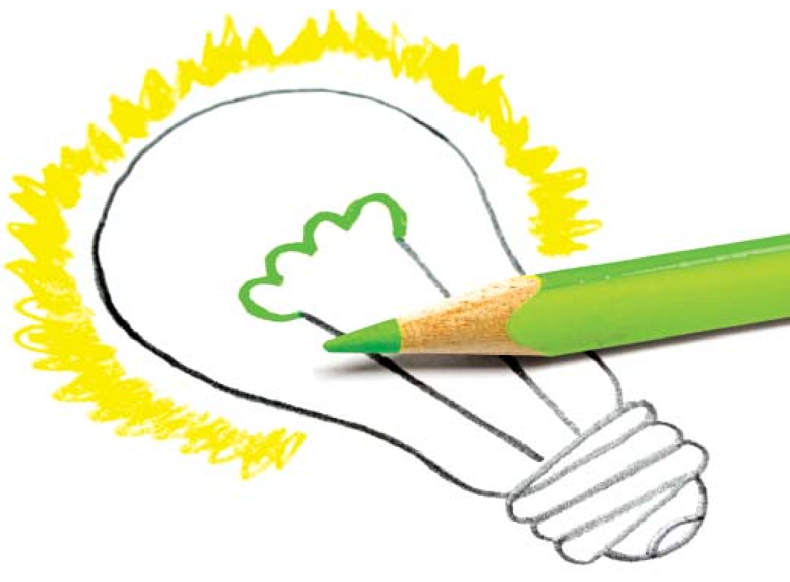
Resetting the agenda for sustainable oil sands development

Declining U.S. energy demand, historically high growth in emerging economies and the deepening role of governments around the world in shaping the understanding, development and use of energy in short and longer terms means Canadian oil sands producers have their work cut out for them. Not least of this will be around opening up alternative markets for bitumen/synthetic crude/refined products, fully leveraging R&D value in oil sands technologies and hitting the reset button on their approach to communications around world public perception of Canadian oil sands development.

We believe, however, that with the price of oil stabilizing at a comfortable threshold (commodity price differentials notwithstanding), all these challenges are manageable – starting with the kind of healthy, internal circumspection one would expect of any industry naturally reaching new levels of insight and maturity. Specifically, we see early evidence the business is being rethought in ways both small and large, from technical, operational and social-license-to-operate perspectives. And the timing couldn't be better – with emerging plays in shale and oil sands carbonates deposits coming to the fore and a newly-elected majority federal government, oil sands companies have a critical window of opportunity in which to effect changes now for mutual or industry-benefit down the road.

At the same time, there is little doubt that increased external circumspection over the last year on industry activity and public oversight in the oil sands has shifted the ground for producers in one area in particular. We referred above to a number of weighty reports and policy documents that appeared in April of 2011 and that signal how the discussion has deepened and evolved – taken together, these are an apt reflection of the International Energy Agency's world energy outlook to 2035 that "hinges critically on government policy action and how that action affects technology, the price of energy services and end-user behaviour."

However, portrayals of life and the way business gets done in oil sands production has also been fictionalized in popular culture through Alberta-produced feature-length movies like *Fubar II* and in news media and "documentary" work that is shaping public perception on a world stage. At best, these independent commentaries simply fail to tell the complete story; at worst, they openly misrepresent the industry and government oversight in fundamentally damaging ways. A simple YouTube search is telling: keying in "Alberta oil sands" generates more than a thousand hits, led by top-viewed video clips from the BBC and *National Geographic* – two credible media producers that still manage to send a negative message, even when seeming to marvel at industry's accomplishments in the region.



Public perception, however, is merely the visible tip of an iceberg whose submerged core comprises, again, the day-to-day operations, practices and processes from technical, organizational and social perspectives that dictate what agenda ultimately plays out in oil sands production. Hitting the public communications "reset button," then – while re-tooling for the anticipated economic uptick and potential world market realignments – starts with rethinking the approach to managing perception in elemental ways.

Specific opportunities for the medium-term include:

5 Identify and focus on core competencies

Oil sands producers will need to continue asking fundamental questions about what business they are actually in. Too many firms – especially start-ups – still adopt the "but that's how it's done up here" mentality with regard to workforce planning and management, environmental due diligence and organizational practice in general.

Companies have been entertaining alternative models to the traditional approach to projects, such as outsourcing or partnering with third parties for housing, transportation and even steam generation and water treatment. But even in core areas of the operation like safety training and the environment – where all companies must meet minimum standards but vary in approach and procedures – we believe companies could collaborate to define, design and deliver a singular and shared contractor orientation that would meet everyone's needs and certify contractors at all relevant sites.

Clarity around core competencies, however, does more than reduce operational clutter and workload. Decentralizing certain support and/or infrastructural aspects of a company's operation by creating or offloading to secondary entities could reduce or potentially redeploy existing labour into value-add positions and simplify the business in ways that liberate management to focus on those elements of the business that drive value.

6 Internal rigour around operational excellence

Given the pace of oil sands development over the last decade, it is at least understandable why companies have been in a rush to secure financing and permitting, to recruit and ramp up the required workforce and to start hitting project targets – often in the name of maximizing shareholder value as quickly as possible.

But this type of breakneck development does more than just increase risk and inflate labour and material costs in the aggregate. Along the way, companies also tend to steer by the given project's schedule, sometimes at the expense of quality and even cost.

Our research reveals that steps already taken in this direction, such as the migration of pre-fabrication shops offsite to more assembly-line types of operations, is a forerunner to a more recent industry-wide response to outsource these and other critical operational areas further afield (e.g., modules now being constructed in China and Korea), including maintenance and asset management.

Companies that face their operational excellence challenges head-on will be those that engage in deep review of their organizational structures, including hiring, communications and quality control processes. The gain isn't simply in cutting waste and inefficiencies. Placing greater resources and intelligence on industry benchmarking and extra-industry best practices affords better organizational awareness and, therefore, the capacity to anticipate, avoid or respond to larger unforeseens.

7 Improved accountability

The pace and scale of development over the last decade has also effectively made cost overruns almost the norm on "mega" projects, with labourers and service and materials suppliers enjoying a seller's market.

Going forward, producers (in particular) will need to rethink those approaches and policies that pertain especially to big-ticket areas like engineering, procurement and construction. And also to labour. Encouraging signs include Suncor's commitment to cap their labour force at 4,000 workers (which will help project development to avoid being schedule driven and help the bottom line another way by containing or even reducing labour cost inflation) and recent labour announcements that tie wages and other work terms and conditions to oil prices.

More leadership of this kind would better and more appropriately spread risk, heighten cost accountability and improve standards across the supply chain and operation.

8 Adopting models from other sectors

Producers with a strong conventional oil and gas orientation often embody corporate cultures that celebrate the industry's roots in the early wildcatting days of petroleum exploration. This, however, is increasingly at odds with the demands of oil sands development today. Challenges such as environmental oversight, cost containment and social performance are not as effectively addressed in some of the older ways of doing business that promoted staunchly independent or even adversarial attitudes.

We see early signs, however, that industry is moving past these legacy attitudes, particularly in the areas of cost containment, waste reduction and overall process reliability and efficiency. Borrowing models and methods from the automobile and hi-tech sectors specifically, more and more oil sands producers are implementing contemporary manufacturing approaches such as Lean Improvement and Six Sigma processes to bring about saving and efficiencies of no small significance. Among these are reducing cycle times (to first oil or gas) by 30-50%, reducing overall operational costs (including fabrication and construction) by 15-20%, and eliminating nonproductive activity (recruiting, training, housing and moving people) by more than 50%.

We also see, however, where there is now opportunity for the industry to take these early steps with manufacturing models to the next level. Specifically, we encourage wider industry collaboration and best practices sharing around all such continuous improvement and just-in-time processes that would take supplier relationship management well beyond individual supplier-producer transactions and become consistent and integrated practice across the entire industry and supply chains.

9 Enhanced collaboration

An important silver lining in the conventional oil and gas legacy, however, is a long tradition in distributing risk through joint ventures and partnerships – elements appearing in oil sands operations more and more. This is happening internally, where cultures of collaboration between departments normally take hold organically and/or by management directive; and externally, as exemplified by the partnership announced last December between Suncor and Total to build two new mines and complete an upgrader, as well as the formation of the Oil Sands Tailings Consortium (OSTC) around the same time.

Strides toward greater and better collaboration within and between companies is, at the very least, matched by the growing role of industry associations in a variety of strategic areas, including technology development, environmental protection and social engagement with multiple stakeholders. On the one hand, this is encouraging. On the other, however, a problem for broader oil and gas industry associations in 2012 could suddenly and paradoxically be one of an embarrassment of riches – that is, a risk of redundancy and miscommunication between the growing roster of associations, none of which represents all of the oil sands industry or all of the oil sands industry exclusively.

The matter is of no small significance. As we discuss in the next section of this report, "Going to the next level", the associations being forged now will set in motion the expectations and rules of engagement that will carry forward when addressing even bigger picture issues requiring even greater universality and solidarity – including the opening up and managing of foreign markets, the shaping of a potential national energy strategy and retaining the social license to operate. One such group in striking distance of doing this is the Oil Sands Leadership Initiative (OSLI), but a wider representation of both large and small operators will be needed to truly push ahead.

10 Locating the public perception reset button

Anyone who has renovated their house or replaced an aging backyard deck knows it's much easier to tear something down than it is to build it up – simply because the tearing down process does not have to be as careful or precise as the (re)building.

In the current context, companies and the industry at large perpetuate a fundamental disconnect when they displace their responsibility for public communication back on to their adversaries by criticizing opponents for "not knowing the facts." The simple reality is, opponents interested in tearing down the industry don't need to know all the facts to be successful in their endeavours. This has the corollary effect of painting with the same brush well-meaning public oversight that simply seeks assurances that industry and governments elected to protect the public interest are in fact monitoring the situation. Indeed, requiring NGOs, the media and the public at large to know all the facts is like requiring referees to be accredited hockey coaches before they can call a game when their only role is to ensure rules aren't broken and players don't go offside.

In other words, in the game of public perception, the puck stops with industry and, like hockey, public perception is often a game of inches. The industry at large will make gains with the public when patiently continuing such work as CAPP's *Dialogues* program. At the same time, however, this work also needs to be done on deeper level and on a wider basis. Companies themselves can make this contribution by reconsidering some of their general approaches to communication, including:

- Shifting from one-way, strictly information-driven PR/marketing to an evidence-based communication approach that uses established social science methodologies to better understand the communication challenges in a given context, rather than defaulting to the traditional shotgun approach of crafting one-size-fits-all mass and/or even social media messaging in the mere hope that something resonates and sticks.

- Hiring communication practitioners at the senior research level to leverage their multidisciplinary training and broad contextual knowledge to enrich overall corporate strategy. Specifically, this would include designing and conducting original research aimed at identifying, monitoring and assessing key indicators and influencers of public opinion, stakeholder engagement and the overall dynamics and factors at play in earning a social license to operate. CAPP, for one, is on the right track with its *Dialogues* initiative, which could nevertheless be taken still further.

- Following the example of those companies whose investments in honest, timely and in-depth internal communication have helped employees become strong industry ambassadors – committed advocates who understand the role of public oversight and can address issues in informed ways.

Assumptions are made to be challenged

Usually referred to as 'thinking outside of the box,' innovation in fact often starts when an idea arises completely out of context – the textbook classic being the invention of Post-it notes in response to one 3M chemist's frustration with bookmarking his hymnal during choir.

The trick, first of all, is not to assume that existing approaches to solving problems are exclusively the right ones. Secondly, companies facing significant challenges need to dedicate correspondingly significant resources to environmental scans for possible inspiration, ideas and solutions – elsewhere in industry, in academia and, as with the case of 3M, sometimes in your own corporate and operational backyard.

In other words, innovation is where you find it and companies positioning themselves for the future are already actively scanning the global technology and operational environments. As one industry leader put it to us recently in conversation, the idea is to put 10 oars in the water in the hopes one works out – where each oar, we would further argue, needs to come from wholly different designs, materials and possibly eras. This also means, then, 360˚ scanning that looks forward (to everything from advances in biomimicry, nanotechnology and remote robotics) while also looking rearward at venerable technologies, such as dirigibles and barges for transporting equipment and large modules.

Sustainable development of Canadian oil sands falls in part to regulatory and public oversight, but the onus for making fundamental changes in the technology and processes that will make positive and enduring differences falls to industry itself. Quite simply, no one knows the business better, not to mention the technical challenges involved and the complexities of operating in an increasingly circumspect and global social environment.

Still, the companies poised to best manage these highly charged, changing and challenging times will be those that challenge and change along with them, reviewing and maybe even abandoning some cherished legacies, entrenched assumptions and operational inertia.

Long-term

Going to the next level

Fulfilling Canada's promise as an energy superpower

When the notion of Canada as an "energy superpower" arose in connection with an Energy Council of Canada summit six years ago, it was in the middle of a dramatic up-cycle: the industry was on an investment capital roll; advanced technologies like SAGD and Toe to Heel Air Injection (THAI) were proving up or starting to emerge; and negative, NGO-driven public relations campaigns had not yet gone global. Indeed, one of the major media stories to emerge from the inaugural World Heavy Oil Congress in Beijing in 2006 was not one of impending environmental impact, but a call by one U.S.-based observer for the inception of a world heavy oil commodity market to be based in Calgary.

Heady times during this period of expansion gave way in 2011 to the more sober realities of having to endure a challenging climate in order to develop a resource that is not only energy- and cost-intensive and still isolated from foreign markets, but also coming under increased scrutiny in the broader public interest. Throw in the prospects of competing supply from emerging shale gas and carbonate reservoir plays – the latter alone, by some estimates, accounting for more than 60% of the world's remaining oil in place – and Canada's response to developing its oil sands in 2012 will need to be measured and innovative, to say the least.

The fundamentals for Canada to forge a global leadership role in sustainable energy resource development are there: perhaps no other jurisdiction in the world with this magnitude of resource potential has anywhere near Canada's combination of political stability, advanced education, technical prowess and transparency in business dealings. But we think the opportunity at hand is even bigger than simple resource industry leadership: Canada is poised to do for global hydrocarbon-based energy development what Germany has done for the renewable energy R&D and manufacturing sectors – lead not only by the numbers but, most especially, by the example of vision and political will.

In other words, the opportunity is to become a world leader in responsible and sustainable hydrocarbon resource development that integrates the long view, that captures opportunities in technology development, and that engages all stakeholders – including and especially government – in helping shape a viable plan for the future.

Expanding the market

The first order of business is to secure a diversified customer base. It's difficult to self-proclaim to be an energy superpower when we can serve only two markets – our own small western and central Canadian market and the U.S. The election in 2011 of a solid majority government, however, presents an opportunity to make headway in pipeline construction in particular, there to set the stage for expanded markets across the value chain.

The reality is simple: the growing global middle class in emerging economies means the countries of those hundreds of millions of people will continue to need reliable sources of both raw materials for construction and the energy to make their new upwardly mobile societies function. Australia has benefitted hugely from filling the bill on the materials side; Canada needs to take its rightful place on the energy side. And in the spirit of partnership and collaboration that we advocate here and have advocated elsewhere, pipeline and possibly rail development for ultimate tanker traffic to Asia-Pacific need not be a Canadian-only infrastructure when there's a multitude of deep-water ports all along the west coast of our largest trading partner. Ongoing conversations between Canada and the U.S. in the same cooperative

spirit could lay the groundwork for distributing risks and rewards by exploring a wider range of potential distribution projects.

Indeed, important precedence for such alignment already exists in groups like the Pacific NorthWest Economic Region, which, for decades, has been advocating tighter economic ties and smoother cross-border flow of energy, products, services and people between B.C., Alberta and Saskatchewan on the Canadian side and Washington, Oregon, Idaho and Montana on the U.S. side. Opportunities to the East Coast are also being considered.

Seizing the day technologically

The oil sands sector should be looking to parlay its technology development into a number of enduring values, starting with the technology itself as home-grown intellectual property of potential application and value elsewhere in the world and also as instrumental in helping to mitigate and/or eliminate ongoing concerns about health and environmental impacts.

But the opportunity is also to earn a world profile and add a secondary economic engine at the same time, not unlike what, again, Germany has done in advancing its solar photovoltaic industry over the last two decades. Photovoltaics are now a significant component of that country's current export-booming economy that is also spinning off into related technology endeavours, including battery and electric vehicle technologies that are seen as game-changing in the next years.

Indeed, Canada has never been better poised to emerge as the go-to source in North America for strategic technology development – a view strongly voiced by the Alberta Government itself in last May's *Report of the Premier's Council for Economic Strategy*. Anticipating that the world, one way or another, will be substantially different in 30 years, the report calls first and foremost for a "Global Centre for Energy" to help realize the full potential of the province's energy resources so that monies produced from non-renewable energy assets can be invested in emerging technologies, products and services.

In short, because it is the major economic driver in Canada today – capstoning a long shift away from the traditional base in auto manufacturing – the oil sands industry is front and center in terms of influence on energy and long-term energy-related social policy. However, as with the case in Germany, technology is the first and the critical means to that end.

Again, the prize isn't simply technology itself, but in ensuring we don't lose the opportunity to develop important secondary industries and market potential.

The strategic key to sustainability

Technology does more than just help oil sands producers clear myriad operational hurdles – it is key to better realizing the resource's potential in ways that are also economically, environmentally and socially sustainable. It is also a burgeoning secondary industry in its own right and Canadian producers have an opportunity to more fully capitalize on its R&D contribution in this sector – in terms of both the intellectual property value involved and to enhance global public perception of the industry as setting the bar for innovation and leadership.

Tailings consolidation – The "step change" accomplished this year in accelerating tailings pond reclamation cycles through better management of Mature Fine Tailings (MFT) – and the faster turnaround for recycling water that it affords – breaks the ground for further innovations that could see significantly smaller and fewer tailings ponds for mining operations as well as less water use overall. The Oil Sands Tailings Consortium (OSTC), a group of industry peers committed to faster development and deployment of tailings solutions, is making good strides in this area.

SC-SAGD – Successful completion in 2011 of the world's first solvent-cyclic SAGD pilot project means the vast reserves of bitumen locked up in carbonate rock – more than 400 billion barrels are believed to exist in the Grosmont Formation alone – could more than double Canada's unconventional oil production potential.

EM – Producing bitumen through electromagnetic stimulation of reservoirs too shallow for SAGD, but too deep for mining could see a re-emergence of a technology piloted in the mid-2000s by Shell at its Peace River operations. Under the right conditions, the technology is also considered a potential stand-alone process for mobilizing and even partially upgrading bitumen, eliminating the need for both water and fuel gas in the process.

In situ upgrading – Partially upgrading the bitumen in situ through combustion processes that leave unwanted by-products underground while also capturing carbon release has the potential to reduce water use and fuel gas consumption for steam generation by up to 80% while increasing recovery factors by as much as 50%.

Alternative overburden approaches – Testing in reservoirs lacking a good cap rock to contain injected steam in normal SAGD operations shows promise in areas such as northwest Saskatchewan, where alternative geological features like glacial tills are proving effective in containing sufficient heat to mobilize bitumen – an evolving process that could unlock significant additional reserves.

Next-generation advances in oil sands technology have the potential to enhance the end game – producing more bitumen with less effort, energy and impact. Together, however, they are also creating a new center of gravity in the overall value chain whereby some of the technology can be deployed to other resource plays, and in any case is distinctly Canadian in design and/or application.

This presents the opportunity to further leverage the effort and investment in the oil sands by celebrating these technological advances in ways that lay the groundwork for further drawing and developing of research talent, while also promoting the industry at large on the global technology stage – a move that resource-rich Norway has managed to make with a population base one-eighth that of Canada's.

Walking the talk

Wearing the *energy superpower* mantel and being a global leader doesn't mean swaggering across the world stage, but it does mean taking the initiative. It also means, as one industry observer put it, that part of this will come from government but "ultimately it will be in ways that stretch the mind." We believe that if there is one area in the Canadian economy where minds are being "stretched," it's in the oil sands.

But what these minds are being stretched to understand, create and manage needs increasingly to move to the broader strategic level. This means seizing the opportunity to help shape Canadian (if not global) society in a holistic way, but also in a way that leads by example. We don't believe, for instance, that Canada needs either to wait for, or outright defer to, the United States regarding policies around climate change. We don't believe partnership and collaboration is restricted to the industry or Canadian-only companies, government and organizations. And we don't believe public education and perception is a zero-sum game – a war for hearts and minds where one side will win and the other will lose.

Like the military and economic variety, energy superpowers also need to balance short- and medium-term opportunity with long-term strategic thinking and action. As the central drivers of the Canadian economy, oil sands leaders should strive to be seen in the world media as taking a stand on, for instance, the Arctic resource potential in ways that focus and inform international debate of issues pertaining to sovereignty. Oil sands leaders should be shifting gears to be seen as thinking globally first, North American second and Canadian third in terms of what needs to be done for the longer-term benefit of the world – whether through economic development, the shift to renewable energies, or leveraging technology. Finally, oil sands leaders should be working to be understood as real stewards – leaders with interests far bigger and broader than their own.

Indeed, we think renewed calls for a comprehensive national energy strategy – like those that emerged during the CAPP Dialogues engagements and the Energy and Mines Ministers' Conference in July 2011 – are timely and appropriate. Unlike the adversarial energy programs of the 1980s, such a strategy would not only set an overall policy direction for developing all types of energy but also exemplify the quality and depth of leadership that we argue the industry and government together need to provide.

When earnest and comprehensive, such a strategy would thereby do the important work of trust-building in the community. As discussed above, this is a particularly complex issue but one that comes to bear most directly in areas such as pipeline development, environmental and social issues, long-term energy R&D and the inevitable integration of renewables, as well as in just earning an overall social licence to operate.

A national strategy would also be just that – national in scope to thereby do the further good work of building stronger institutional, industry, social and knowledge linkages across the country. Aside from overcoming regional misunderstanding and even distrust of the oil sands sector specifically, such a strategy would also provide a clear set of research and development objectives, an emerging identity as a singularly-focused energy superpower and an important center of gravity in the world for attracting and retaining top skilled labour.

Sir Wilfred Laurier's pronouncement to the Canadian Club of Ottawa in 1904 that Canada "shall fill the 20th century" was almost exactly 100 years off the mark. Canada is in fact poised to fill the 21st century, but will need to avoid a very real risk of becoming, if it becomes one at all, an "energy superpower" *only on paper*. It's the old adage that a good offense is the best defense, an attitude increasingly of material importance when it comes to addressing medium-term issues such as transportation infrastructure: unless greater access to existing and new markets becomes available over the next 5-10 years, the reality is that much of our growth potential will be shut in along with the bitumen itself. And the loss is more than simply one of revenues and standards of living. If market opportunity is removed or frustrated or the social licence to operate is revoked, our ability to plan for an independent, prosperous and sustainable Canadian society falls increasingly into uncertainty.

When you look at what we already have in place in terms of political stability, technology development and just on-going improvements in developing this resource with increasingly minimal impacts, we see the industry on the threshold of a long-term commitment that will be instrumental in developing all sources of sustainable energy in the future. That's the promise but also the responsibility of being an energy superpower – that industry leaders step up their influence by thinking more strategically about resources.

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