

PwC Energy Visions 2010 Alberta's Oil Sands Then, Now, Next

May 18, 2010



PRICEWATERHOUSECOOPERS 

Oil Sands – Then, Now, Next

- We are entering a renewed phase of intense activity in the Alberta Oil Sands. Our clients at a distance from the action are asking...

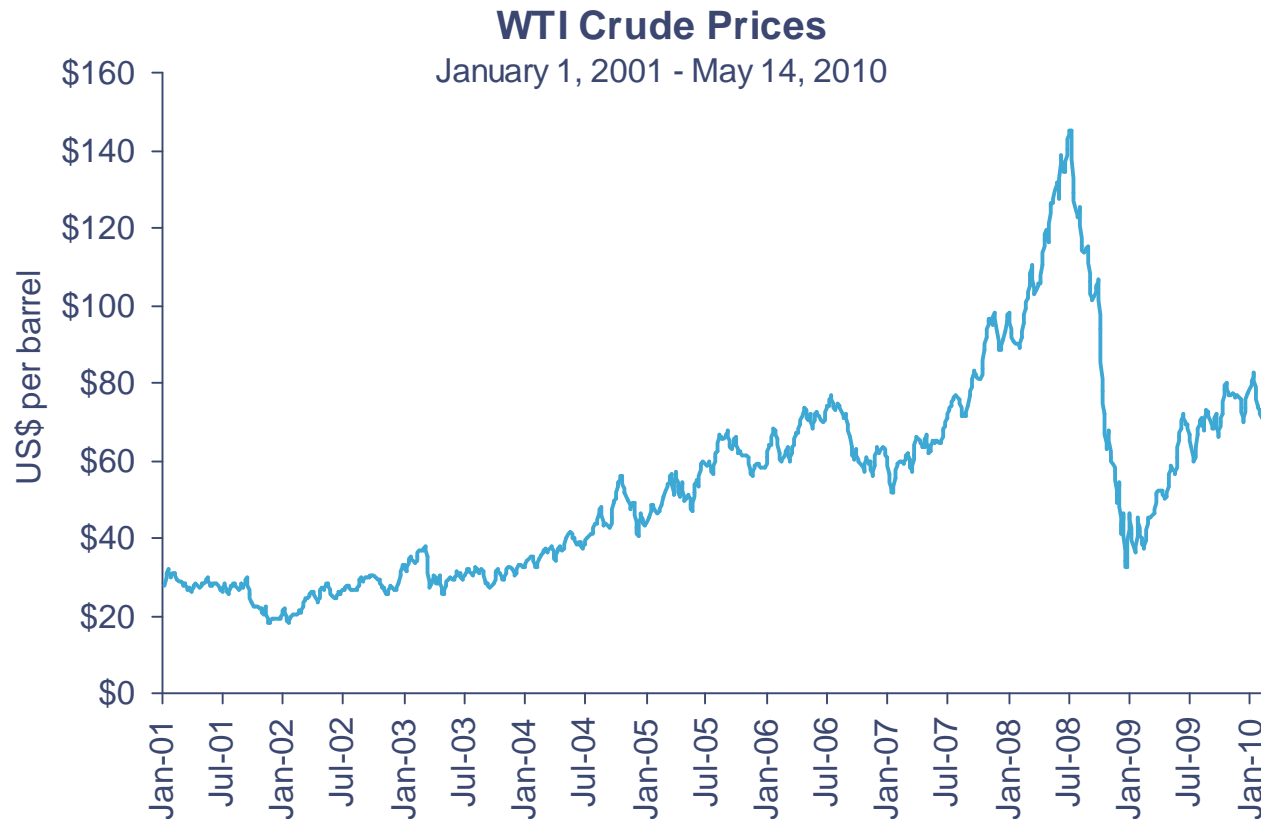
“What’s going on?”

- We tried to answer that question:
 - We reviewed >300 recent reports on the industry (both public domain and proprietary)
 - We interviewed a number of senior executives and government officials

This presentation highlights our key findings

Recent history

Recent history



Remember the boom...

Investments in oil sands mining and upgrader projects could reach \$105 billion over the next decade, while production is expected to quadruple from current levels

- *Conference Board of Canada, April 11, 2006*

...Then came 2009!

“Oil Sands to ‘Slumber’: Lost investments will total \$97B to \$241B in next decade”

- *Financial Post, February 6, 2009*

2010 – Back to the future?

Economic revival sweeping Western Canada: New deals in energy sector touted as sparkplug to ‘lead the country out of the recession’”

- *Globe and Mail, January 21, 2010*

Recent history

Current headlines

“Alberta bracing for the next labour squeeze”

- *Globe and Mail, March 2*

“Rising oil sands costs ‘a worry’” – Randy Ollenberger of BMO suggests that Shell project costs continued to rise during recession and that “...there was a mistaken presumption that costs came down...”

- *Globe and Mail, March 5*

Report says costs will climb at an “unbelievable pace” over next 3 years

- *Conference Board of Canada, March 18*

“Cenovus Energy Inc. said inflation has climbed as much as 10% in some parts of the Canadian oilpatch, making it the second major energy outfit to report cost concerns in two weeks”

- *Financial Post, April 29*

“Canadian Natural Resources Ltd. on Thursday said it is bracing for a return to runaway cost inflation and possible labour shortages as producers scramble back into expanding oil sands production”

- *Calgary Herald, May 7*

Recent history

What can we conclude from this?

- Recovery in crude prices has revitalized project announcements
- However, a press release does not equal board sanction
 - Things can change – witness the last two weeks!
- Therefore, too early to call this a boom yet... but we may be headed there

The switch appears close to being turned “on” again

Have we learned
anything?

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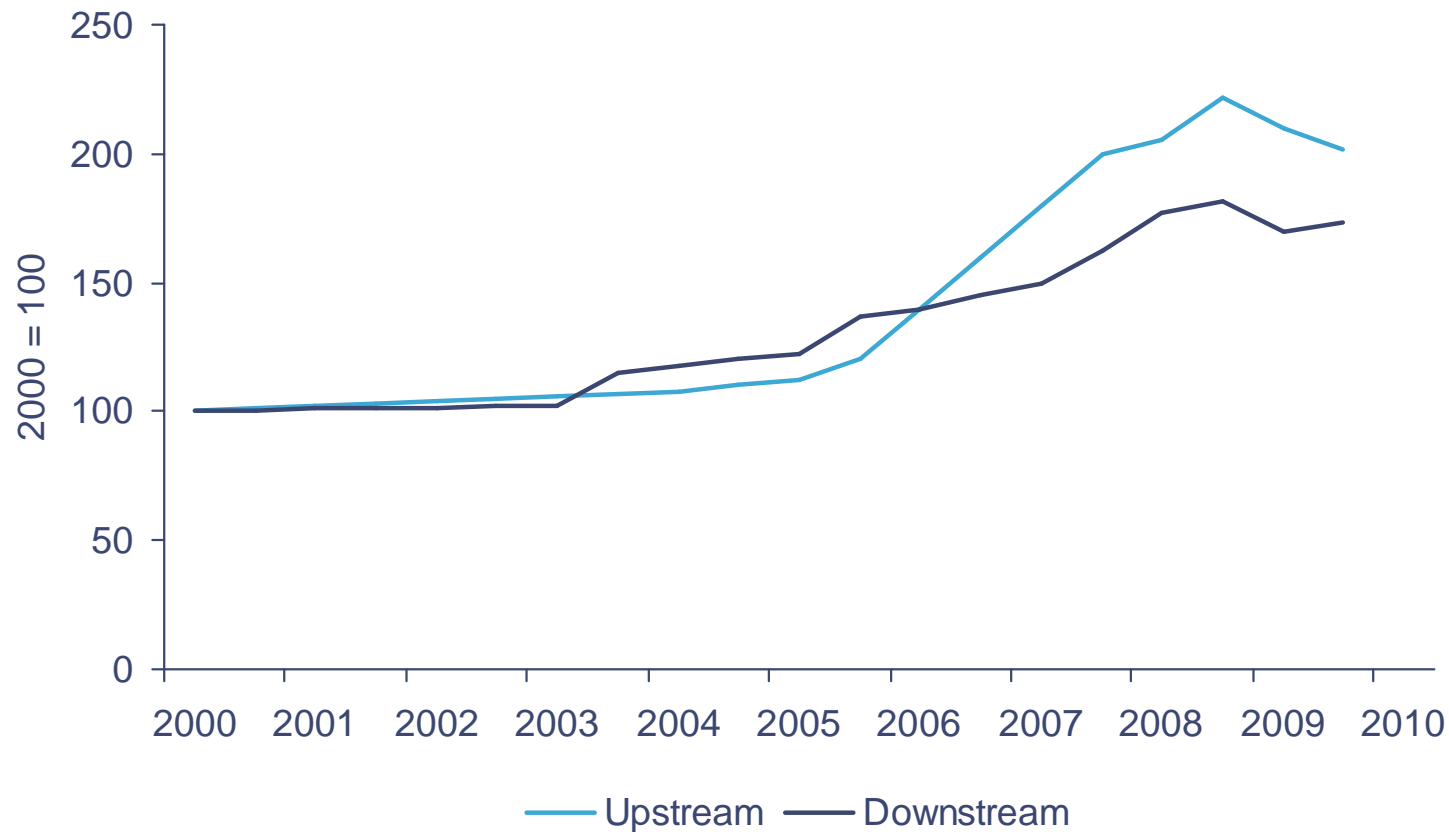
Labour issues have not been solved

- New projects facing comparable labour issues to before
 - Key problems last time were lack of experience and inadequate supervision. Those problems remain
 - If the switch gets turned on it may rapidly trigger a new labour crunch, which we are not prepared to deal with
- We are a very small population trying to develop a very large resource – labour issues are never far away

Have we learned anything?

Capital costs have not really come down

IHS CERA Upstream and Downstream Capital Costs Index



Have we learned anything?

But, there are differences, which temper things

- The oil sands land rush is over
- Trend is smaller scale in-situ projects
 - Narrow light/heavy differential and lower natural gas prices help these projects' economics
- Learning to standardize and modularize and build elsewhere
 - Although you cannot outsource site construction
- Technology is making a difference
- Upgrading currently uneconomic, which reduces pressure

The changing landscape of the industry

The changing landscape of the industry

Divergent business models have emerged...

- Oil sands industry differentiating:
 - In-situ versus mining
 - Upgrading in Alberta versus shipping bitumen south (as dilbit, synbit)
 - Integration with U.S. refining versus stand-alone bitumen seller
 - Partial upgrading (to pipeline quality) versus full upgrading (to light synthetic)
 - Technology differentiation (e.g. steam v. solvent v. combustion)
 - And now, the entry on larger scale of Asian state-controlled companies

“There is no ‘we’ in this industry”

The changing landscape of the industry

Consequences of divergent business models

- Reduced alignment on key issues:
 - Transportation
 - Environmental considerations
 - Industry image
 - Cost inflation
 - Proliferation of industry representative and working groups (CAPP, IOSA, OSDG, OSLI etc...)

Point was made over and over that it is essential for the industry to work together – the rest of the world views us as one industry

The changing landscape of the industry

Divergence between government and industry?

- Maximizing value for resource-owner versus maximizing shareholder value
 - Location of “value-add”
 - Economic diversification
- Has public policy adequately recognized industry’s differentiation?

Dialogue is essential – everyone said this – too many other issues require coordination

What are the key challenges going forward?

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- Project planning, execution, and cost controls
- Regulatory approval process (complexity and delay)
- Operating risk reduction
- Market dynamics (U.S. Gulf Coast, Asia, pipelines, diluent availability)
- Environmental considerations
- Industry image

Project planning, execution, and cost controls

Project planning, execution, and cost controls

- Everyone accepts the mistakes of the past but everyone admits there is real risk of repeating them
- Lots is being done (e.g. better sourcing and modularization strategies)
 - Recognition that improved integration of owner processes and information management with engineering firms (EPC's) is needed

However, on the topic of collaboration (e.g. sharing infrastructure, coordinating manpower demands, procurement, staging projects, engineering) there does not seem to be a driver for change

Regulatory approval process

Regulatory approval process

Complexity and delay

- Observation that regulatory approvals taking “twice the time” they used to - serious impediment
 - Even pilot projects are caught up in this
- Regulatory process not very flexible
- Government is listening
 - However, there are a lot of stakeholders
- Issue particularly pronounced in the in-situ sector

Not an easy one to fix – but maybe this represents an opportunity

Industry values consistency and predictability

Operating risk reduction

Operating risk reduction

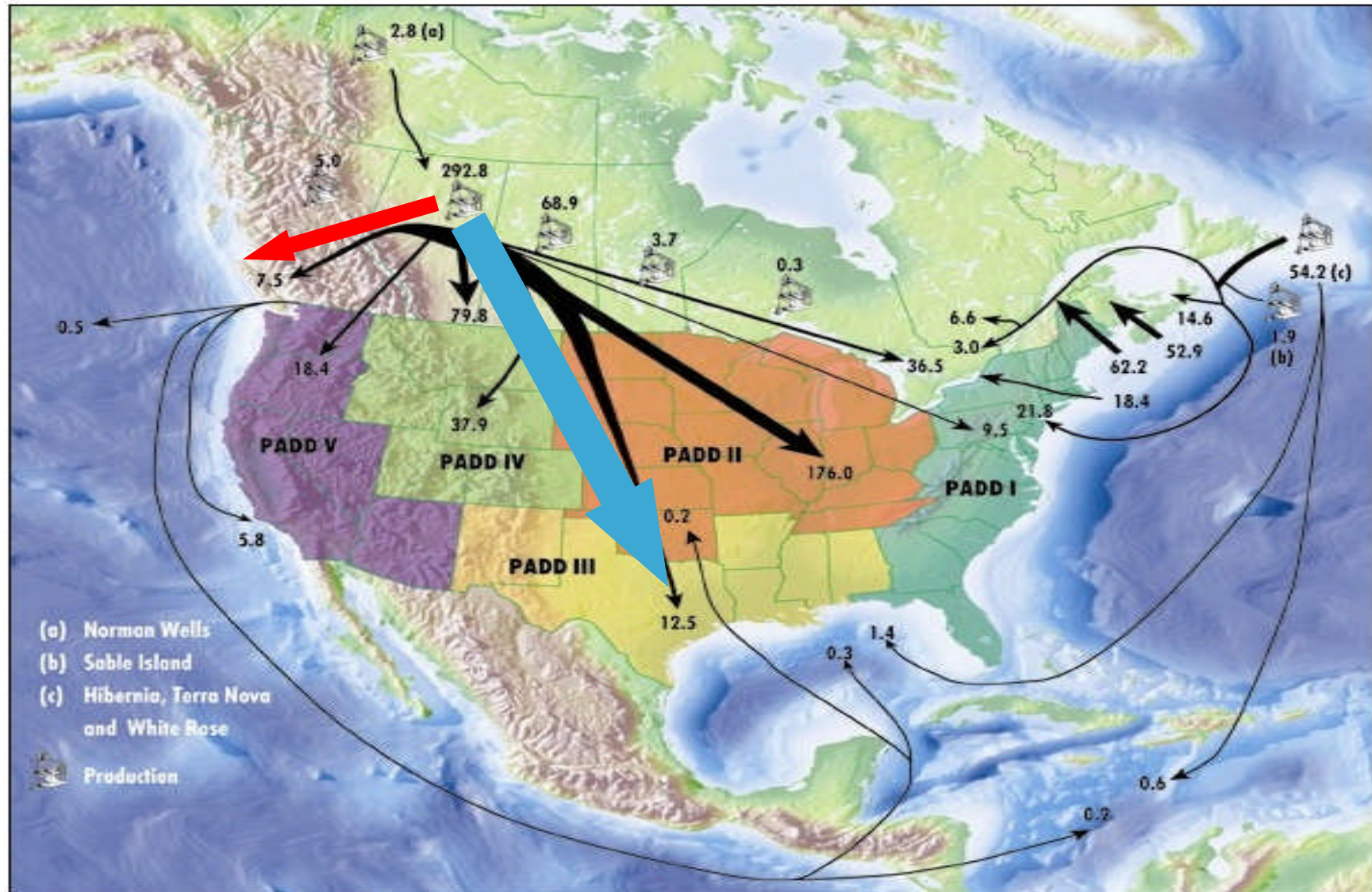
- Start-up problems have been frequent and significant
- Unexpected in-situ reservoir challenges encountered
 - For example, higher than expected steam-to-oil ratio
- Skilled labour a huge challenge with current demographics and more large projects becoming operational

Significant people investment required from industry and governments; concern is that we are not prepared

Market dynamics

Market dynamics

2008 supply and disposition (crude oil in thousands of m³ per day)



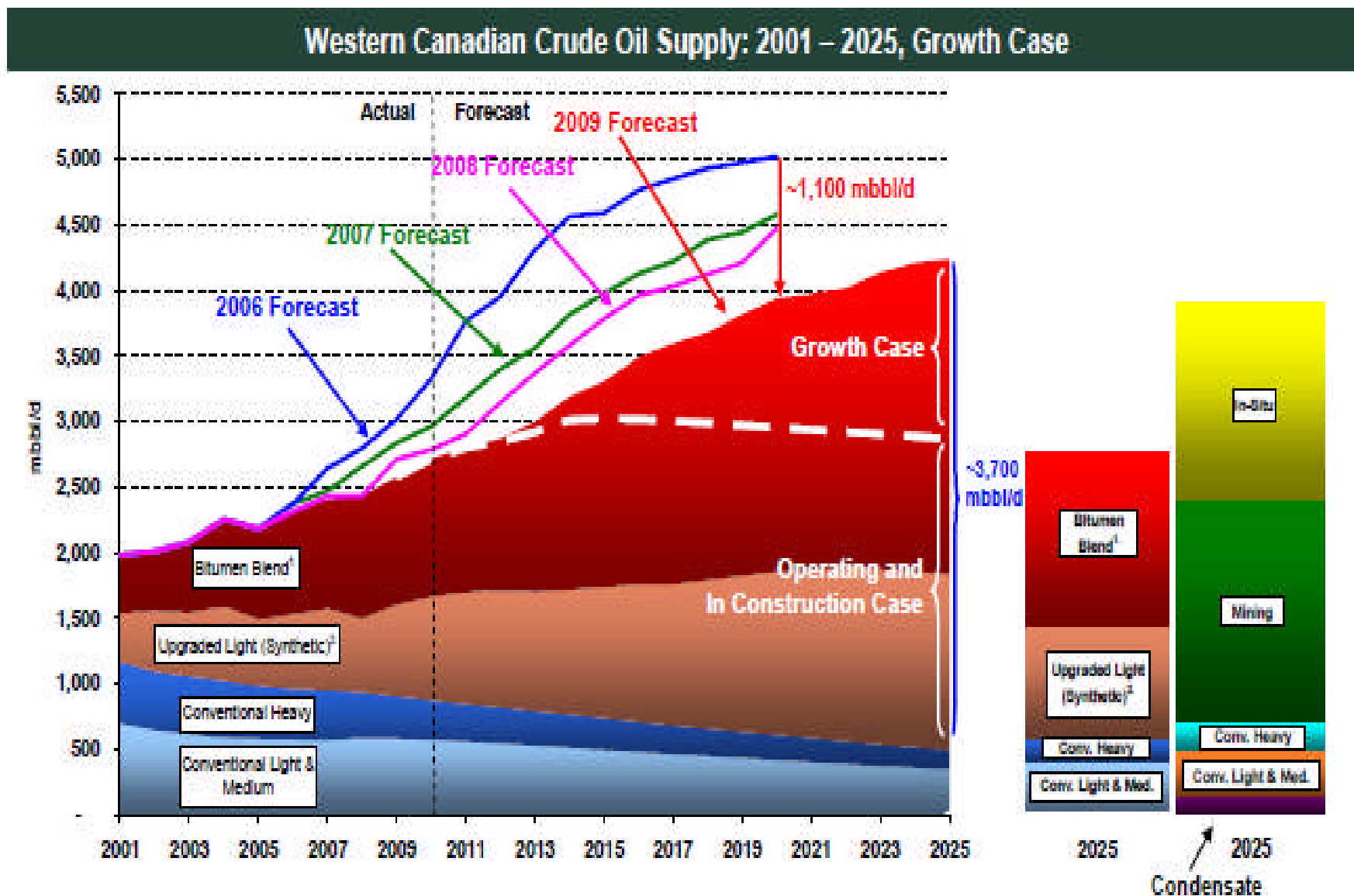
Market dynamics

U.S. Gulf Coast, Asia, pipelines, diluent availability

- Overwhelming majority of production to the U.S.
 - Incremental growth to the Gulf Coast
 - Integrated north/south strategy among the largest companies, driving pipeline construction
 - But, we now have excess pipeline capacity for the medium term; already resulting in rising transportation tariffs
- Volumes will start to enter the Pacific market; both bitumen and SCO
 - Rail option to Prince Rupert gaining some traction

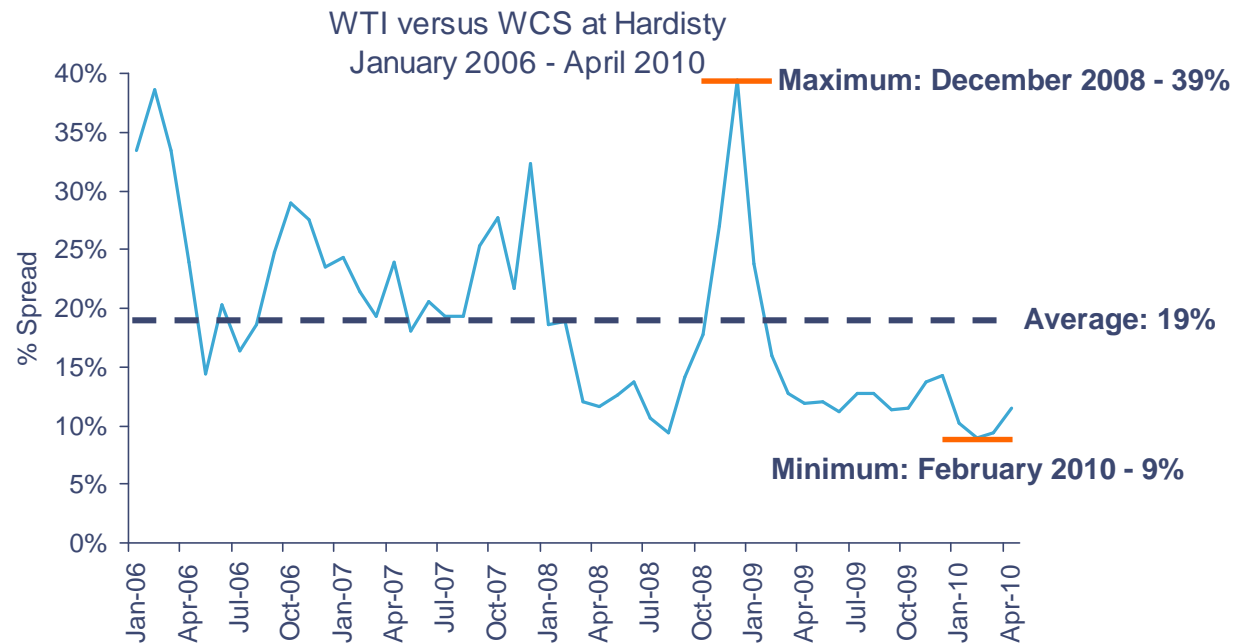
Industry has overestimated production growth

Supply Forecast



Market dynamics

Heavy oil differentials



- Consensus is that light-heavy differential will remain tight
 - But, a minority says the differential will widen sooner than expected
 - Most upgraders and coking refineries losing money
 - With exception of Total and possibly NorthWest (pending bitumen royalty-in-kind decision), no new upgrading projects currently planned

Environmental considerations

Environmental considerations

Land

- Issue *may* recede in the future
 - Especially once tailings ponds reclamation gets into full gear
 - But, land is the “visual” that shapes public opinion above all else

Water

- Issues remain (tailings pond water quality, winter flow, in-situ water availability, treatment and recycling)
- **Key is to remember water presents a real physical limitation risk that can impact production (unlike CO2)**

Environmental considerations

Air

- CO2 is the big issue. It is not going away.
- All projects need CO2 mitigation investments
- CCS still a long way from economic viability
- Federal government is waiting for the U.S. on CO2 legislation
 - **You can have the same targets but achieve them through different means**
 - **Are we going to see a national energy strategy?**

Environmental considerations

Cumulative Effects

- Managing these will become an imperative, demanding much greater coordination and collaboration amongst players

Social Footprint

- Longer term, this may be Government's toughest issue
 - In situ development is already having a significant impact on communities like Conklin and Lac La Biche

Gulf of Mexico

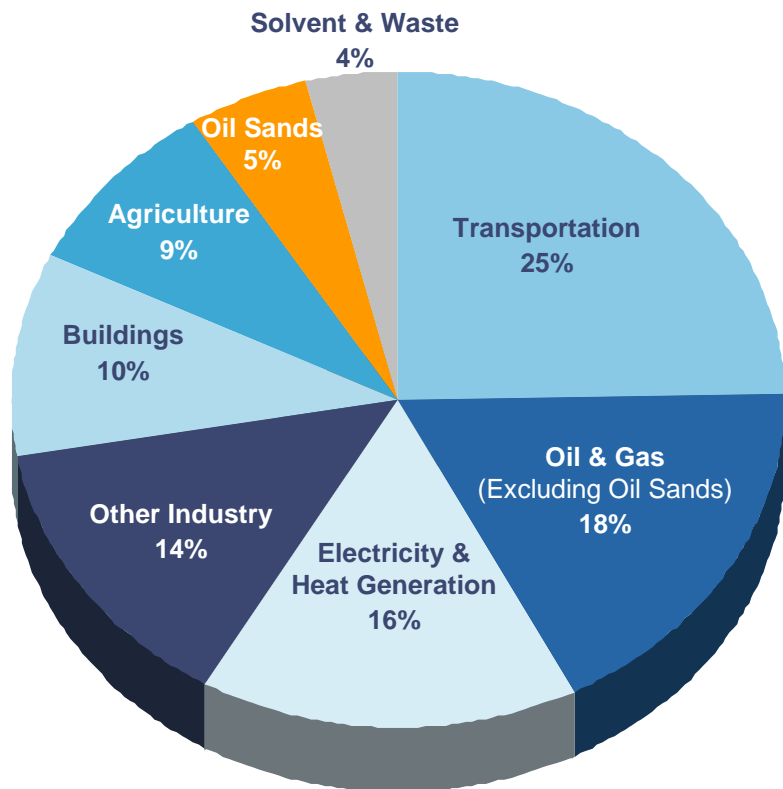
- Oil spill issue - impact?

Industry image

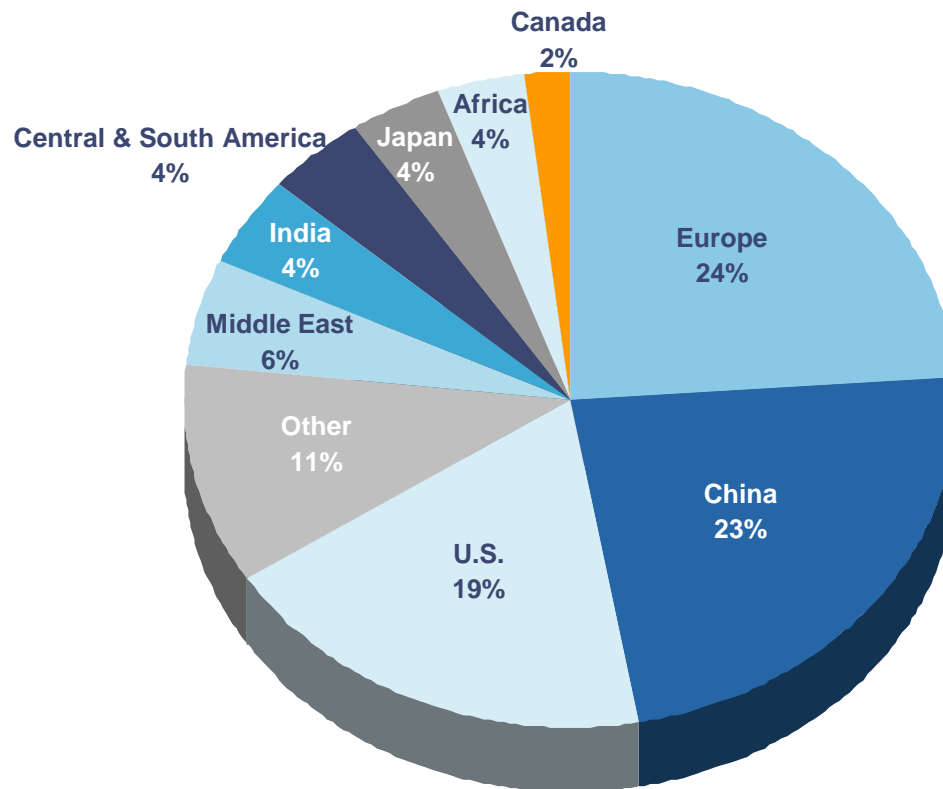
Industry image

Oil sands: GHG emissions

Canada's GHG Emissions by Sector



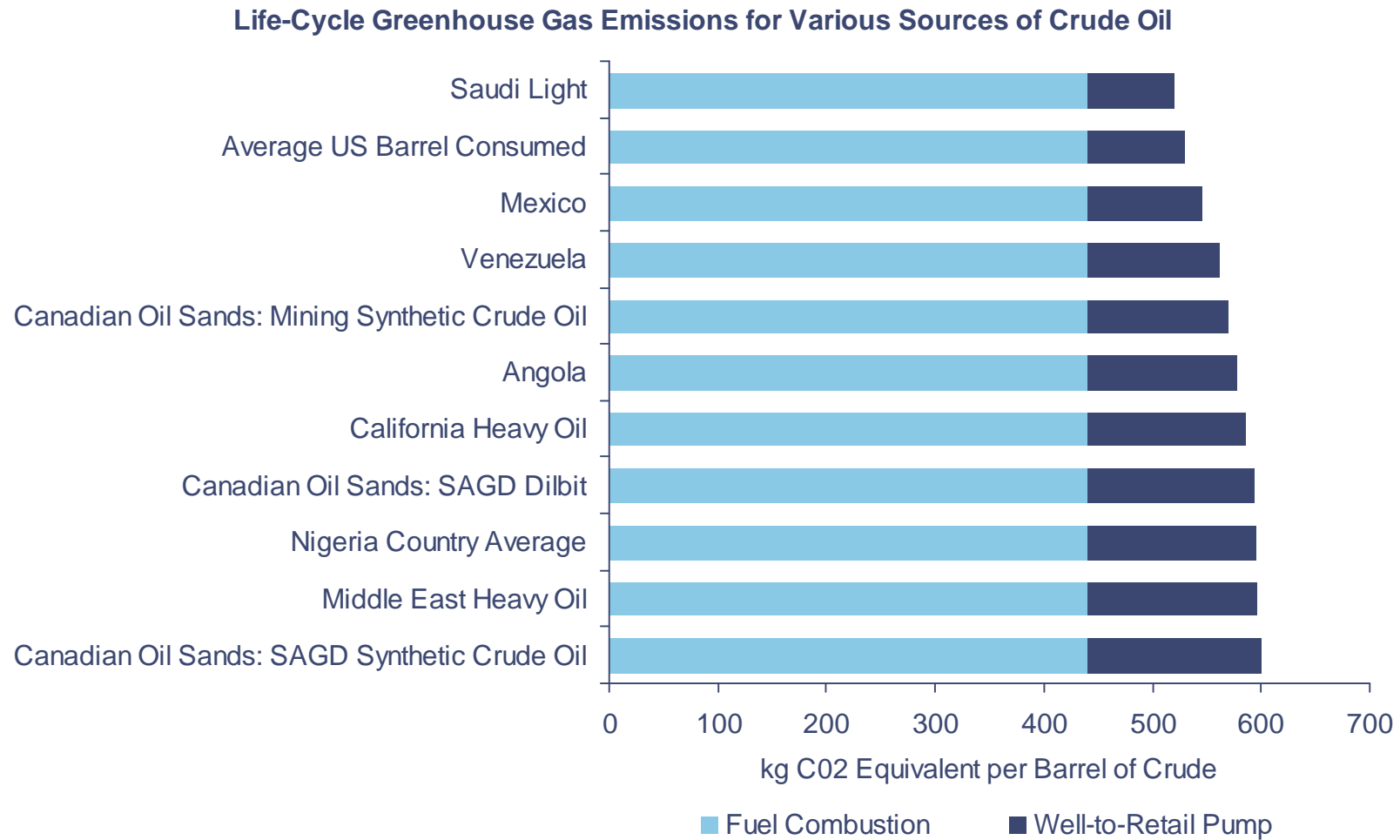
Global Energy Related Emissions by Country



Canada's oil sands industry accounts for less than 0.1% percent of global GHG emissions

Industry image

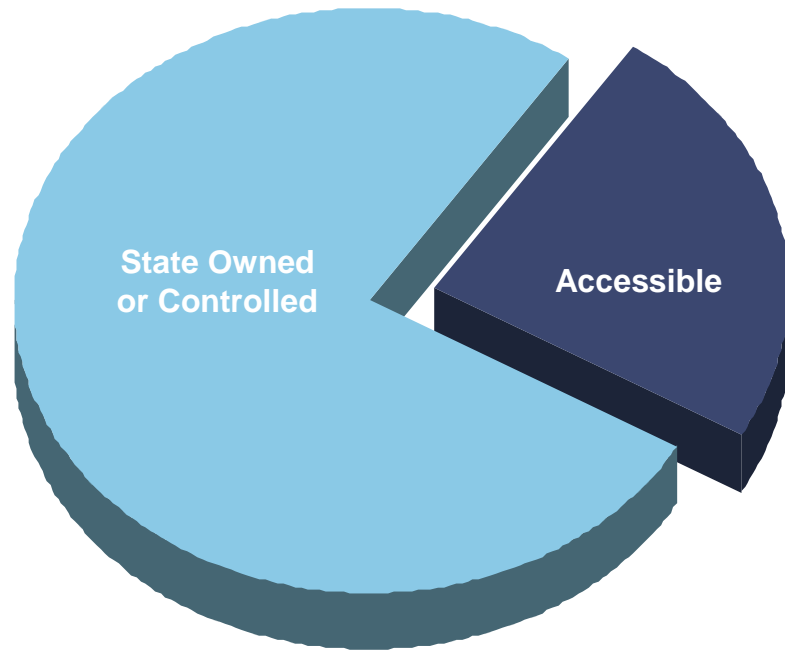
Life cycle emissions from Canada's oil sands
not far off other crude oil sources



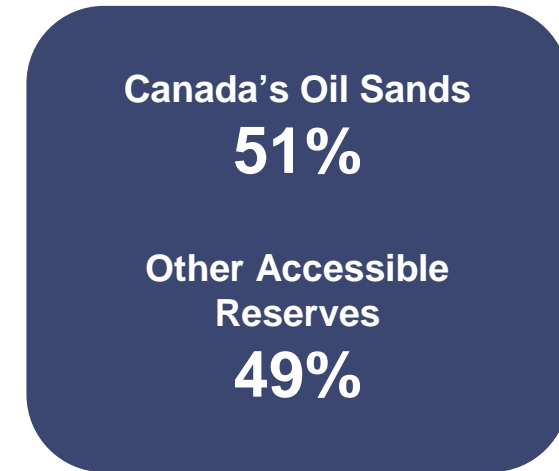
Industry image

Importance of Canadian reserves

World Oil Reserves



Accessible Oil Reserves



Industry image

And yet....

- The image issue will not go away and may well get worse
- The fact is that this industry carries significant environmental challenges and risks, but these risks can be managed
- Image **will not** be improved by education and PR (advertising) alone
- Image **will be** improved (with time) from exemplary industry performance
 - Measurable, verifiable, transparent, independent, communicated openly and in real-time
- The public will judge the industry based on the worst performer, not the best
- The world views this industry as one
 - We are all in this together

Conclusions

Conclusions

- We are likely entering a “mini-boom”. Potential bottlenecks are:
 - Labour
 - Regulatory process
- We now have lots of pipeline and refining capacity
- Trend is to smaller scale in-situ projects (low natural gas prices and a tight light/heavy spread help economics; the unknown is the ultimate price of carbon)
- New technologies look promising
- But, development remains very expensive (costs have not really fallen)
- Industry is still very young
- Improving industry image is difficult but achievable
- There may be no “we” in this industry but “we” will succeed or fail together on these issues

Thank you.

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