

Renewable Fuels Policy Development: Canada

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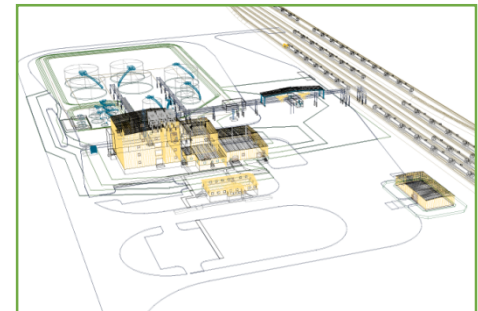
Content



- Canadian policy framework for renewable fuels 2005 – 2015
- Learnings
- Applicability of EU, US approaches to Canada
- Opportunities and challenges: 1G - 2G transition
- Musing - Appropriate Canadian policy framework by 2015

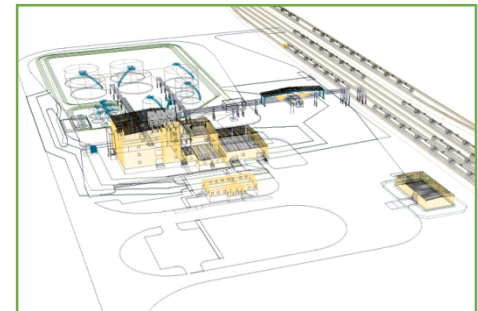
Liquid fuels only

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Canadian Context for Renewable Fuels

- Large investments in heavy 'oilsands' development
 - Impetus to 'green' the western Canadian energy portfolio
 - Renewables — competing with and complementary to CCS
 - CCS viable at \$70-150⁺/T
- Energy security perceived to be a secondary objective
 - Eastern Canada net importer
- Agriculture, forestry have driven development of renewables
 - Abundant feedstocks in both sectors
- Renewables plan developed comparatively late in a global context
- Downstream petroleum highly concentrated
 - Majors will import some elements of global renewables platforms
 - Opportunity to differentiate in market limited; policy role heightened
- Minimal invested capital 1G production relative US, EU



Complimentary policy development

Supply Side - 'Push'

Feasibility funding

Feedstock production incentives

Operating incentives (/litre)

Capital incentives

- Grants, low interest debt, loan guarantees

Tax policy (accelerated depreciation, flow through shares)

Demand Side - 'Pull'

Motor Fuel/Excise tax exemptions (neat or blend)

Adoption incentives (capex offsets)

Blender's incentives

Renewable content regulations

Carbon offset protocol for renewables

Carbon offsets markets for renewables

Low Carbon fuel standards

Cap & Trade - downstream petroleum

Challenges to 'getting it right':

- Timing - Push before Pull leaves idle capacity
 - Pull before push eventually delays pull (political support dwindles)
- Adaptability - Flexibility of supply side programs to developmental delays in industry
- Conditional policies - Pull policies conditional on successful push outcomes

Canadian policy framework for renewable fuels 2005 – 2015



Canada

- Kyoto - Canada's target is an average of 6% below 1990 levels over the 2008-2012 period
- US-Canada 'comparable efforts' on carbon reduction
 - Cap & Trade?
 - Carbon Offsets protocols in draft; biofuels not included for eligibility
- Capital incentives
 - ecoAgricultural Biofuels Capital - 5% minimum farmer investment, \$200M fund
 - Sustainable Development Technology Canada - NextGen Biofuels Fund, \$500M
- Production incentives
 - All alternatives to gasoline - declining rate to 2017, profitability definition fixed, clawback if 'excess' profitability
 - All alternatives to diesel - declining rate to 2017, profitability definition fluid year-to-year, clawback if 'excess' profitability, efficiency/low cost advantaging
- Renewable Fuel Standard regulation in draft
 - September 2010, 5% renewable content in equivalent of gasoline pool
 - Before 2012, 2% renewable content in distillate
- RFS2 (EISA) differences:
 - Not transportation fuels ('liquid renewable fuels')
 - No GHG reduction eligibility thresholds or carveouts
 - No 'small refiner' exemption
- Tariff on Brazil ethanol \$0.05/L

Provincial policy 2005-2015

ALBERTA

Canola, wheat, forest products

'Produce then consume'

2006 - Bioenergy plan - feasibility, capital, and operating support

2007 - Offset Protocol for biofuels

2008 - Technology Fund offsets acquisitions - \$15/T

2008 - Enhanced commercialization & capital support; biorefinery clusters

2010 - Renewable Fuel Standard w/25% GHG threshold

Drivers

- Rural development & diversification
- Export risk diversification - energy portfolio
- Climate change
- 1G as bridge to 2G fuels

BRITISH COLUMBIA

Forest products, minor grains

'Consume then produce'

2004 - biofuels detaxation

2008 - Carbon tax fuels (revenue neutral - \$30/T 2012)

2009 - Innovative Clean Energy fund

2010 - Renewable Fuel Requirement

2010 - Low Carbon Fuel Requirement ('soft cap')

2012 - Western Climate Initiative ('hard cap')

Legislated GHG reductions by 2020 of 33% < 2007 levels.
2050 80% < 2007.

Drivers

- Climate change
- Rural development & diversification
- 2G fuels (target: 50% bioenergy from BC by 2020)

Canadian policy framework for renewable fuels 2005 – 2015



▪ **Saskatchewan**

- Ethanol - Distributor tax credit: \$0.15/L if produced and consumed in SK
- Ethanol in gasoline standard of 7.5% started 2006

▪ **Manitoba**

- Legislation for 10% ethanol; no start date
- Biodiesel road tax exemption: \$0.115/L
- Ethanol road tax exemptions: if produced and consumed in MB
- Western Climate Initiative member

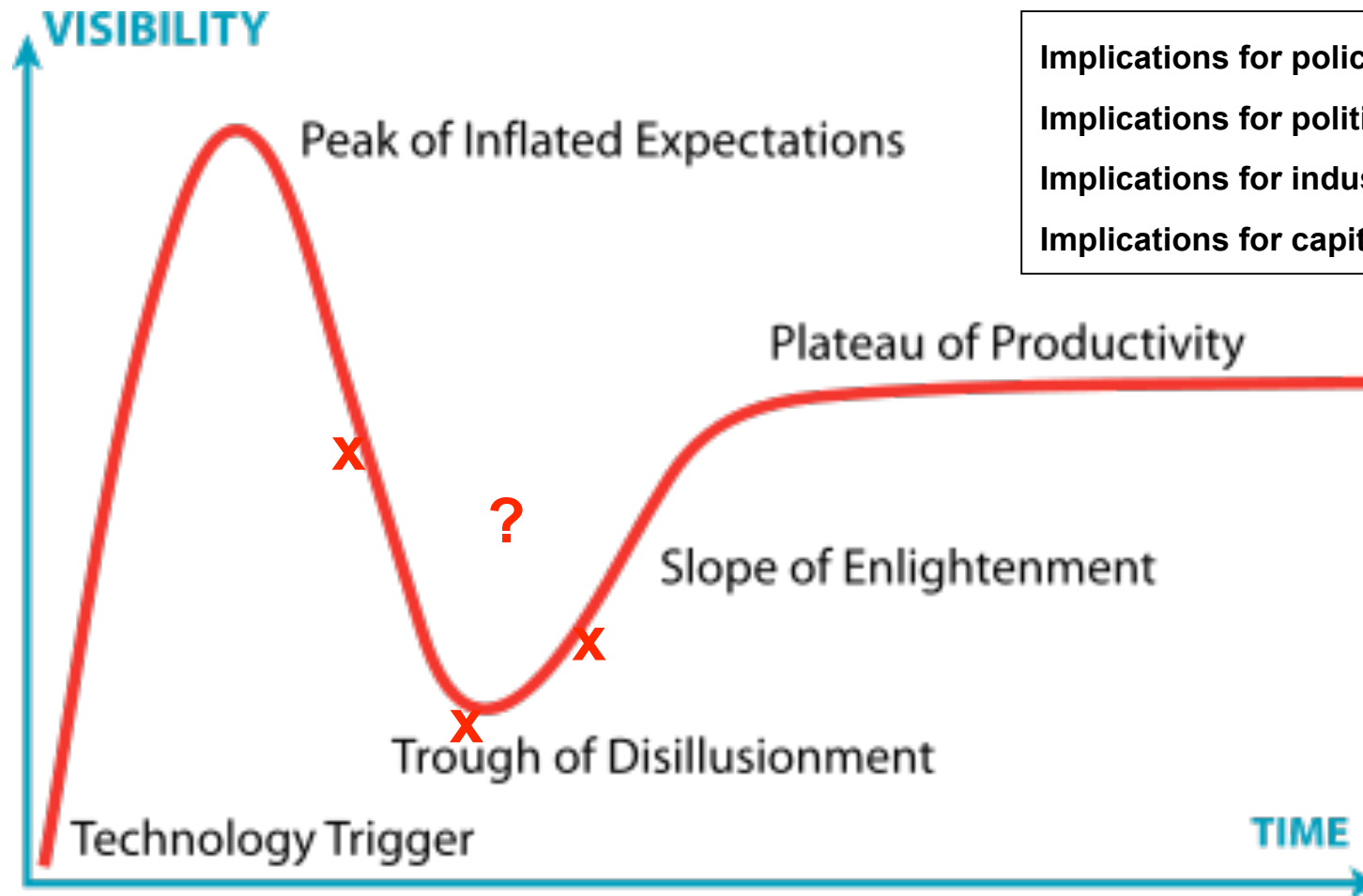
▪ **Ontario**

- Ontario Ethanol Growth Fund
- 5% Renewable Fuel Standard (ethanol) gasoline
- Committed to Low Carbon Fuel Standard (-10% by 2020)
- Western Climate Initiative member

▪ **Quebec**

- Ethanol - Income tax credit for producers - Cap on corn-based ethanol production
- Biodiesel - road tax exemptions
- Western Climate Initiative member

Biofuels Hype Cycle?



Implications for policy makers
Implications for politicians
Implications for industry
Implications for capital

Canadian Renewable Fuel Policy - Learnings



- Provincial climate change action - regulatory process more nimble, leadership
- Producer incentives - 'excess profitability' clawback mechanism threatens financeability
- 'Hype cycle' expectations crash - communicate, engage proactively in disillusionment phase
- Quandry - wait for 2G (risk: demand side delay) or move on 1G (risk: peak early, stranded capital)
- Carbon policy has lagged - \$75/T economic feasibility for biodiesel
- Avoid inter-generational split - 2G biofuels industry support for market-creating role of 1G important
- 'Technology-forcing' policy paradigm needs better articulation
- More rigour in definition of, transitional frameworks for 'residuals' and 'wastes'
- Petroleum industry - one voice / multiple voices issues

Canadian Renewable Fuel Policy - Opportunities toward 2G



Ensure 1G policies function well (don't 'move on')

- Anticipate hype-disillusionment, educate

Help high-carbon heavy crudes and refined products comply in low-carbon world

- Synergistic relationship renewables - fossil fuel development
- Fully fungible 'drop in' renewables in exported refined products
- Co-processed biocrudes one path, further away

Involve investment capital earlier in government incentive program design

Communicate that demand-side policies will increase

- Avoid stranding 1G capacity
- Employ 'technology forcing' principle

Pragmatic approach to 'open market' carbon pricing

- Optimize, not maximize
- Sector specific policies to reduce risks

Forest biomass

- But, project developer and political perspective: reliance on by-products = exposure to primary business model

Cross-jurisdictional collaboration

Canadian Renewable Fuel Policy - Adopting US, EU, Other Policies & Experience



Capacity for action on trade issues?

- EU tariff action may have opened door to biofuel trade wars
- 'B99' action had -ve impact in both the sending and the receiving jurisdictions

Trade development & energy security

- Biofuels have opportunity for energy import diversification
- Trade in feedstocks (crude) or biofuel (refined products)? - implications for profile of 'energy security' in Canada
- Biofuels could repeat mistakes of fossil fuels re: security

Food security needs a new context

- Simplification of 'non-food' crop impacts
- Agricultural sector initially slow to articulate agricultural/energy sector interplay
- Perspective: Food security strengthened when ag sector more economically viable

Biomass

- Biomass aggregation economics is key hurdle
- US subsidy \$45/T - allow technology to proceed while purpose-grown crops/residue economics reach viability

Canadian Renewable Fuel Policy - 2015 Framework directions



North American integration

- Canada - will it put up the same stakes up as US to develop industry?
- Removes some risk of unilateral disadvantaging carbon regimes

Energy Security will emerge as arbiter

Downstream Cap? ('soft cap' or 'hard cap')

- Soft cap basically a Low Carbon Fuel Standard
- Concern about LCA becoming a regulatory instrument

Public funding - bridge gap of high-cost solution development & low-price carbon

Carbon price will be strongest signal to drive innovation

Systems more responsive to address actionable trade issues, quickly

- Avoid prolonged impact in both the sending and the receiving jurisdictions

Petroleum industry will gear toward maintaining ownership of refining capacity

- Co-located 2G renewables
- Co-processed biocrude

'Biorefineries' will compliment high-carbon fossil fuels - integration

Thank You!

Questions?

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